LMS/RFS/S11432

# Annual Report of Site Surveillance and Maintenance Activities at the Rocky Flats, Colorado, Site

## Calendar Year 2013

**April 2014**

U.S. DEPARTMENT OF ENERGY | Legacy Management

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**Available on DVD:**

Ecology DVD: 2013 Annual RFS Ecology Reports

# Abbreviations

| | |
|---|---|
| Ag | silver |
| Am | americium |
| ANOVA | Analysis of Variance |
| AOC | Area of Concern |
| B | boron |
| Be | beryllium |
| BMP | best management practice |
| Ca | calcium |
| CAD/ROD | Corrective Action Decision/Record of Decision |
| Cd | cadmium |
| CDPHE | Colorado Department of Public Health and Environment |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act (also known as "Superfund") |
| CFR | *Code of Federal Regulations* |
| cfs | cubic feet per second |
| COU | Central Operable Unit |
| Cr | chromium |
| Cu | copper |
| CY | calendar year |
| DCB | dichlorobenzene |
| DCE | dichloroethene |
| DER | duplicate error ratio |
| DNAPL | dense nonaqueous-phase liquid |
| DO | dissolved oxygen |
| DOC | dissolved organic carbon |
| DOE | U.S. Department of Energy |
| DQA | data quality assessment |
| DUP | duplicate sample |
| EPA | U.S. Environmental Protection Agency |
| ERP | *Emergency Response Plan for Rocky Flats Site Dams* |
| ESL | Environmental Sciences Laboratory |
| ET | evapotranspiration |
| ETPTS | East Trenches Plume Treatment System |
| FC | Functional Channel |
| FR | *Federal Register* |
| ft/yr | feet per year |
| GIS | geographic information system |
| gpd | gallons per day |

| | |
|---|---|
| gpm | gallons per minute |
| GWIS | Groundwater Intercept System |
| HRC | Hydrogen Release Compound |
| HRT | hydraulic residence time |
| IA | Industrial Area |
| IC | institutional control |
| IHSS | Individual Hazardous Substance Site |
| IMP | Integrated Monitoring Plan |
| ITSS | Intercept Trench System Sump |
| J | For sampling data, a laboratory and/or validation qualifier that indicates an estimated value. |
| K-H | Kaiser-Hill Company LLC |
| L | liters |
| LANL | Los Alamos National Laboratory |
| LBNL | Lawrence Berkeley National Laboratory |
| LCS | laboratory control sample |
| LM | Office of Legacy Management |
| M&M | monitoring and maintenance |
| M-K | Mann-Kendall |
| MCL | maximum contaminant level |
| µg | micrograms |
| µg/L | micrograms per liter (sometimes expressed as ug/L) |
| mg/L | milligrams per liter |
| MS | matrix spike |
| MSD | matrix spike duplicate |
| MSPTS | Mound Site Plume Treatment System |
| N | nitrogen |
| Ni | nickel |
| NOIPD | Notice of Intent for Partial Deletion |
| NPL | National Priorities List |
| OBP | Oil Burn Pit |
| OLF | Original Landfill |
| OU | Operable Unit |
| PARCC | precision, accuracy, representativeness, completeness, and comparability |
| PBA | Programmatic Biological Assessment |
| PCE | tetrachloroethene |
| pCi | picocuries |
| pCi/L | picocuries per liter |
| PIP | Public Involvement Plan |
| PLF | Present Landfill |

| | |
|---|---|
| PLFTS | Present Landfill Treatment System |
| POC | Point of Compliance |
| POE | Point of Evaluation |
| POU | Peripheral Operable Unit |
| PQL | practical quantitation limit |
| Pu | plutonium |
| PU&D | Property Utilization and Disposal |
| QA | quality assurance |
| QC | quality control |
| R | For sampling data, a laboratory and/or validation qualifier that indicates a value rejected as unusable. |
| RCRA | Resource Conservation and Recovery Act |
| Refuge | Rocky Flats National Wildlife Refuge |
| RER | relative error ratio |
| RFCA | *Rocky Flats Cleanup Agreement* |
| RFETS | Rocky Flats Environmental Technology Site |
| RFLMA | *Rocky Flats Legacy Management Agreement* |
| RFSOG | *Rocky Flats, Colorado, Site, Site Operations Guide* |
| RNS | rinsate sample |
| RPD | relative percent difference |
| S-K | Seasonal-Kendall |
| Se | selenium |
| SED | Sitewide Ecological Database |
| SEEPro | Site Environmental Evaluation for Projects |
| SEP | Solar Evaporation Pond |
| SID | South Interceptor Ditch |
| SPP | Solar Ponds Plume |
| SPPTS | Solar Ponds Plume Treatment System |
| STP | Sewage Treatment Plant |
| SVOC | semivolatile organic compound |
| TCA | trichloroethane |
| TCB | trichlorobenzene |
| TCE | trichloroethene |
| TOC | total organic carbon |
| U | uranium |
| U | For sampling data, a laboratory and/or validation qualifier that indicates an analyte not detected at the indicated concentration. |
| UHSU | upper hydrostratigraphic unit |
| USACE | U.S. Army Corps of Engineers |
| USFWS | U.S. Fish and Wildlife Service |

| | |
|---|---|
| V&V | validation and verification |
| VC | vinyl chloride |
| VOC | volatile organic compound |
| WQP | water quality parameter |
| WWTP | Wastewater Treatment Plant |
| Zn | zinc |
| ZVI | zero-valent iron |

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# Executive Summary

The U.S. Department of Energy (DOE) Office of Legacy Management (LM) is responsible for implementing the final response action selected in the *Final Corrective Action Decision/Record of Decision for Rocky Flats Plant (USDOE) Peripheral Operable Unit and Central Operable Unit* (CAD/ROD) issued September 29, 2006, for the Rocky Flats, Colorado, Site (Site).

Under the CAD/ROD, two Operable Units were established within the boundaries of the Rocky Flats property: the Peripheral Operable Unit (POU) and the Central Operable Unit (COU). The COU consolidates all areas of the Site that require additional remedial or corrective actions while also considering practicalities of future land management. The POU includes the remaining, generally unimpacted portions of the Site and surrounds the COU. The response action in the Final CAD/ROD is no action for the POU and institutional and physical controls with continued monitoring for the COU. The CAD/ROD determined that conditions in the POU were suitable for unrestricted use. The U.S. Environmental Protection Agency (EPA) subsequently published a Notice of Partial Deletion from the National Priorities List for the POU on May 25, 2007.

DOE, EPA, and the Colorado Department of Public Health and Environment (CDPHE) have chosen to implement the monitoring and maintenance requirements of the CAD/ROD under, and as described in, the *Rocky Flats Legacy Management Agreement* (RFLMA), executed March 14, 2007. RFLMA Attachment 2 defines the COU remedy surveillance and maintenance requirements. The requirements include environmental monitoring; maintenance of the erosion controls, access controls (signs), landfill covers, and groundwater treatment systems; and operation of the groundwater treatment systems.

LM prepared and continually updates the *Rocky Flats, Colorado, Site, Site Operations Guide* (DOE 2013e). It is the primary document to guide work performed to satisfy the requirements of RFLMA and to implement best management practices at the Site.

This report addresses all surveillance and maintenance activities conducted at the Site during calendar year (CY) 2013 (January 1 through December 31, 2013). Highlights of the surveillance and maintenance activities are as follows:

- RFLMA references the use of contact records to document CDPHE approvals of field modifications to implement approved response actions. RFLMA Attachment 2 references the use of contact records to document the outcome of consultation related to addressing any reportable conditions. This report discusses the three RFLMA contact records issued in 2013 and the contact record status as of December 31, 2013.
- Inclinometers were installed at the Original Landfill (OLF) as part of the 2008 geotechnical investigation to address localized slumping and settling of the OLF cover observed in 2007. The localized instability is caused by the weakening of one or more soil layers in the shallow subsurface due to moisture in these layers. To address these conditions, filling and grading to recontour some sideslopes and to minimize and remove subsurface moisture was completed in 2009. This annual report includes the annual review of the inclinometer data by a qualified geotechnical engineer. The data indicate that movement at the OLF is exacerbated by precipitation events and elevated water levels, as seen in September due to the heavy precipitation. While the large-scale, overall OLF slope is stable, localized failures have occurred on the landfill under elevated water level conditions. Continued monitoring

and routine maintenance of the OLF cover are recommended. Localized cracking and subsidence in the northeast portion of the OLF were observed after the September heavy precipitation event. Cracks were filled to minimize infiltration of additional precipitation and a temporary drain was installed to reduce ponding in the new subsidence area. The displaced section of berm 4 will be repaired in summer 2014. Design has been completed for a 2014 project to recontour sideslopes in the East Perimeter Channel to increase slope stability in that area. Berm-height criteria were re-defined based on the observed performance of the berm channels during the September heavy precipitation event.

- Reportable 30-day average uranium concentrations were observed starting on December 18, 2013, in surface water at RFLMA Point of Compliance (POC) monitoring station WALPOC, which is located on Walnut Creek at the eastern COU boundary. Validated results were received on February 3, 2014, and notification to the regulatory agencies and the public—in accordance with RFLMA Attachment 2, Figure 6—was made by e-mail on February 13, 2014. Representatives of the regulatory agencies and DOE met on February 18, 2014, to discuss the observations and develop a path forward.

  RFLMA Contact Record 2014-05, "Reportable condition for evaluation purposes for uranium at point of compliance WALPOC," provides a discussion of the monitoring results and recaps the outcome of the RFLMA Parties consultation regarding the evaluation steps to be taken. This contact record is available on the Rocky Flats website, http://www.lm.doe.gov/Rocky_Flats/ContactRecords.aspx.

- All other POC analyte concentrations/activities remained below reporting levels throughout CY 2013.

- Reportable 12-month rolling average uranium concentrations continued to be observed periodically in CY 2013, in surface water at RFLMA Point of Evaluation (POE) monitoring station GS10, which is located on South Walnut Creek upstream of former Pond B-1. Reportable 12-month rolling average americium (Am) and plutonium (Pu) activities also continued to be observed periodically during CY 2013. However, all sampling results since August 2013 show Am and Pu activities well below the 0.15 picocurie per liter surface water standard. The evaluation of these reportable conditions is ongoing.

- All other POE analyte concentrations/activities remained below reporting levels throughout CY 2013.

- As with many locations on the Front Range, the Site experienced very high water flows due to heavy precipitation during the second week of September 2013. In some cases the high flows and debris caused damage to the automated sampling equipment, resulting in temporary interruptions in composite sampling. At almost all Site locations, the unanticipated runoff volumes caused flow-paced composite bottles to fill before personnel could safely replace them with empty bottles. Access to various areas of the Site was unsafe and restricted by local authorities during certain periods.

  Due to the interruptions in automated sampling at RFLMA POCs and POEs, tables have been added to this report (see Sections 3.1.2.1 and 3.1.2.2 below) detailing automated composite sample collection during September 2013. That said, the automated surface-water monitoring network performed as well as could be expected. During September 2013, composite samples collected at RFLMA POCs and POEs included more than 2,000 individual grabs.

- The results of statistical evaluations of groundwater quality at the OLF and Present Landfill (PLF) were largely identical to the results of these evaluations performed in 2012.
- Water monitoring at the Present Landfill Treatment System during CY 2013 showed three analytes detected above the applicable standards for individual sample results. The observed concentrations did not recur and RFLMA consultation was not required during CY 2013. Groundwater samples collected from the three downgradient PLF Resource Conservation and Recovery Act (RCRA) wells indicated notable concentrations of boron in one well; boron and nickel in another; and boron, chromium, and selenium in a third well. These concentrations were statistically higher than in upgradient groundwater and were on increasing trends, although only the selenium results exceeded corresponding RFLMA levels. These conditions are generally consistent with those reported for earlier years. After reviewing the results of statistical evaluation of the 2013 groundwater data presented in this Annual report, the RFLMA Parties may decide that subsequent consultation regarding the appropriate response is required. Such consultation, if it occurs, will be documented in a new contact record (in accordance with guidelines described in Contact Record 2011-03). Surface-water monitoring for the OLF during CY 2013 showed one analyte detected above the applicable standards for individual sample results. The observed concentrations did not recur and RFLMA consultation was not required. Boron was determined to be present at higher concentrations in groundwater at all three downgradient OLF RCRA wells than in upgradient wells. This condition also applied to uranium in two of these wells and nickel in one downgradient well. An increasing trend in downgradient concentrations was only calculated for boron in one downgradient well. These conditions are generally consistent with those reported for earlier years. In all cases, the concentrations of these constituents in downgradient groundwater were below the associated RFLMA limits. After reviewing the results of statistical evaluation of the 2013 groundwater data presented in this Annual report, the RFLMA Parties may decide that subsequent consultation regarding the appropriate response is required. Such consultation, if it occurs, will be documented in a new contact record (in accordance with guidelines described in Contact Record 2011-03). Analytical results for effluent from the Mound Site Plume Treatment System (MSPTS) and East Trenches Plume Treatment System (ETPTS) continued to demonstrate that the vast majority of contaminants have been removed. However, concentrations of some volatile organic compounds (VOCs) in system effluent exceeded target concentrations. Both of these treatment systems received new, larger air strippers in early 2013 that were modeled after the unit installed in the existing effluent manhole at the MSPTS in 2011. The air stripper installed in 2013 at the MSPTS was placed in the effluent manhole, while that at the ETPTS was installed in the influent manhole. Both operated continuously and acted to remove additional VOCs.
- The Solar Ponds Plume Treatment System (SPPTS) was the focus of continued study in an effort to improve cost and treatment effectiveness. Building on results obtained in 2012, pilot-scale lagoons are being tested to treat nitrate. An approach using small containers of treatment media—on the order of 1 to 2 gallons—is being tested to treat uranium. Both of these approaches are being optimized for potential full-scale implementation.
- Groundwater quality and flow at the Site were generally consistent with previous years. No reportable conditions were indicated. Statistical trending calculations indicated numerous significant concentration trends. Conditions observed at some locations, particularly with respect to groundwater elevations, suggested climatic causes (i.e., the extremely heavy precipitation received in September 2013).

- Wetlands constructed to mitigate the impacts to wetlands caused by both Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and non-CERCLA related projects have been managed and monitored in accordance with the *Rocky Flats, Colorado, Site Wetland Mitigation Monitoring and Management Plan* (Plan) (DOE 2006b). That Plan states "The annual report for the fifth year will contain the wetland delineation data and will serve as the final wetland mitigation report (unless further monitoring is required by the regulatory agencies)." This annual report serves as that final wetland mitigation report for those projects that disturbed wetlands in 2009 or earlier and closes out the Plan. In summary, the CERCLA and non-CERCLA wetland impacts were mitigated onsite in a one-to-one ratio. A detail accounting for the impacted and compensatory mitigation wetland acreage is provided in this annual report.

  Although the Plan is closed out (with the delivery of this report), projects with wetland impacts after 2009 will continue to be monitored following the same basic methodology as outlined in the Plan. The methodology and process will be documented in the *Rocky Flats, Colorado, Site, Site Operations Guide*. CERCLA-related projects that impact wetlands will have their compensatory wetlands delineated in the fifth year and closed out. Non-CERCLA projects that impact wetlands subject to the U.S. Army Corps of Engineers Clean Water Act Section 404 permitting process will be closed out as required by the permit issued for the project. The status of any CERCLA-related impacted/mitigated wetlands will be reported in future annual reports.
- All RFLMA-required ecological data collection, analysis, and reporting were completed as scheduled.
- Revegetation monitoring data continued to demonstrate the establishment and sustainability of desirable grassland species at the Site.
- The annual data quality assessment showed that the Site continues to collect high-quality data sufficient for decision making.

# 1.0 Introduction

The U.S. Department of Energy (DOE) Office of Legacy Management (LM) is responsible for implementing the final response action selected in the final *Corrective Action Decision/Record of Decision for Rocky Flats Plant (USDOE) Peripheral Operable Unit and Central Operable Unit* (CAD/ROD) (DOE 2006a) issued September 29, 2006, for the Rocky Flats, Colorado, Site (Site). Prior to the CAD/ROD, cleanup and closure activities were completed in accordance with the requirements of the *Final Rocky Flats Cleanup Agreement* (RFCA) (CDPHE et al. 1996). Under the CAD/ROD, two Operable Units (OUs) were established within the boundaries of the Rocky Flats property: the Peripheral Operable Unit (POU) and the Central Operable Unit (COU). The COU consolidates all areas of the Site that require additional remedial or corrective actions while also considering practicalities of future land management. The POU includes the remaining, generally unimpacted portions of the Site and surrounds the COU. The response action in the final CAD/ROD is no action for the POU and institutional and physical controls with continued monitoring for the COU. The Offsite Areas at Rocky Flats, known as OU 3, were addressed under a separate no-action CAD/ROD dated June 3, 1997.

The CAD/RODs for OU 3 and the POU determined that conditions in those OUs were suitable for unrestricted use. As a result, the U.S. Environmental Protection Agency (EPA) published a Notice of Intent for Partial Deletion (NOIPD) of the Rocky Flats Site (also known as the Rocky Flats Plant) from the National Priorities List (NPL) on March 13, 2007 (Volume 72 *Federal Register* page 11313 [72 FR 11313]), which was a proposal to delete the POU and OU 3 from the NPL. The NOIPD was based on the results of the remedial investigations leading to the CAD/ROD no-action remedies being selected for these OUs. The NOIPD stated that, because no hazardous substances occur in the OUs above levels that allow for unlimited use and unrestricted exposure, a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Five-Year Review was no longer required for these OUs. EPA subsequently published a Notice of Partial Deletion from the NPL for the POU and OU 3 on May 25, 2007 (72 FR 29276).

On July 12, 2007, most of the property outside the COU was transferred to the U.S. Department of the Interior for establishment of a national wildlife refuge managed by the U.S. Fish and Wildlife Service (USFWS). EPA certified that cleanup and closure of Rocky Flats was complete and that the COU remedy was operating properly and successfully, in accordance with requirements for DOE to transfer land to USFWS for establishing the refuge. DOE retained the COU and is responsible for implementing the CAD/ROD final response action and for ensuring that it remains protective of human health and the environment. The monitoring, surveillance, and maintenance activities—for which quarterly, annual, and Five-Year Review reports are issued—are included in the *Rocky Flats Legacy Management Agreement* (RFLMA) (CDPHE et al. 2012).

RFLMA, signed March 14, 2007, superseded the RFCA. RFLMA is a Federal Facility Agreement and Consent Order under CERCLA, the Resource Conservation and Recovery Act (RCRA), and the Colorado Hazardous Waste Act, between DOE, EPA Region 8, and the Colorado Department of Public Health and Environment (CDPHE). The purpose of RFLMA is to establish the regulatory framework for RFLMA Attachment 2, "Legacy Management Requirements."

RFLMA Attachment 2, Section 7.0, requires DOE to provide reports pertaining to the surveillance and maintenance of the remedy prescribed in the CAD/ROD on a calendar quarter and annual basis. The fourth-quarter report information is to be included in the annual report.

RFLMA Attachment 2, Section 7.2, specifies that the annual reports may include a summary for the previous quarter and shall include the following:

- A discussion of surface-water monitoring data
- A discussion of groundwater monitoring data
- A discussion of groundwater treatment system monitoring data
- A discussion of ecological sampling data
- A description of any adverse biological conditions
- A summary of actions taken in response to reportable conditions
- A summary of maintenance and repairs
- Inspection reports
- Verification of the *Environmental Covenant* (CDPHE 2011a)and evaluation of the effectiveness of institutional controls (ICs)
- Monitoring and maintenance required by the Original Landfill (OLF) Monitoring Report (see Table 3 and Section 6.1 of the final *U.S. Department of Energy Rocky Flats Site*, *Original Landfill Monitoring and Maintenance Plan* [OLF M&M Plan] [DOE 2009a])
- Monitoring and maintenance required by the Present Landfill (PLF) Monitoring Report (see Table 3 and Section 6.1 of the *Present Landfill Monitoring and Maintenance Plan and Post-Closure Plan, U.S. Department of Energy Rocky Flats Site* (PLF M&M Plan) [DOE 2008a])
- Assessments of analytical data, including laboratory audits
- Other conditions or actions taken that are pertinent to the continued effectiveness of the remedy

This calendar year (CY) 2013 Annual Report contains the summary for the fourth quarter of CY 2013.

LM prepared and continually updates the *Rocky Flats, Colorado, Site, Site Operations Guide* (DOE 2013e), also called the RFSOG, as a framework to guide work at the Site. The RFSOG provides details on the surveillance and maintenance needed to satisfy the requirements of the CAD/ROD as well as best management practices (BMPs) at the Site. The RFSOG explains how DOE will fulfill its long-term surveillance and maintenance obligations at the Site.

While the specific BMPs are not subject to regulation under RFLMA, this annual report includes a discussion of activities related to implementing BMPs to document the information for future reference and to provide a perspective of the work conducted over the year.

## 1.1 Purpose and Scope

The purpose of this report is to inform the regulatory agencies and stakeholders of the surveillance, monitoring, and maintenance activities being conducted at the Site. LM provides

periodic communications such as this report and communicates through other means such as Web-based tools and public meetings.

Topics covered in this annual report include Site operations and maintenance (Section 2.0) and environmental monitoring, including water and ecological monitoring (Section 3.0). Data management, data validation, and an assessment of data quality are also included in Section 3.0. References cited in this report are included in Section 4.0.

Supporting information is provided in a series of appendixes. Appendix A provides the hydrologic data and Appendix B provides the water-quality data. The fourth quarter of CY 2013 landfill inspection forms for the PLF and OLF are included in Appendix C. RFLMA and RFSOG data evaluation flowcharts are provided in Appendix D. Appendix E contains the *Technical Memorandum Regarding Instrumentation and Monitoring at the Rocky Flats OLF*. The *Technical Memorandum on OLF Berm Height Evaluation Using Site-Specific Data* is included as Appendix F. Appendix G consists of the Lawrence Berkeley National Laboratory reports received for selected site samples, and Appendix H contains the RFLMA contact records issued during CY 2013.

## 1.2 Background

Surveillance, maintenance, and monitoring activities are conducted according to RFLMA. RFLMA incorporates the following plans:

- The OLF O&M Plan (DOE 2009a)
- The PLF M&M Plan (DOE 2008a)

RFLMA Attachment 2 stipulates that DOE employ administrative procedures to control activities in accordance with the ICs and to meet quality assurance and quality control program requirements. Other Site procedures are established to guide work and implement BMPs. These procedures are referenced in the RFSOG and include the *Erosion Control Plan for the Rocky Flats Property Central Operable Unit* (DOE 2007a).

## 1.3 RFLMA Contact Records

This section provides a summary of the status of activities addressed by RFLMA contact records issued during 2013. RFLMA references the use of contact records to document CDPHE oral approvals of field modifications to implement approved response actions (see RFLMA paragraph 34). Excavation or soil disturbance activities that are subject to ICs must have prior regulatory review and approval pursuant to the Soil Disturbance Review Plan in RFLMA Attachment 2, Section 4.1, and results of consultation will be documented in contact records or written correspondence. RFLMA Attachment 2 also references the use of contact records to document the outcome of consultation related to addressing any reportable conditions (see RFLMA Attachment 2, Section 6.0). Finally, the *Rocky Flats Site Legacy Management Public Involvement Plan* (PIP), in RFLMA Appendix 2, also provides that a contact record of consultative process discussions between the RFLMA Parties will be made available to the Rocky Flats Stewardship Council and other interested stakeholders as early in the process as is practicable following signature approval by the parties. The PIP process to make contact records

available is implemented by posting contact records on the Rocky Flats public website and by promptly notifying stakeholders (by e-mail) that the contact record is posted.

The RFLMA Parties agreed, as documented in RFLMA Contact Record 2007-08, that DOE will document the status of actions or activities in RFLMA contact records from time to time and will include the documentation in RFLMA quarterly and/or annual surveillance and maintenance reports for tracking purposes. The RFLMA Parties also agreed that to facilitate the status reporting, contact records should include a short discussion of the anticipated actions or activities to close out the RFLMA contact record. Thus, RFLMA Contact Record 2007-08 and subsequent contact records will include the closeout discussion.

Under certain situations, activities previously approved in a contact record that has been closed out will need to be performed. A simple notification and approval process has been developed for these situations, which is documented in RFLMA Contact Record 2009-05. CDPHE may receive notification of and approve the activities over the phone or in person, with e-mail follow-ups. The notification and approval of such work shall be reported in the next RFLMA annual report, in relation to the contact record that originally covered the work. This protocol is consistent with RFLMA paragraph 34.

Table 1 lists the RFLMA contact records issued in 2013 and their status at the end of 2013. The table also lists contact records that were issued from 2007 to the end of 2012, were discussed in the 2012 Annual Report, and were not closed by the end of 2013, and shows their status at the end of 2013. The table also lists e-mail approval of activities previously covered by closed-out contact records. Appendix H contains copies of the 2013 contact records.

## 1.4 RFLMA Modifications

Minor modifications to RFLMA Attachment 1, “Site Map,” and Attachment 2, “Legacy Management Requirements,” were proposed in Contact Record 2012-03. The contact record, which was approved on December 7, 2012, and subsequently posted on the Rocky Flats website, constitutes the public notice required in RFLMA paragraph 66. These minor modifications to RFLMA attachments were approved by CDPHE and EPA on February 21, 2013, and have been incorporated into RFLMA Attachment 1, “Site Map” and Attachment 2, “Legacy Management Requirements,” posted on the Rocky Flats public website. The minor modifications are summarized below.

### 1.4.1 Attachment 1 “Site Map”

Completion of breaching the Present Landfill Pond and Pond A-3 dams resulted in a change to several map figures to show the new surface water configuration as wetlands. The “Site Map” now reflects the Present Landfill former pond area and A-3 dam former pond area by changing the footprint and the map features to indicate areas as “wetland/marsh.” Also, “McCaslin Road” and “Indiana St.” labels have replaced “County Highway 5” labels to be consistent with road signs.

### 1.4.2 Attachment 2 "Legacy Management Requirements"

#### *1.4.2.1 Monitoring Requirements*

Completion of the installation of the new flumes for surface water monitoring locations WOMPOC and WALPOC and the required notification to CDPHE and EPA completed the requirements for these locations to become new Points of Compliance (POCs). The RFLMA Attachment 2 change is:

Section 5.1, "Monitoring Surface Water"

> Points of Compliance (POCs): Located in Woman and Walnut Creeks. These locations are used to demonstrate compliance with the surface-water standards in Table 1. WALPOC, which replaced former POCs GS08 and GS11 on September 28, 2011, and WOMPOC, which replaced former POC GS31 on September 9, 2011, will also replace GS03 and GS01 respectively upon DOE notification to EPA and CDPHE certifying that WALPOC and WOMPOC have been functioning as POCs for at least 2 years. EPA or CDPHE may extend the 2-year period by requiring DOE to submit a modification to this attachment in accordance with RFLMA paragraph 65 if either determines that such modification is necessary to ensure protection of human health and the environment.

Table 2, "Water Monitoring Locations and Sampling Criteria," was modified to reflect changes to Section 5.1. The rows for locations GS08, GS11, and GS31 were deleted. Also, in Figure 1, "Water Monitoring at Rocky Flats: RFLMA," locations GS08, GS11, and GS31 were deleted.

The additional ecological sampling required under RFLMA Attachment 2, Table 5 was completed in CY 2007, and the evaluation of results is included in the *Quarterly Report of Site Surveillance and Maintenance Activities, First Quarter Calendar Year 2008* (DOE 2009c). CDPHE agreed that no further ecological sampling is required, as documented in Contact Record 2008-01. Therefore Section 5.3.7, "Ecological Sampling" has been deleted and Table 5 "Ecological Sampling" was also deleted.

#### *1.4.2.2 Reporting Requirements*

Completion of the third Five-Year Review necessitated clarifying the schedule for subsequent reviews. Therefore Section 7.3, "CERLCA 5-Year Review," was modified by deleting specific dates for the Five-Year Review report and inserting that a "mutually agreeable schedule determined by the RFLMA Project Coordinators in accordance with consultative process in RFLMA paragraph 11, so as to allow for EPA concurrence within five years of the preceding 5-year review report."

#### *1.4.2.3 Table 1 "Surface Water Standards"*

There have been recent changes to Regulation #31, "Basic Standards and Methodologies for Surface Water" (5 CCR 1002-31) (Reg. #31), which required updates to RFLMA Attachment 2, Table 1, "Surface Water Standards." Table 1 was modified to delete the current standards and replace them with the new Regulation #31 standards, as follows:

| Analyte | Current RFLMA Standard (mg/L) | New RFLMA Standard (mg/L) |
|---|---|---|
| Acrylamide | 7.80E-6 | 2.20E-5 |
| Carbon tetrachloride | 2.30E-4 | 4.30E-4 |
| 1,2-dichloroethene (*cis*) | 7.00E-2 | 1.40E-2 to 7.00E-2 |
| 1,4-dioxane | 3.20E-3 | 3.50E-4 |
| Hexachloroethane | 4.00E-4 | 5.00E-4 |
| Nitrobenzene | 3.50E-3 | 1.40E-2 |
| Pentachlorophenol | 2.70E-4 | 8.00E-5 |
| Tetrachloroethene | 6.90E-4 | 5.00E-3 |

**Abbreviations:**
mg/L = milligrams per liter

Table 1 footnotes were modified as follows:
[c] Reserved.
[e] Applies to Segment 4a.
[h] Reserved.
[i] The listed nitrite value is the chronic aquatic life standard based on chloride levels in excess of 22 mg/L in Segment 4. Nitrate and nitrite standards are as nitrogen.
[m] Reserved
[n] The second number in the range for arsenic and 1,2-Dichloroethene (cis) is applied as the corresponding or applicable Table 1 standard in the flowcharts in Figures 7 through 11.

#### *1.4.2.4 Table 3, "Present and Original Landfill Inspection and Maintenance Requirements"*

The landfill vegetation meets success criteria, and it will be monitored and managed under the sitewide vegetation and revegetation plans as recommended in the third Five-Year Review report. Therefore Table 3, "Present and Original Landfill Inspection and Maintenance Requirements," has been modified to remove the vegetation and inspection requirements.

*Table 1. Status of RFLMA Contact Records*

| Contact Record No. | Purpose | Approval Date | Status as of December 31, 2012 |
|---|---|---|---|
| 2013-01 | GS10 Flume Replacement Project and Soil Disturbance Review Plan | 5/2/2013 | Actions completed. Closed. |
| 2013-02 | Reportable Condition at Original Landfill | 10/21/2013 | Contact record will be closed when the construction is completed, post-construction reseeding has been performed, and post-construction erosion controls are in place. |
| 2013-03 | Soil Disturbance Review Plan for Regrading the East Perimeter Channel and Associated Diversion Berms at the Original Landfill | 11/22/2013 | Contact record will be closed when the work is completed, post-construction reseeding has been performed, and post-construction erosion controls are in place. Related to Contact Record 2013-02. |
| 2012-02 | Improving Treatment at the East Trenches Plume Treatment System by Adding an Air Stripper Component | 10/25/2012 | Actions completed. Closed. |
| 2012-03 | Minor Modification of *Rocky Flats Legacy Management Agreement* (RFLMA) Attachment 1, "Site Map," and of RFLMA Attachment 2, "Legacy Management Requirements" | 12/7/2012 | Actions completed. Closed. |
| 2011-04 | Reportable Condition for Uranium at Point of Evaluation GS10 | 7/8/2011 | Contact record serves as the plan and schedule for the evaluation of the reportable condition and will be closed when the evaluation is completed. |
| 2011-05 | Update for Reportable Condition for Uranium at Point of Evaluation GS10 | 10/4/2011 | Contact record serves as the plan and schedule for the evaluation of the reportable condition and will be closed when the evaluation is completed. Related to Contact Record 2011-05. |
| 2011-08 | Reportable Condition for Americium-241 at Rocky Flats Legacy Management Agreement Point of Evaluation GS10 | 12/23/2011 | Contact record serves as the plan and schedule for the evaluation of the reportable condition and will be closed when the evaluation is completed. |
| 2010-03 | Non–Rocky Flats Legacy Management Agreement Surface Water Monitoring Project for North and South Walnut Creeks | 3/15/2010 | Actions completed. Closed. |
| 2009-01 | Phase II and III Upgrades to Solar Ponds Plume Treatment System | 2/17/2009 | Construction and post-construction revegetation and erosion controls are in place. Optimization of the upgrades and monitoring is ongoing. Contact record will be closed when testing is completed and as-built drawings are completed. |
| 2008-06 | Management of Intercepted Groundwater During SPPTS Repair or Maintenance Activities | 7/3/2008 | Actions continuing. |
| 2007-06 | Evaluation of Elevated Nitrate in Groundwater Samples from AOC (Area of Concern) Well B206989 | 10/12/2007 | Actions completed. Closed. |

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# 2.0 Site Operations and Maintenance

## 2.1 Annual Site Inspection

Evidence of significant erosion and IC violations must be inspected for annually, in accordance with RFLMA Attachment 2, Sections 5.3.4 and 5.3.6. The 2013 inspection was conducted on March 19, 2013, and reported in the *Rocky Flats Site Quarterly Report of Site Surveillance and Maintenance Activities, First Quarter Calendar Year 2013* (DOE 2013f).

The following categories were monitored during the inspection:

- Evidence of significant erosion in the COU and evaluation of the proximity of significant erosion to subsurface features in RFLMA Attachment 2, Figures 3 and 4. This monitoring included visual observation for precursor evidence of significant erosion (e.g., cracks, rills, slumping, subsidence, sediment deposition);
- The effectiveness of ICs, as determined by any evidence of violation; and
- Evidence of adverse biological conditions, such as unexpected morbidity or mortality, observed during the inspection and monitoring activities.

As part of the IC inspection, the Environmental Covenant's presence in the Administrative Record and in Jefferson County records was verified. This verification is required annually. In addition, physical controls (signs placed along the COU fence) were also inspected.

Marker flags were placed where conditions showed evidence of the three condition categories listed above, to track their location for follow-up by Site subject matter experts. Several areas were noted as having evidence of erosion and possible depressions, which were minor and very limited in area. The inspection forms and maps are included in Appendix A of the *Rocky Flats Site Quarterly Report of Site Surveillance and Maintenance Activities First Quarter Calendar Year 2013* (DOE 2013f).

Most inspection observations were related to metal debris on the surface or trash that was either picked up or marked for subsequent removal and pickup. Rocky Flats field operations subject matter experts subsequently visited the areas to determine if any observations were significant or required repairs and to collect debris. All items were closed out in the Site Observation Log.

No evidence of violations of ICs or physical controls was observed.

No adverse biological conditions were noted during the inspection.

## 2.2 Pond Operations

Three constructed ponds collect and manage surface-water runoff at the Site. The ponds are A-4 in North Walnut Creek, B-5 in South Walnut Creek, and C-2 near and alongside of Woman Creek. Ponds A-4, B-5, and C-2 are referred to as "terminal ponds" because they were the farthest downstream ponds in their respective drainages, but now they are the only constructed ponds in those drainages. All three terminal ponds were operated in a flow-through configuration for all of CY 2013.

Routine dam inspections, pond-level measurements, and piezometer measurements were performed as scheduled during the year. Annual dam mowing and vegetation removal was completed in September. Semiannual or quarterly (as applicable to specific dams) monument-movement surveys and inclinometer readings were also performed approximately as scheduled.

In compliance with the State of Colorado Rules and Regulations for Dam Safety and Dam Construction, a registered professional engineer periodically conducts a formal dam safety inspection for Dams A-4, B-5, and C-2.

Following the extremely high flows during September 11–13, 2013, emergency inspections of each dam were performed by Wright Water Engineers Inc. The inspections took place on September 16, 2013, and all dams were determined to be in good, safe operating condition (Response Level 0) and without substantial evidence of effects from the high flows.

The terminal dams were again inspected in November 2013. All inspected dams received a "satisfactory" condition rating and a recommended safe storage level of "full." To enhance dam safety, inspectors recommended that a visual inspection of the downstream slopes at A-4, B-5, and C-2 should be made regularly to look for slumping or bulging.

## 2.3 Landfills

The annual report of the results of inspections, monitoring data, and maintenance activities for the PLF and OLF is provided below.

### 2.3.1 Present Landfill

The PLF consists of an approximately 22-acre engineered RCRA Subtitle C–compliant cover over a former sanitary and construction debris landfill. A diversion channel surrounds the landfill and diverts storm-water runoff away from the landfill to No Name Gulch. The landfill has a passive seep interception and treatment system (the Present Landfill Treatment System [PLFTS]) installed to treat landfill seep water and Groundwater Intercept System water that discharges into the former Landfill Pond area. A gas extraction system is also built into the landfill to let subsurface gas vent to the atmosphere.

Subsidence and consolidation at the PLF is monitored by visually inspecting the surface of the landfill cover for cracks, depressions, heaving, and sinkholes. The landfill final construction site conditions are used as a baseline for comparisons made during Site inspections. In addition to the visual inspection, settlement monuments are used to evaluate the actual settlement at these specific locations compared to the expected settlement calculated in the final design. Nine settlement monuments were installed across the top of the landfill cap, and an additional six monuments are located on the east face of the landfill. The monuments were monitored quarterly for the first year and annually thereafter.

Inspections and monitoring tasks follow the format and protocol established in the PLF M&M Plan and include groundwater and surface-water monitoring, as well as monitoring subsidence and consolidation, slope stability, soil cover, storm-water management structures, and erosion in surrounding features. This monitoring is conducted so that corrective actions can be taken in a

timely manner. Monthly inspections were initiated in October 2005. Quarterly inspections were initiated in the fourth quarter of CY 2007 as described in RFLMA Contact Record 2007-08.

#### *2.3.1.1 Inspection Results*

Four quarterly inspections were performed at the PLF in CY 2013. The inspection process followed the format and protocol established in the PLF M&M Plan. No significant problems were observed during these inspections. Appendix C contains the landfill inspection forms for the fourth quarter of CY 2013; earlier 2013 inspection forms are included in the applicable quarterly reports.

PLF area surface-water and groundwater monitoring, and operation of the PLFTS, is covered in those respective sections of this report.

#### *2.3.1.2 Slumps*

On February 13, 2007, a slump was discovered on the south-facing hillside just east of the PLF. The slump is not on the PLF, and engineering review determined that it does not impact the PLF cover. The slump was likely caused by heavy snow conditions and influenced by the post-closure lower water levels in the Landfill Pond. Therefore, regrading the slump is not necessary; however, deep-rooted plants were planted in the slump area to promote stabilization. There were no significant changes to the slumping area in CY 2013.

#### *2.3.1.3 Settlement Monuments*

The annual survey was completed in December 2013. Results of the settlement monument survey indicate that settling at each monument does not exceed expected settlement calculated in the final design and therefore does not trigger any maintenance activity under the PLF M&M Plan.

### 2.3.2 Original Landfill

The OLF consists of an approximately 20-acre soil cover over a former solid sanitary and construction debris landfill. The final cover consists of a 2-foot-thick Rocky Flats Alluvium soil cover that was constructed over both a regraded surface and a buttress fill and then revegetated. The original surface was regraded to provide a consistent slope. A 20-foot-high, 1,000-foot-long soil mass buttress fill was placed at the toe of the landfill. Erosion is controlled by a series of diversion berms that carry storm-water runoff away from the cover to channels on the east and west perimeter of the cover.

The OLF is inspected monthly in accordance with the OLF M&M Plan (DOE 2009a).

#### *2.3.2.1 Inspection Results*

Twelve monthly inspections were performed at the OLF in CY 2013. The inspection process followed the format and protocol established in the OLF M&M Plan. Appendix C contains the landfill inspection forms for the fourth quarter of CY 2013; earlier 2013 inspections forms are included in the applicable quarterly reports.

OLF area surface-water and groundwater monitoring is covered in those respective sections of this report.

#### *2.3.2.2 Settlement Monuments*

The settlement monuments were surveyed in March, June, September, and December 2013. Survey data indicate that settling at each monument does not exceed expected settling calculated in the final design and therefore does not trigger any maintenance activity under the OLF M&M Plan.

#### *2.3.2.3 Geotechnical Investigation and Repairs*

Conditions that warranted further repair and that triggered further investigation were found at the OLF beginning in 2007. This resulted in a geotechnical investigation of the conditions and repairs and maintenance actions to address conditions. This work is summarized in the RFLMA annual report for 2009 and quarterly reports for 2010 (DOE 2010b, 2010a, 2010c, 2011a). In 2010 additional maintenance was completed that addressed cracking in the vicinity of Berm 1 and recontoured the eastern end of Berm 7 where the berm was slumping into the eastern perimeter channel. This work is fully described in the quarterly reports for the second and third quarters of CY 2010 (DOE 2010c, 2011a). Locations are shown on Figure 1.

#### *2.3.2.4 Precipitation Response Repairs*

Slumping and cracking were observed on the eastern part of the OLF cover in the vicinity of Berm 4 and the East Perimeter Channel following the unusually high precipitation received in September 2013. DOE notified CDPHE and EPA on September 17, 2013, that a reportable condition had been identified at the OLF. DOE, CDPHE, and EPA personnel toured the area on September 18 to start the consultative process to develop a proposed course of action. Contact Record 2013-02 documents the initial mitigating actions and the path forward to address the reportable condition. CDPHE approved this contact record on October 21, 2013. Repairs to the slumping and cracking areas were completed in September 2013 as reported in the third quarter report for CY 2013. The areas where repairs were completed were inspected weekly as a precautionary measure to help ensure that any new slumping or cracking could be addressed in a timely manner. Only minor cracking and slumping were observed during the fourth quarter in the locations where repairs were completed. These locations required minor filling and grading to close the cracks and prevent infiltration of precipitation as recommended by the geotechnical engineer. A project to complete maintenance on Berm 4 and to address slope stability in the East Perimeter Channel and surrounding area is scheduled to be completed during the summer of 2014. CDPHE approved Contact Record 2013-03 on December 4, 2013. The contact record summarizes the final grading plan and includes the Soil Disturbance Review Plan for the project.

*Figure 1. Original Landfill Previously Observed Surface Cracking Location and Inclinometer Locations*

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#### *2.3.2.5 Inclinometers*

Seven inclinometers were installed in boreholes at the OLF in 2008 as part of the geotechnical investigation (Figure 1).

Movement of the inclinometers has been monitored approximately monthly since installation. During the fourth quarter CY 2013, the inclinometers were monitored on October 31, November 27, and December 19.

Inclinometers deflect based on lateral movement of the ground in which the inclinometer is located and can deflect enough to cause the inclinometer tube to break. Once an inclinometer tube breaks, it will no longer be monitored. Inclinometer monitoring data provide information on localized soil movement and serve to focus periodic inspections of the soil cover surface on signs of potential instability, such as cracking, vertical displacement, and slumping. A deflection of more than 1 inch is used as a trigger for evaluation of the data by a qualified geotechnical engineer. The engineer determines the significance of the deflection in relation to recommendations for maintenance or repairs to address potential instability in accordance with the OLF M&M Plan (DOE 2009a).

During 2013, deflection of more than 1 inch was observed at two inclinometers. Inclinometer Tt-2, installed near the western edge of the landfill, experienced 1.5 inches of movement along the A axis, and 0.8 inches along the B axis. The area in the vicinity of inclinometer Tt-7, along the eastern edge of the OLF, experienced visible slope movement following the September precipitation event. Efforts to collect inclinometer data in late September indicated the inclinometer tube had likely broken at approximately 9 feet below ground surface due to the movement of the landfill slope. Readings taken during 2013 show that approximately 1.8 inches of movement had occurred in alignment with the A axis, and about 2.1 inches of total movement had occurred in alignment with the B axis through August 2013. During August and September 2013, 0.7 additional inches of deflection were recorded on the A axis, and 2 additional inches of deflection were recorded on the B axis. Appendix E contains the *Technical Memorandum Regarding Instrumentation and Monitoring at the Rocky Flats OLF,* which discusses the findings noted above.

The conclusion of the data review is that recommendations made in the 2008 geotechnical investigation remain valid. The instrumentation indicates that instability is caused by one or more weak layers in the shallow subsurface, and movement is exacerbated by precipitation events and elevated water levels. Slope stability modeling indicates that, on a large scale, the overall slope is stable. Localized failures occurred on the OLF during 2013 under elevated water level conditions. The 2014 regrading, as designed by the geotechnical engineer, may be useful in increasing slope stability along the eastern portion of the OLF.

#### *2.3.2.6 Berm Height Evaluation*

Contact Record 2013-02 noted that it appeared that runoff collected and conveyed by the diversion berms during the September heavy precipitation event was approximately 6 to 10 inches deep in the berm channels. As noted in Contact Record 2013-02, the RFLMA Parties agreed that the planned 2013 berm-height maintenance could be delayed until DOE could compare performance of the diversion berms in relation to this event and evaluate a possible

modification to the minimum berm-height criteria. A technical memorandum from the geotechnical subcontractor (see Appendix F) dated December 19, 2013, provides information on the data analysis and tabulates new minimum berm heights (in contrast to those that were previously calculated using more generic Colorado Front Range data). At a December 5, 2013, meeting, the RFLMA Parties reviewed this memorandum and agreed that OLF berm height maintenance can be based on the new calculated minimum berm heights. The new heights will be implemented as a field modification until the next OLF M&M modification is completed. The postponed 2013 berm height maintenance will be performed in summer of 2014 using the new berm-height criteria.

## 2.4 Groundwater Plume Treatment Systems Maintenance

Rocky Flats utilizes four groundwater treatment systems to reduce contaminant load before the water is discharged. The four systems are the Mound Site Plume Treatment System (MSPTS), the East Trenches Plume Treatment System (ETPTS), the Solar Ponds Plume Treatment System (SPPTS), and the PLFTS. Each of these was designed and installed to passively collect and treat groundwater. Before the Site closed, only the SPPTS had been modified to include an active—i.e., powered—component. However, since Site closure, additional active components have been required in order to meet the more stringent post-closure system objectives. Additional active components were initially added only to the SPPTS. However, in 2011 the MSPTS received active components, and in early 2013 those MSPTS active components were bolstered and similar components were installed at the ETPTS. Only the PLFTS remains fully passive.

This section focuses on the maintenance and operation of the MSPTS, the ETPTS, and the SPPTS during CY 2013. Additional information is in the previous quarterly reports from 2013 (DOE 2013f, 2013g, 2014).

Details of the monitoring of the treatment systems, including the PLFTS, are presented in Section 3.1.2.8, and interpretations related to system operation and the corresponding contaminant plumes are provided in Section 3.1.5.

### 2.4.1 Mound Site Plume Treatment System

The MSPTS treated groundwater throughout the year. Operation and maintenance of the treatment system was performed periodically and some modifications were made in CY 2013.

#### *2.4.1.1 Flow*

MSPTS flows are measured using two flow meters located in a configuration vault between the two zero-valent iron (ZVI)-containing treatment cells. The flow configuration through the treatment cells remained in a “parallel upflow” configuration throughout the year. In this configuration, influent is divided with approximately half the flow directed upward through the media in treatment Cell 1 and the other half upward through the media in Cell 2. The flow to each treatment cell is measured by a flow meter in the vault. Groundwater discharging from both treatment cells reenters the flow configuration vault and is combined before entering the effluent manhole, which is located just east of treatment Cell 2. This effluent water from the treatment cells is then processed by an air stripper installed within this manhole. Effluent from this

manhole is discharged to a small, subsurface vertical French drain and then to the larger subsurface discharge gallery.

#### *2.4.1.2 Upgrades*

Several modifications were made to the MSPTS during the year. Beginning in December 2012 and ending in March 2013, the prototype air stripper was upgraded to operate at a higher flow rate, and full time rather than 12 hours per day. (Refer to the annual report for 2012 [DOE 2013b] for details on this prototype unit.) The solar array was replaced with an expanded array and other electrical components. The original test pumps, which produced flow rates up to approximately 8 gallons per minute (gpm), were replaced with a more robust and powerful pump that produces flows close to 20 gpm. Additional sensors and electrical components were installed to optimize system monitoring and maintenance. The air stripper nozzle configuration was expanded from that used for the pilot version; tests had used up to 6 nozzles, while the upgraded air stripper began operating using 10 nozzles.

Air release piping was installed on the air stripper influent line in late summer to minimize the potential for air to accumulate in the pipe and restrict groundwater flow. The air release piping also provides access to the pipes for cleaning. Insulation was added to the flow configuration vault in early winter as additional freeze protection.

#### *2.4.1.3 Maintenance*

MSPTS maintenance in CY 2013 consisted primarily of routine activities such as removing biological growth and clayey iron oxide/oxyhydroxide accumulations from system components (primarily the air stripper pump, but also the air stripper spray nozzles, effluent manhole, and various pipes), releasing air accumulation from piping, and cleaning and servicing such components as flow meters and water-level transducers. Photos in Figure 2 show the nature of this biological/iron-oxide accumulation. More information on the project and its effects on water treatment is provided in Section 3.1.5.

**Notes:** The left photo shows nozzles that were removed from the air stripper because of clogging. The iron coloration on these brass nozzles is related to the air stripper processing effluent from the ZVI-containing cells. The center photo shows similar clogging of air stripper pump impellers, and the right photo shows the same component after the bulk of the clog has been removed.

*Figure 2. MSPTS Air Stripper Components Showing Typical Clogging*

Two data loggers used to remotely monitor the treatment system were updated with the latest software on May 14, and three of the four air stripper fans used to enhance volatilization of dissolved volatile organic compounds (VOCs) were replaced on July 31.

Additional maintenance activities performed in 2013 were mainly in response to the heavy rainfall in September. Minor flooding submerged both flow meters in the flow configuration vault, damaging one of them. The damaged meter was cleaned, dried, rewired, and put back into service. The high water levels also caused an electrical short in a water-level transducer located in the collection trench manhole. That transducer was replaced.

#### *2.4.1.4 Operation*

Operational activities are conducted to gather data, optimize performance, and control various treatment system functions. Routine activities in CY 2013 included controlling and adjusting flow through the treatment system, recording flow and pressure data, measuring water levels, and inspecting system components.

The MSPTS was shut off in January for 10 days while the air stripper upgrades were completed. The system was shut off again intermittently over the summer to help clear clogs, and to allow high levels in the treatment cells to drain prior to installing the air release on the air stripper influent line. The MSPTS was also shut off for 10 days in late summer to help reduce Functional Channel (FC)-4/South Walnut Creek flows during the GS10 flume replacement project. Water accumulated in the MSPTS groundwater intercept trench during each of these instances, and this water was treated after the system was reactivated.

For additional information on treatment system monitoring and performance, refer to Section 3.1.5.

### 2.4.2 East Trenches Plume Treatment System

The ETPTS treated groundwater throughout the year. Operation and maintenance of the treatment system was performed periodically, and several modifications and configuration changes were implemented in CY 2013.

#### *2.4.2.1 Flow*

ETPTS flows are measured using flow meters located in a metering vault adjacent to the two treatment cells. The flow configuration is controlled in a second vault located between these two cells.

Over the course of the year, the flow configuration at the ETPTS was changed on several occasions to both extend the lifetime of the treatment media and enhance treatment effectiveness. For most of the life of the current media, the flow direction has been upward through each cell. The anticipated result of this flow configuration is that the lowermost portions of the ZVI media would be relatively more oxidized and clogged than the uppermost media, due to this extended contact with dissolved oxygen and ions in the groundwater. As a result, the shallower ZVI (nearer the top of the media in each cell) would be expected to be relatively fresher and more reactive than the deeper material.

For the first half of the year, groundwater was routed through the treatment cells in series: upflow through Cell 1 and then downflow through Cell 2. This was revised in late May to the opposite series-flow configuration: upflow through Cell 2, and then downflow through Cell 1. In mid-August, the flow configuration was readjusted to parallel upflow, with the influent being split among the two cells and roughly half flowing upward through Cell 1, the other half upward through Cell 2.

Effluent from the individual treatment cells is routed back into the flow configuration vault (located between the cells), where the flow is combined and routed to the effluent manhole. From here it discharges to the subsurface discharge gallery.

#### *2.4.2.2 Upgrades*

Work was started in late 2012 and completed in the first quarter of 2013 to install an air stripper at the ETPTS. This technology was selected based on the success of the pilot-scale (also referred to as prototype) air stripper installed at the MSPTS in 2011, which treats approximately the same contaminants as are present in the influent at the ETPTS. However, whereas the MSPTS air stripper is located in the effluent manhole downstream of the ZVI-based treatment, the ETPTS air stripper was installed within the influent manhole, prior to any groundwater treatment. This manhole is located approximately 350 feet west of the treatment cells.

The manhole lid was first modified from one that was only slightly above ground level to one that extends several feet above the ground surface. This extension addresses health and safety concerns for staff working at the manhole, and also provides a few extra feet for air stripping and related components to support treatment. Also to support air stripper operation, the volume of collected groundwater in the influent manhole was increased by installing a vertical pipe extension on the manhole drain. A submersible pump was installed within the resulting pool of water, and it directs water to a nozzle assembly to provide spray aeration, much like that at the MSPTS. Four small exhaust fans were mounted on the manhole lid, with an air intake vent extending from the lid down into the manhole. A level, gravel pad was constructed adjacent to the manhole, and a power-supply facility was installed on this pad. The power facility consists of a conex to which solar panels are mounted, and which doubles as the battery housing.

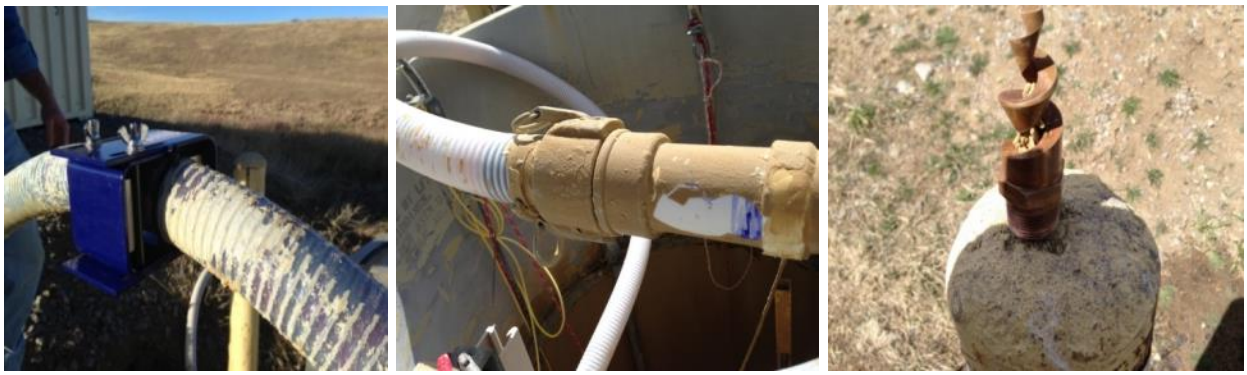
Air stripper configuration changes were made throughout the year to evaluate and optimize treatment and maintenance. Several different nozzle assemblies were tested and the submersible pump was changed once. The average flow rate through the pump remained about 20 gpm throughout the year. A lighter and more manageable lid was installed on the manhole in May. This air stripper successfully reduced the contaminant load by approximately an order of magnitude. Refer to Section 3.1.5 for additional information on the project and air stripper effectiveness.

Insulation was added to the metering and flow configuration vaults in early winter as additional freeze protection.

#### *2.4.2.3 Maintenance*

One important maintenance difference between the MSPTS and ETPTS air strippers was immediately noted upon activation of the ETPTS unit in early 2013. While the air stripper at the MSPTS is prone to biofouling and clogging with clayey iron oxide/oxyhydroxide particles, the air stripper at the ETPTS generates hard-water scale. These precipitates are related to the very hard groundwater at Rocky Flats. They do not represent a significant maintenance issue at the MSPTS air stripper because water routed through that unit has already been treated by the ZVI, which acts to reduce the concentrations of dissolved ions (such as calcium, magnesium, and bicarbonate) that contribute to form these precipitates. However, at the ETPTS, raw influent that contains these ions at relatively high, natural concentrations is routed through the air stripper.

Therefore, maintenance activities at the ETPTS in CY 2013 included substantial and repeated efforts to remove accumulations of hard-water scale from system components (primarily air stripper nozzles, pump, and an inline filter; see Figure 3). Other routine maintenance activities included flushing biological growth from piping and cleaning flow meters and water-level transducers. Two data loggers used to remotely monitor the treatment system were updated with the latest software on May 14, and four air stripper fans used to enhance volatilization of dissolved VOCs were replaced on July 31. Water-level transducers and flow meters were recalibrated in July. The heavy precipitation and flooding in September did not adversely affect any of the equipment at the ETPTS.



**Notes:** Left: Photograph of hard-water deposits on a hose that runs between between a pump and a nozzle. Center: Scale on a camlock fitting. Right: Scale accumulated in a nozzle.

*Figure 3. ETPTS Air Stripper Components Showing Typical Scaling*

#### *2.4.2.4 Operation*

Operational activities are conducted to gather data, optimize performance, and control various treatment system functions. Routine activities this year included controlling flow through the air stripper, modifying the nozzle configuration in the air stripper, recording flow and pressure data, measuring water levels, inspecting system components, and adjusting flows. The air stripper was shut off intermittently throughout the year for maintenance and reconfiguration. It was off for a prolonged period from the beginning of September through mid-November to identify and install a submersible pump better suited to handling hard-water scale. Other than normal maintenance, flow through the treatment cells was not shut off throughout the year.

For additional information on treatment system monitoring and performance, refer to Section 3.1.5.

### 2.4.3 Solar Ponds Plume Treatment System

The SPPTS treated groundwater throughout the year. Maintenance activities were performed periodically, and some operational adjustments and configuration changes were made in CY 2013.

#### *2.4.3.1 Flows*

SPPTS flows are measured using several flow meters, some of which are dedicated to specific components within the system. Total system flows are monitored by (1) a flow meter located on the influent line before water enters treatment cells and (2) a flow meter on the effluent line in a vault near the Solar Ponds Plume (SPP) Discharge Gallery. The flow of groundwater that is pumped from the Phase I Interceptor Trench System Sump (ITSS) over a distance of approximately 420 feet to the main influent collection sump (i.e., the SPPTS influent collection location known as SPIN) is also measured, as is flow directed through test components (including each Phase III cell and the microcell).

***Flow Configuration***

SPPTS influent is a mixture of water from the ITSS (which empties into the SPIN collection well) and water from the original groundwater intercept trench. These commingled waters are routed from SPIN through the small SPIN vault and then through a second vault (the metering vault). Within this metering vault, the influent flow is divided among the various components of the system for treatment and to support ongoing tests. The majority of this groundwater passes through the metering vault and enters the ZVI-filled Phase II treatment cell a few feet to the west, through which it moves in an upflow configuration. This water then flows by gravity to the original treatment Cells 1 and 2, located in the large concrete structure. A portion of the groundwater from the ZVI cell is pumped in timed pulses back through the metering vault, where this water is dosed with liquid carbon, and then into the two pilot-scale lagoons located just north of the metering vault. These Cell A and Cell B lagoons are supporting nitrate treatment tests. (Refer to Section 3.1.5 for a discussion of the operation and status of these lagoons to date.) Effluent from these lagoons flows by gravity to the original treatment Cells 1 and 2.

A portion of the groundwater entering the metering vault is diverted before entering the Phase II cell, flowing instead to the ongoing microcell tests, which are designed to evaluate a compact, simpler, and more efficient way to treat uranium (Section 3.1.5). Effluent from these tests also flows by gravity to the original treatment cells.

Groundwater from the Phase II cell, lagoons, and microcell flows to the original treatment Cells 1 and 2, and then gravity-flows approximately 420 feet to the east where it is piped through the effluent vault (i.e., the SPPTS effluent collection location known as SPOUT). As noted above, a flow meter located in this vault measures the effluent flow rate. From here, effluent flows to the subsurface discharge gallery.

Flow configuration did not change throughout the year. Several different forms of microcell media, typically comprising various grain sizes of ZVI, were tested over the course of the year. See Section 3.1.5 for more information on the SPPTS performance and the different tests.

#### *2.4.3.2 Upgrades*

Minor upgrades were installed at a few locations within the SPPTS in CY 2013. Most notable was the addition of an air release to the Phase III Cell B influent line in late summer to minimize the potential for air to accumulate in the pipe and restrict groundwater flow. In addition, an electrical plug was installed on the SPIN pump to ease its removal. **(Note:** This pump is not routinely removed, but when its removal is desired, having the ability to simply unplug it will be a big advantage over the previous hard-wired configuration.)

One change was made to the lagoon test equipment in January. After the recirculation pump in Cell A malfunctioned, it was removed. At that time, this pump represented the only operational difference between the pilot-scale lagoons in Cells A and B—flow rates, carbon dosing, and other test conditions were the same. The pump in Cell A was being used to determine whether water circulation improved nitrate treatment within the Cell A lagoon. Results (Section 3.1.5) indicated the pump was not beneficial, so it was not replaced.

#### *2.4.3.3 Maintenance*

SPPTS maintenance in CY 2013 primarily consisted of routine activities such as inspecting the various components, cleaning flow meters and lines, calibrating liquid carbon dosing pumps, cleaning temperature sensors and water-level transducers, and refilling the liquid carbon tank. Two data loggers used to remotely monitor the treatment system were updated with the latest software on May 14. Several times throughout the year, especially after heavy snow or rain, groundwater levels in the immediate area rose to the point that the open-bottom vaults became flooded. This water was pumped out of the vaults and into the original concrete treatment structure, sometimes daily, to protect system components. The rate of infiltration was high enough on several occasions to activate an automated shut-off switch, shutting down the entire treatment system. Water was usually pumped out and the system restarted within 24 hours. However, the heavy and prolonged rains in September flooded the vaults and submerged some system components. While some were restored to operation without ill effects, others were damaged, including the SPIN flow meter, the SPIN transducer, the SPIN pressure sensor, both liquid carbon dosing pumps, and the tubing between the liquid carbon storage container and dosing pumps. Damage to this tubing caused liquid carbon—the nutrient added to the pilot-scale lagoons to sustain the denitrifying bacteria within—to leak into the metering vault. The mixture of liquid carbon and water seepage was tested and then pumped into the original concrete treatment structure. Damaged components were replaced.

Weed-suppressant geotextile was added to the surface of the overburden in the original concrete structure in early spring. As has been the case in previous years, standing water was present on the surface of the overburden for part of the year, causing substantial growth of vegetation.

#### *2.4.3.4 Operation*

Operational activities are conducted to gather data, optimize performance, and control various treatment system functions. Routine activities this year included starting, stopping, and adjusting the rate of flow through the treatment system and its various components; recording flow, temperature, and pressure data; and measuring water levels. In addition, test microcells were removed after they clogged or data indicated they were not treating adequately, and new microcells were installed in their place.

Changes to flow rates most often focused on the SPIN pump, which delivers influent to all treatment components. The flow rate was typically increased to draw down the water present in the groundwater intercept trench, or was lowered to retain a nominal amount of water in the trench. Flows to Phase III Cells A and B were also adjusted on occasion, especially to Cell B (Section 3.1.5). The average rate of pumping from ITSS was also adjusted to manage the water level in this sump.

Flooding in mid-September resulted in the entire system being shut down for 10 days to allow repairs to damaged equipment. The system operated intermittently during this period while final repairs and adjustments were made.

For additional information on treatment system monitoring and performance, refer to Section 3.1.5.

## 2.5 Sign Inspection

"U.S. Department of Energy - No Trespassing" signs are required to be posted at intervals around the perimeter of the COU to notify persons that they are at the boundary of the COU. Signs listing the use restrictions (ICs) and providing contact information are also required to be posted at access points to the COU. The signs are required as physical controls of the remedy, are inspected quarterly, and are maintained by repairing or replacing signs as needed. Physical controls protect the engineered components of the remedy, including landfill covers, groundwater treatment systems, and monitoring equipment, which are also inspected routinely during monitoring and maintenance activities.

The signs were inspected quarterly as required and met the requirements.

## 2.6 Erosion Control and Revegetation

The existing erosion controls are maintained and repaired to protect the bare soil areas until the vegetation can stabilize the soil. Areas lacking sufficient vegetation cover are assessed and typically reseeded. In some cases, soil amendments are added to help establish the native vegetation. Additional information on the revegetation activities conducted at the Site during 2013 is provided in Section 3.2.6.

### 2.6.1 Erosion Control

Maintenance, repair, replacement, and monitoring of the Site erosion control features continued as needed through 2013. Assessing the erosion control is especially important following high-wind events that are common at the Site and after significant precipitation events, such as

those experienced in September. Repairs in 2013 included re-staking (or weighting with rocks) wattles or erosion blankets that had loosened. The *Erosion Control Plan for the Rocky Flats Property Central Operable Unit* (DOE 2007b) was followed for various projects conducted in 2013. The plan addresses the regulatory approach, the monitoring inspections, and the applicability and scope of erosion control activities at the Site. It outlines the responsibilities, BMPs, and implementation aspects for erosion control activities before, during, and after projects.

## 2.7 General Site Maintenance and Operations

The Site is managed and maintained, and activities are conducted, pursuant to DOE's jurisdiction and control responsibilities. These activities help maintain the general condition of the Site through BMPs. Highlights of routine and nonroutine maintenance and operations in 2013 are described below.

### 2.7.1 Site Road Upgrades

#### *2.7.1.1 Site Road Upgrades 2013*

The Site Road Upgrades 2013 Project was completed in July 2013. Heavy equipment was used to regrade and compact sections of the existing road surfaces across the Rocky Flats Site including the west access road. Additional 3/4-inch rock was added to help strengthen the road surface. Additional road repairs were performed in November 2013 to repair damage caused by the high-precipitation events in September.

### 2.7.2 Site Security

A USFWS officer was assigned to the Rocky Flats National Wildlife Refuge (also called the Refuge) to perform nonroutine security evaluations as well as to respond to any security events on the refuge. LM can utilize the services of the USFWS enforcement officer, when available. In addition, LM has a Memorandum of Understanding with the Jefferson County Sheriff to pursue law enforcement on the COU.

No security infractions were noted on the COU during CY 2013.

# 3.0 Environmental Monitoring

## 3.1 Water Monitoring

### 3.1.1 Introduction

This section presents data collected to satisfy water monitoring objectives implemented at the Site in accordance with RFLMA Attachment 2, "Legacy Management Requirements," Table 2, "Water Monitoring Locations and Sampling Criteria." The RFSOG provides a guidance framework in support of conducting LM activities, including monitoring, at the Site.

This annual report focuses on data collected during CY 2013 (January through December 2013). This section includes:

- An evaluation of analytical results from routine monitoring as required by RFLMA and detailed in the RFSOG, organized by monitoring objective;
- A summary of hydrologic data for the calendar year; and
- Supplemental data interpretation and evaluation for CY 2013.

Figure 4 shows the RFLMA Attachment 2 water monitoring locations. Analytical water quality data for the fourth quarter of CY 2013 are available in Appendix B. Refer to previous quarterly reports (DOE 2013f, 2013g, 2014) for analytical data collected during the prior quarters of CY 2013.

#### *3.1.1.1 Water Monitoring Highlights: CY 2013*

During CY 2013, the water monitoring network successfully fulfilled the targeted monitoring objectives as required by RFLMA and using the RFSOG implementation guidance. During CY 2013, the routine RFLMA network consisted of 89 wells, 10 gaging stations, 12 surface-water grab sampling locations (3 of which are predischarge pond locations)[1], and 8 treatment system grab sampling locations. During CY 2013, 178 samples composed of 8,071 individual aliquots ("grabs") were collected at the routine surface-water locations,[2] 103 samples were collected from routine treatment system locations, and 136 samples were collected from monitoring wells. Additional samples were collected beyond the RFLMA requirements, as discussed in this report.

Groundwater was monitored in accordance with RFLMA (CDPHE et al. 2012). Analytical data from Area of Concern (AOC) wells did not trigger any reportable conditions. Analytical data from other wells were generally consistent with previous results. Groundwater monitoring results at the PLF and OLF are evaluated in Section 3.1.2.6 and Section 3.1.2.7, respectively, of this report.

[1] Predischarge sampling locations are used only when the terminal ponds are being operated in a batch-and-release mode.
[2] Composite samples consist of multiple grabs of identical volume. Each grab is delivered by the automatic sampler to the composite container at each predetermined flow volume or time interval.

As with many locations on the Front Range, the Site experienced very high flows during the second week of September 2013. In some cases the high flows and debris caused damage to the automated sampling equipment, resulting in temporary interruptions in composite sampling. At almost all locations, the unanticipated runoff volumes caused flow-paced composite bottles to fill before personnel could safely replace them with empty bottles. Access to various areas of the Site was unsafe and restricted by local authorities during certain periods.

Due to the interruptions in automated sampling at RFLMA POCs and Points of Evaluation (POEs), tables have been added to this report (see Sections 3.1.2.1 and 3.1.2.2 below) detailing automated composite sample collection during September 2013. The automated surface-water monitoring network performed as well as could be expected. During September 2013, composite samples collected at RFLMA POCs and POEs were comprised of more than 2,000 individual grabs.

Precipitation in CY 2013 was well above average, with the precipitation gaging stations measuring 15.75 inches of precipitation, which is approximately 131 percent of the average (the CY 1993–2012 average is 12.07 inches). (Note that the precipitation gages used in the automated surface-water monitoring network are not heated due to the lack of AC power at the locations. Thus, the gages do not accurately measure snowfall [as water equivalent]). Obviously, the precipitation during September was a significant event for the Site. While the Site did not receive as much precipitation as locations in Boulder County or the foothills to the west, the event was the largest recorded at the Site. The seven-day totals (September 9–15, 2013) in the area ranged from 5.2 to 8.3 inches.

The September through November period far exceeded the average (352 percent of the CY 1993–2012 average of 2.49 inches for the fall season). September was significantly wetter than average (664 percent of the average). The March through June period was drier than average (only 55 percent of the average). The largest daily events occurred on September 12 (2.66 inches) and September 11 (1.92 inches). September 11–12 is also the largest 2-day total (4.57 inches).

The highest peak flow rates (estimated) for the year from the former Industrial Area were 135.7 cubic feet per second (cfs) in North Walnut Creek, 65.1 cfs in South Walnut Creek, and 28.4 cfs in the South Interceptor Ditch (SID). These peak flows all occurred on September 12, 2013.

The highest peak flow rates for the year from the Site (eastern COU boundary) were 83.5 cfs in Walnut Creek and 682 cfs in Woman Creek; these peak flows also occurred on September 12. The Walnut Creek peak flows are lower than the upstream peak flows for North and South Walnut Creeks because flows were attenuated while passing through Ponds A-4 and B-5.

Reportable 30-day average uranium (U) concentrations occurred in December 2013 for surface water at RFLMA POC monitoring station WALPOC, which is located on Walnut Creek at the eastern COU boundary. WALPOC is evaluated in Section 3.1.2.1 of this report. The RFLMA 30-day average reportable conditions at POCs are for evaluation purposes only and are not an exceedance of the remedy standard.

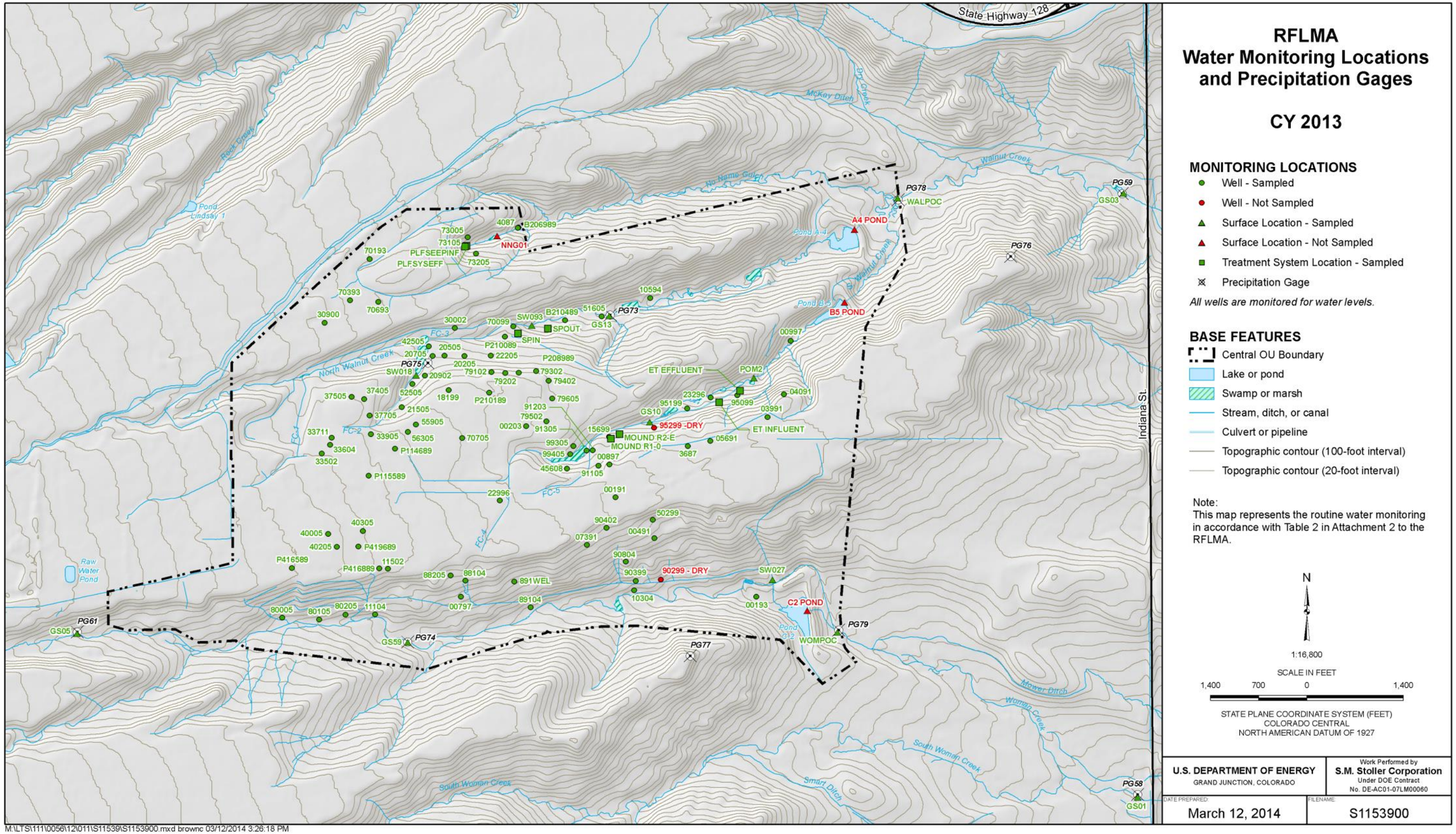



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*Figure 4. Rocky Flats Site Water Monitoring Locations and Precipitation Gages in CY 2013*

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All other RFLMA POC analyte concentrations remained below reporting levels throughout CY 2013.

Reportable 12-month rolling average americium (Am) activities were observed throughout CY 2013 in surface water at RFLMA POE monitoring station GS10, which is located on South Walnut Creek upstream of former Pond B-1. Reportable 12-month rolling average uranium concentrations and plutonium (Pu) activities were also observed periodically during CY 2013. As of the end of CY 2013, Pu and Am were still reportable. GS10 is evaluated in Section 3.1.2.2 of this report.

All other RFLMA POE analyte concentrations remained below reporting levels throughout CY 2013.

In response to the reportable conditions summarized above, a qualified geochemistry subcontractor is currently conducting an extensive evaluation of the fate and transport of uranium at the Site. The study also evaluates data to attempt to identify source terms that may contribute to elevated plutonium and americium results at the GS10 location (see Contact Record 2011-08).

The primary purpose of the study is to evaluate variability in uranium concentrations—due to seasonal, hydrologic, geochemical, and geographic effects—through the collection of targeted analytical and field data. The study also incorporates the ongoing calculation of the percentages of natural uranium versus anthropogenic uranium in Walnut Creek. Information from the study will support the GS10 (Contact Records 2011-04 and 2011-05) and WALPOC (Contact Record 2014-05) reportable conditions evaluations.

The methods used for the study include assessing historical and current data, identifying patterns or correlations, and evaluating potential geochemical mechanisms that may contribute to the noted results. The study has also identified additional data needs; collection of these data is ongoing.

A report summarizing the study is scheduled to be issued in CY 2014. The results of that assessment will determine if the study needs to continue in order improve the understanding of the site dynamics on the concentrations of uranium, plutonium, and americium in Walnut Creek. Information from the study will be reported in a future RFLMA annual report.

#### *3.1.1.2 Use of Analytical Data*

Analytical data are evaluated statistically to meet many objectives in accordance with RFLMA. Rejected data are not included in statistical evaluations. Statistical and other evaluations of analytical data focus solely on those results reported for RFLMA analytes (as listed in RFLMA Attachment 2, Table 1 [CDPHE et al. 2012]).

Surface-water data from POCs and POEs are evaluated twice a month, and results of these evaluations are included in the quarterly reports. Details regarding data handling for all surface water can be found in Appendix B.

Groundwater data evaluations are reported annually because the groundwater regime is less dynamic than the surface-water regime: groundwater conditions change much more gradually

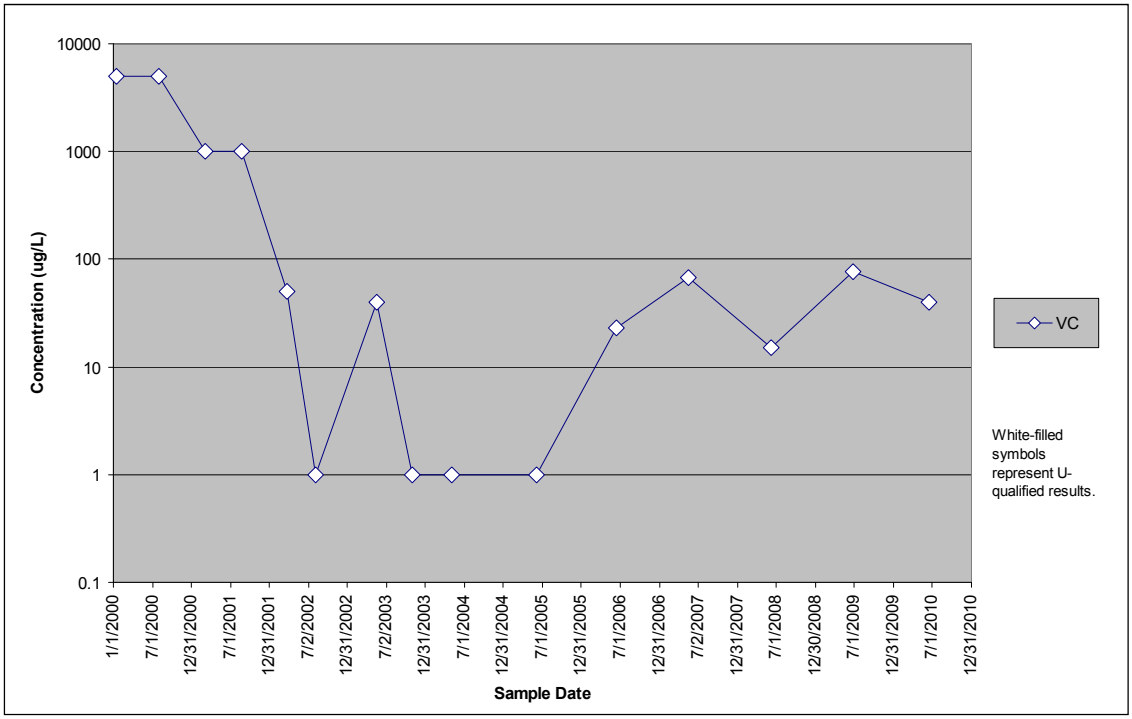
than surface-water conditions. However, groundwater data from AOC wells are evaluated for reportable conditions as they are received; when such conditions exist, they are described in the corresponding quarterly report as well as the annual report.

Groundwater statistics require a minimum of eight results representing routinely collected samples. A commercially available geostatistical software program (e.g., Sanitas, Visual Sample Plan) is used for these calculations. (**Note:** This report does not recommend any particular software; this information is merely included for the sake of completeness.) Furthermore, if trend calculations employ the Seasonal-Kendall (S-K) statistical method, the data representing these routinely collected samples must comprise four sets of results per season. For example, wells required to be monitored semiannually are sampled in the second and fourth quarters of a calendar year. Trending will require a minimum of eight sets of results from routinely collected samples, distributed as four per season—four in the second quarter and four in the fourth quarter. In this example, therefore, a well would need to be sampled for 4 years (4 samples × 2 samples/year = 8 samples total; 4 each of second quarter samples and fourth quarter samples requires 4 full years of semiannual samples) to provide the necessary and appropriate data for statistical analysis. For wells sampled quarterly, although the minimum eight sets of results could be collected in 2 years of routine sampling, the minimum four sets of results per season (four seasons) would not be collected until 4 years of successful, routine sampling had been completed.

Groundwater field duplicates are omitted from statistical evaluations. Groundwater samples assigned the laboratory qualifier "J" (indicating an estimated value) are taken at face value, rather than being assigned a value of less than the method detection limit plus the practical quantitation limit (PQL). Samples assigned a "B" qualifier (which, for organics, indicates that the constituent was also detected in the blank) are also used at face value. This qualifier is commonly associated with results for methylene chloride. Because methylene chloride is a commonly used laboratory solvent, B-qualified results should be carefully reviewed alongside corresponding detection limits, concentrations in the blanks, and other relevant data before any decisions are based on them. (**Note:** In some cases, these considerations have led to the results being assigned a validation "U" qualifier, signifying that the result is so suspect as to be considered a nondetect. In such cases, the result is considered nondetect rather than a J-qualified or B-qualified value.)

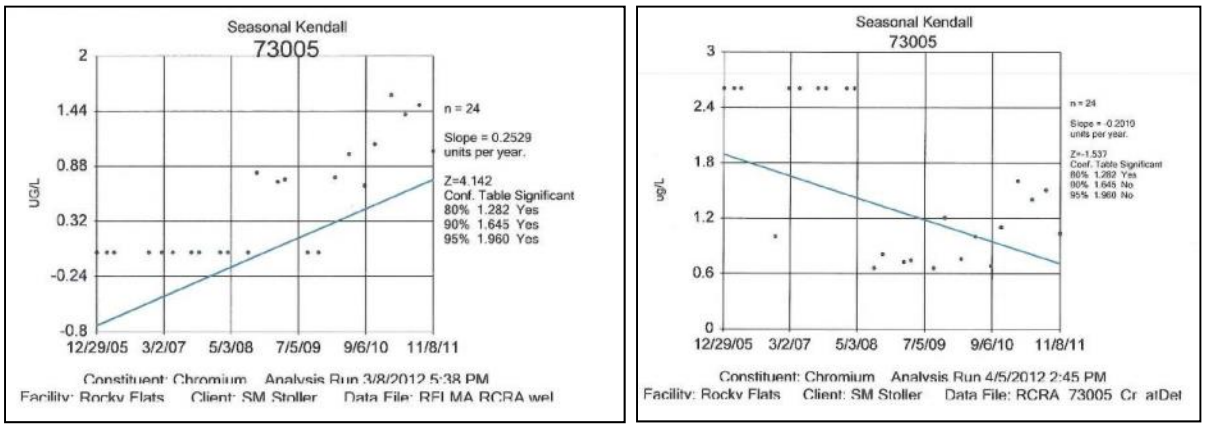
For consistency with pre-closure practices, the RFSOG (DOE 2013e) instructs that nondetects reported for groundwater data be replaced by zeroes when performing statistical assessments. (This is because use of some common techniques, such as replacing the reported nondetect value with one-half the detection limit, could lead to false conclusions. This is illustrated by Figure 5, which is a chart of vinyl chloride (VC) results from the 2010 Annual Report [DOE 2011c].) However, to calculate trends, the data cannot contain zeroes. Therefore, instead of zeroes, nondetects are replaced with a value of 0.001. (**Note:** This includes data with lab qualifiers as well as validation qualifiers that include the "U" qualifier.) Likewise, the statistical program cannot perform the necessary calculations if negative numbers are included in the results, as is occasionally the case for radionuclides. Therefore, any negative results are also replaced with 0.001. Calculated trends may be strongly affected by this data replacement, as demonstrated by data evaluated for the 2011 Annual Report (DOE 2012) and included below as Figure 6. In this figure, the calculated trend in chromium (Cr) concentrations is shown as increasing or decreasing, depending solely on how nondetects are incorporated into the calculations. In

addition, a hypothetical example is provided below in Table 2. As this table demonstrates, the "true" condition is not known, but using half the detection limit, or the reported values (equal to the detection limit) themselves, would strongly suggest the presence of a decreasing trend, while replacing the nondetects with 0.001 may suggest an increasing trend. As demonstrated by these examples, the data that form the basis of calculated trends of interest should be carefully inspected before any conclusions are reached or decisions made based on these trends. The most appropriate path forward in such cases is to refrain from forming conclusions and await the collection of sufficient additional data to allow the determination of whether any concentration trend is actually present.




**Notes:** Y-axis has a logarithmic concentration scale.

*Figure 5. Vinyl Chloride Results from Evaluation Well 07391, Illustrating Variations in Detection Limits*




**Notes:** Left plot utilizes data replacement wherein all nondetects are replaced with a value of 0.001. Right plot incorporates reported data at face value, regardless of qualifier; nondetects are therefore plotted at the associated detection limits. Source: Annual report for 2011 (DOE 2012); refer to that document for additional discussion.

*Figure 6. Effects of Data Replacement on Statistical Trends Calculated for Cr in 2011 at PLF Well 73005*

*Table 2. Hypothetical Example Illustrating Effects of Detection Limits and Data Replacement on Statistical Calculations*

| Reported Concentration | Laboratory Qualifier | Detection Limit | Concentration Used in Statistical Calculations | Actual Concentration |
|---|---|---|---|---|
| 250 | U | 250 | 0.001 | Unknown |
| 50 | U | 50 | 0.001 | Unknown |
| 50 | U | 50 | 0.001 | Unknown |
| 50 | U | 50 | 0.001 | Unknown |
| 50 | U | 50 | 0.001 | Unknown |
| 50 | U | 50 | 0.001 | Unknown |
| 11 | | 5 | 11 | 11 |
| 7 | | 5 | 7 | 7 |
| 8 | | 5 | 8 | 8 |
| 7 | | 5 | 7 | 7 |

Evaluations of U in groundwater are based on total U concentrations. In some cases, surface-water data are also evaluated (e.g., at sampling location GS13, the performance monitoring location supporting the SPPTS). The latter data through mid-2009, as well as a substantial portion of earlier groundwater data, are typically reported as isotopic activities. Any negative values for individual isotopic analyses are first replaced with 0.001 as described above, and then the individual results for a given location and date are converted to mass units and summed to provide a conservative approximation of total U by mass. Any total U results that were equal to or less than zero were also replaced with 0.001 to allow for the requirements of the statistical calculations. Conversion factors used to support these groundwater evaluations are listed in Table 3.

*Table 3. U Isotope Conversion Factors Used in Groundwater Evaluations*

| Isotope | Conversion Factor | Typical Activity Units | Typical Mass Units |
|---|---|---|---|
| U-233[a] | 9,636.6 pCi/µg | pCi/L | µg/L |
| U-234 | 6,235.1 pCi/µg | pCi/L | µg/L |
| U-235 | 2.1612 pCi/µg | pCi/L | µg/L |
| U-236[a] | 64.672 pCi/µg | pCi/L | µg/L |
| U-238 | 0.33614 pCi/µg | pCi/L | µg/L |

**Notes:** Source of conversion factors: (Friedlander et al. 1981)
[a] U-233 and U-236 are absent in natural U and, therefore, can be used as definitive markers for anthropogenic U. Los Alamos National Laboratory analyzes U-236 and also evaluates isotopic ratios for this purpose.

**Abbreviations:**
pCi/µg = picocuries per microgram
pCi/L = picocuries per liter
µg/L = micrograms per liter

There are many instances in the database of multiple results for U on the same date at the same well. These results may represent any of the following: isotopic analysis providing results in activity units, isotopic analysis providing results in mass units, total U analysis via a metals analytical method, total U via a total U analytical method, filtered sample, unfiltered sample,

unvalidated result, partially validated result, validated result, and result of reanalysis. (Note that these last four result types are most common in pre-closure data.) Before trends were calculated, for each well where this applied, these multiple results were winnowed to a single result representing each unique date. Factors evaluated in selecting the result for statistical use included the following:

- Filtration status
- Validation qualifiers
- Lab qualifiers
- Other U results from the well

Because groundwater samples for U analysis for many years have been field-filtered, where both sample results are provided, the filtered result is typically preferred for reasons of consistency. Similarly, where two very different results are presented, the value closer to other values from the same well is retained; if the two results are similar, the higher-concentration result is retained, to be conservative.

Data from original wells are grouped with those from replacement wells to form a data set on which the statistics are based. As additional data are collected from replacement wells (most of which were installed in 2005), this may prove to be inappropriate. The data populations from original and replacement wells may be discontinuous, suggesting that data from the original wells should be removed from statistical assessments of more recent groundwater data. This determination will be made as the post-closure data set becomes large enough to allow such an evaluation. Therefore, it should be stressed that trends for some locations may be misleading in that they might be strongly affected by well replacement and do not reflect only groundwater geochemistry and hydrology.

### 3.1.2 Routine Monitoring

#### *3.1.2.1 POC Monitoring*

This objective deals with monitoring discharges from the Site into Woman and Walnut Creeks and streamflow downstream at Indiana Street to demonstrate compliance with surface-water quality standards (Table 1 of RFLMA Attachment 2). Water-quality data at POCs are reportable under RFLMA when the applicable evaluation parameters are greater than the corresponding Table 1 values (see Appendix D). Surface water at the eastern COU is monitored at WALPOC on Walnut Creek and WOMPOC on Woman Creek. During 2013, Walnut Creek was also monitored downstream at Indiana Street by POC GS03 through September 27, 2013. Similarly, Woman Creek was also monitored downstream at Indiana Street by POC GS01 through September 8, 2013. These locations are shown on Figure 7. Sampling and data evaluation protocols are summarized in Table 4.

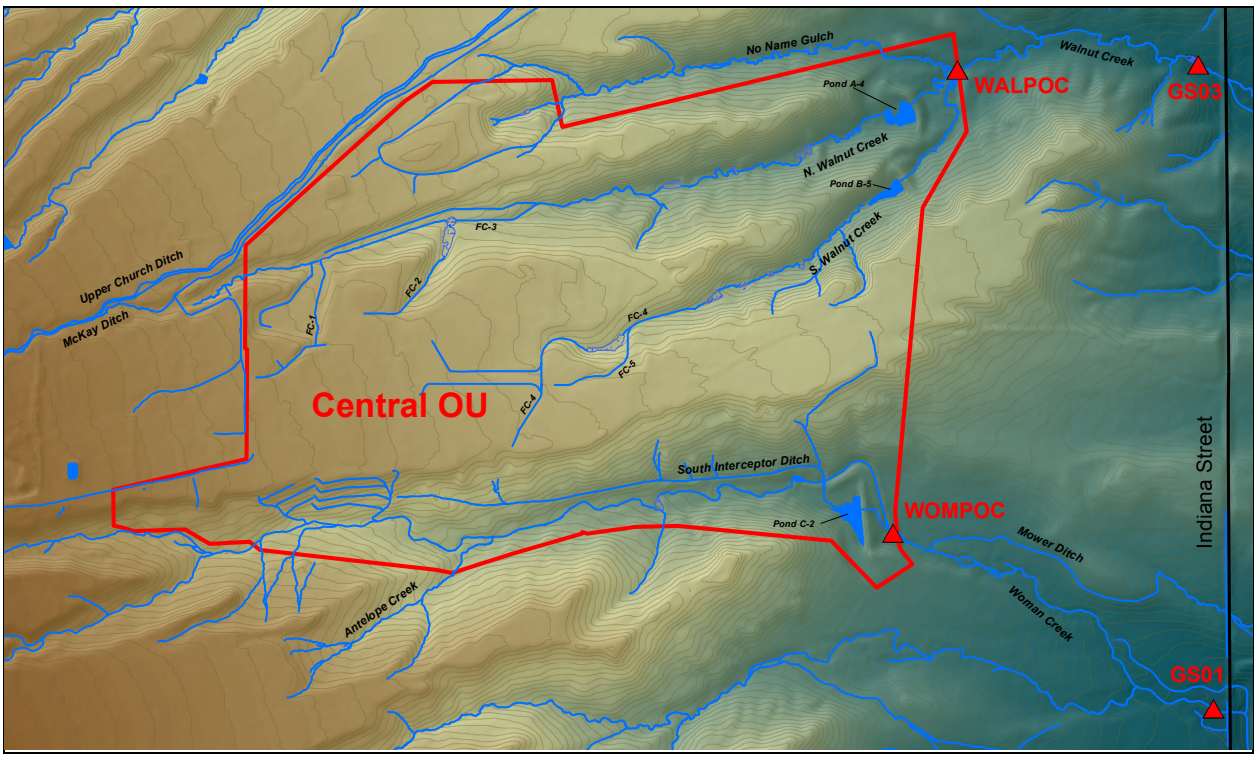



*Figure 7. POC Monitoring Locations*

*Table 4. Sampling and Data Evaluation Protocols at POCs*

| Location Code | Location Description | Sample Types/Frequencies | Analytes | Data Evaluation |
|---|---|---|---|---|
| GS01[a] | Woman Creek at Indiana Street | Continuous flow-paced composites; frequency varies (target is 20–30 per year) | total Pu, Am, and U [TSS[b]] | See Figure 5 in Appendix D |
| GS03[a] | Walnut Creek at Indiana Street | Continuous flow-paced composites; frequency varies (target is 20–30 per year) | total Pu, Am, U, and nitrate[c] [TSS[b]] | See Figure 5 in Appendix D |
| WOMPOC | Woman Creek at Eastern COU Boundary | Continuous flow-paced composites; frequency varies (target is 20–30 per year) | total Pu, Am, and U [TSS[b]] | See Figure 5 in Appendix D |
| WALPOC | Walnut Creek at Eastern COU Boundary | Continuous flow-paced composites; frequency varies (target is 20–30 per year) | total Pu, Am, U, and nitrate[c] [TSS[b]] | See Figure 5 in Appendix D |

**Notes:**
[a] GS01 and GS03 were POCs through September 8 and 27, 2013, respectively.
[b] Total suspended solids (TSS) is analyzed when the composite sampling period is within TSS holding-time limits.
[c] Collected during flow-through pond discharge periods as grab samples collected at the start of each automated composite sample period. If there is no flow when the automated composite sample is started, then the nitrate grab is collected as soon as flow is available nitrate is analyzed as nitrate+nitrite as nitrogen; this result is conservatively compared to the nitrate standard only.

The following sections include summary tables and plots showing the applicable 30-day and 12-month rolling averages for the POC analytes. The evaluations include all results that were not rejected through the data verification and validation process. Data are generally presented to decimal places as reported by the laboratories. Accuracy should not be inferred; minimum

detectable concentrations, activities, and analytical errors are often greater than the precision presented. When a sample has a corresponding field duplicate, the value used in calculations is the arithmetic average of the "real" and "duplicate" values. When a sample has multiple "real" analyses (Site-requested "reruns"), the value used in calculations is the arithmetic average of the multiple "real" analyses.[3]

Refer to Appendix B, which contains the water-quality data, for further information.

### *Location GS01*

Monitoring location GS01 is located on Woman Creek at Indiana Street (Figure 7). The Woman Creek headwaters, the southern portion of the COU, Pond C-2, and the southern portion of the Refuge contribute flow to GS01. As of September 9, 2013, GS01 is no longer a RFLMA POC.

Although GS01 was no longer a POC during the extremely high flows in September 2013, Table 5 shows automated composite sampling information collected during September 2013. Although telemetry indicated that the sampler was collecting samples up until 7:43 a.m. on September 12, sometime soon after that time the equipment shelter was overturned after being hit by a large tree. When the equipment was repaired a few days later, the composite bottle had only a small amount of water with significant quantities of mud. Obviously, analysis of this material cannot be considered representative of creek flows.

*Table 5. September 2013 Composite Sampling Detail for POC GS03*

| Sampling Period | Number of Grabs | Sample Results | | | Flow Volume (MG) | Flow Rates (cfs) | Comments |
|---|---|---|---|---|---|---|---|
| | | Am-241 (pCi/L) | Pu-239, 240 (pCi/L) | Uranium (µg/L) | | | |
| 6/6/2013 9:59–9/12/2013 7:43 | 154 (est) | unusable data | unusable data | unusable data | 33.2 (est) | 0.0–349 (est) | Sampler overturned at ~9/12/2013 7:43 |
| 9/12/2013 7:43–9/17/2013 15:29 | NSQ | NA | NA | NA | 205.7 (est) | 1.9–794 (est) | Sampler was non-functional |
| 9/17/2013 15:29–10/2/2013 13:42 | 16 | 0.004 | 0.010 | 2.3 | 12.2 | 0.1–11.1 | |

**Abbreviations:**
est = estimated
µg/L = micrograms per liter
MG = million gallons
NA = not analyzed
NSQ = nonsufficient quantity for analysis
pCi/L = picocuries per liter

Table 6 shows that all of the annual average Pu and Am activities were well below the RFLMA standard of 0.15 picocurie per liter (pCi/L). Additionally, the long-term Pu and Am averages

[3] Significant differences in values for a data pair are an indication of potential problems with sample preparation or analysis. Under these circumstances, an applicable value to be used for comparison cannot be determined with sufficient confidence to make compliance decisions. Thus, an evaluation of the relative error ratio (RER) or relative percent difference (RPD), depending on the analyte, is required to assess the representativeness of the sample and its usability for compliance decisions (see the RFSOG for discussion).

(1997–2013) are well below 0.15 pCi/L. The annual average total U concentrations are all well below the RFLMA standard of 16.8 micrograms per liter (µg/L).

*Table 6. Annual Volume-Weighted Average Radionuclide Activities at GS01 for 1997–2013*

| Calendar Year | Volume-Weighted Average | | |
|---|---|---|---|
| | Am-241 (pCi/L) | Pu-239, 240 (pCi/L) | Total U (µg/L) |
| 1997 | 0.003 | 0.007 | NA |
| 1998 | 0.006 | 0.006 | NA |
| 1999 | 0.005 | 0.008 | NA |
| 2000 | 0.004 | 0.003 | NA |
| 2001 | 0.004 | 0.006 | NA |
| 2002 | 0.002 | 0.001 | NA |
| 2003 | 0.002 | 0.004 | 1.60 |
| 2004 | 0.003 | 0.002 | 4.58 |
| 2005 | 0.004 | 0.003 | 3.22 |
| 2006 | 0.012 | 0.003 | 6.06 |
| 2007 | 0.002 | 0.007 | 1.40 |
| 2008 | 0.002 | 0.003 | 5.74 |
| 2009 | 0.003 | 0.007 | 2.75 |
| 2010 | 0.005 | 0.010 | 2.39 |
| 2011 | 0.003 | 0.003 | 5.16 |
| 2012 | 0.003 | 0.002 | 5.89 |
| 2013[a] | 0.003 | 0.005 | 2.83 |
| **Total (1997–2013)*** | 0.004 | 0.006 | 2.57 |

**Notes:** Collection of total U data began on February 3, 2003.
[a] Values use data through 9/8/2013

**Abbreviations:**
NA = not applicable.

Figure 8 and Figure 9 show no occurrences of reportable 30-day averages for the year through September 8, 2013.

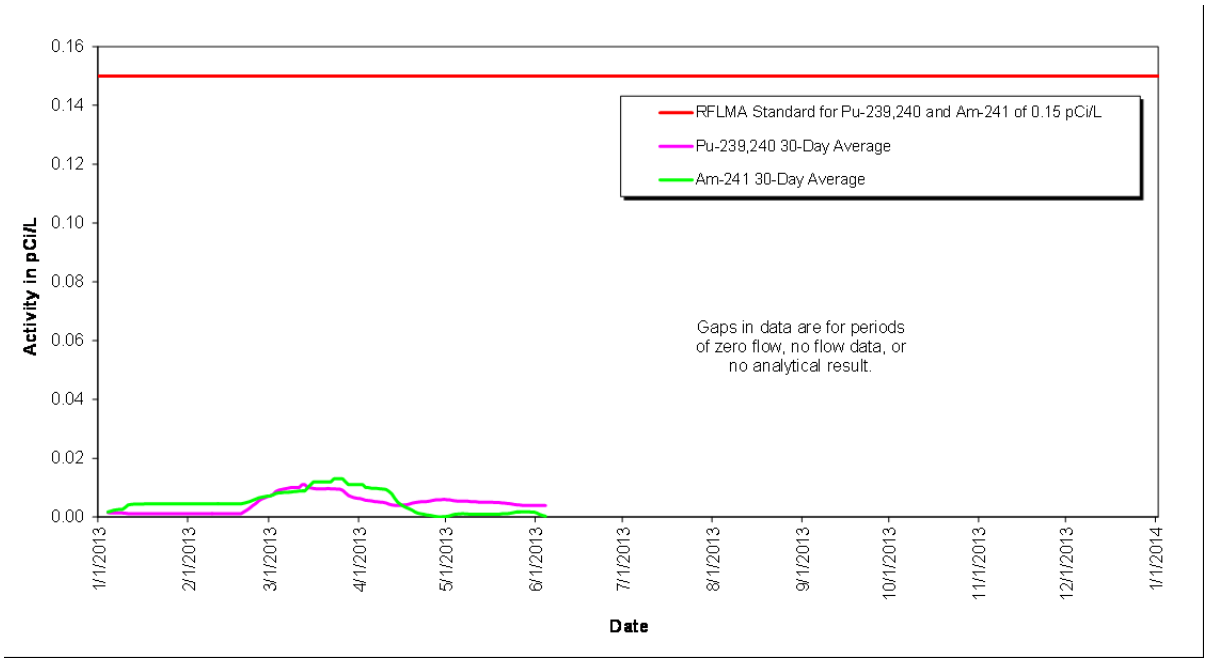



*Figure 8. Volume-Weighted 30-Day Average Pu and Am Activities at GS01: CY 2013 Through September 8, 2013*

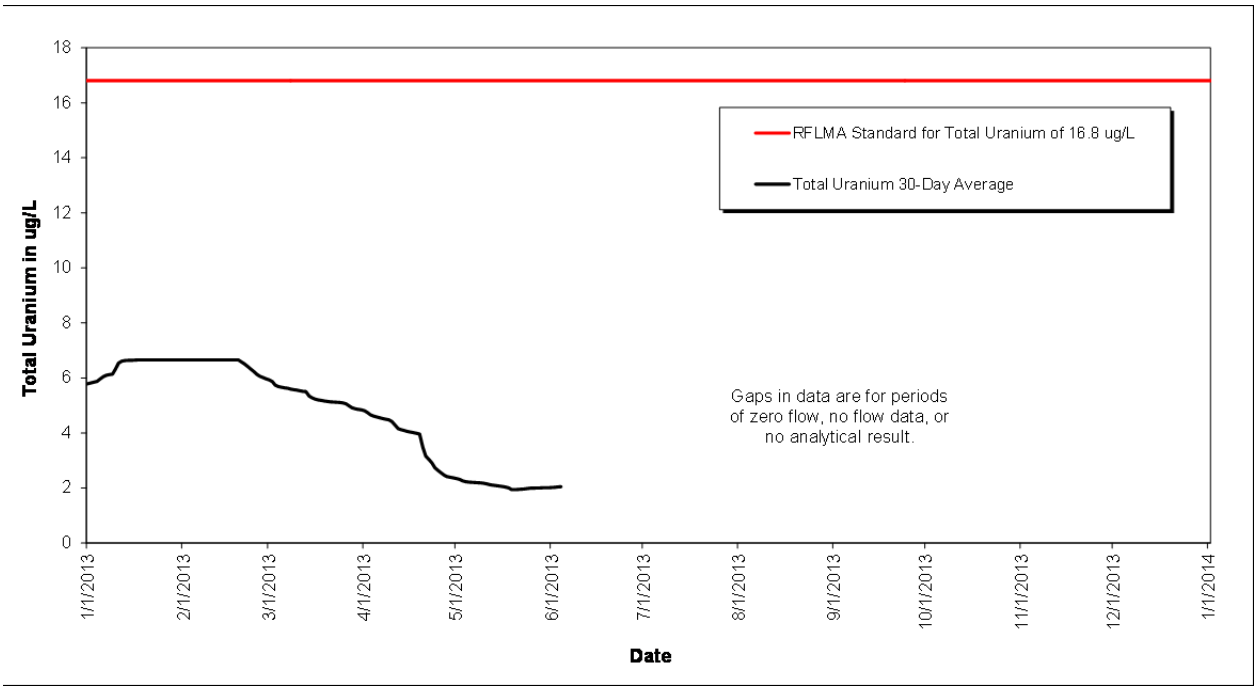



*Figure 9. Volume-Weighted 30-Day Average Total U Concentrations at GS01: CY 2013 Through September 8, 2013*

Figure 10 and Figure 11 show similar data for the entire post-closure period through September 8, 2013.

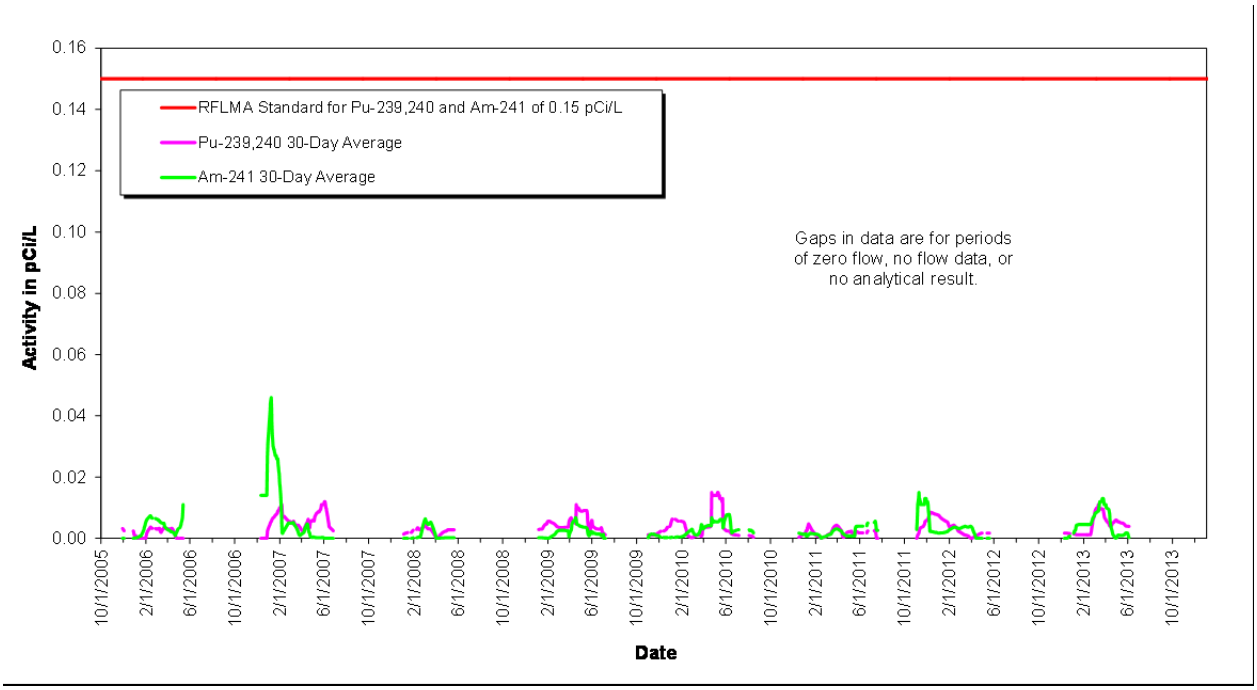



*Figure 10. Volume-Weighted 30-Day Average Pu and Am Activities at GS01: Post-Closure Period Through September 8, 2013*

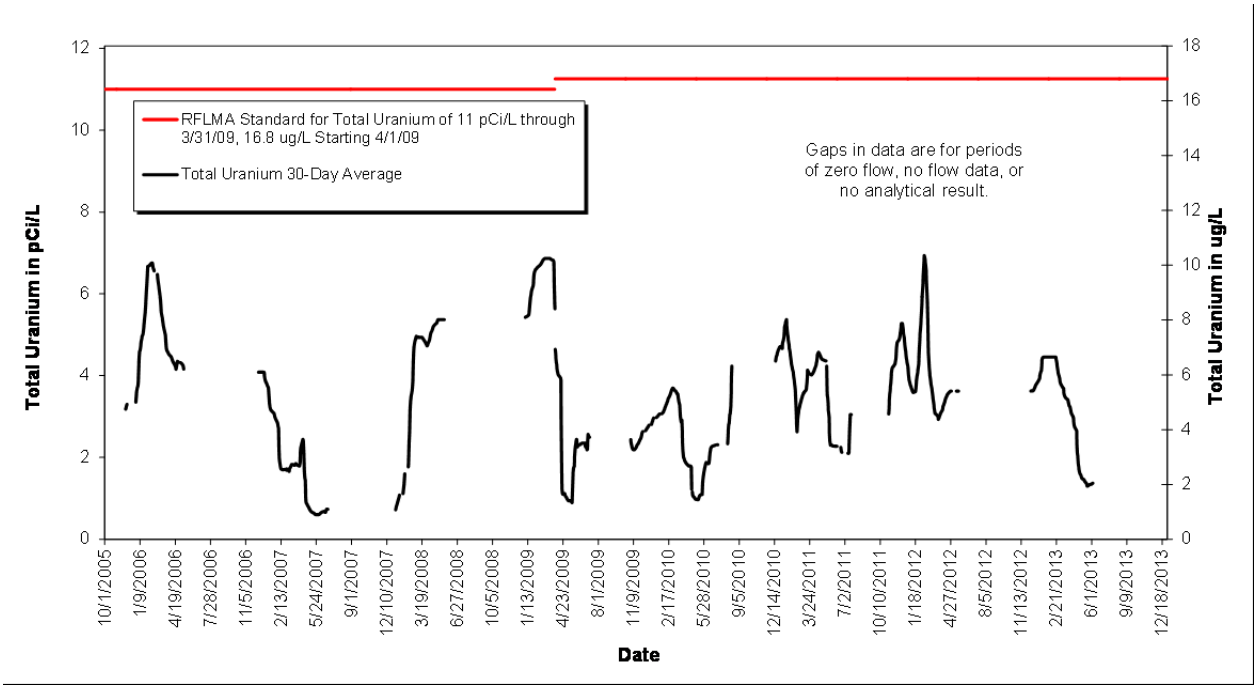



*Figure 11. Volume-Weighted 30-Day Average Total U Concentrations at GS01: Post-Closure Period Through September 8, 2013*

### *Location GS03*

Monitoring location GS03 is on Walnut Creek at Indiana Street (Figure 7). The Walnut Creek headwaters, the majority of the COU, Pond A-4, Pond B-5, and the northeastern portion of the Refuge contribute flow to GS03. As of September 28, 2013, GS03 is no longer a RFLMA POC.

Table 7 shows automated composite sampling information collected during September 2013. Flow rates could not be accurately estimated for the period 9/12/2013 14:36 through 9/14/2013 09:50. Therefore, no discharge volumes are available and, in accordance with routine evaluation protocols, this period is not included in the calculation of 12-month rolling and 30-day averages.

*Table 7. September 2013 Composite Sampling Detail for POC GS03*

| Sampling Period | Number of Grabs | Sample Results | | | Flow Volume (MG) | Flow Rates (cfs) | Comments |
|---|---|---|---|---|---|---|---|
| | | Am-241 (pCi/L) | Pu-239, 240 (pCi/L) | Uranium (µg/L) | | | |
| 6/25/2013 12:07–9/12/2013 14:36 | 249 | 0.016 | 0.036 | 8.90 | NA | NA | Sampler was full on 9/12/2013 from 7:28 to 14:36 |
| 9/12/2013 14:36–9/14/2013 9:50 | 251 | 0.032 | 0.042 | 2.15 | NA | NA | Sampler was full on 9/14/2013 from 6:43 to 9:50 |
| 9/14/2013 9:50–10/2/2013 14:37 | 52 | 0.011 | 0.017 | 2.91 | 50.2 | 0.2–68.4 | |

**Abbreviations:**
MG = million gallons
NA = not analyzed

Table 8 shows that all of the annual average Pu and Am activities were well below the RFLMA standard of 0.15 pCi/L. Additionally, the long-term Pu and Am averages (1997–2013) are well below 0.15 pCi/L. The annual average total U and nitrate+nitrite as nitrogen (N) concentrations are also all below the RFLMA standard of 16.8 µg/L and 10 milligrams per liter (mg/L), respectively.

*Table 8. Annual Volume-Weighted Average Radionuclide Activities and Nitrate+Nitrite as Nitrogen Concentrations at GS03 for 1997–2013[a]*

| Calendar Year | Volume-Weighted Average | | | |
|---|---|---|---|---|
| | **Am-241 (pCi/L)** | **Pu-239, 240 (pCi/L)** | **Total U (µg/L)** | **Nitrate+Nitrite as N (mg/L)[a]** |
| 1997 | 0.014 | 0.026 | NA | NA |
| 1998 | 0.010 | 0.014 | NA | NA |
| 1999 | 0.009 | 0.015 | NA | NA |
| 2000 | 0.007 | 0.005 | NA | NA |
| 2001 | 0.005 | 0.009 | NA | NA |
| 2002 | 0.006 | 0.012 | NA | NA |
| 2003 | 0.005 | 0.006 | 2.38[b] | NA |
| 2004 | 0.008 | 0.008 | 2.44 | NA |
| 2005 | 0.022 | 0.008 | 5.68 | NA (no pond discharge after October 13, 2005) |
| 2006 | NA (no flow) | NA (no flow) | NA (no flow) | NA (no pond discharge) |
| 2007 | 0.002 | 0.006 | 5.13 | 2.34 |
| 2008 | NA (no flow) | NA (no flow) | NA (no flow) | NA (no pond discharge) |
| 2009 | 0.003 | 0.004 | 4.29 | 0.34 |
| 2010 | 0.005 | 0.007 | 4.81 | 1.88 |
| 2011 | 0.003 | 0.002 | 6.72 | 0.05 |
| 2012 | 0.001 | 0.004 | 12.5 | 3.62 |
| 2013[c] | 0.013 | 0.018 | 4.18 | 2.55 |
| **Total[c] (1997–2013)[c]** | 0.009 | 0.012 | 4.09 | 1.59 |

**Notes:**
[a] For pond discharge periods only; nitrate+nitrite as nitrogen sampling began on October 13, 2005.
[b] Collection of total U data began on November 5, 2002.
[c] Values use data through September 27, 2013

**Abbreviations:**
NA = not applicable.

Figure 12, Figure 13, and Figure 14 show no occurrences of reportable 30-day averages for the year through September 27, 2013.

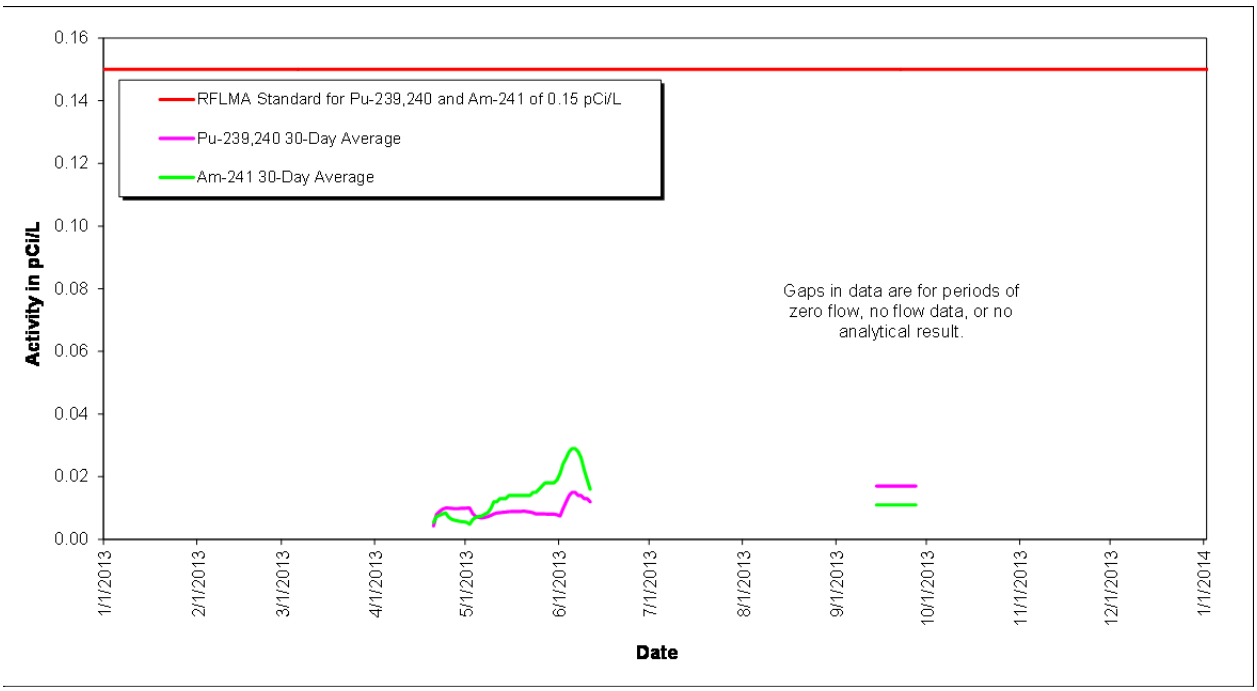



*Figure 12. Volume-Weighted 30-Day Average Pu and Am Activities at GS03: CY 2013 Through September 27, 2013*

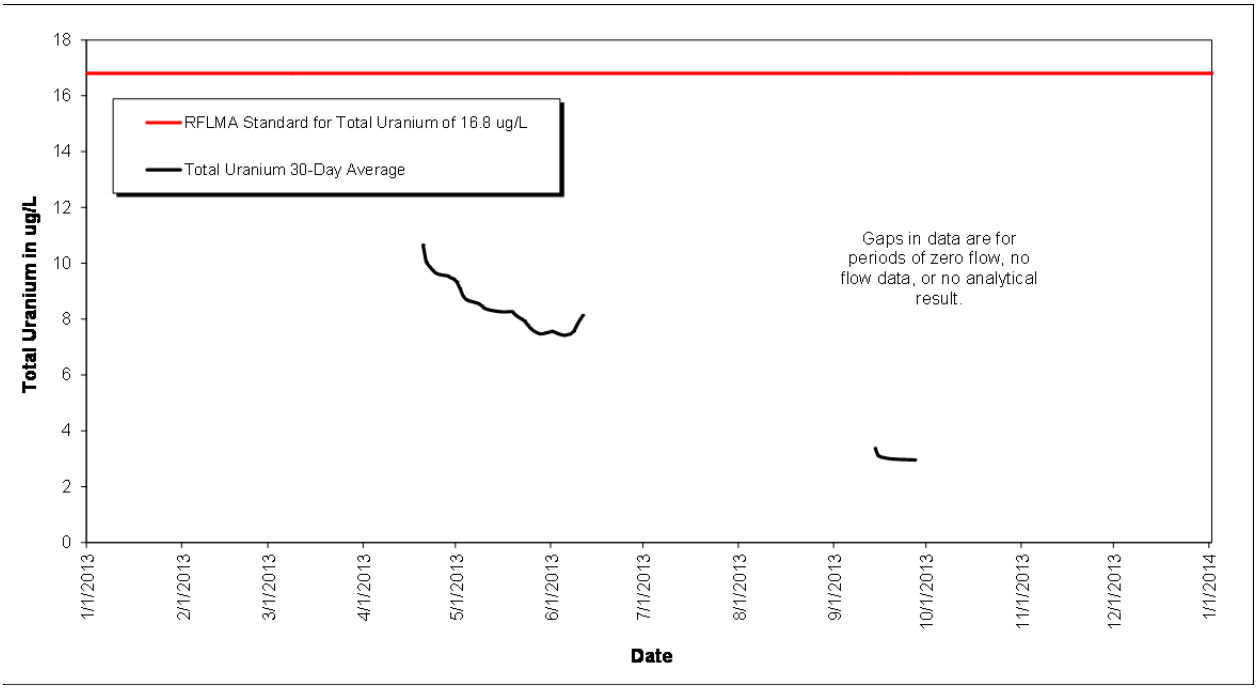



*Figure 13. Volume-Weighted 30-Day Average Total U Concentrations at GS03: CY 2013 Through September 27, 2013*

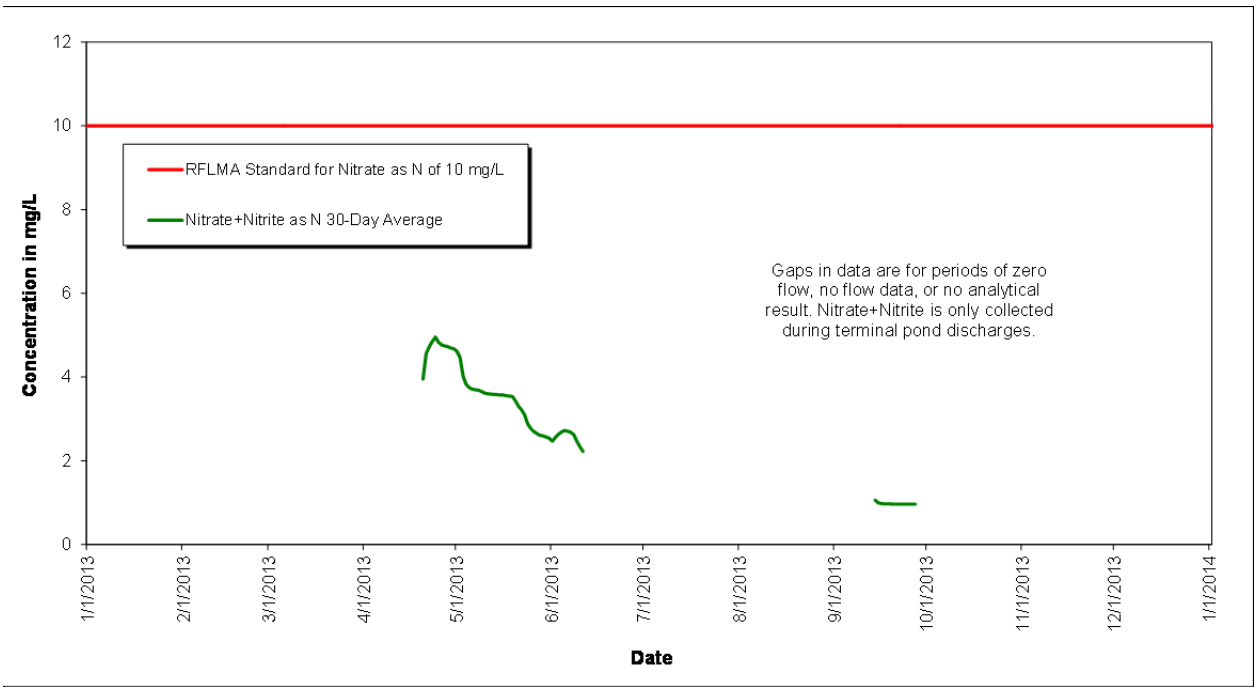



*Figure 14. Volume-Weighted 30-Day Average Nitrate+Nitrite as N Concentrations at GS03: CY 2013 Through September 27, 2013*

Figure 15, Figure 16, and Figure 17 show similar data for the entire post-closure period through September 27, 2013.

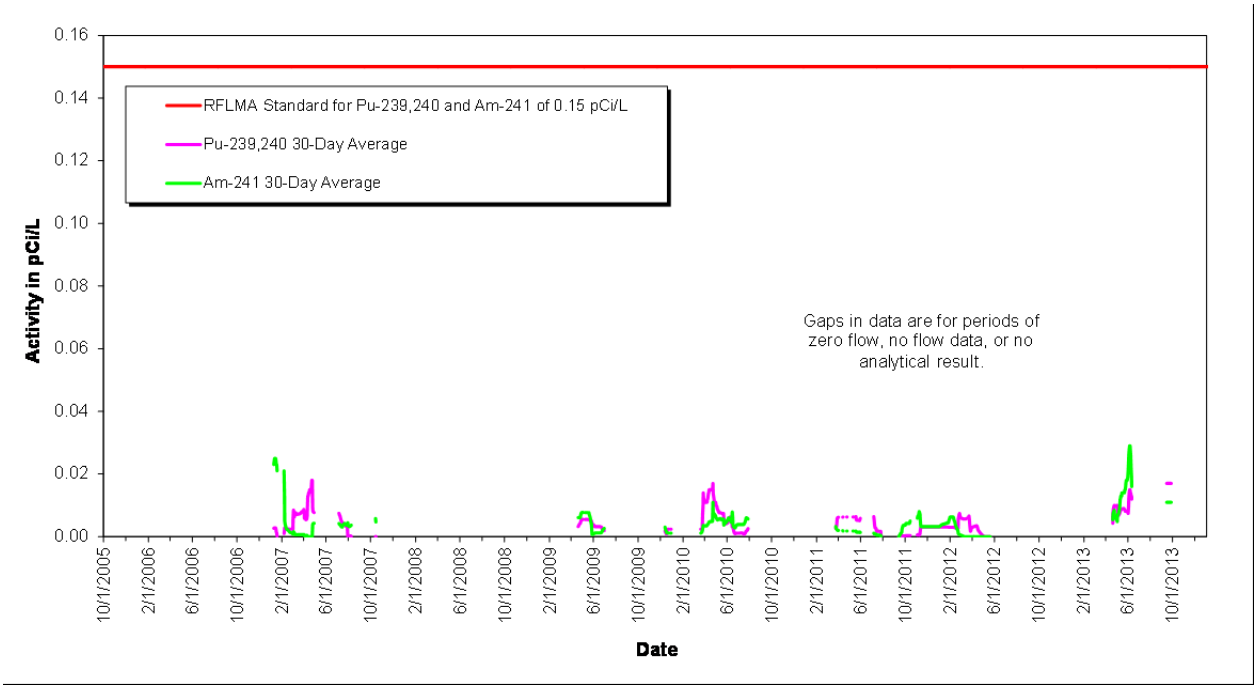



*Figure 15. Volume-Weighted 30-Day Average Pu and Am Activities at GS03: Post-Closure Period Through September 27, 2013*

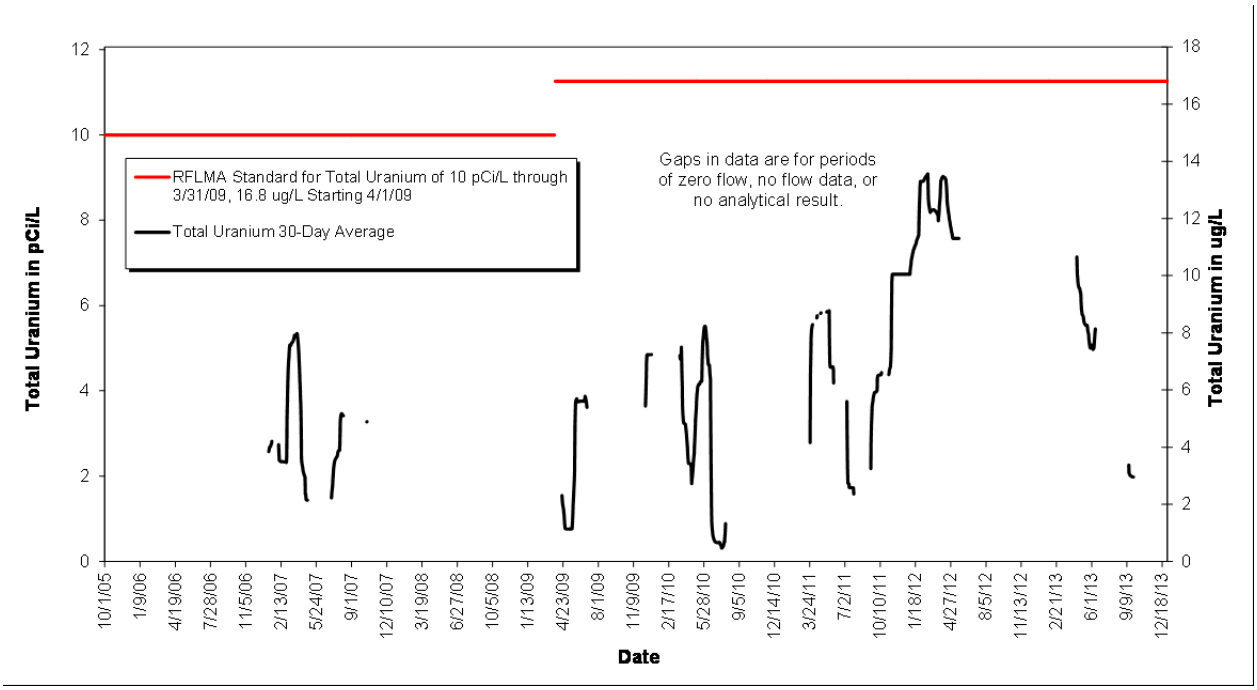



*Figure 16. Volume-Weighted 30-Day Average Total U Concentrations at GS03: Post Closure-Period Through September 27, 2013*

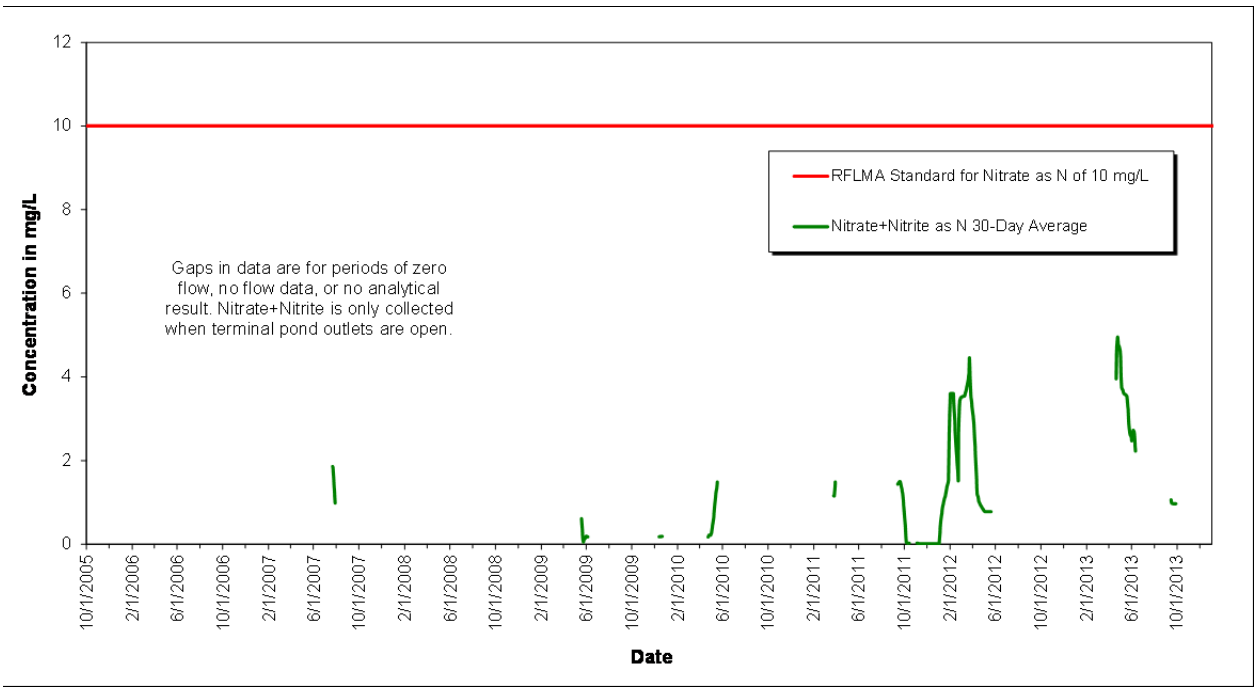



*Figure 17. Volume-Weighted 30-Day Average Nitrate+Nitrite as N Concentrations at GS03: Post-Closure Period Through September 27, 2013*

### *Location WOMPOC*

Monitoring location WOMPOC is located on Woman Creek at the eastern COU boundary (Figure 7). The Woman Creek headwaters, the southern portion of the COU, and Pond C-2 contribute flow to WOMPOC. WOMPOC began operating as a POC on September 28, 2011.

Table 9 shows automated composite sampling information collected during September 2013. It should be noted that the sampler was full and did not collect any water for the period 9/12/2013 14:13 to 9/13/2013 12:23. For the period 9/23/2013 13:37 to 9/28/2013 9:24, the sampler pacing was too large for the actual flows and only two grab samples were collected. These two grabs were discarded and a more appropriate pace was selected on September 28, 2013. Therefore, no analytical results are available for these two periods and, in accordance with routine evaluation protocols, these periods are not included in the calculation of 12-month rolling and 30-day averages.

*Table 9. September 2013 Composite Sampling Detail for POC WOMPOC*

| Sampling Period | Number of Grabs | Sample Results | | | Flow Volume (MG) | Flow Rates (cfs) | Comments |
|---|---|---|---|---|---|---|---|
| | | Am-241 (pCi/L) | Pu-239, 240 (pCi/L) | Uranium (µg/L) | | | |
| 6/6/2013 10:20–9/12/2013 14:13 | 250 | 0.007 | 0.038 | 7.11 | 48.5 (est) | 0.0–682 (est) | Sampler filled 9/12/2013 14:13 |
| 9/12/2013 14:13–9/13/2013 12:23 | 0 NSQ | NA | NA | NA | 74.8 (est) | 24.4–414 (est) | |
| 9/13/2013 12:23–9/14/2013 10:50 | 127 | 0.005 | 0.009 | 1.14 | 6.44 (est) | 3.3–29.8 (est) | Sampler was full on 9/14/2013 from 8:05 to 10:50 |
| 9/14/2013 10:50–9/19/2013 11:39 | 58 | 0.004 | 0.023 | 1.44 | 16.1 (est) | 0.7–33.7 (est) | |
| 9/19/2013 11:39–9/23/2013 13:37 | 85 | 0.0 | 0.002 | 2.35 | 1.65 (est) | 0.3–4.2 (est) | |
| 9/23/2013 13:37–9/28/2013 9:24 | 2 NSQ | NA | NA | NA | 1.48 (est) | 0.2–1.7 (est) | Only two grabs collected and discarded. |
| 9/28/2013 9:24–10/7/2013 14:43 | 76 | 0.001 | 0.002 | 2.89 | 3.05 | 0.2–2.4 | |

**Abbreviations:**
est = estimated
MG = million gallons
NA = not analyzed
NSQ = nonsufficient quantity for analysis

Table 10 shows annual average Pu and Am activities all well below the RFLMA standard of 0.15 pCi/L. The annual average total U concentrations are also well below the RFLMA standard of 16.8 µg/L.

*Table 10. Annual Volume-Weighted Average Radionuclide Activities at WOMPOC for 2011–2013*

| Calendar Year | Volume-Weighted Average | | |
|---|---|---|---|
| | Am-241 (pCi/L) | Pu-239, 240 (pCi/L) | Total U (µg/L) |
| 2011 (partial year) | 0.004 | 0.003 | 4.42 |
| 2012 | 0.001 | 0.003 | 3.07 |
| 2013 | 0.004 | 0.009 | 2.34 |
| **Total (2011–2013)** | 0.003 | 0.007 | 2.78 |

**Notes:** WOMPOC began operating on September 28, 2011.

Figure 18 through Figure 21 show no occurrences of reportable 30-day or 12-month rolling averages for the year.

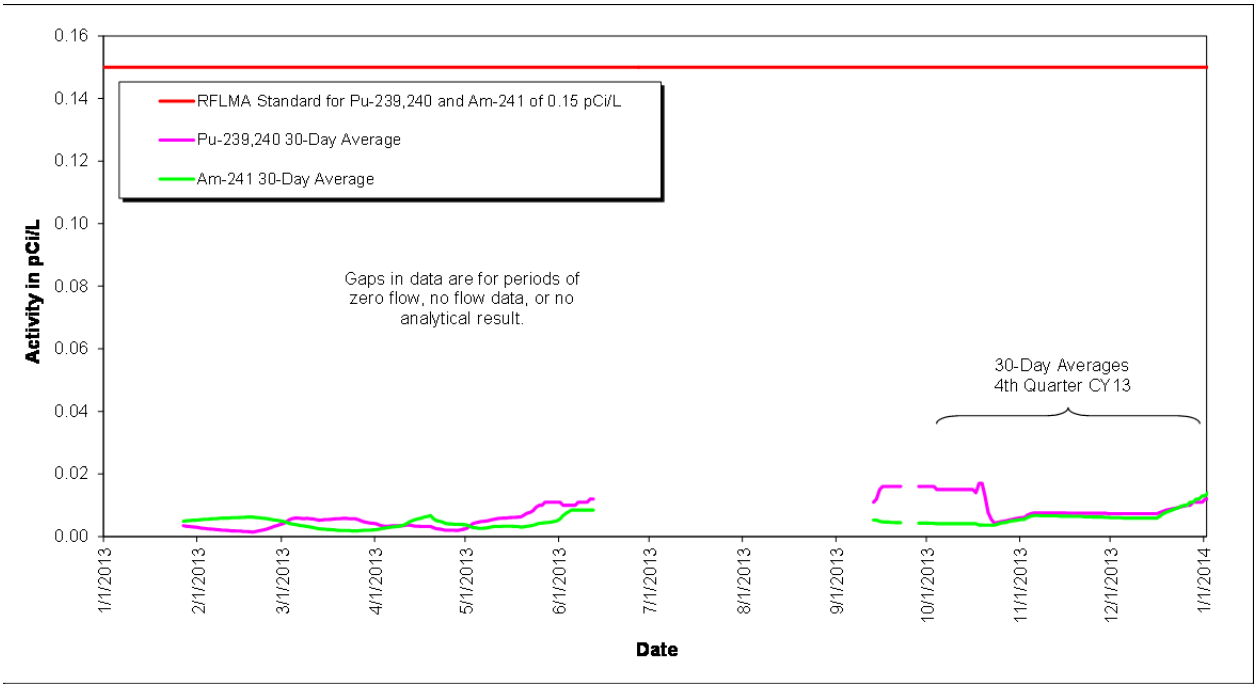



*Figure 18. Volume-Weighted 30-Day Average Pu and Am Activities at WOMPOC: Year Ending Fourth Quarter CY 2013*

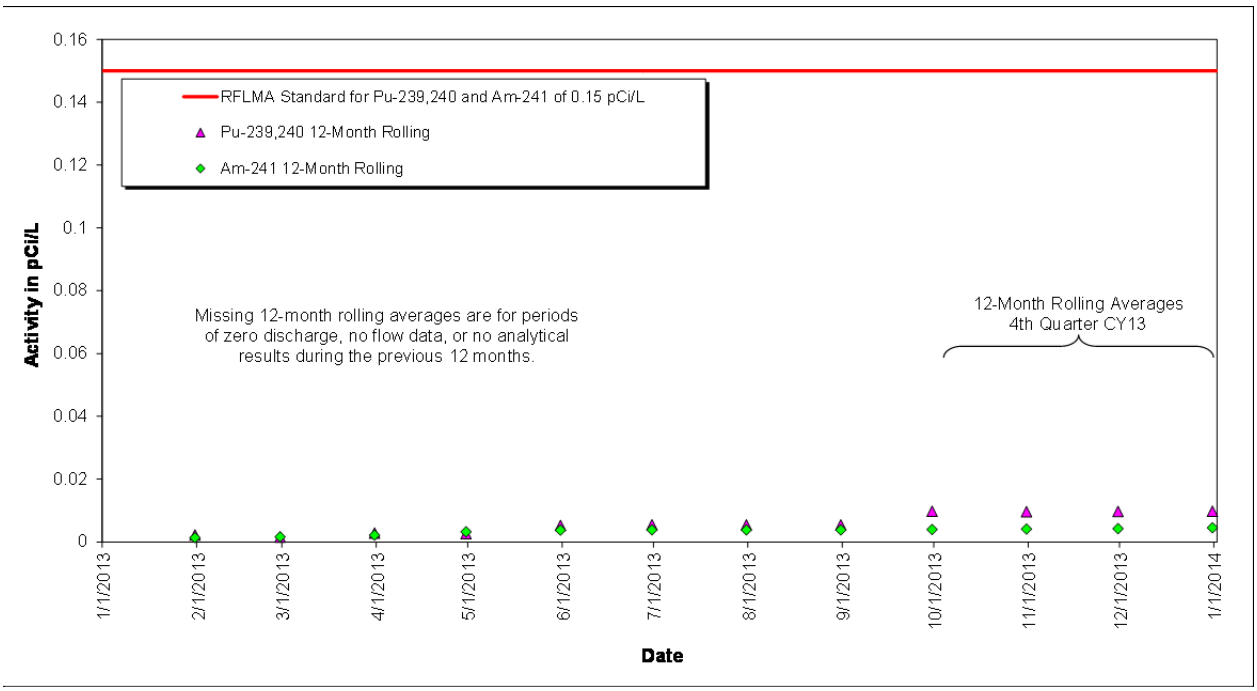



*Figure 19. Volume-Weighted 12-Month Rolling Average Pu and Am Activities at WOMPOC: Year Ending Fourth Quarter CY 2013*

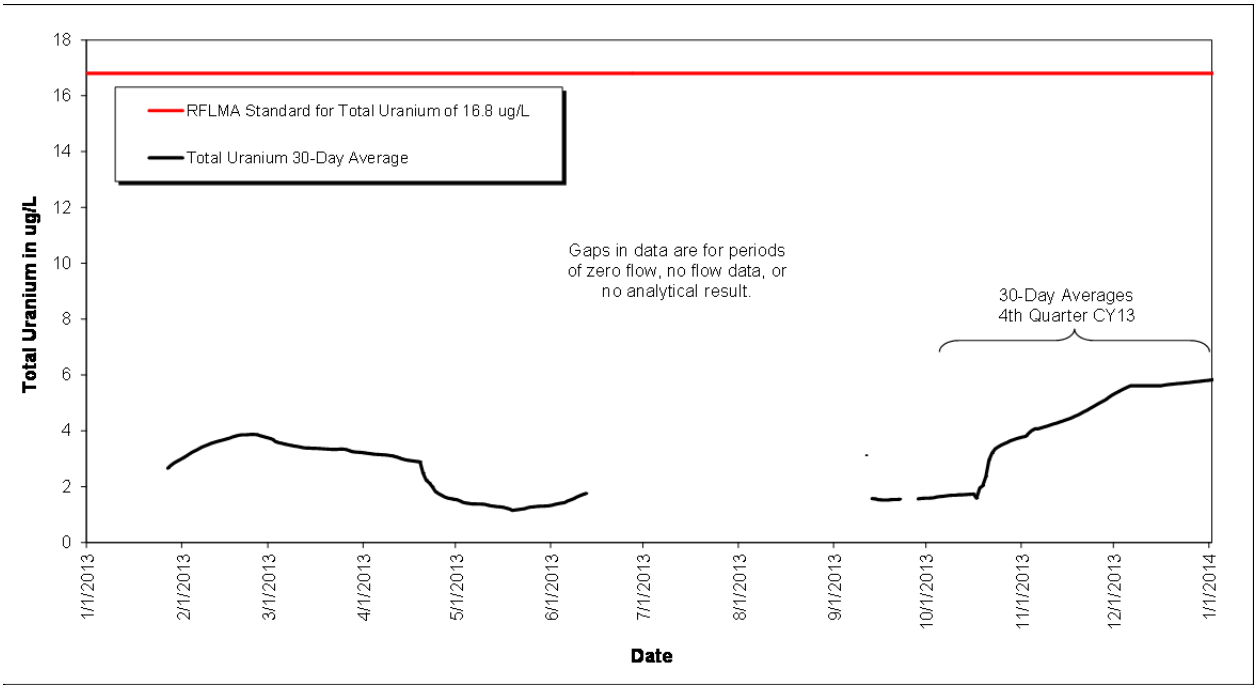



*Figure 20. Volume-Weighted 30-Day Average Total U Concentrations at WOMPOC: Year Ending Fourth Quarter CY 2013*

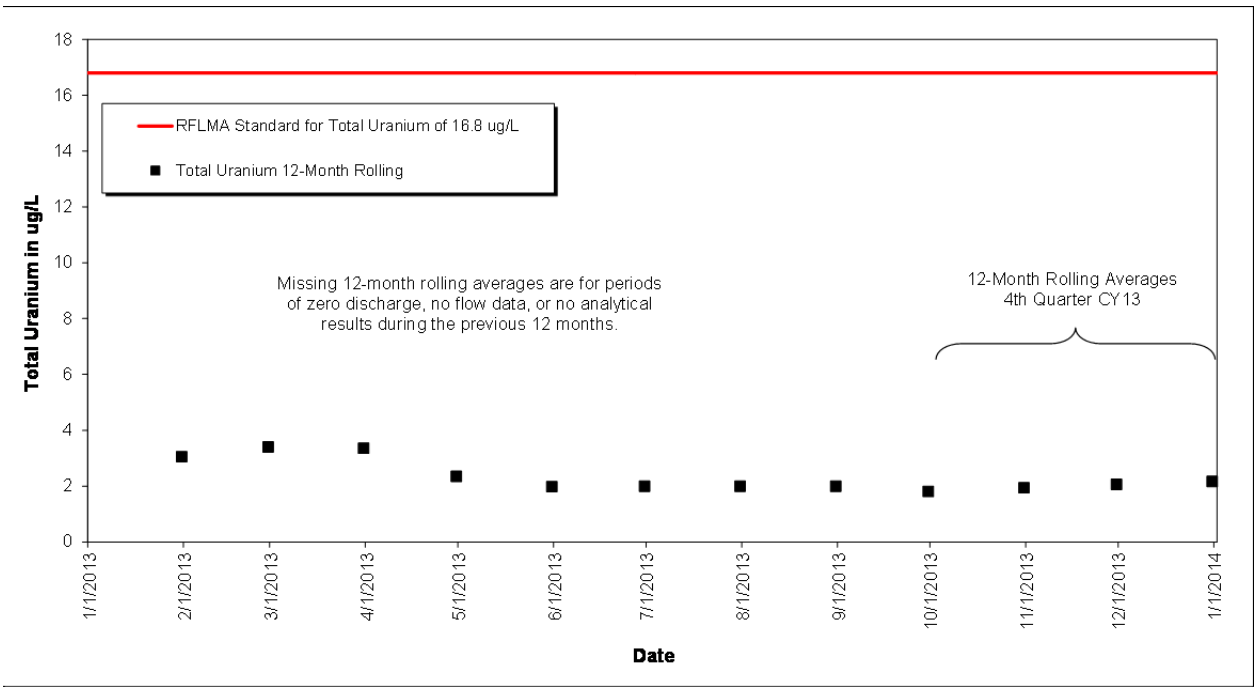



*Figure 21. Volume-Weighted 12-Month Rolling Average Total U Concentrations at WOMPOC: Year Ending Fourth Quarter CY 2013*

### *Location WALPOC*

Monitoring location WALPOC is located on Walnut Creek at the eastern COU boundary (Figure 7). The Walnut Creek headwaters, the majority of the COU, No Name Gulch, Pond A-4, and Pond B-5 contribute flow to WALPOC. WALPOC began operating as a POC on September 9, 2011.

Table 11 shows automated composite sampling information collected during September 2013. It should be noted that the sampler was full and did not collect any water for the period 9/12/2013 7:08 to 9/13/2013 14:54. Therefore, no analytical results are available and, in accordance with routine evaluation protocols, this period is not included in the calculation of 12-month rolling and 30-day averages.

*Table 11. September 2013 Composite Sampling Detail for POC WALPOC*

| Sampling Period | Number of Grabs | Sample Results | | | Flow Volume (MG) | Flow Rates (cfs) | Comments |
|---|---|---|---|---|---|---|---|
| | | Am-241 (pCi/L) | Pu-239, 240 (pCi/L) | Uranium (µg/L) | | | |
| 6/4/2013 13:19–9/12/2013 7:08 | 231 | 0.007 | 0.026 | 3.21 | 5.14 | 0.0–30.8 (est) | Sampler filled at 9/12/2013 7:08 |
| 9/12/2013 7:08–9/13/2013 14:54 | 0 NSQ | NA | NA | NA | 43.2 (est) | 22.3–83.5 (est) | Sampler was full for this period and no water was collected |
| 9/13/2013 14:54–9/14/2013 11:54 | 62 | 0.028 | 0.039 | 1.99 | 17.5 (est) | 22.5–41.8 (est) | |
| 9/14/2013 11:54–9/16/2013 11:20 | 89 | 0.013 | 0.025 | 2.55 | 25.1 (est) | 6.2–41.6 (est) | |
| 9/16/2013 11:20–10/25/2013 14:12 | 32 | 0.010 | 0.010 | 11.5 | 10.2 | 0.12–6.1 | |

**Abbreviations:**
est = estimated
MG = million gallons
NA = not analyzed
NSQ = nonsufficient quantity for analysis

Table 12 shows that annual average Pu and Am activities are all well below the RFLMA standard of 0.15 pCi/L. The annual average total U and nitrate+nitrite as N concentrations are also below the RFLMA standards of 16.8 µg/L and 10 mg/L respectively.

*Table 12. Annual Volume-Weighted Average Radionuclide Activities and Nitrate+Nitrite as Nitrogen Concentrations at WALPOC for 2011–2013*

| Calendar Year | Volume-Weighted Average | | | |
|---|---|---|---|---|
| | Am-241 (pCi/L) | Pu-239, 240 (pCi/L) | Total U (µg/L) | Nitrate+Nitrite as N (mg/L) |
| 2011 (partial year) | 0.004 | 0.003 | 7.99 | 0.055 |
| 2012 | 0.002 | 0.006 | 12.8 | 4.52 |
| 2013 | 0.013 | 0.018 | 7.79 | 1.58 |
| **Total (2011–2013)** | 0.009 | 0.014 | 8.54 | 1.70 |

**Notes:** WALPOC began operating on September 9, 2011.

Figure 22 through Figure 25 show no occurrences of reportable 30-day or 12-month rolling averages for plutonium, americium, or nitrate+nitrite as N.

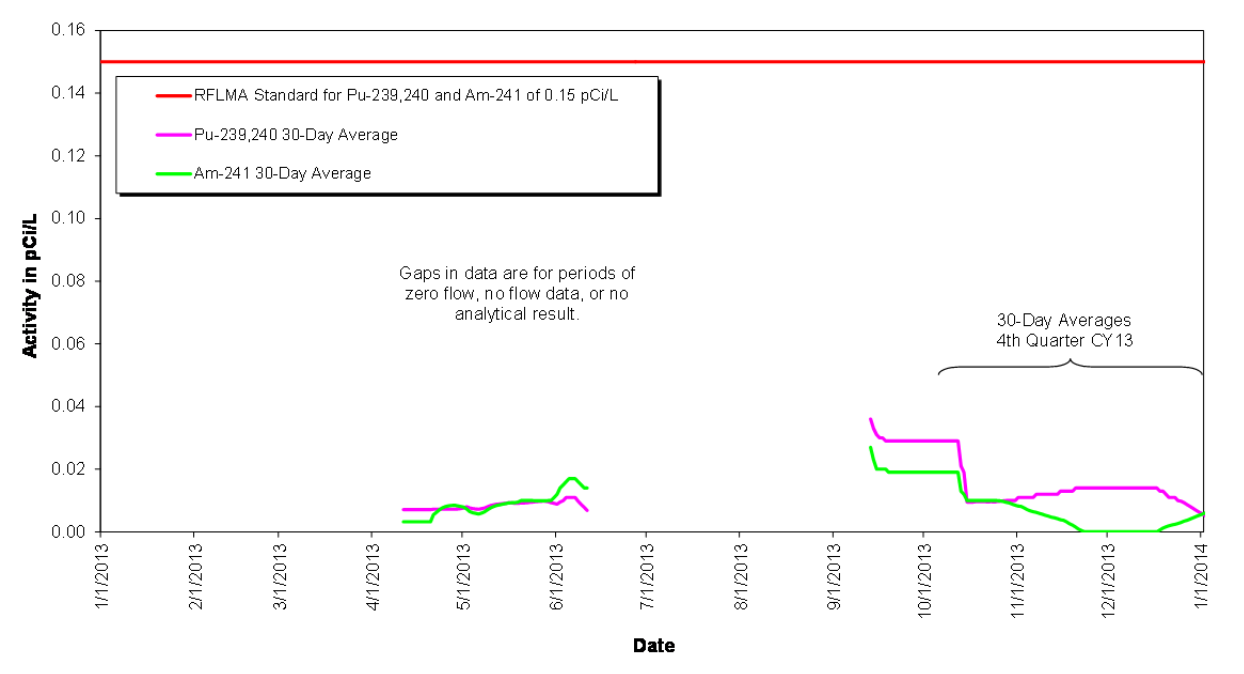



*Figure 22. Volume-Weighted 30-Day Average Pu and Am Activities at WALPOC: Year Ending Fourth Quarter CY 2013*

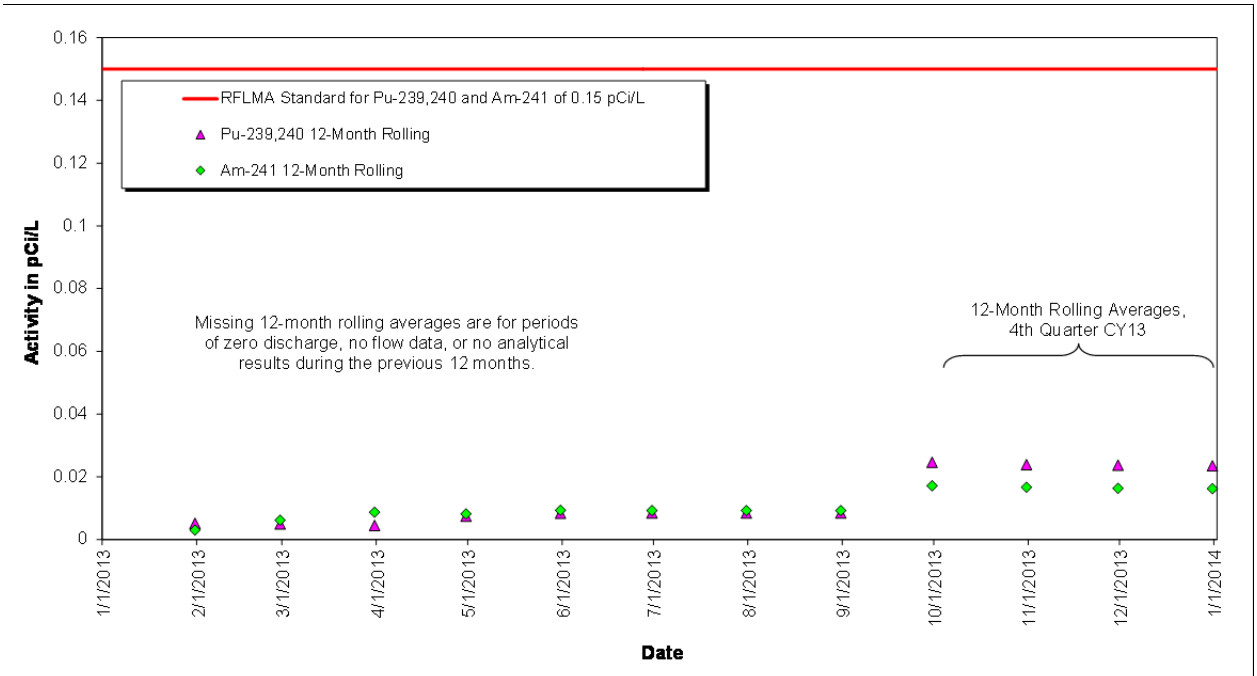



*Figure 23. Volume-Weighted 12-Month Rolling Average Pu and Am Activities at WALPOC: Year Ending Fourth Quarter CY 2013*

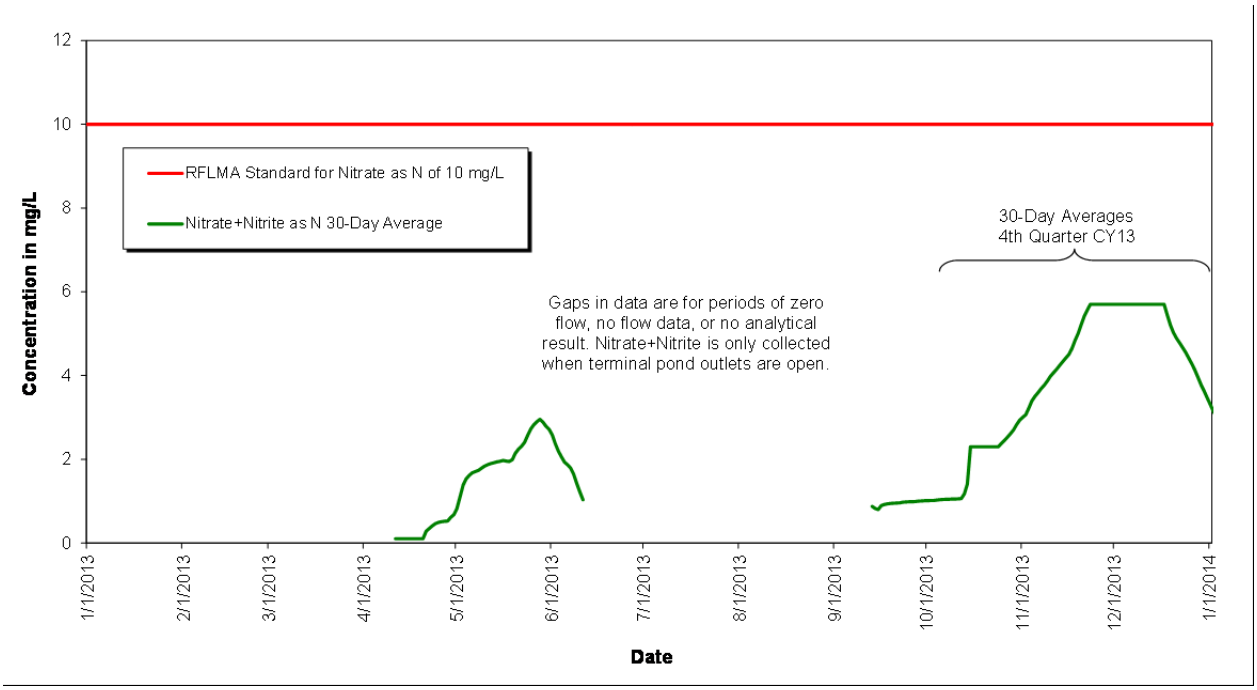



*Figure 24. Volume-Weighted 30-Day Average Nitrate+Nitrite as N Concentrations at WALPOC: Year Ending Fourth Quarter CY 2013*

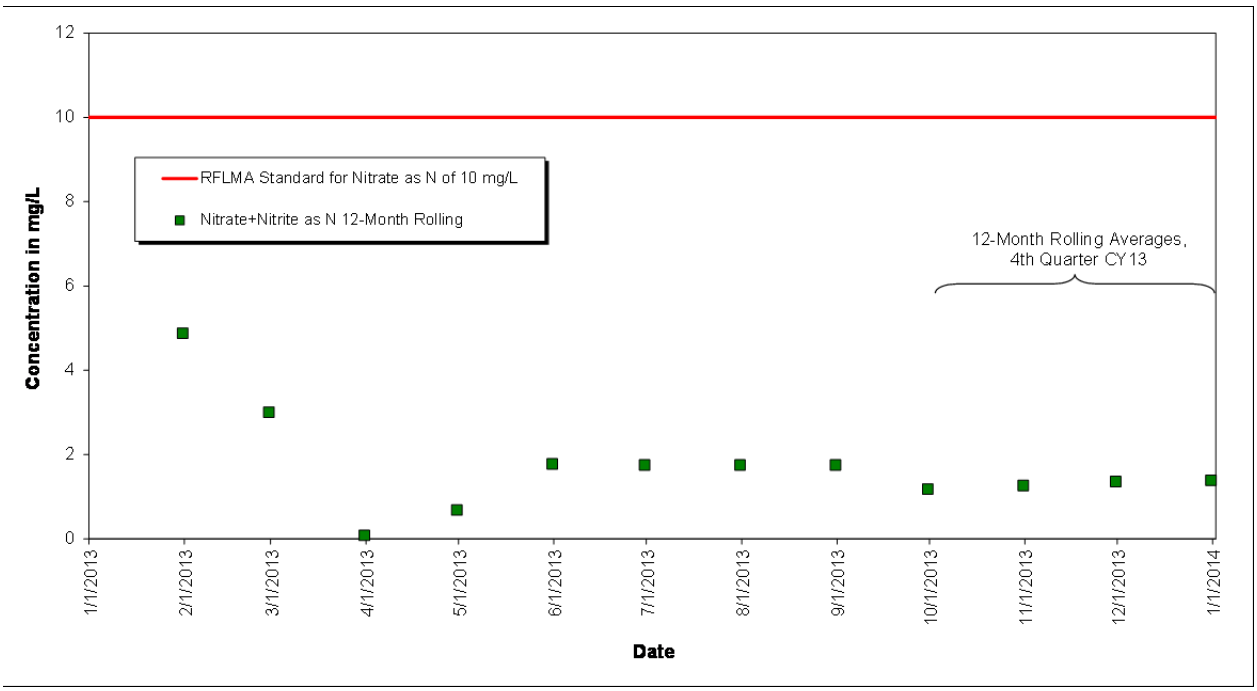



*Figure 25. Volume-Weighted 12-Month Rolling Average Nitrate+Nitrite as N Concentrations at WALPOC: Year Ending Fourth Quarter CY 2013*

Figure 26 shows that the 30-day average for uranium exceeded the RFLMA standard of 16.8 µg/L at the end of CY 2013. The 12-month rolling average remains well below RFLMA standard (Figure 27).

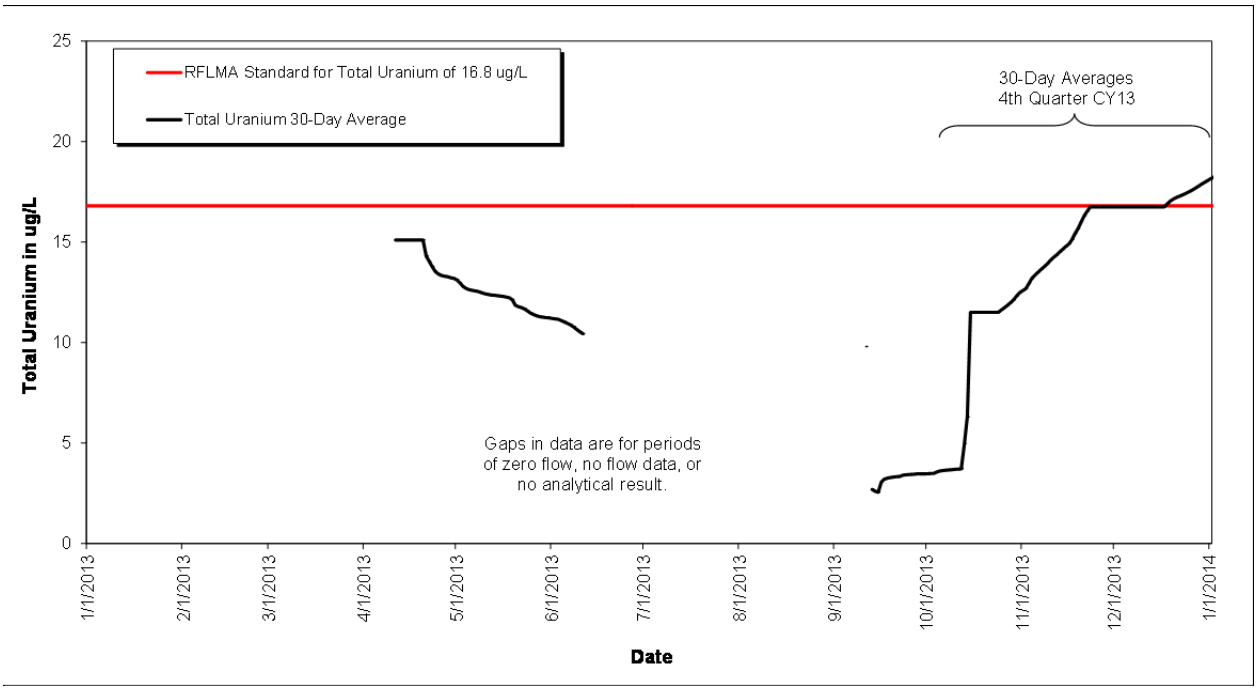



*Figure 26. Volume-Weighted 30-Day Average Total U Concentrations at WALPOC: Year Ending Fourth Quarter CY 2013*

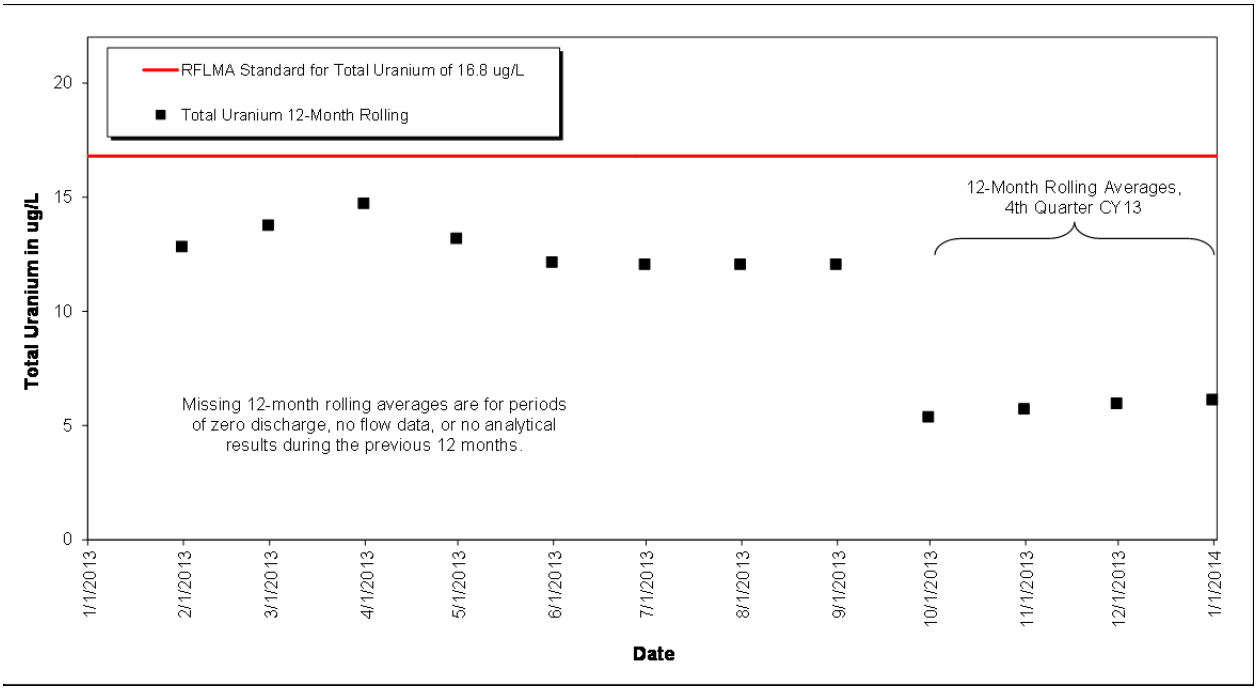



*Figure 27. Volume-Weighted 12-Month Rolling Average Total U Concentrations at WALPOC: Year Ending Fourth Quarter CY 2013*

The evaluation of WALPOC uranium data was performed in accordance with RFLMA Attachment 2, Figure 6, "Points of Evaluation," and resulted in a calculated 30-day average concentration for uranium of 16.9 µg/L on December 18, 2013. This value exceeds the RFLMA Table 1 standard of 16.8 µg/L. Validated results were received on February 3, 2014, and notification to the regulatory agencies and the public—in accordance with RFLMA Attachment 2, Figure 6—was made by e-mail on February 13, 2014. Representatives of the regulatory agencies and DOE met on February 18, 2014, to discuss the observations and develop a path forward.

RFLMA Contact Record 2014-05 (approved April 8, 2014), "Reportable condition for evaluation purposes for uranium at point of compliance WALPOC," provides a discussion of the monitoring results and recaps the outcome of the RFLMA Parties consultation regarding the evaluation steps to be taken. This contact record is available on the Rocky Flats website, http://www.lm.doe.gov/Rocky_Flats/ContactRecords.aspx.

The RFLMA Parties agreed on the evaluation steps described below and agreed that no mitigating actions are necessary at this time, for the following reasons taken directly from Contact Record 2014-05:

- The remedy remains protective. The remedy standard for total uranium at the WALPOC sampling location is the calculated 12-month rolling average. Using the most recent validated data, the calculated 12-month rolling average at WALPOC for total uranium on December 31, 2013, is 6.1 µg/L, well below the remedy performance standard of 16.8 µg/L.
- WALPOC has been an RFLMA monitoring location for roughly 2.5 years. During that period, the Site experienced one of its driest years (2012) and its wettest month (September 2013) according to precipitation data collected since 1990. Because uranium concentrations are influenced by changing environmental conditions, varying uranium concentrations at WALPOC are anticipated. While significant uranium concentration variability can be seen in both individual sample results and in the 30-day averages, the observed variability is not outside of anticipated ranges nor do these levels suggest the existence of a new source term.
- Although the recent result was above the Site standard of 16.8 µg/L, it remains well below the drinking water standard (i.e., the maximum contaminant level [MCL]) of 30 µg/L. While the MCL is not applied at the Site, the fact that the uranium concentration triggering this reportable condition was well below that level indicates that the remedy remains protective of human health and the environment.

However, the RFLMA Parties also agreed that further evaluation should be completed to help confirm the foregoing conclusions and to aid in developing future mitigating actions if they become necessary. The following steps taken directly from Contact Record 2014-05 serve as the plan and schedule for the WALPOC evaluation:

- Measured concentrations of total uranium at WALPOC include both naturally occurring and anthropogenic uranium. Previous high-resolution isotopic uranium analyses for WALPOC show signatures that are between 76 and 80 percent naturally occurring uranium. Additional high-resolution isotopic uranium analysis on the most recent WALPOC samples is being conducted to determine the percentages of natural and anthropogenic uranium for comparison to the historical data. These samples include a split from the

December 18, 2013, composite sample that triggered the reportable condition. Additional grab samples were collected on February 13, 2014, from WALPOC, Pond A-4, GS11 (Pond A-4 outlet), Pond B-5, and GS08 (Pond B-5 outlet). These samples will also be evaluated using high-resolution uranium analysis techniques.

- Split samples will continue to be collected from each flow-paced composite collected at WALPOC and held for possible high-resolution isotopic uranium analysis.
- Flow-paced composite samples routinely being collected at WALPOC will continue to be analyzed on a 2-week turnaround.
- A qualified geochemistry subcontractor with direct and applicable experience at the Rocky Flats site is currently conducting an extensive evaluation of the fate and transport of uranium at the Site. The data collected throughout the Walnut Creek drainage for the fate and transport study will also be utilized in this WALPOC reportable condition evaluation.

  The purpose of the study, as it relates to this reportable condition, is to evaluate variability in uranium concentrations—due to seasonal, hydrologic, geochemical, and geographic effects—through the collection of targeted analytical and field data. The study also incorporates the ongoing calculation of the percentages of natural uranium versus anthropogenic uranium in Walnut Creek.

  The methods used for the study include assessing historical and current data, identifying patterns or correlations, and evaluating potential geochemical mechanisms that may contribute to the noted results. The study has also identified additional data needs; collection of these data is ongoing.

  The study is scheduled to be completed in CY 2014.
- On February 26, 2014, DOE provided a split sample from the sample collected on January 16, 2014, to CDPHE for analysis of uranium at the State's Radiochemistry Laboratory.

  DOE will report the results of this monitoring and of the subsequent evaluation in RFLMA quarterly and annual reports of surveillance and monitoring activities. This plan and schedule may be modified based on the outcome of RFLMA Party consultation related to the evaluation.

  To keep the public informed, the outcome of continuing RFLMA Party consultation regarding the evaluation will be reported in RFLMA quarterly and annual reports of surveillance and monitoring activities or in subsequent contact records.

The composite sampling results for uranium from composite samples collected at WALPOC during CYs 2013–2014 are given below in Table 13.

*Table 13. CYs 2013–2014 Composite Sampling Results at WALPOC*

| Date–Time Start | Date–Time End | Uranium Result (µg/L) |
|---|---|---|
| 4/13/2012 10:08 | 4/21/2013 12:06 | 15.1 |
| 4/21/2013 12:06 | 4/29/2013 12:46 | 12.6 |
| 4/29/2013 12:46 | 5/3/2013 11:50 | 11.5 |
| 5/3/2013 11:50 | 5/7/2013 12:13 | 11.3 |
| 5/7/2013 12:13 | 5/17/2013 9:41 | 11.4 |
| 5/17/2013 9:41 | 6/4/2013 13:19 | 10.6 |
| 6/4/2013 13:19 | 9/12/2013 7:08 | 3.21 |
| 9/12/2013 7:08 | 9/13/2013 14:54 | NSQ |
| 9/13/2013 14:54 | 9/14/2013 11:54 | 1.99 |
| 9/14/2013 11:54 | 9/16/2013 11:20 | 2.55 |
| 9/16/2013 11:20 | 10/25/2013 14:12 | 11.5 |
| 10/25/2013 14:12 | 12/18/2013 11:39 | 16.8 |
| 12/18/2013 11:39 | 1/16/2014 13:27 | 18.8 |
| 1/16/2014 13:27 | 2/18/2014 12:39 | 22.5 |
| 2/18/2014 12:39 | 3/6/2014 10:43 | Results pending |
| 3/6/2014 10:43 | 3/10/2014 10:25 | Results pending |
| 3/10/2014 10:25 | In progress | Sample in progress |

**Notes:** Recent results from 2014 are not yet validated and are subject to revision.
NSQ = nonsufficient quantity for analysis due to a full bottle because of high runoff (September 2013; see Table 11).

### *3.1.2.2 POE Monitoring*

This objective deals with monitoring runoff and baseflow from the interior of the COU for comparison with surface-water-quality standards (see Table 1 of RFLMA Attachment 2). Water quality data are reportable under RFLMA when the applicable evaluation parameters are greater than the corresponding Table 1 values (see Appendix D). Surface water is monitored by POEs SW093, GS10, and SW027 on North Walnut Creek, South Walnut Creek, and the SID, respectively. These locations are shown on Figure 28. Sampling and data evaluation protocols are summarized in Table 14.

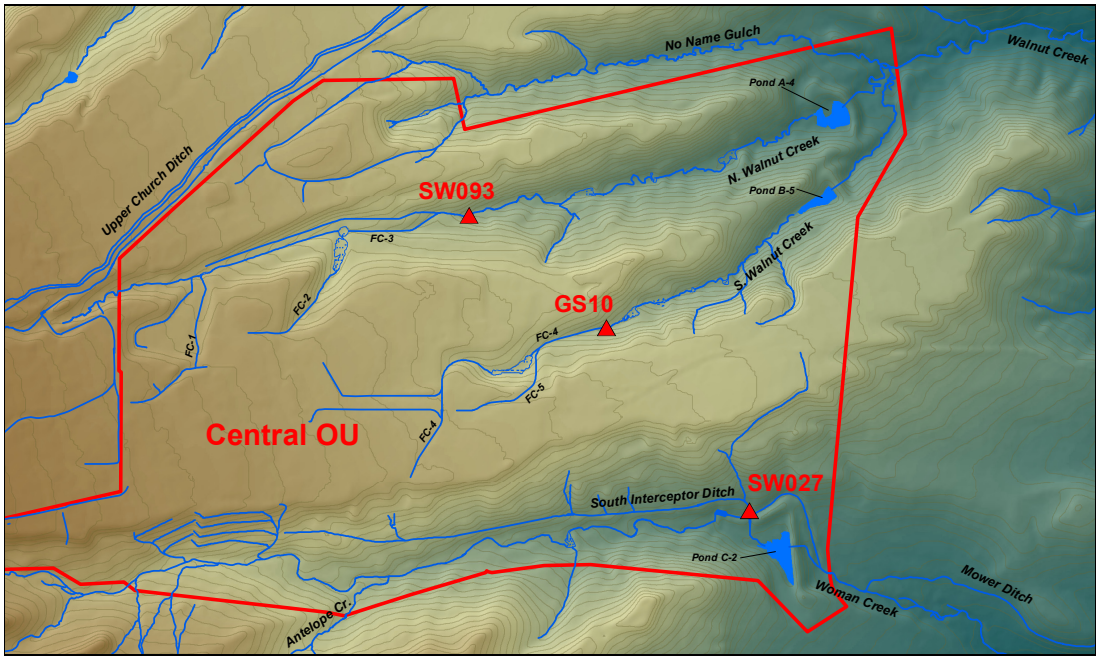



*Figure 28. POE Monitoring Locations*

*Table 14. Sampling and Data Evaluation Protocols at POEs*

| Location Code | Location Description | Sample Types/Frequencies | Analytes | Data Evaluation |
|---|---|---|---|---|
| GS10 | South Walnut Creek at Outfall of FC-4 | Continuous flow-paced composites; frequency varies (target is 30–40 per year)[a] | Total hardness, Be, Cr, Pu, Am, and U; dissolved Ag and Cd; [TSS[b]] | See Figure 6 in Appendix D |
| SW027 | SID at Pond C-2 | Continuous flow-paced composites; frequency varies (target is 10–15 per year)[a] | Total hardness, Be, Cr, Pu, Am, and U; dissolved Ag and Cd; [TSS[b]] | See Figure 6 in Appendix D |
| SW093 | North Walnut Creek at Outfall of FC-3 | Continuous flow-paced composites; frequency varies (target is 10–15 per year)[a] | Total hardness, Be, Cr, Pu, Am, and U; dissolved Ag and Cd; [TSS[b]] | See Figure 6 in Appendix D |

**Notes:**
[a] Frequency depends on available flow.
[b] Total suspended solids (TSS) is analyzed when the composite sampling period is within TSS holding-time limits.

**Abbreviations:**
Ag = silver
Be = beryllium
Cd = cadmium
TSS = total suspended solids

The following sections include summary tables and plots showing the applicable 30-day and 12-month rolling averages for the POE analytes. The evaluations include all results that were not rejected through the data verification and validation process. Data are generally presented to decimal places as reported by the laboratories. Accuracy should not be inferred; minimum detectable concentrations, activities, and analytical errors are often greater than the precision presented. When a sample has a corresponding field duplicate, the value used in calculations is the arithmetic average of the "real" and "duplicate" values. When a sample has multiple "real"

analyses (Site-requested "reruns"), the value used in calculations is the arithmetic average of the multiple "real" analyses.[4]

Refer to Appendix B, which contains the water-quality data, for further information.

***Location GS10***

Monitoring location GS10 is located on South Walnut Creek just upstream of the former B-Series Ponds (Figure 28). The central portion of the COU contributes flow to GS10 through FC-4 and FC-5.

Table 15 shows automated composite sampling information collected during September 2013. It should be noted that the sampler was full and did not collect any water for the period 9/11/2013 21:49 to 9/13/2013 15:30. Therefore, no analytical results are available for this period and, in accordance with routine evaluation protocols, this period is not included in the calculation of 12-month rolling and 30-day averages.

*Table 15. September 2013 Composite Sampling Detail for POE GS10*

| Sampling Period | Number of Grabs | Sample Results | | | Flow Volume (MG) | Flow Rates (cfs) | Comments |
|---|---|---|---|---|---|---|---|
| | | Am-241 (pCi/L) | Pu-239, 240 (pCi/L) | Uranium (µg/L) | | | |
| 8/9/2013 13:06–9/11/2013 21:49 | 109 | 0.041 | 0.033 | 5.61 | 0.85 | 0.0–15.7 | Sampler filled 9/11/2013 21:49 |
| 9/11/2013 21:49–9/13/2013 15:30 | 0 NSQ | NA | NA | NA | 16.0 (est) | 1.4–65.1 (est) | Sampler was full 9/11/2013 21:49–9/13/2013 15:30 |
| 9/13/2013 15:30–9/16/2013 12:09 | 110 | 0.0 | 0.012 | 5.55 | 3.0 | 0.2–13.2 | Sampler was full 9/15/2013 17:06–9/16/2013 12:09 |
| 9/16/2013 12:09–9/24/2013 16:26 | 41 | 0.013 | 0.010 | 12.7 | 1.2 | 0.1–1.3 | |
| 9/24/2013 16:26–10/16/2013 14:45 | 47 | 0.009 | 0.002 | 16.3 | 1.4 | 0.04–0.4 | |

**Abbreviations:**
est = estimated
MG = million gallons
NA = not analyzed
NSQ = nonsufficient quantity for analysis

Table 16 shows annual average Pu and Am activities at GS10 that were greater than the RFLMA standard of 0.15 pCi/L during active Site closure. Although a significant reduction in both Pu and Am activities was observed through 2010, recent 2011–2013 data show increased Pu and Am activities. Figure 29 shows that recent 12-month rolling averages for americium and

[4] Significant differences in values for a data pair are an indication of potential problems with sample preparation or analysis. Under these circumstances, an applicable value to be used for comparison cannot be determined with sufficient confidence to make compliance decisions. Therefore, an evaluation of the RER or RPD, depending on the analyte, is required to assess the representativeness of the sample and its usability for compliance decisions (see the RFSOG for discussion).

plutonium exceed the RFLMA standard of 0.15 pCi/L. Figure 30 shows the 12-month rolling averages for Am and Pu in the context of the entire post-closure period.

*Table 16. Annual Volume-Weighted Average Radionuclide Activities at GS10 for 1997–2013*

| Calendar Year | Volume-Weighted Average | | |
|---|---|---|---|
| | Am-241 (pCi/L) | Pu-239, 240 (pCi/L) | Total U (µg/L) |
| 1997 | 0.266 | 0.260 | 4.05 |
| 1998 | 0.109 | 0.158 | 4.28 |
| 1999 | 0.274 | 0.139 | 3.76 |
| 2000 | 0.421 | 0.195 | 3.20 |
| 2001 | 0.075 | 0.080 | 4.14 |
| 2002 | 0.087 | 0.061 | 4.03 |
| 2003 | 0.117 | 0.113 | 3.86 |
| 2004 | 0.136 | 0.314 | 3.64 |
| 2005 | 0.185 | 0.238 | 12.0 |
| 2006 | 0.010 | 0.014 | 19.3 |
| 2007 | 0.010 | 0.020 | 16.5 |
| 2008 | 0.025 | 0.020 | 22.9 |
| 2009 | 0.009 | 0.019 | 13.4 |
| 2010 | 0.007 | 0.012 | 14.4 |
| 2011 | 0.319 | 0.207 | 20.7 |
| 2012 | 0.260 | 0.175 | 24.1 |
| 2013 | 0.579 | 0.356 | 18.2 |
| **Total (1997–2013)** | 0.184 | 0.160 | 7.35 |

Figure 31 shows that the 12-month rolling average for uranium exceeded the RFLMA standard of 16.8 µg/L during portions of CY 2013.

An updated discussion of these reportable conditions is presented below.

The composite sampling results for americium, plutonium, and uranium from composite samples collected at GS10 during CY 2012–2014 are given below in Table 17. All individual americium and plutonium results have been below 0.15 pCi/L since August 2013.

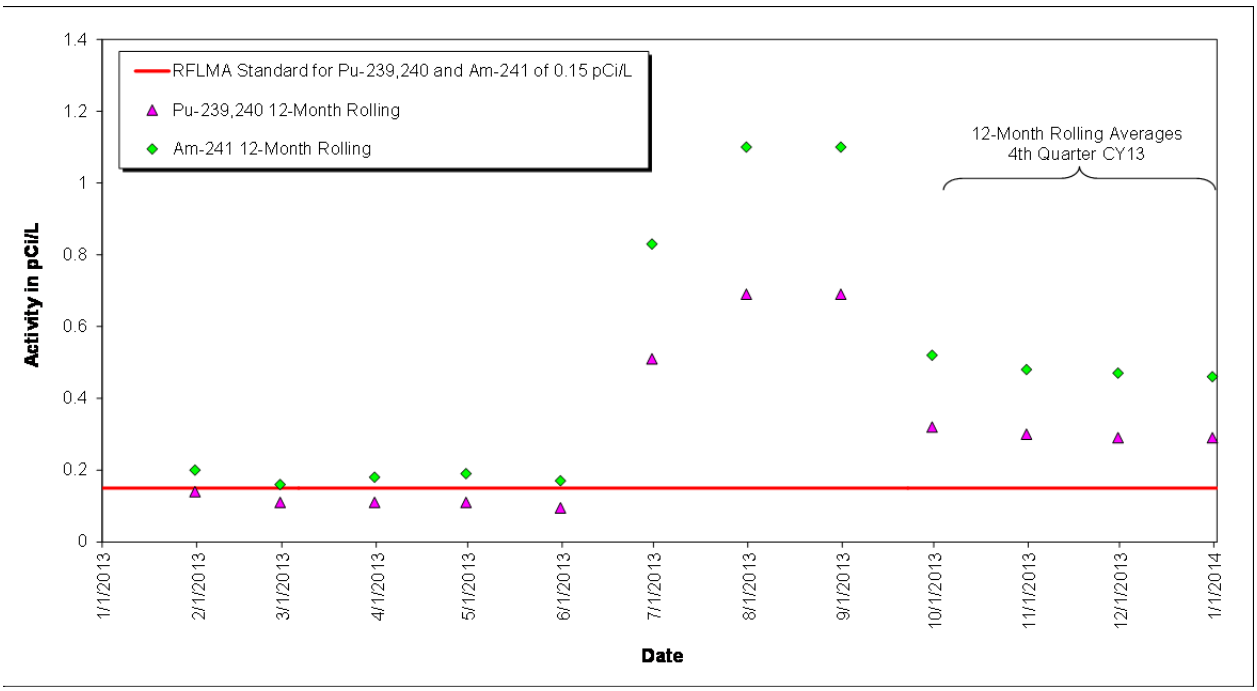



*Figure 29. Volume-Weighted 12-Month Rolling Average Pu and Am Activities at GS10: Year Ending Fourth Quarter CY 2013*

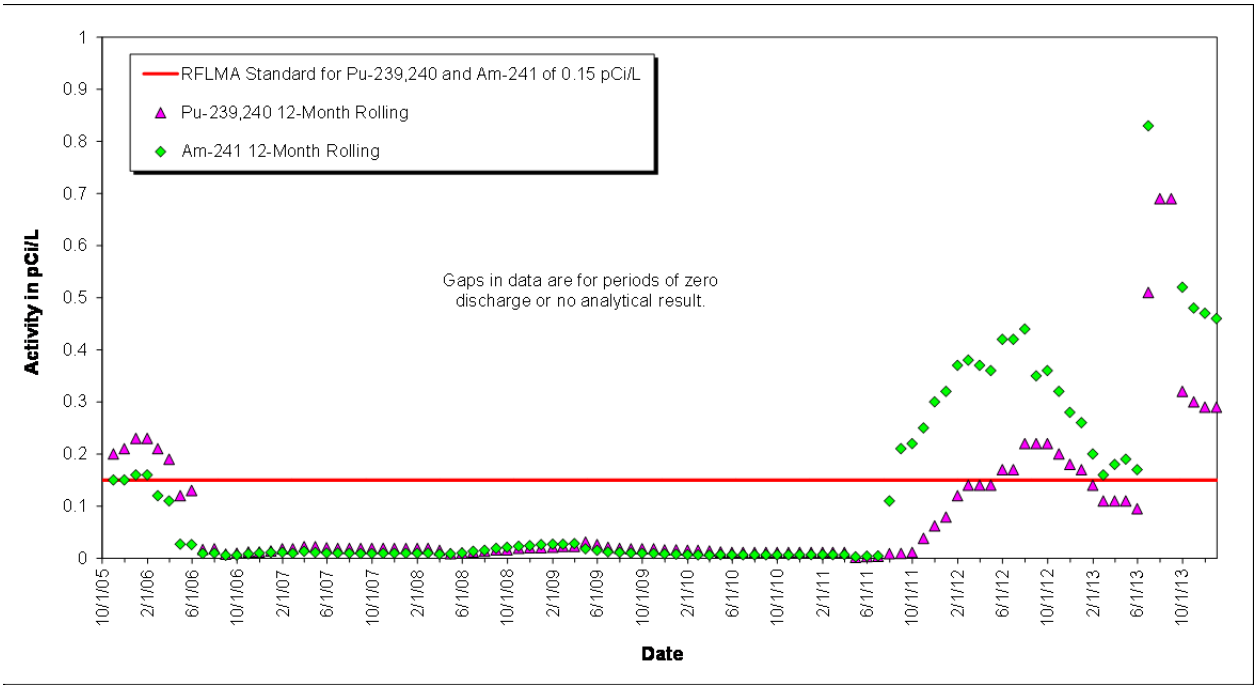



*Figure 30. Volume-Weighted 12-Month Rolling Average Pu and Am Activities at GS10: Post-Closure Period*

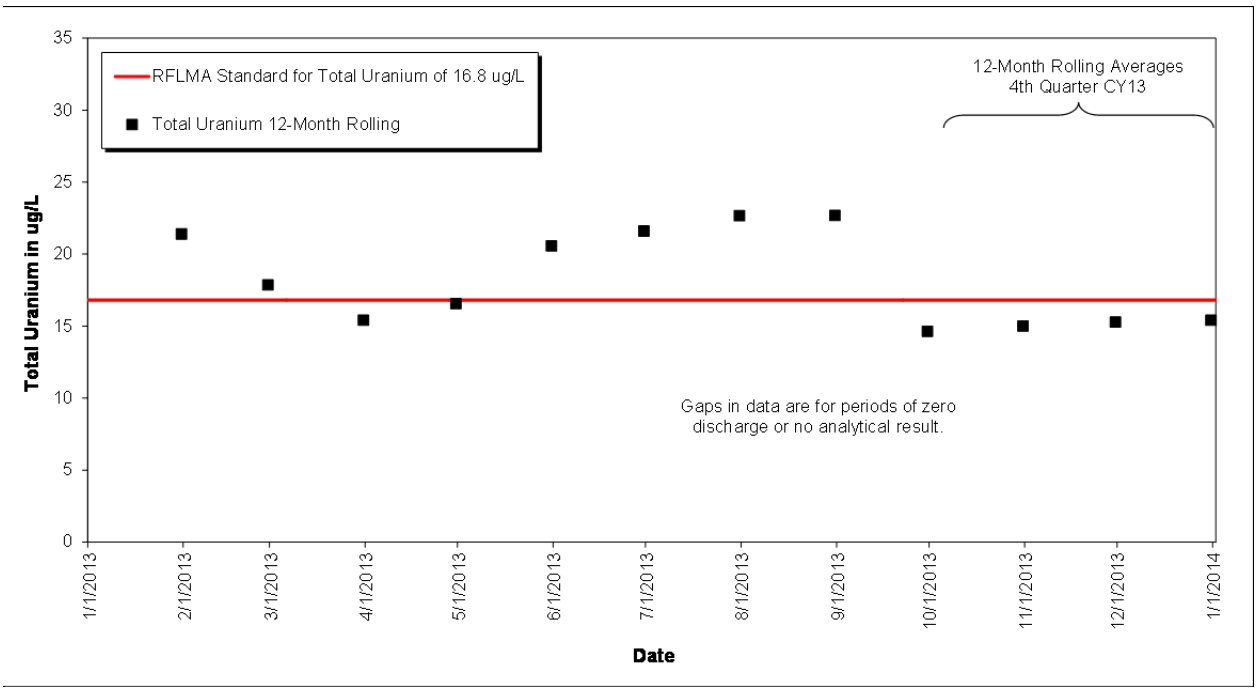



*Figure 31. Volume-Weighted 12-Month Rolling Average Total U Concentrations at GS10: Year Ending Fourth Quarter CY 2013*

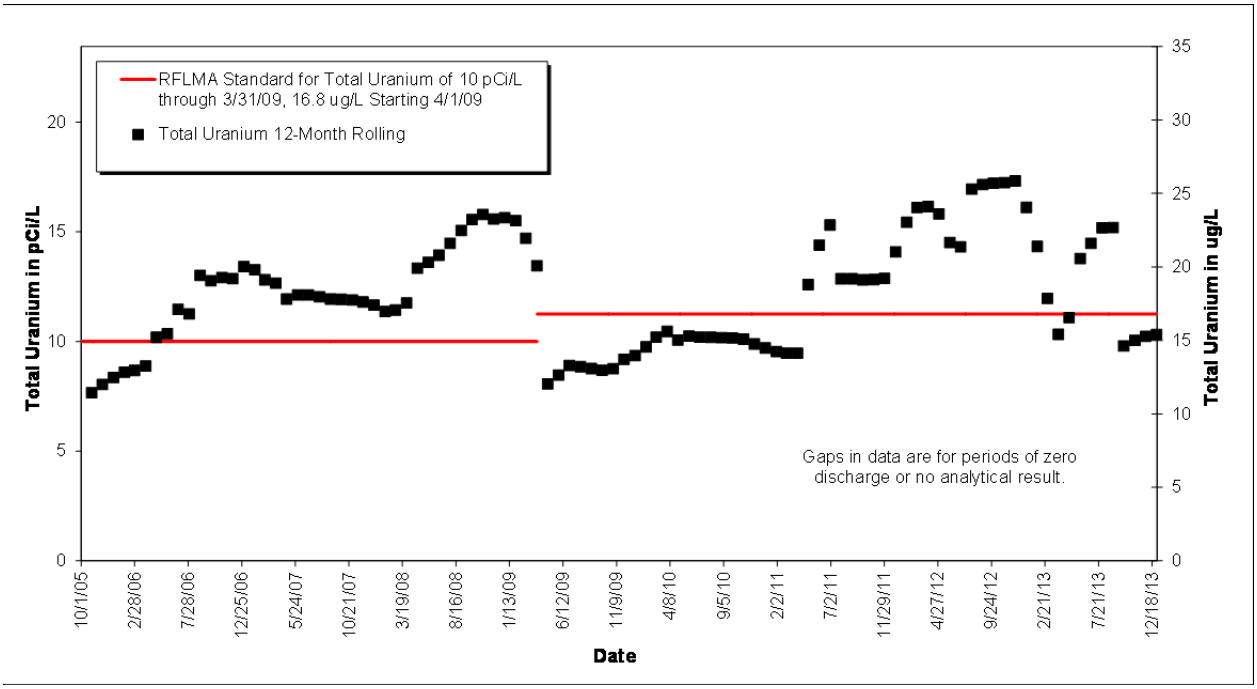



*Figure 32. Volume-Weighted 12-Month Rolling Average Total U Concentrations at GS10: Post-Closure Period*

*Table 17. CY 2012–2014 Composite Sampling Results at GS10*

| Date–Time Start | Date–Time End | Am-241 Result (pCi/L) | Pu-239, 240 Result (pCi/L) | Uranium Result (µg/L) |
|---|---|---|---|---|
| 12/14/2011–12:17 | 1/5/2012–13:19 | 0.435 | 0.238 | 44.5 |
| 1/5/2012–13:19 | 1/23/2012–10:43 | 1.140 | 0.735 | 49.7 |
| 1/23/2012–10:43 | 2/2/2012–12:36 | 0.037 | 0.021 | 38.3 |
| 2/2/2012–12:36 | 2/21/2012–11:18 | 0.776 | 0.466 | 49.0 |
| 2/21/2012–11:18 | 2/24/2012–9:34 | 0.214 | 0.267 | 25.1 |
| 2/24/2012–9:34 | 3/6/2012–12:04 | 0.074 | 0.050 | 33.9 |
| 3/6/2012–12:04 | 3/21/2012–9:37 | 0.150 | 0.114 | 38.7 |
| 3/21/202–9:37 | 4/4/2012–10:20 | 0.318 | 0.246 | 35.5 |
| 4/4/2012–10:20 | 4/25/2012–9:31 | 0.052 | 0.034 | 27.6 |
| 4/25/2012–9:31 | 5/9/2012–13:36 | 0.478 | 0.264 | 16.1 |
| 5/9/2012–13:36 | 5/23/2012–9:37 | 0.159 | 0.107 | 12.9 |
| 5/23/2012–9:37 | 6/14/2012–10:08 | 0.034 | 0.033 | 8.98 |
| 6/14/2012–10:08 | 7/9/2012–11:53 | 0.085 | 0.049 | 4.68 |
| 7/9/2012–11:53 | 7/26/2012–8:58 | 0.224 | 0.173 | 7.07 |
| 7/26/2012–8:58 | 9/12/2012–13:06 | 0.464 | 0.314 | 4.20 |
| 9/12/2012–13:06 | 10/24/2012–10:19 | 0.012 | 0.009 | 3.75 |
| 10/24/2012–10:19 | 12/4/2012–10:44 | 0.080 | 0.043 | 7.16 |
| 12/4/2012–10:44 | 1/10/2013–10:39 | 0.054 | 0.032 | 12.3 |
| 1/10/2013–10:39 | 3/4/2013–11:22 | NSQ | NSQ | NSQ |
| 3/4/2013–11:22 | 4/1/2013–10:35 | 0.724 | 0.325 | 39.5 |
| 4/1/2013–10:35 | 4/20/2013–18:54 | 0.183 | 0.110 | 28.8 |
| 4/20/2013–18:54 | 4/24/2013–9:51 | 0.221 | 0.131 | 27.2 |
| 4/24/2013–9:51 | 4/29/2013–12:21 | 0.133 | 0.085 | 26.3 |
| 4/29/2013–12:21 | 5/3/2013–12:24 | 0.191 | 0.080 | 36.5 |
| 5/3/2013–12:24 | 5/8/2013–9:01 | 0.353 | 0.201 | 34.2 |
| 5/8/2013–9:01 | 5/16/2013–11:04 | 0.038 | 0.029 | 18.9 |
| 5/16/2013–11:04 | 5/28/2013–10:54 | 0.023 | 0.014 | 26.8 |
| 5/28/2013–10:54 | 6/14/2013–9:15 | 0.145 | 0.058 | 19.4 |
| 6/14/2013–9:15 | 7/3/2013–7:36 | 8.410 | 5.275 | 21.9 |
| 7/3/2013–7:36 | 8/9/2013–13:06 | 4.540 | 2.820 | 28.8 |
| 8/9/2013–13:06 | 9/11/2013–21:49 | 0.041 | 0.033 | 5.61 |
| 9/11/2013–21:49 | 9/13/2013–15:30 | NSQ | NSQ | NSQ |
| 9/13/2013–15:30 | 9/16/2013–12:09 | 0.000 | 0.012 | 5.55 |
| 9/16/2013–12:09 | 9/24/2013–16:26 | 0.013 | 0.010 | 12.7 |
| 9/24/2013–16:26 | 10/16/2013–14:45 | 0.009 | 0.002 | 16.3 |
| 10/16/2013–14:45 | 11/13/2013–13:38 | 0.042 | 0.004 | 18.0 |
| 11/13/2013–13:38 | 1/2/2014–13:09 | 0.000 | 0.011 | 17.3 |
| 1/2/2014–13:09 | 1/29/2014–12:55 | 0.020 | 0.000 | 20.7 |
| 1/29/2014–12:55 | In progress | In progress | In progress | In progress |

**Notes:** NSQ = nonsufficient quantity for analysis due to ice (January–March 2013) or a full bottle due to high runoff (September 2013).
Recent results from 2014 are not yet validated and are subject to revision.

Table 18 shows that all of the annual average metals concentrations were less than the standards/PQLs. Additionally, the long-term metals averages (1997–2013) were all less than the RFLMA standards/PQLs. Figure 33 shows that none of the 85th percentile 30-day average metals concentrations were reportable for the year.

*Table 18. Annual Volume-Weighted Average Hardness and Metals Concentrations at GS10 for 1997–2013*

| Calendar Year | Volume-Weighted Average Concentration (µg/L) | | | | |
|---|---|---|---|---|---|
| | Hardness (mg/L) | Total Be | Dissolved Cd | Total Cr | Dissolved Ag |
| 1997 | 138 | 0.50 | 0.09 | 4.05 | 0.11 |
| 1998 | 162 | 0.15 | 0.13 | 3.32 | 0.20 |
| 1999 | 139 | 0.16 | 0.07 | 4.08 | 0.15 |
| 2000 | 181 | 0.21 | 0.11 | 3.65 | 0.11 |
| 2001 | 222 | 0.32 | 0.11 | 5.95 | 0.11 |
| 2002 | 277 | 0.24 | 0.09 | 5.38 | 0.10 |
| 2003 | 228 | 0.22 | 0.10 | 6.91 | 0.12 |
| 2004 | 227 | 0.60 | 0.10 | 13.1 | 0.13 |
| 2005 | 401 | 0.88 | 0.06 | 17.5 | 0.15 |
| 2006 | 604 | 0.50 | 0.05 | 0.74 | 0.10 |
| 2007 | 383 | 0.50 | 0.10 | 0.89 | 0.10 |
| 2008 | 517 | 0.45 | 0.07 | 1.20 | 0.09 |
| 2009 | 351 | 0.50 | 0.06 | 1.69 | 0.10 |
| 2010 | 314 | 0.50 | 0.06 | 1.00 | 0.10 |
| 2011 | 395 | 0.50 | 0.06 | 0.80 | 0.10 |
| 2012 | 562 | 0.50 | 0.06 | 0.90 | 0.10 |
| 2013 | 431 | 0.50 | 0.06 | 1.50 | 0.11 |
| **Total (1997–2013)** | 247 | 0.38 | 0.09 | 5.22 | 0.13 |

**Abbreviations:**
Ag = silver
Be = beryllium
Cd = cadmium

*Reportable Americium and Plutonium Activities at GS10*

Formal notification of a reportable condition for 12-month rolling average americium values at GS10 was made on December 12, 2011. Formal notification of a reportable condition for 12-month rolling average plutonium values at GS10 was made on July 24, 2012.

The above notifications were triggered by routine data evaluation performed in accordance with RFLMA Attachment 2, Figure 6, "Points of Evaluation," which resulted in a 12-month rolling average value for americium of 0.21 pCi/L on August 31, 2011. Similarly, data evaluation resulted in a 12-month rolling average value for plutonium of 0.17 pCi/L on May 31, 2012. As of December 31, 2013, using validated data, the 12-month rolling average for both americium and plutonium remained above the standard at 0.46 pCi/L and 0.29 pCi/L, respectively. The applicable RFLMA Table 1 standard for americium and plutonium is 0.15 pCi/L.

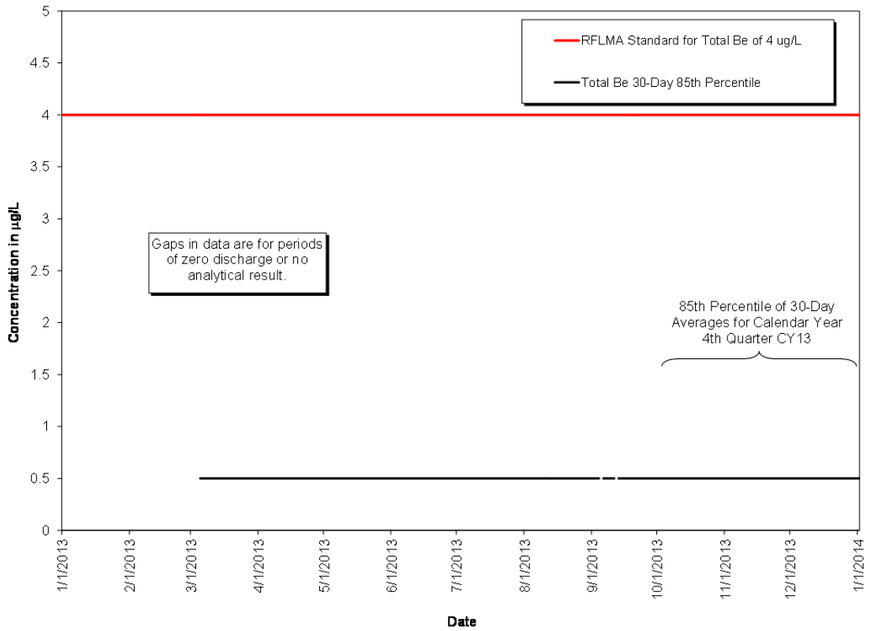
Downstream monitoring at GS08, WALPOC, and GS03 continue to show plutonium and americium activities below the RFLMA standard of 0.15 pCi/L. Recent analytical results from these downstream locations are given in Table 19. The latest available 12-month rolling and 30-day average plutonium and americium activities calculated from flow-paced composite samples are shown on Figure 34 and Figure 35.

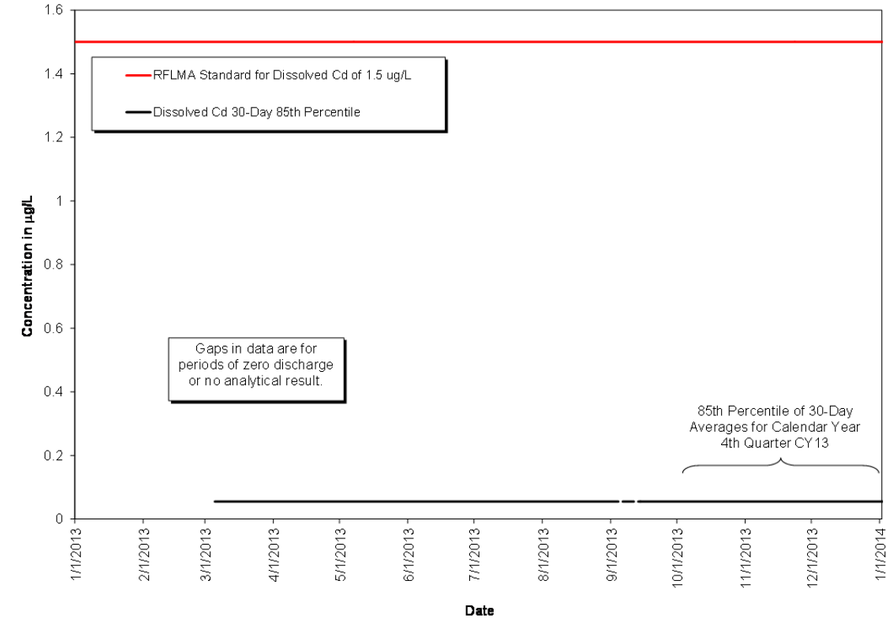
*Table 19. Recent Plutonium and Americium Flow-Paced Composite Sample Results*

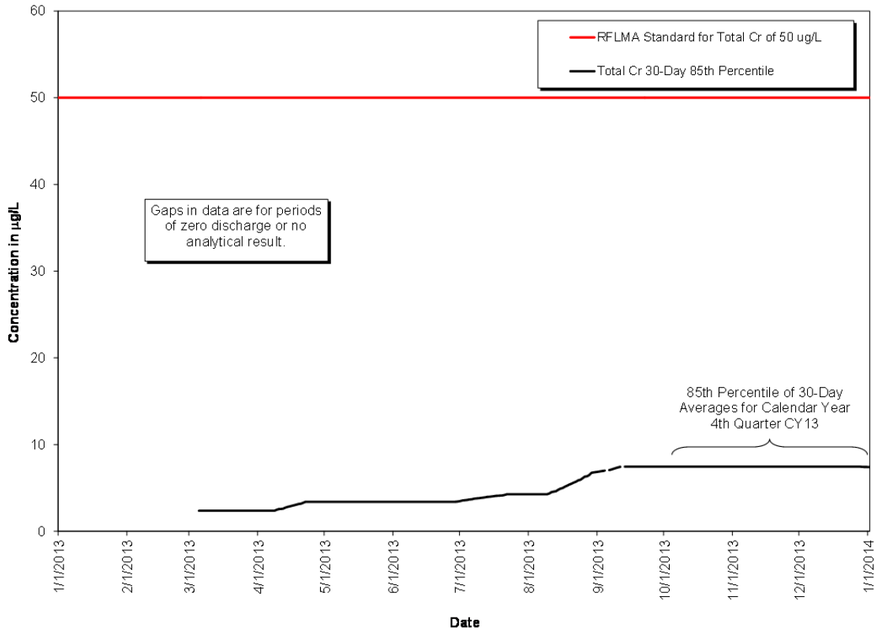
| GS08 | | WALPOC | | GS03 | |
|---|---|---|---|---|---|
| **Sample Period** | **Result Am/Pu (pCi/L)** | **Sample Period** | **Result Am/Pu (pCi/L)** | **Sample Period** | **Result Am/Pu (pCi/L)** |
| 1/5–2/1/2012 | 0.001/0.0 | 1/3–2/23/2012 | 0.0/0.009 | 1/3–2/10/2012 | 0.006/0.003 |
| 2/1–4/4/2012 | 0.0/0.0 | | | 2/10–2/23/2012 | 0.0/0.003 |
| | | 2/23–3/6/2012 | 0.003/0.001 | 2/23–2/27/2012 | 0.0/0.012 |
| | | | | 2/27–3/1/2012 | 0.0/0.0 |
| | | 3/6–3/21/2012 | 0.004/0.009 | 3/1–3/15/2012 | 0.0/0.002 |
| | | 3/21–4/13/2012 | 0.018/0.0 | 3/15–4/4/2012 | 0.0/0.005 |
| 4/4/2012–4/25/2013 | 0.016/0.055 | 4/13/2012–4/21/2013 | 0.003/0.007 | 4/4/2012–1/15/2013 | 0.0/0.0 |
| | | | | 1/15–4/21/2013 | 0.008/0.006 |
| | | 4/21–4/29/2013 | 0.010/0.007 | 4/21–4/25/2013 | 0.009/0.012 |
| 4/25–5/7/2013 | 0.010/0.004 | | | 4/25–4/29/2013 | 0.0/0.009 |
| | | 4/29–5/3/2013 | 0.001/0.012 | 4/29–5/3/2013 | 0.0/0.012 |
| | | 5/3–5/7/2013 | 0.0/0.005 | 5/3–5/7/2013 | 0.012/0.0 |
| 5/7–6/4/2013 | 0.065/0.037 | 5/7–5/17/2013 | 0.022/0.016 | 5/7–5/17/2013 | 0.036/0.016 |
| | | 5/17–6/4/2013 | 0.010/0.0 | 5/17–6/25/2013 | 0.0/0.009 |
| 6/4–9/12/2013 | 0.031/0.039 | 6/4–9/12/2013 | 0.007/0.026 | 6/25–9/12/2013 | 0.016/0.036 |
| 9/12–9/14/2013 | NSQ | 9/12–9/13/2013 | NSQ | 9/12–9/14/2013 | 0.032/0.042 |
| 9/14–9/15/2013 | 0.017/0.006 | 9/13–9/14/2013 | 0.028/0.039 | 9/14–10/2/2013 | 0.011/0.017 |
| 9/15–9/17/2013 | NSQ | 9/14–9/16/2013 | 0.013/0.025 | | |
| 9/17–9/24/2013 | 0.008/0.004 | 9/16–10/25/2013 | 0.010/0.010 | | |
| 9/24–10/9/2013 | 0.0/0.001 | | | 10/2–10/7/2013 | 0.0/0.004 |
| 10/9–11/14/2013 | 0.033/0.005 | 10/25–12/18/2013 | 0.0/0.014 | 10/7–10/25/2013 | 0.0/0.002 |
| 11/14/2013–1/16/2014 | 0.007/0.013 | 12/18/2013–1/16/2014 | 0.008/0.002 | 10/25/2013–1/2/2014 | 0.002/0.0 |
| 1/16–2/13/2014 | [a] | 1/16–2/18/2014 | 0.0/0.003 | 1/2–3/10/2014 | [a] |
| 2/13–3/10/2014 | [a] | 2/18–3/6/2014 | [a] | | |
| | | 3/6–3/10/2014 | [a] | | |
| 3/10/2014– | [b] | 3/10/2014– | [b] | 3/10/2014– | [b] |

**Notes:** Some results are preliminary and subject to revision; negative results are set to zero.
NSQ = nonsufficient quantity for analysis (no analytical results).
[a] Results pending
[b] Sample in progress

An aliquot from each flow-paced composite sample routinely being collected at B5INFLOW (supporting the GS10 uranium evaluation; Figure 36) is also being held for plutonium and americium analysis if upstream sample results at GS10 suggest analysis would inform the evaluation. To date, 10 plutonium and americium results have been obtained and all results are well below the RFLMA standard of 0.15 pCi/L. The highest single result is 0.012 pCi/L of americium for the March 14–April 1, 2013, composite sample.



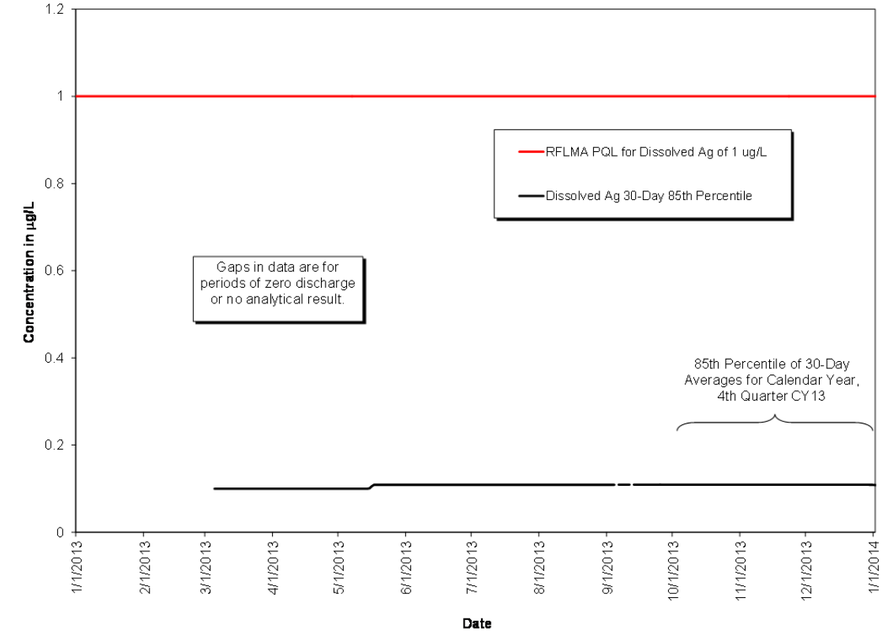




*Figure 33. Volume-Weighted Average Metals Compliance Values at GS10: Year Ending Fourth Quarter CY 2013*

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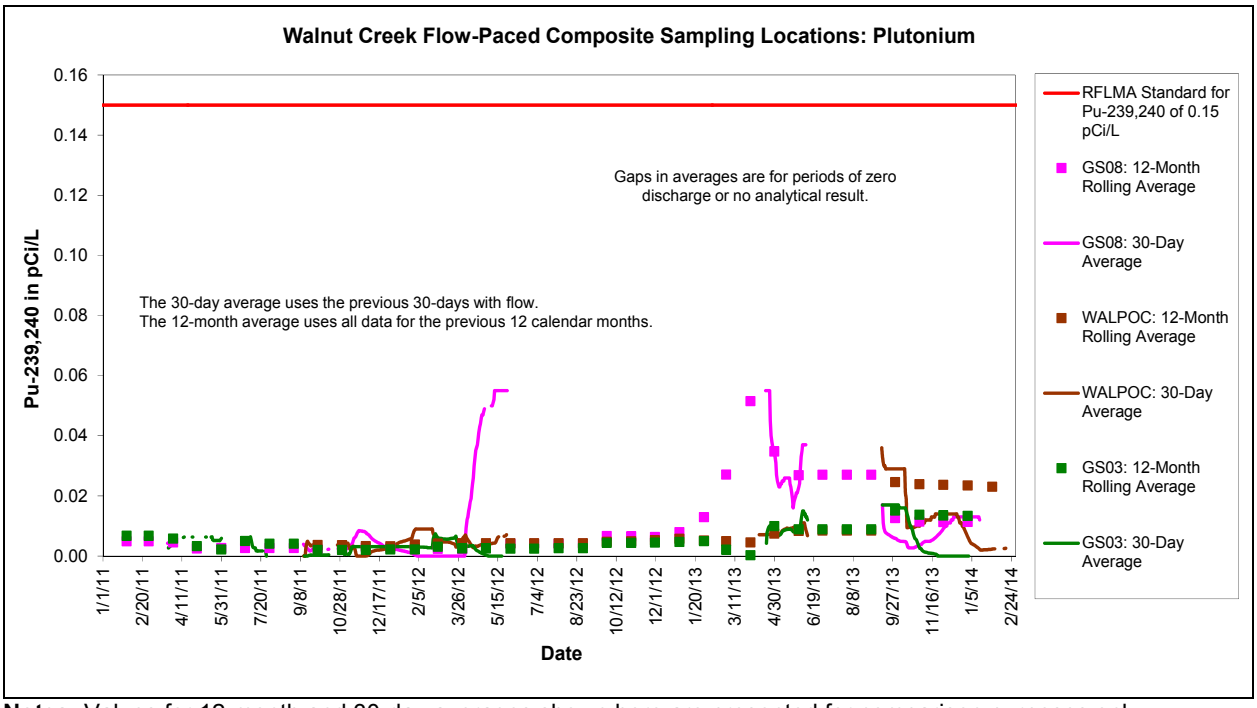
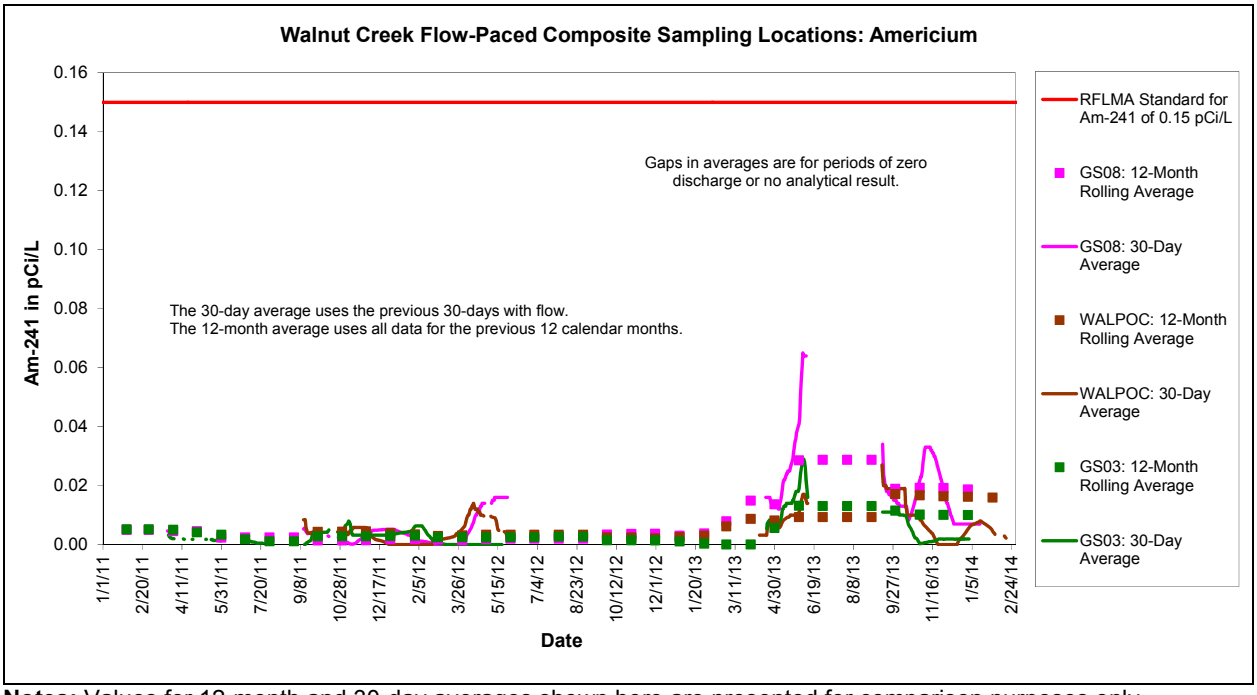



**Notes:** Values for 12-month and 30-day averages shown here are presented for comparison purposes only.

*Figure 34. Average Plutonium Activities at Locations Downstream of GS10*




**Notes:** Values for 12-month and 30-day averages shown here are presented for comparison purposes only.

*Figure 35. Average Americium Activities at Locations Downstream of GS10*

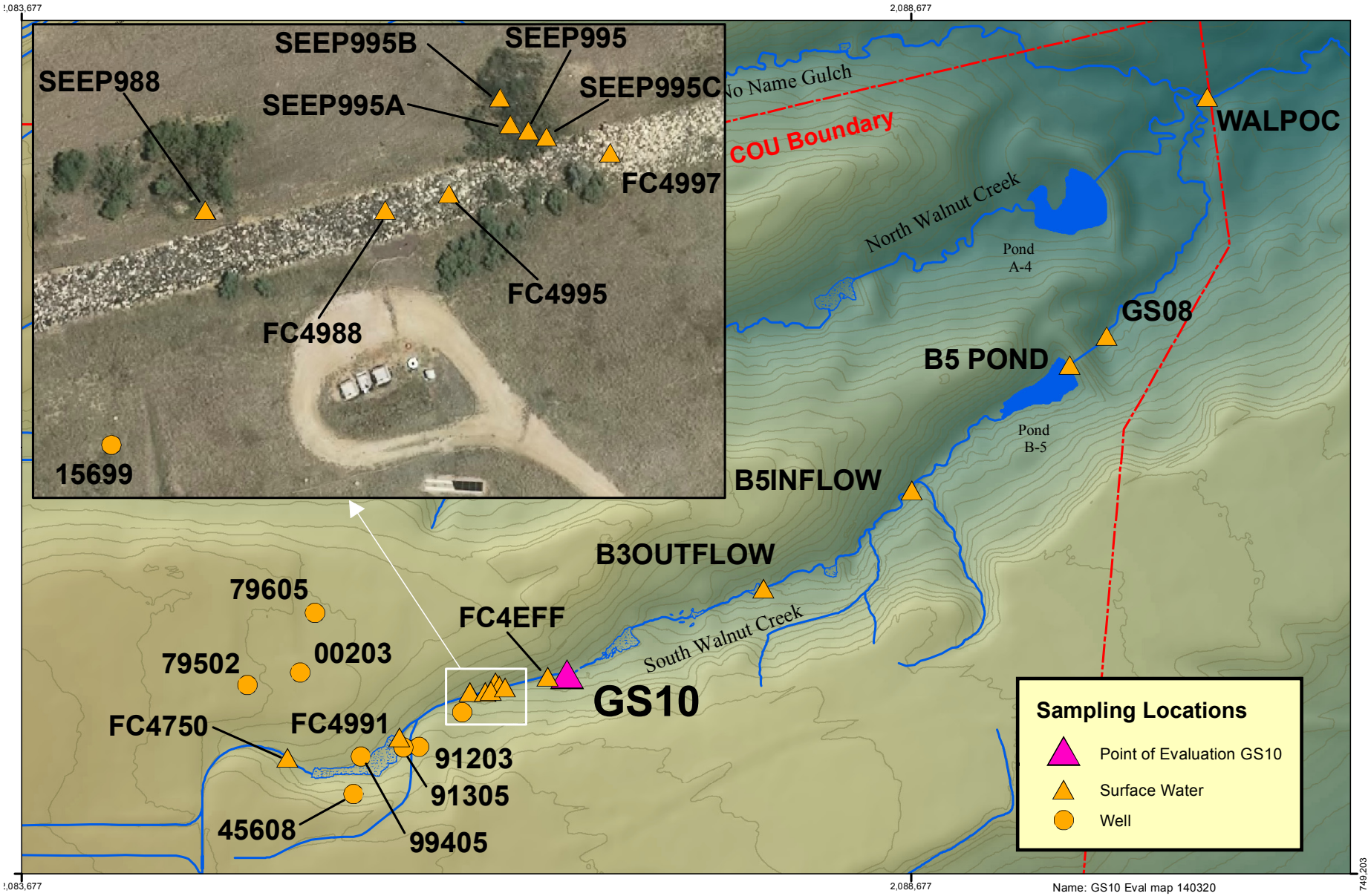



*Figure 36. Evaluation Sampling Location Map for GS10 Drainage Area*

Many additional water samples have been collected both upstream and downstream of GS10. Although further evaluation and consultation is ongoing, the following list summarizes action to date:

- Rocky Flats site staff walked down the GS10 drainage on November 16, 2011, to see if any obvious conditions were promoting potential soil erosion. Some thin vegetation spots were noted on the north side of the riprap upstream of GS10. Some reseeding/erosion matting may have been useful, but given that the current water quality does not appear to be a result of soil transport, additional erosion controls were not implemented. A closer examination of the drainage to focus on seeps and former utility corridors was conducted; representatives from DOE and EPA were in attendance. Additional seed was spread and raked into the ground along the riprap areas upstream of GS10 in FC-4 and at the confluence of FC-4/FC-5 on November 29, 2011.
- Historical plutonium and americium well data from wells in the drainage have been reviewed. The review gave no indication that additional well sampling would be informative at this stage.
- The previous GS10 evaluation reports have been reviewed for information that may aid this current evaluation.
- Several of the sampling locations already designated for evaluation of the reportable condition for uranium at GS10 (FC4991, GS10, and B3OUTFLOW; Figure 36) were grab-sampled on November 25, 2011. Several seep sampling locations (SEEP995, SEEP995A, SEEP995B, and SEEP995C; Figure 36) were also grab-sampled on November 25, 2011. The Seep 995 area was chosen for sampling for the following reasons:
  - GS10 samples with elevated plutonium/americium were collected during low-flow conditions, not during high-flow conditions when soil and sediment would be expected to be transported.
  - Visible surface flow from this seep was observed reaching FC-4.
  - This seep, which has increased in size since closure, is in the same location of the former Wastewater Treatment Plant outfall and a former utility corridor that included Original Process Waste Lines.

  The results in Table 20 suggest that the SEEP995 locations could be contributing plutonium and americium to GS10. However, activities at GS10 for this grab sample are low.

*Table 20. Grab Sampling Results Upstream of GS10: November 25, 2011*

| Location Code | SEEP995 | SEEP995A | SEEP995B | SEEP995C |
|---|---|---|---|---|
| Pu [pCi/L] | 0.096 | 0.156 | 0.157 | 0.105 |
| Am [pCi/L] | 0.066 | 0.127 | 0.035 | 0.052 |

| | Upstream | ➡ | Downstream |
|---|---|---|---|
| Location Code | FC4991 | GS10 | B3OUTFLOW |
| Pu [pCi/L] | 0.006 | 0.030 | 0.005 |
| Am [pCi/L] | 0.005 | 0.012 | 0.005 |

The arrow from the upper table indicates the relative location of the SEEP995 locations along FC-4.

Additional samples were collected at the SEEP995 locations when water was available (i.e., unfrozen seep flow not affected by surface flow, such as snowmelt). Table 21 through Table 24 summarize sample results. While the activities are not as high as seen at GS10, the results do suggest that the SEEP995 area could be contributing some plutonium and americium to GS10.

For the January 24, 2012, sample from SEEP995A, analysis was performed for total plutonium and americium (unfiltered) and also for filtered plutonium and americium (sample filtered with 0.45-micron filter) to evaluate for the possibility of colloidal transport. However, the low activities for the January 24 samples do not provide additional insight into colloidal transport.

- The GS10 evaluation was discussed during a RFLMA Parties meeting on February 18, 2014. Based on seep water sampling results to date, along with the recently lower observed activities at GS10, the RLFMA Parties concluded that continued sampling or any additional investigation actions for this area would be unlikely to further inform the ongoing GS10 evaluation. Therefore, in accordance with Contact Record 2011-08, the RFLMA Parties agreed to discontinue sampling the former Building 995 hillside seeps as part of the evaluation for the GS10 americium reportable condition. Monitoring of the remaining evaluation locations discussed in Contact Record 2011-08 will continue.

*Table 21. Americium Grab Sampling Results for SEEP995 Locations (pCi/L)*

| Sample Date(s) | SEEP995 | SEEP995A | SEEP995B | SEEP995C |
|---|---|---|---|---|
| **11/25/2011** | 0.066 | 0.127 | 0.035 | 0.052 |
| **1/6/2012** | --- | 0.052 | --- | --- |
| **1/24/2012** | --- | 0.000 | --- | --- |
| **3/6/2012** | --- | 0.003 | --- | --- |
| **4/13/2012** | --- | 0.040 | --- | --- |
| **2/14/2013** | --- | --- | --- | 0.020 |
| **2/20/2013** | 0.002 | --- | --- | --- |
| **3/26/2013** | 0.028 | --- | --- | --- |
| **5/15/2013** | 0.008 | 0.045 | 0.008 | --- |
| **5/28/2013** | 0.120 | 0.074 | 0.007 | --- |
| **6/10-6/20** | 0.135 | 0.138 | 0.079 | --- |
| **9/19/2013** | 0.023 | 0.033 | 0.013 | 0.005 |
| **9/24/2013** | 0.012 | 0.010 | 0.017 | 0.000 |
| **9/30/2013** | 0.069 | 0.083 | 0.045 | 0.077 |
| **10/10/2013** | 0.016 | 0.041 | 0.156 | 0.045 |
| **10/17/2013** | 0.055 | 0.056 | 0.010 | 0.071 |
| **10/24/2013** | 0.054 | 0.021 | 0.031 | 0.022 |
| **10/31/2013** | 0.071 | 0.016 | 0.004 | 0.079 |
| **11/14/2013** | 0.012 | 0.089 | 0.013 | 0.007 |
| **11/25/2013** | 0.009 | 0.203 | 0.002 | 0.003 |
| **12/30/2013** | 0.002 | 0.012 | 0.009 | --- |

**Notes:** --- = not sampled

*Table 22. Plutonium Grab Sampling Results for SEEP995 Locations (pCi/L)*

| Sample Date(s) | SEEP995 | SEEP995A | SEEP995B | SEEP995C |
|---|---|---|---|---|
| **11/25/2011** | 0.096 | 0.156 | 0.157 | 0.105 |
| **1/6/2012** | --- | 0.079 | --- | --- |
| **1/24/2012** | --- | 0.007 | --- | --- |
| **3/6/2012** | --- | 0.004 | --- | --- |
| **4/13/2012** | --- | 0.052 | --- | --- |
| **2/14/2013** | --- | --- | --- | 0.043 |
| **2/20/2013** | 0.051 | --- | --- | --- |
| **3/26/2013** | 0.058 | --- | --- | --- |
| **5/15/2013** | 0.007 | 0.028 | 0.007 | --- |
| **5/28/2013** | 0.135 | 0.157 | 0.030 | --- |
| **6/10-6/20** | 0.179 | 0.350 | 0.122 | --- |
| **9/19/2013** | 0.040 | 0.069 | 0.045 | 0.022 |
| **9/24/2013** | 0.015 | 0.015 | 0.022 | 0.000 |
| **9/30/2013** | 0.190 | 0.245 | 0.101 | 0.108 |
| **10/10/2013** | 0.024 | 0.068 | 0.512 | 0.059 |
| **10/17/2013** | 0.150 | 0.123 | 0.023 | 0.145 |
| **10/24/2013** | 0.083 | 0.055 | 0.088 | 0.058 |
| **10/31/2013** | 0.129 | 0.054 | 0.015 | 0.143 |
| **11/14/2013** | 0.004 | 0.190 | 0.033 | 0.000 |
| **11/25/2013** | 0.000 | 0.452 | 0.013 | 0.019 |
| **12/30/2013** | 0.002 | 0.016 | 0.127 | --- |

**Notes:** --- = not sampled

*Table 23. Uranium Grab Sampling Results for SEEP995 Locations (µg/L)*

| Sample Date(s) | SEEP995 | SEEP995A | SEEP995B | SEEP995C |
|---|---|---|---|---|
| **11/25/2011** | --- | --- | --- | --- |
| **1/6/2012** | --- | 12.3 | --- | --- |
| **1/24/2012** | --- | 13.7 | --- | --- |
| **3/6/2012** | --- | 11.2 | --- | --- |
| **4/13/2012** | --- | 7.8 | --- | --- |
| **2/14/2013** | --- | --- | --- | 22.4 |
| **2/20/2013** | 23.9 | --- | --- | --- |
| **3/26/2013** | 23.4 | --- | --- | --- |
| **5/15/2013** | 14.1 | 10.9 | 11.6 | --- |
| **5/28/2013** | 14.7 | 9.4 | 11.0 | --- |
| **6/10-6/20** | 12.6 | 7.8 | 11.1 | --- |
| **9/19/2013** | 11.7 | 10.2 | 12.0 | 22.3 |
| **9/24/2013** | 14.8 | 14.4 | 14.9 | 26.5 |
| **9/30/2013** | 16.6 | 19.1 | 16.0 | 19.2 |
| **10/10/2013** | 18.2 | 19.1 | 21.9 | 16.8 |
| **10/17/2013** | 24.2 | 23.1 | 22.4 | 19.7 |
| **10/24/2013** | 22.0 | 21.4 | 23.9 | 19.6 |
| **10/31/2013** | 24.0 | 23.5 | 23.7 | 19.3 |
| **11/14/2013** | 18.5 | 21.3 | 19.2 | 16.0 |
| **11/25/2013** | 23.1 | 27.8 | 23.1 | 20.5 |
| **12/30/2013** | 19.5 | 21.1 | 18.0 | |

**Notes:** --- = not sampled

*Table 24. Filtered Results for SEEP995A*

| SEEP995A | 1/24/12 (total) | 1/24/12 (filtered) |
|---|---|---|
| **Pu [pCi/L]** | 0.007 | 0.000 |
| **Am [pCi/L]** | 0.000 | 0.000 |
| **U [ug/L]** | 13.7 | NA |

**Abbreviations:**
NA = not analyzed

- To evaluate whether there could be other seep-related contributions along FC-4 that are not visible due to the thick riprap, several sampling locations were established along FC-4 where water could be reached between the rocks (Figure 36). These locations were originally grab-sampled on March 6, 2012, for both total and filtered analytes.

  The results in Table 25 show low plutonium and americium activities and no significant spatial trends for any of the analytes. These results are presented in Table 26.

*Table 25. Grab Sampling Results in FC-4 Upstream of GS10: March 6, 2012*

| Location Code | SEEP995A |
|---|---|
| **Pu [pCi/L]** | 0.004 |
| **Am [pCi/L]** | 0.003 |
| **U [ug/L]** | 11.2 |
| **Alk as CaCO3 [mg/L]** | 143 |
| **Hardness as CaCO3 [mg/L]** | 384 |
| **pH** | 7.84@4.1C |
| **TSS [mg/L]** | 6 |

| | **Upstream** | ➡ | ➡ | **Downstream** |
|---|---|---|---|---|
| **Location Code** | FC4988 | FC4995 | FC4997 | FC4EFF |
| **Pu [pCi/L]** | 0.026 | 0.000 | 0.007 | 0.004 |
| **Am [pCi/L]** | 0.002 | 0.001 | 0.002 | 0.000 |
| **U [ug/L]** | 19.0 | 19.1 | 18.7 | 18.7 |
| **Alk as CaCO3 [mg/L]** | 261 | 256 | 246 | 246 |
| **Hardness as CaCO3 [mg/L]** | 478 | 468 | 464 | 462 |
| **pH** | 7.74@3.5C | 7.62@3.2C | 7.64@3.5C | 7.71@3.7C |
| **TSS [mg/L]** | 113 | 2 | 1 | 5 |

**Notes:** The arrow from the upper table indicates the relative location of SEEP995A along FC-4.

**Abbreviations:**
Alk = alkalinity
CaCO3 = calcium carbonate
TSS = total suspended solids

*Table 26. Americium, Plutonium, and Uranium Grab Sampling Results for FC-4 Locations (pCi/L)*

Americium

| Sample Date(s) | FC4988 | FC4995 | FC4997 | FC4EFF |
|---|---|---|---|---|
| **3/26/2013** | --- | 0.003 | 0.049 | --- |
| **9/19/2013** | 0.005 | 0.021 | 0.000 | 0.005 |
| **9/30/2013** | 0.003 | 0.025 | 0.000 | 0.008 |
| **10/17/2013** | 0.000 | 0.000 | 0.008 | 0.002 |
| **10/31/2013** | 0.004 | 0.005 | 0.033 | 0.000 |
| **11/14/2013** | 0.005 | 0.004 | 0.005 | 0.010 |
| **11/25/2013** | 0.029 | 0.002 | 0.005 | 0.006 |

Plutonium

| Sample Date(s) | FC4988 | FC4995 | FC4997 | FC4EFF |
|---|---|---|---|---|
| **3/26/2013** | --- | 0.004 | 0.046 | --- |
| **9/19/2013** | 0.005 | 0.022 | 0.006 | 0.004 |
| **9/30/2013** | 0.000 | 0.004 | 0.000 | 0.000 |
| **10/17/2013** | 0.000 | 0.006 | 0.001 | 0.006 |
| **10/31/2013** | 0.003 | 0.001 | 0.003 | 0.003 |
| **11/14/2013** | 0.005 | 0.000 | 0.004 | 0.008 |
| **11/25/2013** | 0.020 | 0.000 | 0.007 | 0.004 |

Uranium

| Sample Date(s) | FC4988 | FC4995 | FC4997 | FC4EFF |
|---|---|---|---|---|
| **3/26/2013** | --- | 31.3 | 29.5 | --- |
| **9/19/2013** | 13.5 | 13.9 | 14.0 | 14.7 |
| **9/30/2013** | 15.5 | 16.1 | 15.3 | 15.5 |
| **10/17/2013** | 19.0 | 19.6 | 19.2 | 17.8 |
| **10/31/2013** | 22.2 | 23.4 | 22.0 | 20.3 |
| **11/14/2013** | 19.5 | 20.0 | 19.2 | 19.2 |
| **11/25/2013** | 26.5 | 26.1 | 24.3 | 24.9 |

**Notes:** --- = not sampled

- To evaluate for any plutonium and americium transport characteristics specifically related to the dissolved, colloidal, and particulate mechanisms, water from the routine GS10 composite samples is periodically analyzed after filtration with a 0.45-micron filter.

  A filtered sample split is prepared from each composite sample collected at GS10. The routine RFLMA sample is analyzed for total (unfiltered) plutonium, americium, uranium, beryllium, chromium, and hardness. If the unfiltered analytical results show plutonium and americium concentrations above the 0.15 pCi/L standard, then the corresponding filtered sample may be submitted for analysis. Seven GS10 composite samples that have been analyzed as filtered and unfiltered to date (Table 27) indicate the Pu and Am can be removed with a 0.45-micron filter.

*Table 27. Results for Filtered and Unfiltered Composite Sample Pairs at GS10*

| Composite Dates | Am-241 (pCi/L) | | Pu-239, 240 (pCi/L) | | Uranium (µg/L) | |
|---|---|---|---|---|---|---|
| | Unfiltered | Filtered | Unfiltered | Filtered | Unfiltered | Filtered |
| 3/21–4/4/2012 | 0.318 | 0.000 | 0.246 | 0.000 | 35.5 | 34.2 |
| 4/25–5/9/2012 | 0.478 | 0.000 | 0.264 | 0.026 | 16.1 | NA |
| 7/26–9/12/2012 | 0.464 | 0.000 | 0.314 | 0.002 | 3.75 | 3.63 |
| 3/4–4/1/2013 | 0.724 | 0.003 | 0.325 | 0.000 | 39.5 | NA |
| 4/1–4/20/2013 | 0.183 | 0.000 | 0.110 | 0.000 | 28.8 | NA |
| 4/20–4/24/2013 | 0.221 | 0.000 | 0.131 | 0.004 | 27.2 | NA |
| 6/14–7/3/2013 | 8.41 | 0.007 | 5.28 | 0.010 | 21.9 | 27.2 |

Table 27 shows that nearly all of the plutonium and americium was removed by the 0.45-micron filter. Additionally, nearly all of the uranium passed through the filter. These results support the conclusions of previous research showing that plutonium and americium move in association with particulates, while uranium is predominantly dissolved. However, these results only indicate that the plutonium and americium are associated with particles larger than 0.45 micron once they reach GS10 and are processed for submittal to the laboratory. It is still possible that plutonium and americium could reach surface water in association with sub-0.45 micron colloids, but then adsorb to other geologic materials or simply aggregate.

Additional unfiltered-filtered sample pairs may periodically be collected from seeps and surface water upstream of GS10.

- Grab samples have been collected upstream of GS10 from both seeps and surface water in an attempt to define the spatial variability of plutonium and americium activities. However, grab samples have failed to show activities similar to those measured in flow-paced composites collected at GS10. This suggests that either the source of the GS10 plutonium and americium is not affecting the grab sample locations, the source could be very close to GS10, the plutonium and americium follow a pathway that is difficult to sample (e.g., below the riprap and fill in FC-4), or the source is intermittent, such that grabs have missed the plutonium and americium, while the flow-paced composites at GS10 (with up to 100 individual grabs) have been more successful.

  Therefore, time-paced automated samplers were deployed at FC4991, FC4997, and GS10 (Figure 36; the latter is a secondary sampler located at GS10) to collect composite samples over the course of a few days. Table 28 presents the results for the May 2012 sampling event, which show very low plutonium and americium activities and give practically no indication of spatial variability (FC4991 did not provide a sample this period). Table 29 presents results for the April 2013 sampling event. Some activity is noted at FC4997, which is located in FC-4 immediately downstream from SEEP995, suggesting that SEEP995 could be contributing some plutonium and americium to GS10.

*Table 28. Results for Time-Paced Composites at GS10 and FC4997: May 22–28, 2012*

| Analyte | FC4997 (upstream) | GS10 (downstream) |
|---|---|---|
| Am-241 (pCi/L) | 0.005 | 0.005 |
| Pu-239, 240 (pCi/L) | 0.00 | 0.00 |
| Uranium (µg/L) | 10.4 | 10.6 |
| Alkalinity as $CaCO_3$ (mg/L) | 205 | 246 |
| Hardness as $CaCO_3$ (mg/L) | 492 | 517 |

**Abbreviations:**
$CaCO_3$ = calcium carbonate

*Table 29. Results for Time-Paced Composites at GS10, FC4997, and FC4991: April 22–25, 2013*

| Analyte | FC4991 (upstream) | FC4997 | GS10 (downstream) |
|---|---|---|---|
| Am-241 (pCi/L) | 0.003 | 0.035 | 0.006 |
| Pu-239, 240 (pCi/L) | 0.003 | 0.054 | 0.000 |
| Uranium (µg/L) | 13.6 | 21.1 | 23.4 |

- A 2-week turnaround will continue to be requested for analysis of flow-paced composite samples routinely being collected at WALPOC. A 2-week turnaround is also currently being requested for analysis of flow-paced composite samples routinely being collected at GS10 and GS08.

Updates to the ongoing evaluation for GS10 will periodically be communicated through public meetings, routine reports, and contact records. For additional information, go to http://www.lm.doe.gov/Rocky_Flats/ContactRecords.aspx.

*Reportable Uranium Concentrations at GS10*

The routine GS10 uranium data evaluation is performed in accordance with RFLMA Attachment 2, Figure 6, "Points of Evaluation," which resulted in a calculated 12-month rolling average concentration for uranium of 18.8 µg/L on April 30, 2011, exceeding the applicable RFLMA Table 1 standard of 16.8 µg/L. As of December 31, 2013, the 12-month rolling average concentration for uranium was no longer reportable at 15.4 µg/L. However, given the variable nature of the uranium concentrations at GS10, the RFLMA source evaluation is continuing.

Initial notification to the regulatory agencies and the public, in accordance with RFLMA Attachment 2, Figure 6, was made by e-mail on June 16, 2011. RFLMA Contact Record 2011-04 (July 8, 2011), "Reportable Condition for Uranium at Point of Evaluation GS10," provides a discussion of the monitoring results and recaps the outcome of the RFLMA Parties consultation regarding the evaluation steps to be taken. RFLMA Contact Record 2011-05 (October 4, 2011), "Update for Reportable Condition for Uranium at Point of Evaluation GS10," provides an update of the monitoring results and provides further discussion of the path forward. Both contact records are available on the Rocky Flats website at http://www.lm.doe.gov/Rocky_Flats/ContactRecords.aspx.

Figure 37 shows the locations sampled in support of the evaluation for GS10.

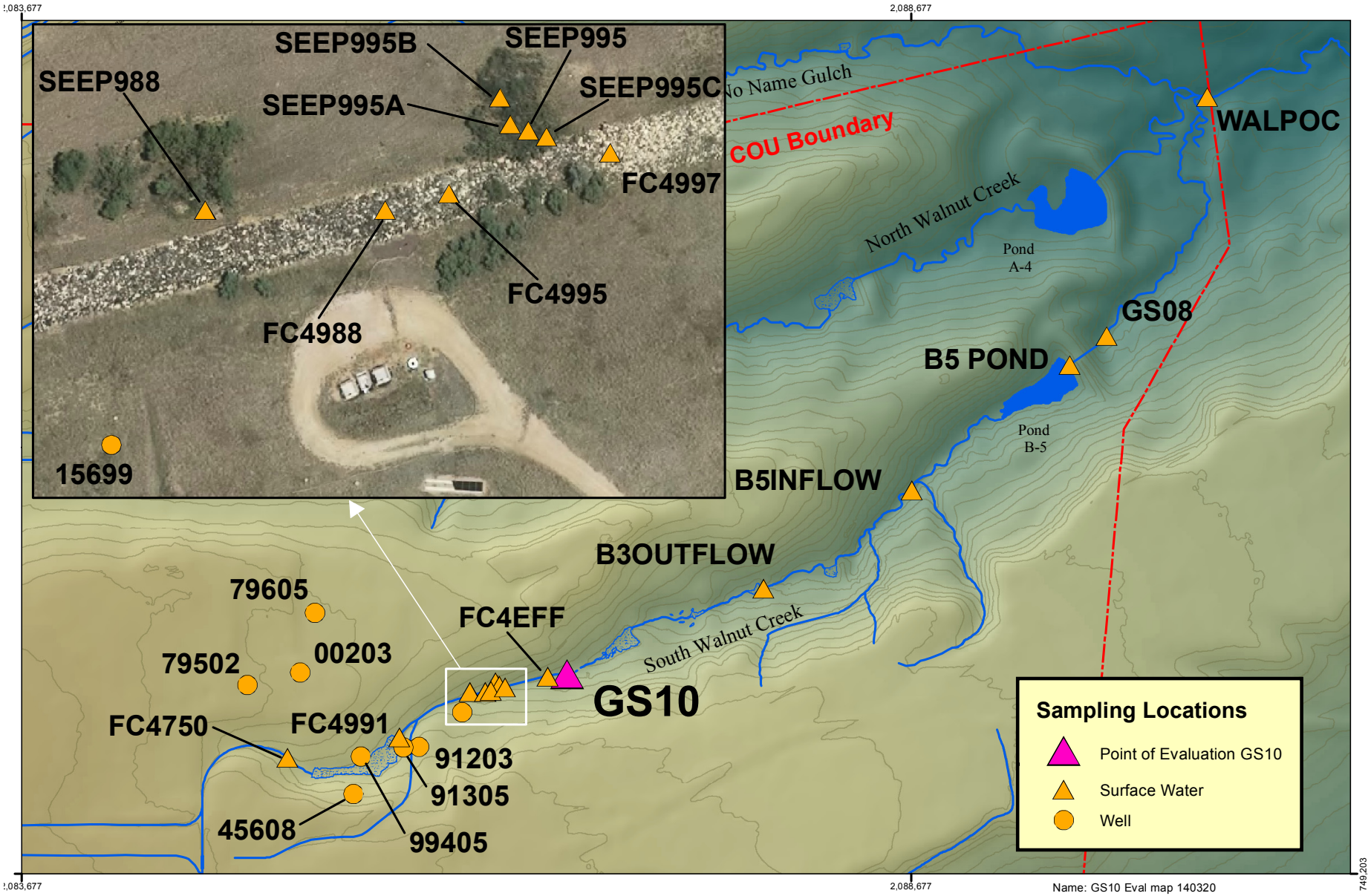



*Figure 37. Location Map for Evaluation Sampling GS10 Drainage Area*

The following is an update to the ongoing GS10 uranium evaluation:

- Downstream monitoring at B5INFLOW, GS08, and GS03 continue to show uranium concentrations that are generally lower than GS10 (Figure 37; GS03, which was the POC on Walnut Creek at Indiana Street through September 27, 2013, is not shown). Recent analytical results at these locations are given in Table 30. The latest available 12-month rolling and 30-day average uranium concentrations calculated from flow-paced composite samples are shown in Figure 38.

  Recently collected composite samples from WALPOC show uranium concentrations above 16.8 µg/L (see Section 3.1.2.1). However, based on uranium results from GS08 (Figure 37), these higher concentrations do not appear to be attributable to South Walnut Creek. The 12-month rolling average at the downstream POC (WALPOC) is well below 16.8 µg/L.

- Additional sampling and analysis for uranium within the GS10 drainage continues. Following the initial RFLMA Parties consultation, two temporary surface water sample locations upstream of GS10 were established for biweekly uranium grab sampling (FC4991 and FC4750; Figure 37). Biweekly grab sampling at these locations was initiated on June 30, 2011.

  These new locations supplement GS10, B3OUTFLOW, B5INFLOW, and B5 POND (Figure 37), which have been grab sampled biweekly for uranium since January 27, 2010. Data from these six locations are summarized in Table 31.

*Table 30. Recent Uranium Flow-Paced Composite Sample Results*

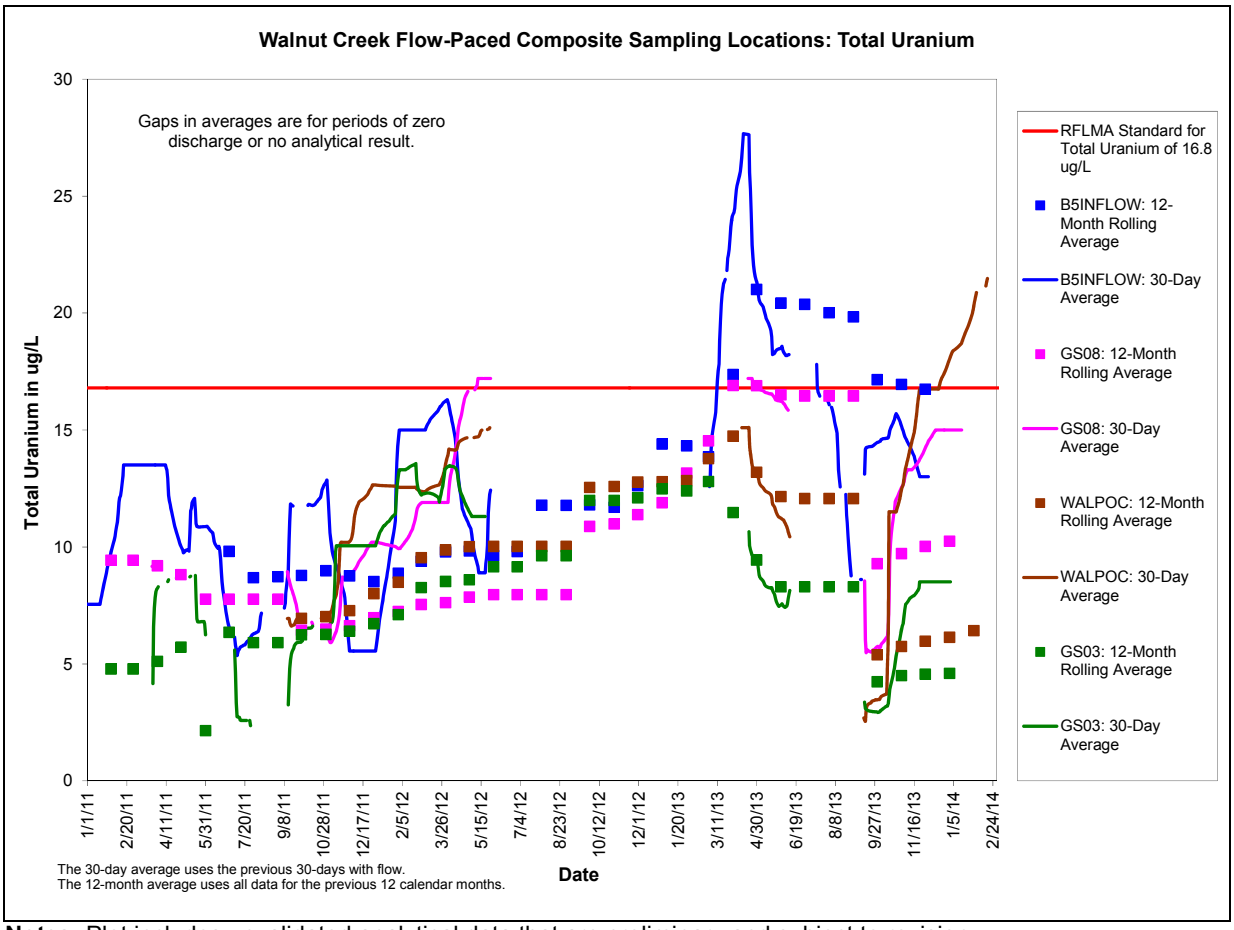
| B5INFLOW | | GS08 | | WALPOC | | GS03 | |
|---|---|---|---|---|---|---|---|
| Sample Period | Result (µg/L) | Sample Period | Result (µg/L) | Sample Period | Result (µg/L) | Sample Period | Result (µg/L) |
| 11/1/2011–1/3/2012 | 5.6 | 9/27–11/9/2011 | 8.8 | 9/27–11/30/2011 | 10.2 | 9/27/2011–1/3/2012 | 10.1 |
| | | 11/9–11/29/2011 | 8.5 | | | | |
| | | 11/29/2011–1/5/2012 | 10.2 | 11/30/2011–1/3/2012 | 12.7 | | |
| 1/3–3/6/2012 | 15.0 | 1/5–2/1/2012 | 9.9 | 1/3–2/23/2012 | 12.6 | 1/3–2/10/2012 | 13.3 |
| | | 2/1–4/4/2012 | 11.9 | | | 2/10–2/23/2012 | 13.7 |
| | | | | 2/23–3/6/2012 | 12.2 | 2/23–2/27/2012 | 11.2 |
| | | | | | | 2/27–3/1/2012 | 11.4 |
| 3/6–3/23/2012 | 17.4 | | | 3/6–3/21/2012 | 14.2 | 3/1–3/15/2012 | 13.1 |
| 3/23–4/13/2012 | 13.2 | | | 3/21–4/13/2012 | 14.1 | 3/15–4/4/2012 | 14.2 |
| 4/13–5/21/2012 | 8.90 | | | | | | |
| 5/21/2012–3/14/2013 | 20.5 | 4/4/2012–4/25/2013 | 17.2 | 4/13/2012–4/21/2013 | 15.1 | 4/4/2012–1/15/2013 | 11.3 |
| 3/14–4/1/2013 | 27.7 | | | | | 1/15–4/21/2013 | 10.4 |
| 4/1–4/21/2013 | 27.6 | | | | | | |
| 4/21–4/29/2013 | 17.8 | | | 4/21–4/29/2013 | 12.6 | 4/21–4/25/2013 | 9.36 |
| | | 4/25–5/7/2013 | 16.4 | | | 4/25–4/29/2013 | 9.37 |
| 4/29–5/3/2013 | 17.9 | | | 4/29–5/3/2013 | 11.5 | 4/29–5/3/2013 | 7.18 |
| 5/3–5/8/2013 | 19.4 | | | 5/3–5/7/2013 | 11.3 | 5/3–5/7/2013 | 7.74 |
| 5/8–5/23/2013 | 18.1 | 5/7–6/4/2013 | 16.1 | 5/7–5/17/2013 | 11.4 | 5/7–5/17/2013 | 7.02 |
| 5/23–6/26/2013 | 18.4 | | | 5/17–6/4/2013 | 10.6 | 5/17–6/25/2013 | 9.03 |
| 6/26–9/11/2013 | 8.6 | 6/4–9/12/2013 | 7.1 | 6/4–9/12/2013 | 3.2 | 6/25–9/12/2013 | 8.9 |
| 9/11–9/16/2013 | NSQ | 9/12–9/14/2013 | NSQ | 9/12–9/13/2013 | NSQ | 9/12–9/14/2013 | 2.2 |
| | | 9/14–9/15/2013 | 4.3 | 9/13–9/14/2013 | 2.0 | 9/14–10/2/2013 | 2.9 |
| | | 9/15–9/17/2013 | NSQ | 9/14–9/16/2013 | 2.6 | | |

*Table 30 (continued). Recent Uranium Flow-Paced Composite Sample Results*

| B5INFLOW | | GS08 | | WALPOC | | GS03 | |
|---|---|---|---|---|---|---|---|
| Sample Period | Result (µg/L) | Sample Period | Result (µg/L) | Sample Period | Result (µg/L) | Sample Period | Result (µg/L) |
| 9/16–9/25/2013 | 14.4 | 9/17–9/24/2013 | 7.4 | 9/16–10/25/2013 | 11.5 | | |
| 9/25–10/25/2013 | 15.7 | 9/24–10/9/2013 | 11.1 | | | 10/2–10/7/2013 | 4.9 |
| | | 10/9–11/14/2013 | 13.3 | 10/25–12/18/2013 | 16.8 | 10/7–10/25/2013 | 7.1 |
| 10/25/2013–2/24/2014 | 13.0 | 11/14/2013–1/16/2014 | 15.0 | 12/18/2013–1/16/2014 | 18.8 | 10/25/2013–1/2/2014 | 8.51 |
| | | 1/16–2/13/2014 | [a] | 1/16–2/18/2014 | 22.5 | 1/2–3/10/2014 | [a] |
| 2/24/2014– | [b] | 2/13–3/10/2014 | [a] | 2/18–3/6/2014 | [a] | | |
| | | | | 3/6–3/10/2014 | [a] | | |
| | | 3/10/2014– | [b] | 3/10/2014– | [b] | 3/10/2014– | [b] |

**Notes:** Some results are preliminary and subject to revision.
[a] Results pending
[b] Sample in progress

**Abbreviations:**
NSQ = nonsufficient quantity for analysis




**Notes:** Plot includes unvalidated analytical data that are preliminary and subject to revision.

*Figure 38. Average Uranium Concentrations at Locations Downstream of GS10*

*Table 31. Summary of Biweekly Uranium Grab Sampling in South Walnut Creek*

| South Walnut Creek | | Uranium (ug/L) | | | |
|---|---|---|---|---|---|
| | Location Code | Average | Sample Count | 85th Percentile | 50th Percentile |
| Upstream | FC4750 | 18.9 | 38 | 21.0 | 17.0 |
| ⬇ | FC4991 | 15.0 | 43 | 23.7 | 14.0 |
| ⬇ | GS10 | 15.1 | 104 | 22.0 | 15.0 |
| ⬇ | B3OUTFLOW | 16.4 | 77 | 23.0 | 17.0 |
| ⬇ | B5INFLOW | 14.0 | 72 | 18.5 | 14.0 |
| Downstream | B5 POND | 8.57 | 105 | 12.0 | 7.50 |

- As noted in previous RFLMA quarterly and annual reports, samples have been periodically sent to either Los Alamos National Laboratory (LANL) or Lawrence Berkeley National Laboratory for high-resolution isotopic analysis (Section 3.1.6). This analysis technique determines the percentages of natural and anthropogenic uranium in a sample. These percentages can be compared with percentages in pre-closure and post-closure samples previously analyzed. Table 32 summarizes uranium signature results for locations related to GS10. The locations described below are shown on Figure 37.

*Table 32. Summary of High-Resolution Isotopic Uranium Results for Locations Related to GS10*

| Location | Sample Date or Period | Uranium Concentration (µg/L) | Percentage Natural Uranium |
|---|---|---|---|
| GS10 | Pre–Closure Average (2 samples) | 11.4 | 70.8% |
| | 7/23–8/6/2007 | 10.1 | 70.5% |
| | 10/1–10/16/2007 | 9.99 | 70.9% |
| | 8/25–9/12/2008 | 15.2 | 66.8% |
| | 3/17–3/24/2010 | 24.1 | 71.7% |
| | 6/3–6/13/2011 | 21.6 | 50.6% |
| | 8/24–9/29/2011 | 8.90 | 70.2% |
| | 1/5–1/23/2012 | 49.7 | 52.6% |
| | 3/6–3/21/2012 | 38.7 | 43.3% |
| | 7/26–9/12/2012 | 4.20 | 64.3% |
| | 4/29–5/3/2013 | 36.5 | 59.1% |
| | 9/13–9/16/2013 | 5.55 | 70.1% |
| | 9/24–10/16/2013 | 16.3 | 73.3% |
| | 10/1/2013 | 15.4 | 71.2% |
| | 10/1/2013 | 15.4 | 74.0% |
| | 11/25/2013 | 23.7 | 71.5% |
| 99405 | Pre-Closure (1 sample) | 396 | 99.9% |
| | 9/12/2007 | 439 | 99.9% |
| | 4/20/2011 | 411 | 100% |
| FC4750 | 9/28/2011 | 17.6 | 70.9% |
| FC4991 | 9/28/2011 | 5.0 | 78.3% |
| B5INFLOW | 8/24–9/29/2011 | 11.7 | 78.5% |
| SEEP995A | 9/30/2013 | 19.1 | 68.1% |
| | 11/25/2013 | 27.8 | 59.7% |
| FC4EFF | 9/30/2013 | 15.5 | 73.9% |
| | 11/25/2013 | 24.9 | 71.2% |
| B3OUTFLOW | 3/17/2010 | 19.9 | 74.3% |
| | 9/27/2011 | 10.7 | 76.6% |

*Table 32 (continued). Summary of High-Resolution Isotopic Uranium Results for Locations Related to GS10*

| Location | Sample Date or Period | Uranium Concentration (µg/L) | Percentage Natural Uranium |
|---|---|---|---|
| 91305 | Pre-Closure (1 sample) | 54.1 | 94.4% |
| | 10/10/2011 | 39.9 | 90.8% |
| WALPOC | 9/22–9/27/2011 | 7.60 | 77.4% |
| | 9/27–11/30/2011 | 10.2 | 77.6% |
| | 1/3–2/23/2012 | 12.6 | 79.6% |
| | 2/23–3/6/2012 | 12.2 | 79.5% |
| | 3/6–3/21/2012 | 14.2 | 78.4% |
| | 4/13/12–4/21/2013 | 15.1 | 77.5% |
| | 4/21–4/29/2013 | 12.6 | 77.8% |
| | 5/3–5/7/2013 | 11.3 | 76.0% |
| | 6/4–9/12/2013 | 3.21 | 76.6% |
| | 9/13–9/14/2013 | 1.99 | 79.5% |
| | 9/14–9/16/2013 | 2.55 | 77.5% |
| | 9/16–10/25/2013 | 11.5 | 74.9% |

- — Samples from GS10 show variable percentages of natural uranium ranging from 43 percent to 74 percent. The cause of this variation is unknown at this time.
- — Grab samples from upgradient well 99405 show very high uranium concentrations relative to GS10. This well consistently shows a signature of 99.9 to 100 percent natural uranium.
- — Samples from FC4750, FC4991, B5INFLOW, FC4EFF, and B3OUTFLOW also show a predominantly natural uranium signature ranging from 71 percent to 79 percent.
- — Samples from SEEP995A show higher concentrations of anthropogenic uranium. Since SEEP995 is locate at the downgradient end of a former utility corridor that extends to the former Solar Ponds / 700 Area, this anthropogenic uranium could originate from residual low-level contamination associated with the utility trench bedding materials.
- — Grab samples from upgradient well 91305 also show high uranium concentrations relative to GS10. This well also consistently shows a signature of more than 90 percent natural uranium.
- — WALPOC shows more consistent percentages of natural uranium, ranging from 75 percent to 80 percent.

- Additional nonroutine grab samples have been collected to assist in the possible identification of a source that may have contributed to elevated uranium levels at GS10. These additional samples included the following:
  - — Wells 15699, 45608, 91305, and 91203 were grab-sampled for uranium on October 10–11, 2011.
  - — Wells 00203, 79502, and 79605 were grab-sampled for uranium and nitrate+nitrite as nitrogen on October 6, 2011. Nitrate+nitrite was included as an indicator of potential contributions from the Solar Ponds Plume area.

— GS10 and hillside seep locations SEEP988 and SEEP995 were also grab-sampled for uranium and nitrate + nitrite as nitrogen on September 28–29, 2011.

— Many of the samples collected in support of the GS10 Pu and Am evaluation are also being analyzed for both uranium and nitrate+nitrite as N.

Updates to the ongoing evaluation for GS10 will periodically be communicated through public meetings, routine reports, and contact records. For additional information, go to http://www.lm.doe.gov/Rocky_Flats/ContactRecords.aspx.

***Location SW027***

Monitoring location SW027 is located at the end of the SID at the inlet to Pond C-2 (Figure 28). The southern portion of the COU contributes flow to SW027 through the SID.

Table 33 shows automated composite sampling information collected during September 2013. It should be noted that the sampler was full and did not collect any water for the period 9/12/2013 12:21 to 9/13/2013 13:17. Therefore, no analytical results are available for this period and, in accordance with routine evaluation protocols, this period is not included in the calculation of 12-month rolling averages.

*Table 33. September 2013 Composite Sampling Detail for POE SW027*

| Sampling Period | Number of Grabs | Sample Results | | | Flow Volume (MG) | Flow Rates (cfs) | Comments |
|---|---|---|---|---|---|---|---|
| | | Am-241 (pCi/L) | Pu-239, 240 (pCi/L) | Uranium (µg/L) | | | |
| 2/4/2013 11:38–9/12/2013 12:21 | 109 | 0.026 | 0.108 | 1.91 | 0.24 | 0–3.5 | Sampler filled 9/12/2013 12:21. |
| 9/12/2013 12:21–9/13/2013 13:17 | 0 NSQ | NA | NA | NA | 5.1 (est) | 0.8–28.4 (est) | Sampler full from 9/12/2013 12:21–9/13/2013 13:17 |
| 9/13/2013 13:17–10/3/2013 17:49 | 47 | 0.014 | 0.126 | 1.98 | 1.0 | 0–4.6 | |

**Abbreviations:**
est = estimated
MG = million gallons
NA = not analyzed
NSQ = nonsufficient quantity for analysis

Table 34 shows that the majority of the annual average Pu and Am activities are less than the RFLMA standard of 0.15 pCi/L. The significant increase in 2004 was the result of increased solids transport from disturbed areas associated with the 903 Pad/Lip accelerated actions. However, a measurable reduction in both Pu and Am activities has been observed following completion of accelerated actions in the drainage. With the completion of Site closure and reduced runoff, transport of Pu and Am has been significantly reduced. The annual average total U concentrations are well below the RFLMA standard of 16.8 µg/L.

*Table 34. Annual Volume-Weighted Average Radionuclide Activities at SW027 for 1997–2013*

| Calendar Year | Volume-Weighted Average | | |
|---|---|---|---|
| | Am-241 (pCi/L) | Pu-239, 240 (pCi/L) | Total U (µg/L) |
| 1997 | 0.008 | 0.036 | 2.46 |
| 1998 | 0.021 | 0.156 | 5.99 |
| 1999 | 0.019 | 0.066 | 3.15 |
| 2000 | 0.060 | 0.348 | 1.62 |
| 2001 | 0.006 | 0.025 | 2.17 |
| 2002 | 0.001 | 0.003 | 0.87 |
| 2003 | 0.011 | 0.080 | 2.80 |
| 2004 | 0.413 | 2.273 | 1.55 |
| 2005 | 0.022 | 0.156 | 3.91 |
| 2006 | NA (no flow) | NA (no flow) | NA (no flow) |
| 2007 | 0.040 | 0.092 | 2.78 |
| 2008 | NA (no flow) | NA (no flow) | NA (no flow) |
| 2009 | 0.015 | 0.092 | 3.07 |
| 2010 | 0.027 | 0.155 | 4.73 |
| 2011[a] | NA (no analytical data) | NA (no analytical data) | NA (no analytical data) |
| 2012 | NA (no flow) | NA (no flow) | NA (no flow) |
| 2013 | 0.014 | 0.126 | 1.98 |
| **Total (1997–2013)** | 0.055 | 0.302 | 3.10 |

**Notes:**

[a] During CY 2011, only 4,033 gallons of flow were observed at SW027 (less than 0.3% of the post-closure average). Therefore, the automated sampler collected an insufficient volume of water for laboratory analysis.

**Abbreviations:**

NA = not applicable.

Figure 39 and Figure 40 show no reportable Pu, Am, or total U values during the year.

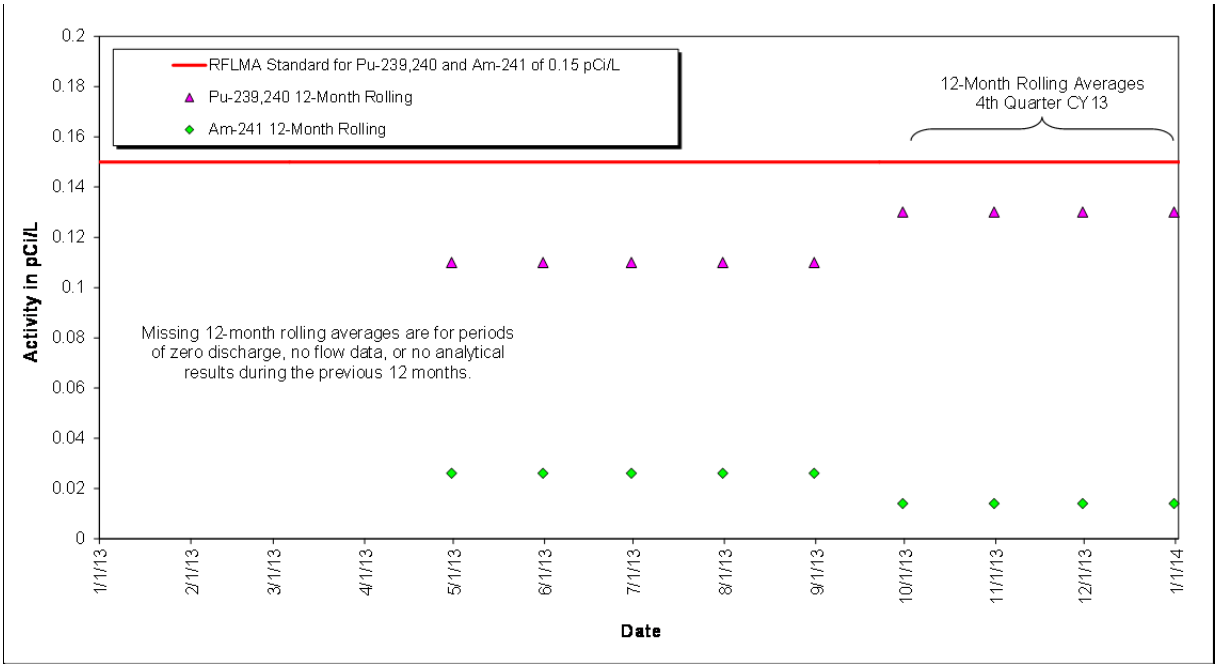



*Figure 39. Volume-Weighted 12-Month Rolling Average Pu and Am Activities at SW027: Year Ending Fourth Quarter CY 2013*

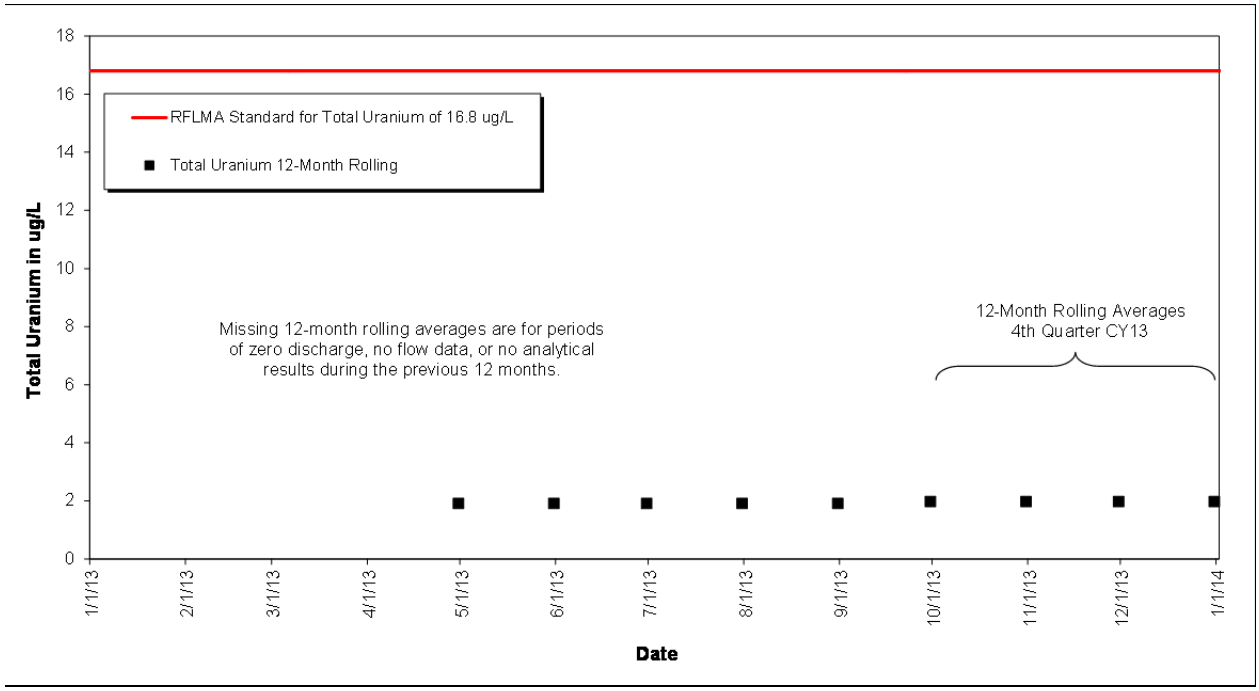



*Figure 40. Volume-Weighted 12-Month Rolling Average Total U Concentrations at SW027: Year Ending Fourth Quarter CY 2013*

Figure 41 and Figure 42 show 12-month rolling averages for the entire post-closure period. Figure 43 presents the volume-weighted average metals compliance values at SW027.

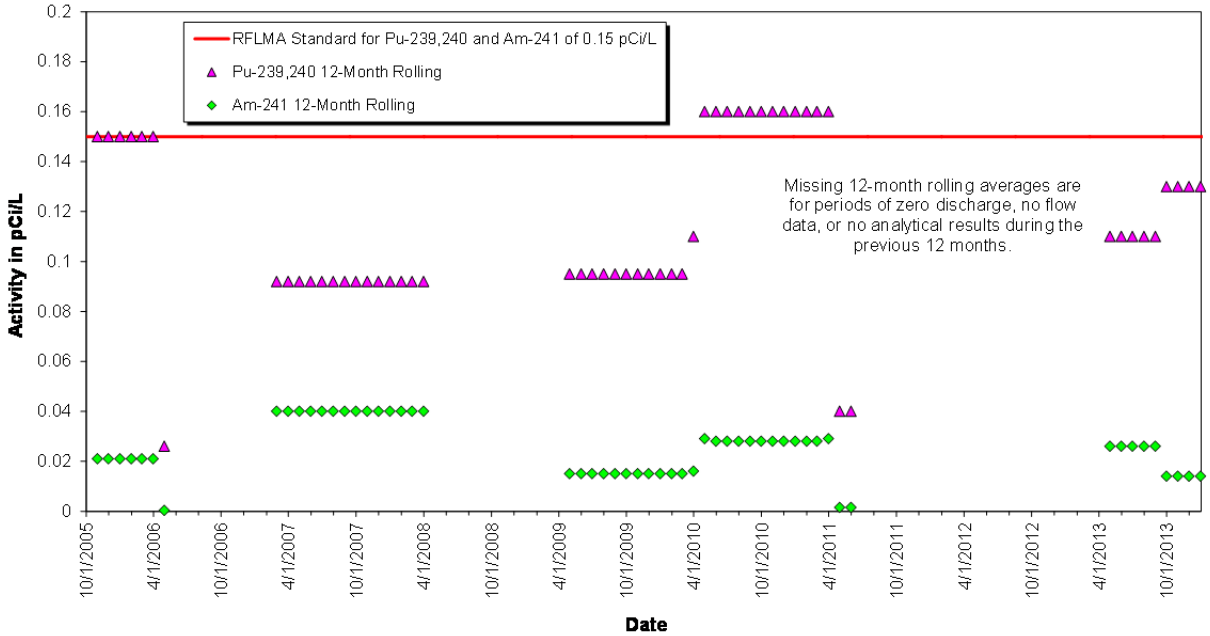



*Figure 41. Volume-Weighted 12-Month Rolling Average Pu and Am Activities at SW027: Post-Closure Period*

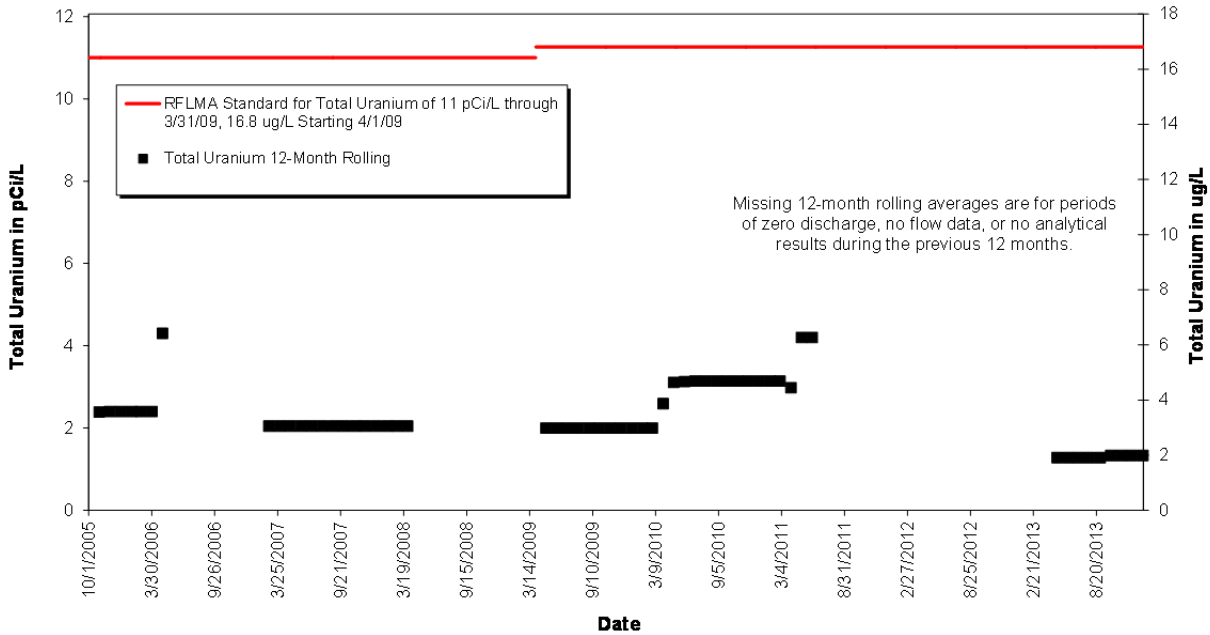
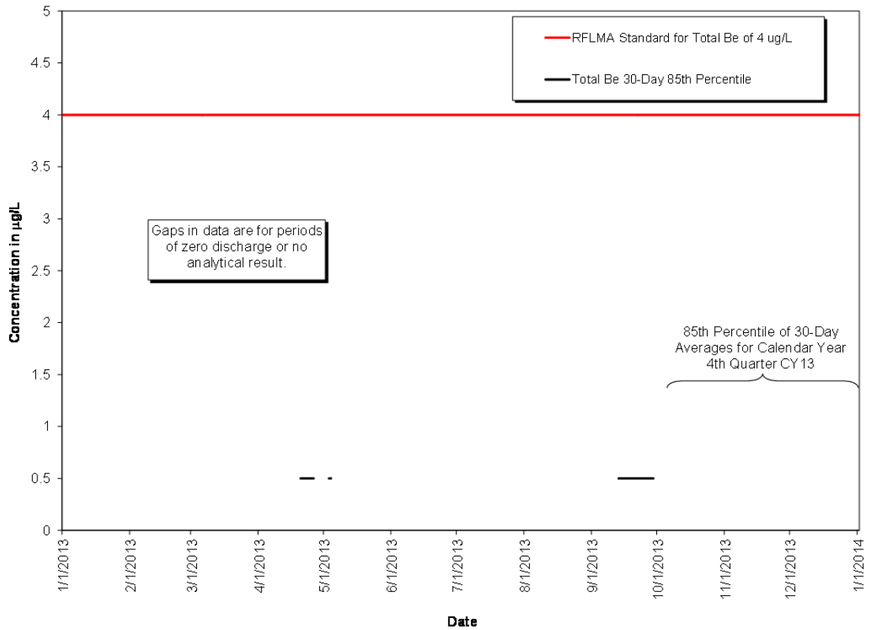
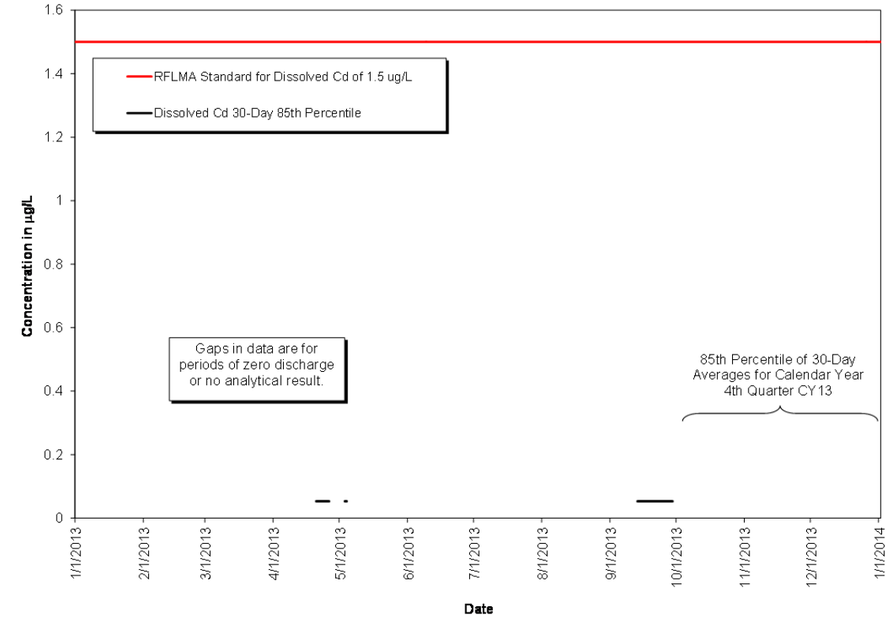
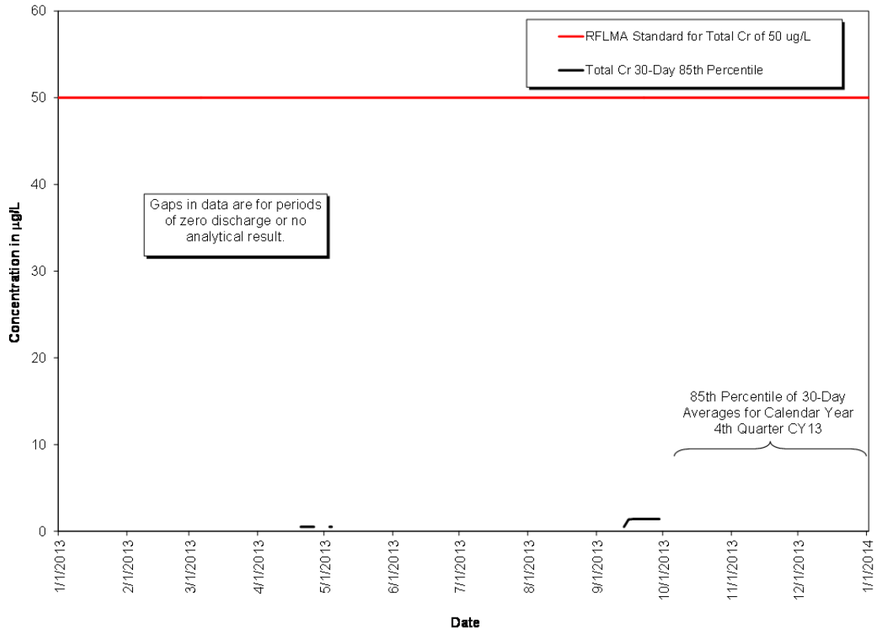



*Figure 42. Volume-Weighted 12-Month Rolling Average Total U Concentrations at SW027: Post-Closure Period*



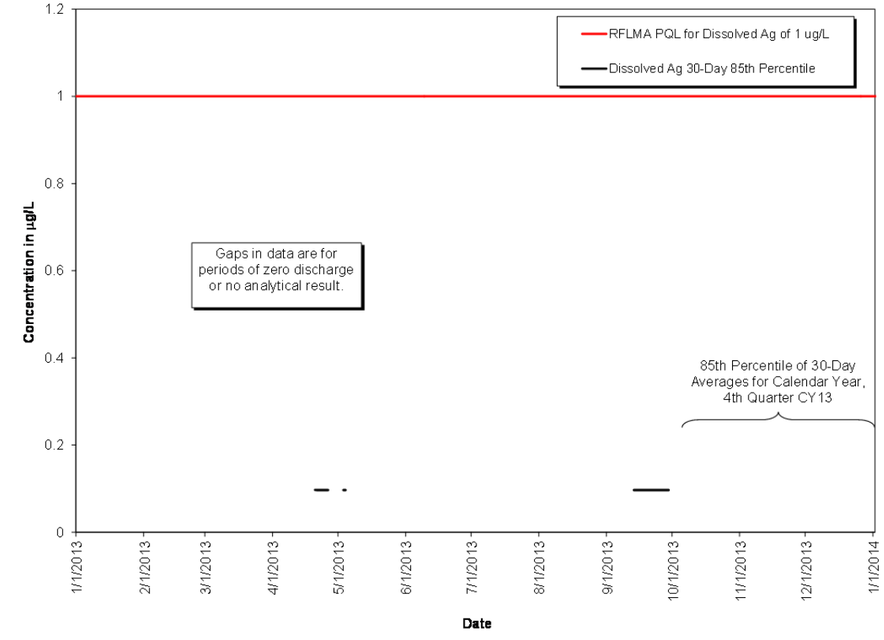




*Figure 43. Volume-Weighted Average Metals Compliance Values at SW027: Year Ending Fourth Quarter CY 2013*

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Table 35 shows that all of the annual average metals concentrations are less than the standards/PQLs. Additionally, the long-term metals averages (1997–2013) are less than the standards/PQLs.

*Table 35. Annual Volume-Weighted Average Hardness and Metals Concentrations at SW027 for 1997–2013*

| Calendar Year | Volume-Weighted Average Concentration (µg/L) | | | | |
|---|---|---|---|---|---|
| | Hardness (mg/L) | Total Be | Dissolved Cd | Total Cr | Dissolved Ag |
| 1997 | 108 | 0.44 | 0.09 | 1.71 | 0.10 |
| 1998 | 152 | 0.14 | 0.15 | 0.91 | 0.21 |
| 1999 | 111 | 0.03 | 0.10 | 1.55 | 0.24 |
| 2000 | 150 | 0.27 | 0.05 | 4.14 | 0.09 |
| 2001 | 145 | 0.23 | 0.07 | 1.82 | 0.12 |
| 2002 | 114 | 0.12 | 0.05 | 2.88 | 0.11 |
| 2003 | 148 | 0.06 | 0.06 | 1.75 | 0.15 |
| 2004 | 133 | 0.32 | 0.06 | 7.36 | 0.19 |
| 2005 | 236 | 0.08 | 0.07 | 2.03 | 0.19 |
| 2006 | NA (no flow) | NA (no flow) | NA (no flow) | NA (no flow) | NA (no flow) |
| 2007 | 133 | 0.50 | 0.05 | 0.50 | 0.10 |
| 2008 | NA (no flow) | NA (no flow) | NA (no flow) | NA (no flow) | NA (no flow) |
| 2009 | 139 | 0.50 | 0.06 | 1.15 | 0.10 |
| 2010 | 154 | 0.50 | 0.06 | 1.16 | 0.10 |
| 2011 | NA (no analytical data)[a] | NA (no analytical data)[a] | NA (no analytical data)[a] | NA (no analytical data)[a] | NA (no analytical data)[a] |
| 2012 | NA (no flow) | NA (no flow) | NA (no flow) | NA (no flow) | NA (no flow) |
| 2013 | 126 | 0.50 | 0.06 | 1.44 | 0.10 |
| **Total (1997–2013)** | 138 | 0.23 | 0.08 | 2.18 | 0.16 |

**Notes:**
[a] During CY 2011, only 4,033 gallons of flow were observed at SW027 (less than 0.3% of the post-closure average). Therefore, the automated sampler collected an insufficient volume of water for laboratory analysis.

**Abbreviations:**
Ag = silver
Be = beryllium
Cd = cadmium
NA = not applicable.

### *Location SW093*

Monitoring location SW093 is located on North Walnut Creek 1,300 feet upstream of the A-Series Ponds (Figure 28). The northern portion of the COU contributes flow to SW093 through FC-2 and FC-3.

Table 36 shows automated composite sampling information collected during September 2013. It should be noted that the sampler was full and did not collect any water for the period 9/11/2013 20:17 to 9/15/2013 11:01. Therefore, no analytical results are available for this period and, in accordance with routine evaluation protocols, this period is not included in the calculation of 12-month rolling averages.

*Table 36. September 2013 Composite Sampling Detail for POE SW093*

| Sampling Period | Number of Grabs | Sample Results | | | Flow Volume (MG) | Flow Rates (cfs) | Comments |
|---|---|---|---|---|---|---|---|
| | | Am-241 (pCi/L) | Pu-239, 240 (pCi/L) | Uranium (µg/L) | | | |
| 7/23/2013 12:28–9/11/2013 20:17 | 110 | 0.031 | 0.011 | 2.88 | 1.7 | 0–10.2 | Sampler filled 9/11/2013 20:17 |
| 9/11/2013 20:17–9/15/2013 11:01 | 0 NSQ | NA | NA | NA | 43.3 (est) | 0.7–136 (est) | Sampler full from 9/11/2013 20:17 to 9/15/2013 11:01 |
| 9/15/2013 11:01–9/19/2013 12:34 | 58 | 0.018 | 0.0 | 5.33 | 4.3 | 0.3–17.5 | |
| 9/19/2013 12:34–10/15/2013 14:15 | 63 | 0.003 | 0.002 | 12.1 | 3.6 | 0.1–2.3 | |

**Abbreviations:**
est = estimated
MG = million gallons
NA = not analyzed
NSQ = nonsufficient quantity for analysis

Table 37 shows that the majority of the annual average Pu and Am activities are below the RFLMA standard of 0.15 pCi/L. Additionally, the long-term Pu and Am averages (1997–2013) are below 0.15 pCi/L. The average annual total U concentrations are also below the RFLMA standard of 16.8 µg/L.

Table 37 shows an increase in Pu and Am activities during 2004. However, a significant reduction in both Pu and Am activities has been observed following Site closure, with transport of Pu and Am having been virtually eliminated. Figure 44 and Figure 45 show no reportable Pu, Am, or total U values during the year.

*Table 37. Annual Volume-Weighted Average Radionuclide Activities at SW093 for 1997–2013*

| Calendar Year | Volume-Weighted Average | | |
|---|---|---|---|
| | Am-241 (pCi/L) | Pu-239, 240 (pCi/L) | Total U (µg/L) |
| 1997 | 0.035 | 0.052 | 3.84 |
| 1998 | 0.020 | 0.022 | 3.51 |
| 1999 | 0.025 | 0.038 | 3.02 |
| 2000 | 0.022 | 0.040 | 3.12 |
| 2001 | 0.011 | 0.015 | 3.12 |
| 2002 | 0.017 | 0.006 | 4.24 |
| 2003 | 0.039 | 0.056 | 3.19 |
| 2004 | 0.622 | 0.603 | 3.67 |
| 2005 | 0.029 | 0.022 | 5.55 |
| 2006 | 0.004 | 0.008 | 8.00 |
| 2007 | 0.009 | 0.011 | 4.85 |
| 2008 | 0.034 | 0.061 | 10.06 |
| 2009 | 0.007 | 0.016 | 5.67 |
| 2010 | 0.008 | 0.008 | 7.28 |
| 2011 | 0.003 | 0.004 | 5.20 |
| 2012 | 0.003 | 0.002 | 6.91 |
| 2013 | 0.006 | 0.003 | 6.71 |
| **Total (1997–2013)** | 0.062 | 0.067 | 4.33 |

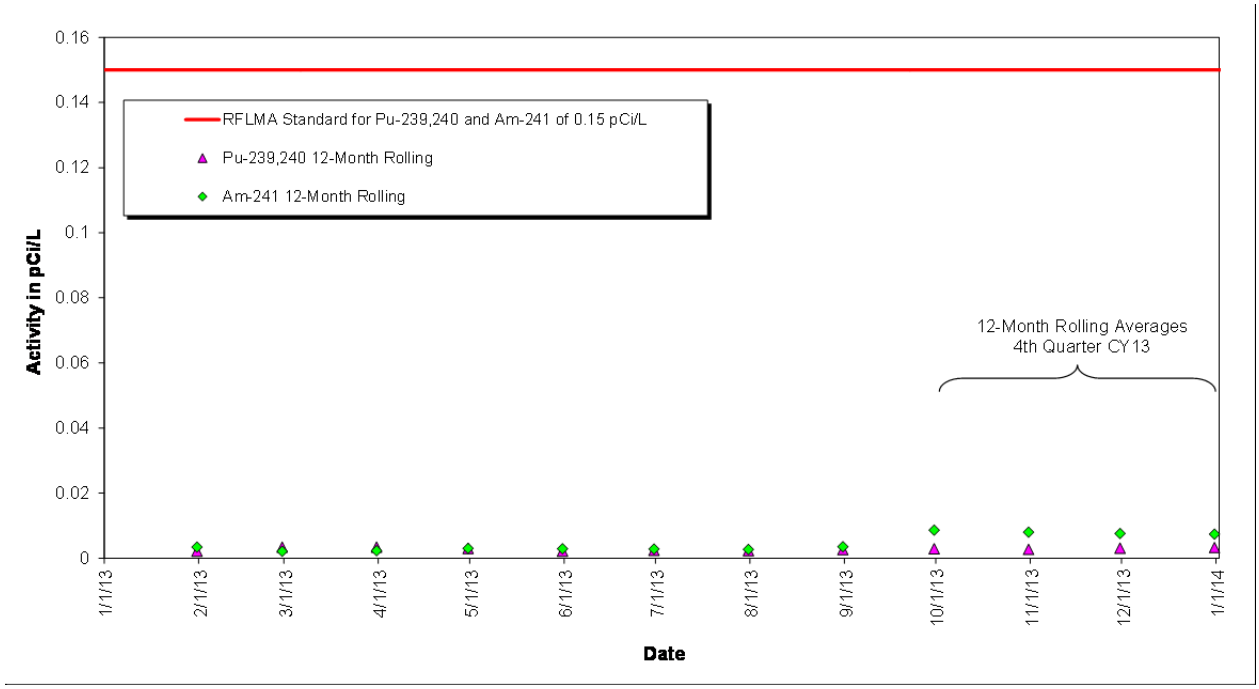



*Figure 44. Volume-Weighted 12-Month Rolling Average Pu and Am Activities at SW093: Year Ending Fourth Quarter CY 2013*

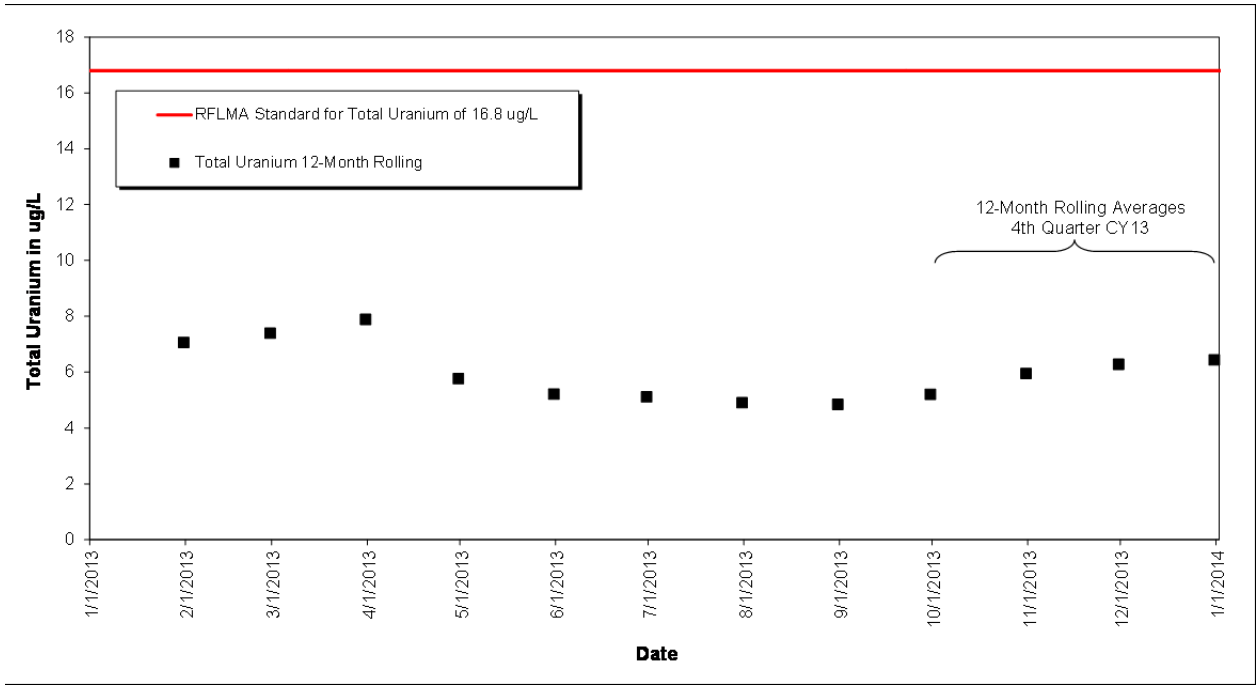



*Figure 45. Volume-Weighted 12-Month Rolling Average Total U Concentrations at SW093: Year Ending Fourth Quarter CY 2013*

Figure 46 and Figure 47 show 12-month rolling averages for the entire post-closure period.

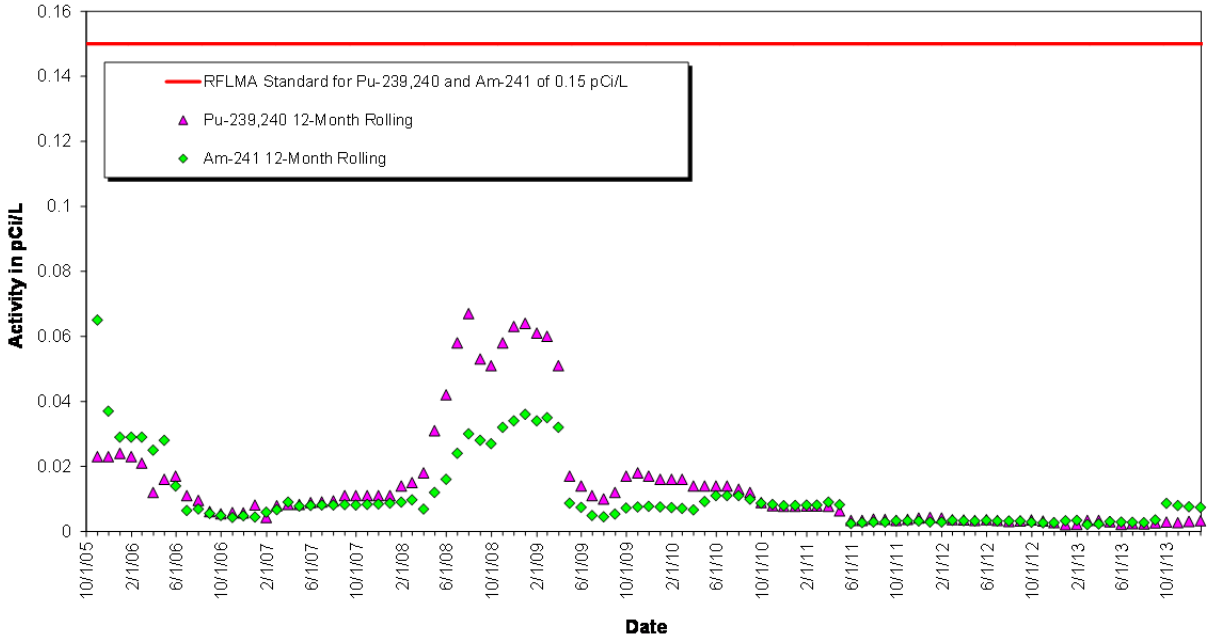



*Figure 46. Volume-Weighted 12-Month Rolling Average Pu and Am Activities at SW093: Post-Closure Period*

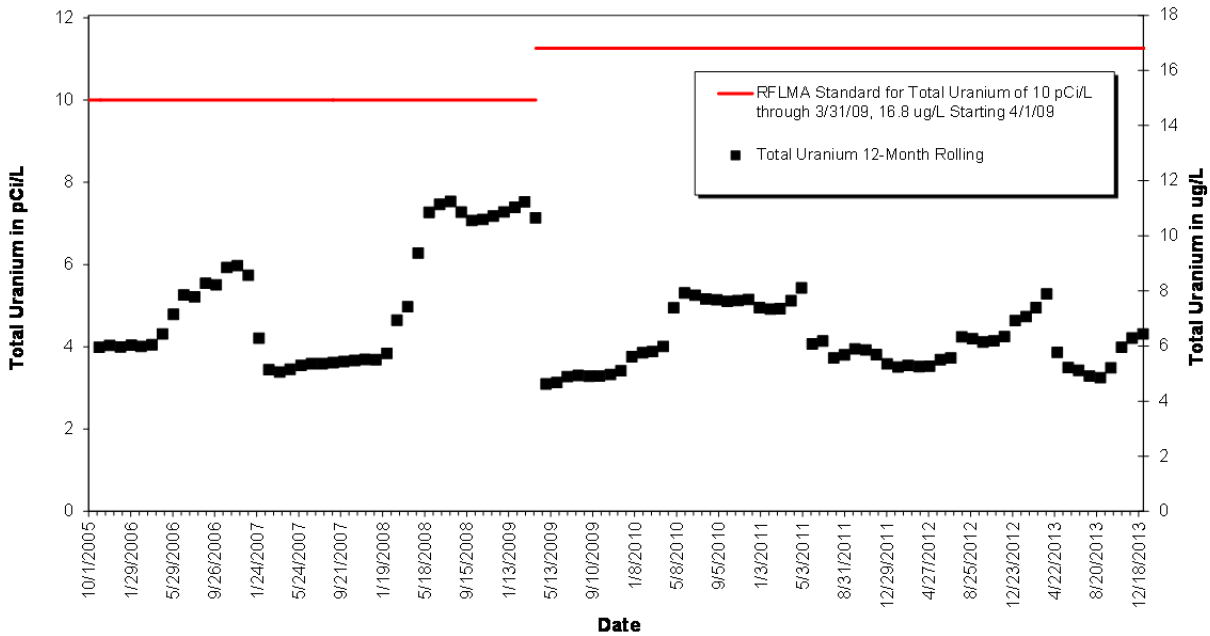



*Figure 47. Volume-Weighted 12-Month Rolling Average Total U Concentrations at SW093: Post-Closure Period*

Table 38 shows that all of the annual average metals concentrations are less than the standards/PQLs. Additionally, the long-term metals averages (1997–2013) are less than the standards/PQLs. Figure 48 shows that none of the 85th percentile 30-day average metals concentrations were reportable for the year.

*Table 38. Annual Volume-Weighted Average Hardness and Metals Concentrations at SW093 for 1997–2013*

| Calendar Year | Volume-Weighted Average Concentration (µg/L) | | | | |
|---|---|---|---|---|---|
| | Hardness(mg/L) | Total Be | Dissolved Cd | Total Cr | Dissolved Ag |
| 1997 | 168 | 0.43 | 0.07 | 2.36 | 0.12 |
| 1998 | 184 | 0.14 | 0.23 | 2.22 | 0.22 |
| 1999 | 152 | 0.20 | 0.13 | 5.08 | 0.16 |
| 2000 | 231 | 0.21 | 0.08 | 3.94 | 0.11 |
| 2001 | 247 | 0.36 | 0.07 | 6.49 | 0.11 |
| 2002 | 365 | 0.30 | 0.08 | 5.95 | 0.11 |
| 2003 | 257 | 0.29 | 0.09 | 6.88 | 0.16 |
| 2004 | 315 | 0.57 | 0.09 | 12.05 | 0.12 |
| 2005 | 337 | 0.11 | 0.05 | 1.92 | 0.11 |
| 2006 | 564 | 0.50 | 0.05 | 0.82 | 0.10 |
| 2007 | 287 | 0.50 | 0.06 | 0.82 | 0.10 |
| 2008 | 552 | 0.50 | 0.07 | 1.84 | 0.10 |
| 2009 | 295 | 0.50 | 0.06 | 2.23 | 0.10 |
| 2010 | 237 | 0.50 | 0.06 | 1.15 | 0.10 |
| 2011 | 343 | 0.50 | 0.06 | 1.15 | 0.10 |
| 2012 | 373 | 0.50 | 0.07 | 0.64 | 0.10 |
| 2013 | 302 | 0.50 | 0.10 | 0.58 | 0.10 |
| **Total (1997–2013)** | 254 | 0.35 | 0.10 | 3.99 | 0.13 |

**Abbreviations:**
Ag = silver
Be = beryllium
Cd = cadmium

### *3.1.2.3 AOC Wells and SW018*

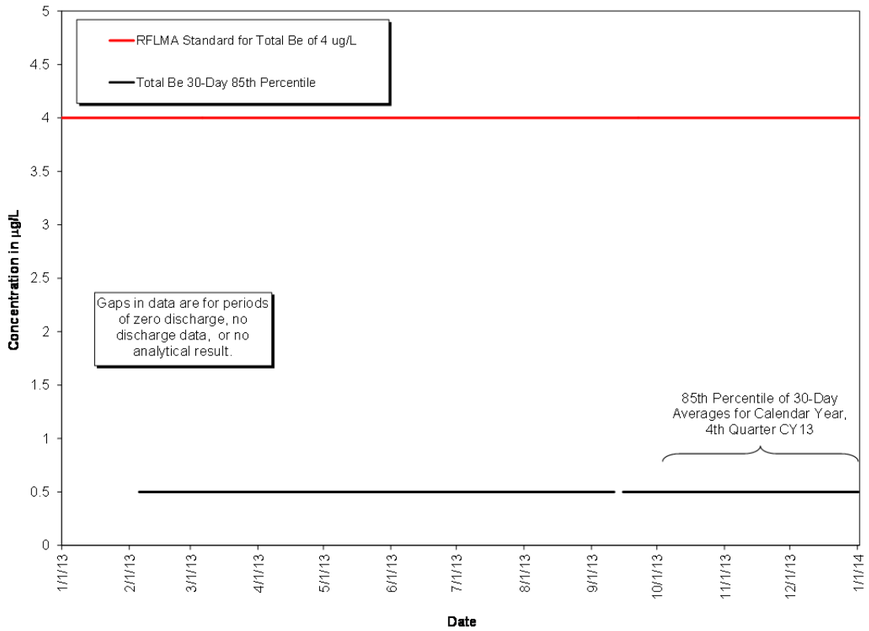
AOC wells (Table 39 and Figure 49) are located to evaluate potential groundwater impacts to surface water. Surface Water Support location SW018 is located to assess groundwater impacts from specific source areas on surface water. Impacts are based on a minimum of two routinely scheduled sampling events in a row, not on a single data point. Analytical results from AOC wells are compared directly against the appropriate surface-water standards in Table 1 of RFLMA Attachment 2 or the RFLMA U groundwater threshold value of 120 µg/L. Analytical data from surface-water performance location SW018, where grab samples for VOCs are collected to support groundwater objectives, are assessed in a manner similar to data from AOC wells.

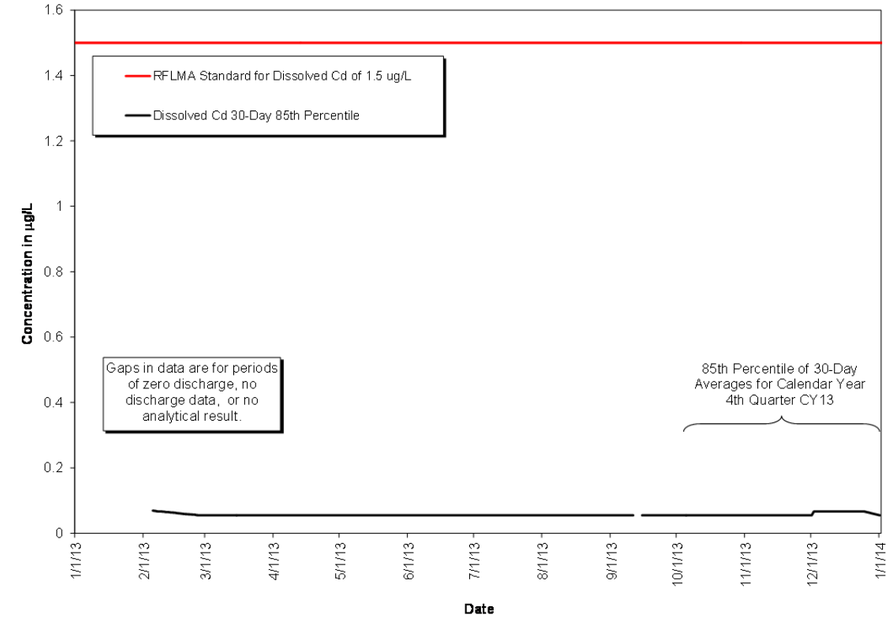
*Table 39. Sampling and Data Evaluation Protocols at AOC Wells and SW018*

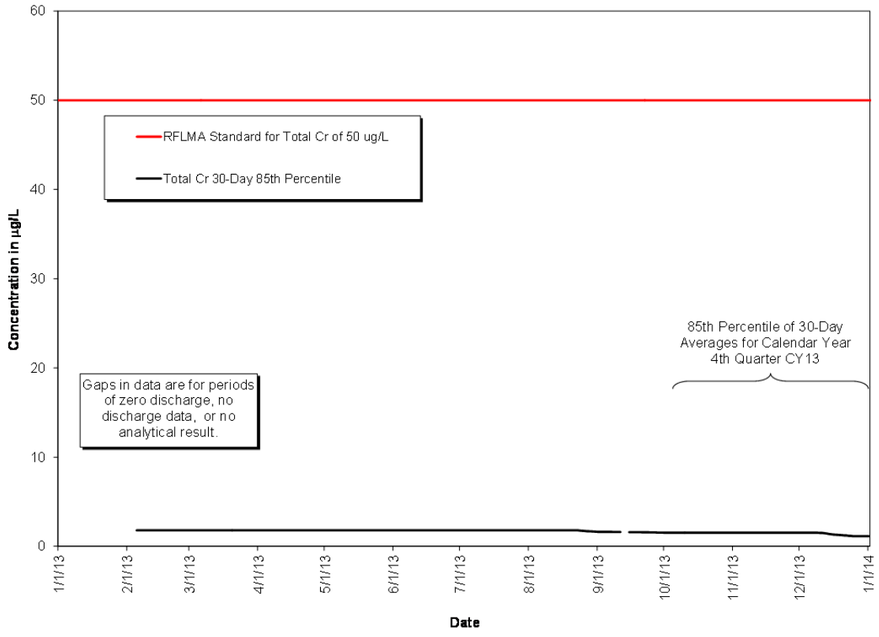
| Location Code | Location Description | Sample Types/Frequencies | Analytes[a] | Data Evaluation |
|---|---|---|---|---|
| 00193 | Woman Creek upstream of Pond C-2 | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs, U | See Figure 7 in Appendix D |
| 00997 | South Walnut Creek upstream of Pond B-5 | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs, U, nitrate | See Figure 7 in Appendix D |
| 10304 | Southeast of 903 Pad/Ryan's Pit Plume at Woman Creek | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs, U, nitrate | See Figure 7 in Appendix D |
| 10594 | North Walnut Creek downstream of former Pond A-1 | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs, U, nitrate | See Figure 7 in Appendix D |
| 11104 | Downgradient, downstream | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs, U | See Figure 7 in Appendix D |
| 4087 | Below former Landfill Pond area | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs, U, nitrate | See Figure 7 in Appendix D |
| 42505 | Terminus of FC-2 | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs | See Figure 7 in Appendix D |
| 89104 | Downgradient at Woman Creek | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs | See Figure 7 in Appendix D |
| B206989 | Below former Landfill Pond area | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs, U, nitrate | See Figure 7 in Appendix D |
| SW018 | FC-2 west of former Building 771 area | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs | See Figure 7 in Appendix D |

**Notes:**

[a] Samples for the analysis of U are field-filtered using a 0.45-micrometer inline filter.
Nitrate is analyzed as nitrate+nitrite as nitrogen; this result is conservatively compared to the nitrate standard only (standard is also nitrate+nitrite as N).



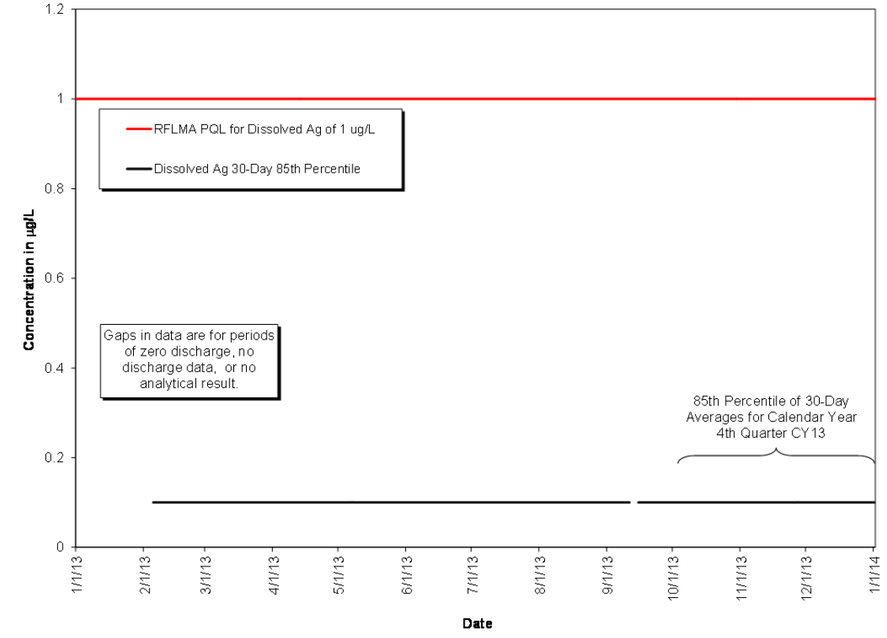




*Figure 48. Volume-Weighted Average Metals Compliance Values at SW093: Year Ending Fourth Quarter CY 2013*

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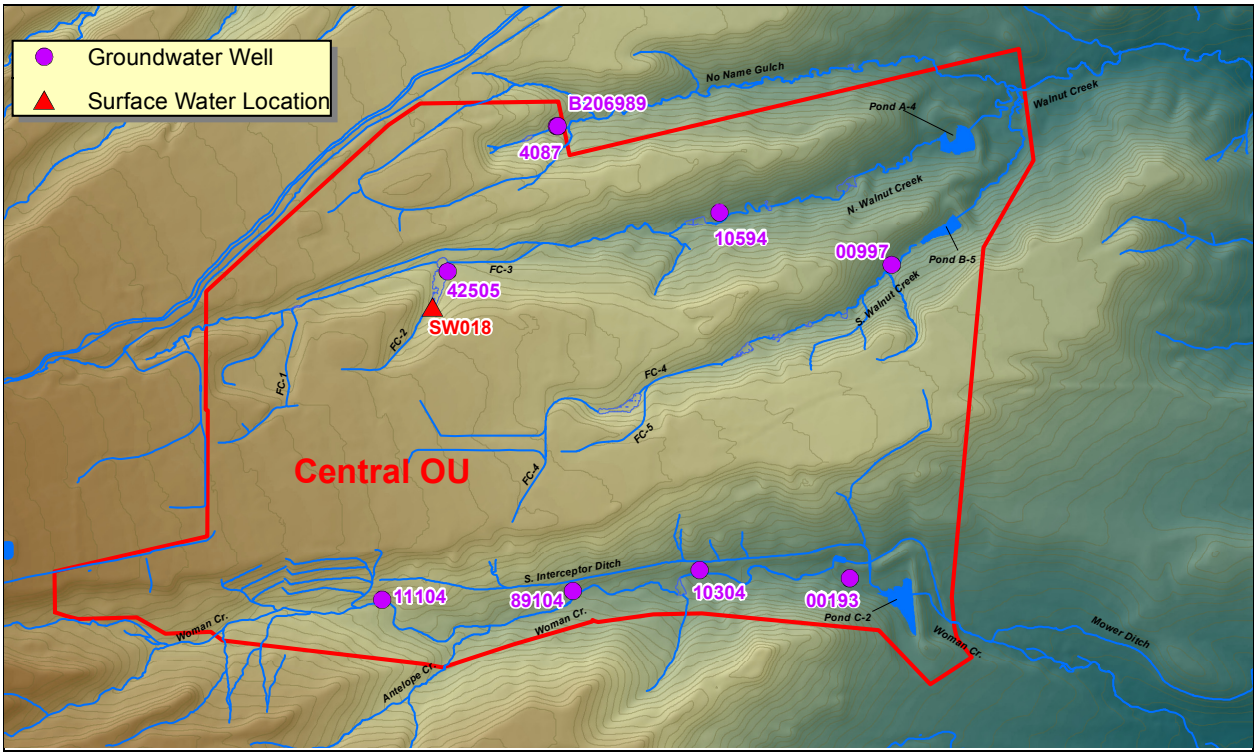



*Figure 49. AOC Wells and SW018 Locations*

### *Data Evaluation*

All AOC wells and SW018 were scheduled for routine monitoring in the fourth quarter of CY 2013. No decision criteria were triggered by the associated analytical results (Appendix B), which were generally consistent with previous data. Monitoring will continue as prescribed in RFLMA (CDPHE et al. 2012).

A reportable condition was encountered for AOC well B206989 in August 2007 (see RFLMA Contact Record 2007-06) due to elevated concentrations of nitrate in groundwater samples from this well. The fourth-quarter 2013 result was 3.5 mg/L, the same as was reported in the second-quarter 2013 sample. This is the lowest concentration of nitrate reported at this location over the period of record (i.e., since 2000). Each of the last seven nitrate results, representing samples collected from the fourth quarter of 2010 through the end of 2013, was below the associated 10 mg/L standard. Updated S-K trend calculations for this well are provided in Appendix B and summarized in Section 3.1.5. Consistent with the results obtained in the years since 2009, the 2013 analytical data continue to support a decreasing trend in nitrate concentrations at well B206989 that has a 95 percent level of significance. Refer to Section 3.1.5 for additional discussion.

### *3.1.2.4 Sentinel Wells*

Sentinel wells (Table 40 and Figure 50) are located near downgradient edges of contaminant plumes, in drainages, at groundwater treatment systems, and along contaminant pathways to surface water. These wells are monitored to determine whether concentrations of contaminants are increasing, thereby providing advance warning of potential groundwater-quality impacts to

the downgradient AOC wells. Confirmation of a potential impact to downgradient wells will require an analytical record that consistently indicates an impact, not a single data point that indicates that a contaminant has been detected.

Sentinel wells are used to monitor the performance of an accelerated action (including soil and source removals, in situ contaminant plume treatment, groundwater intercept components of treatment systems, and facility demolitions) and assess contaminant trends at important locations. Data from Sentinel wells are supplemented with those from Evaluation wells and are used to determine when monitoring can be ended and when additional remedial work should be considered.

*Table 40. Sampling and Data Evaluation Protocols at Sentinel Wells*

| Location Code | Location Description | Sample Types/Frequencies | Analytes[a] | Data Evaluation |
|---|---|---|---|---|
| 00797 | South of former Building 881 (B881) area | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs, U | See Figure 8 in Appendix D |
| 04091 | East of source area | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs | See Figure 8 in Appendix D |
| 11502 | Southeast of former Building 444 (B444) area | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs, U | See Figure 8 in Appendix D |
| 15699 | Downgradient of MSPTS intercept trench | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs | See Figure 8 in Appendix D |
| 20205 | North/northeast of former Building 771 (B771)/Building 774 (B774) area | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs, U, Pu, Am | See Figure 8 in Appendix D |
| 20505 | North of former B771/B774 area | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs, U, Pu, Am | See Figure 8 in Appendix D |
| 20705 | North/northwest of former B771 area | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs, U, nitrate, Pu, Am | See Figure 8 in Appendix D |
| 23296 | Downgradient of ETPTS intercept trench | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs, U | See Figure 8 in Appendix D |
| 30002 | Downgradient at North Walnut Creek | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs | See Figure 8 in Appendix D |
| 33711 | Downgradient of source area | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs | See Figure 8 in Appendix D |
| 37405 | North/northeast part of former Building 371 (B371)/ Building 374 (B374) area | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs, U, nitrate, Pu, Am | See Figure 8 in Appendix D |
| 37505 | North part of former B371 area | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs, U, nitrate | See Figure 8 in Appendix D |
| 37705 | East/southeast of former B371/B374 area at foundation drain confluence | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs, U, nitrate, Pu, Am | See Figure 8 in Appendix D |

*Table 40 (continued). Sampling and Data Evaluation Protocols at Sentinel Wells*

| Location Code | Location Description | Sample Types/Frequencies | Analytes[a] | Data Evaluation |
|---|---|---|---|---|
| 40305 | East part of former B444 area | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs, U | See Figure 8 in Appendix D |
| 45608 | Adjacent to remnants of SW056 French drain and drain interruption | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs | See Figure 8 in Appendix D |
| 52505 | West of former Individual Hazardous Substance Site 118.1 area | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs | See Figure 8 in Appendix D |
| 70099 | Northwest (sidegradient) of SPPTS intercept trench | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | U, nitrate | See Figure 8 in Appendix D |
| 88104 | South part of former B881 area | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs, U | See Figure 8 in Appendix D |
| 90299 | Southeast part of 903 Pad/Ryan's Pit Plume at SID | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs | See Figure 8 in Appendix D |
| 90399 | Southeast part of 903 Pad/Ryan's Pit Plume at SID | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs | See Figure 8 in Appendix D |
| 91203 | Downgradient of Oil Burn Pit #2 source area | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs | See Figure 8 in Appendix D |
| 91305 | South of confluence of FC-4 and FC-5 | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs, U, nitrate | See Figure 8 in Appendix D |
| 95099 | Downgradient of ETPTS intercept trench | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs | See Figure 8 in Appendix D |
| 95199 | Downgradient of ETPTS intercept trench | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs | See Figure 8 in Appendix D |
| 95299 | Downgradient of ETPTS intercept trench | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs | See Figure 8 in Appendix D |
| 99305 | East part of former Building 991 (B991) area | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs, U, nitrate | See Figure 8 in Appendix D |
| 99405 | Southeast part of former B991 area | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs, U, nitrate | See Figure 8 in Appendix D |
| P210089 | Downgradient (north) portion of the Solar Ponds Plume | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs, U, nitrate | See Figure 8 in Appendix D |

**Notes:**
[a] Samples for the analysis of U, Pu, and Am are field-filtered using a 0.45-micrometer inline filter.
Nitrate is analyzed as nitrate+nitrite as nitrogen; this result is conservative compared to the nitrate standard only.

**Abbreviations:**
B371 = former Building 371
B374 = former Building 374
B444 = former Building 444
B771 = former Building 771
B774 = former Building 774
B881 = former Building 881
B991 = former Building 991

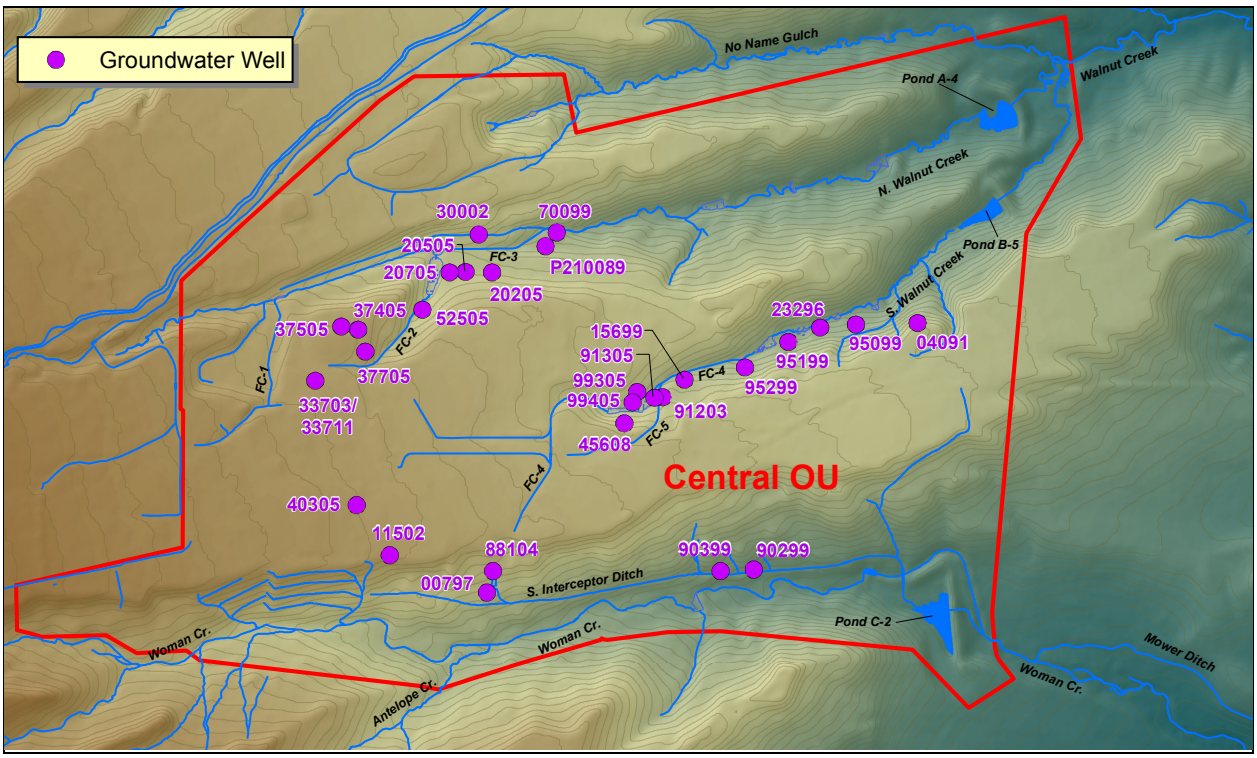



*Figure 50. Sentinel Well Locations*

### *Data Evaluation*

All Sentinel wells were monitored in the fourth quarter of CY 2013 (refer to Appendix B for analytical results). Analytical data are generally consistent with previous results. Refer to Section 3.1.5 for discussion of Sentinel well data, including statistical results, and Appendix B for trend plots.

### *3.1.2.5 Evaluation Wells*

Evaluation wells (Table 41 and Figure 51) are located within groundwater contaminant plumes and near plume source areas, and within the interior of the COU at the Site. As such, they may monitor the effects of accelerated actions that have been performed (e.g., source removal and in situ treatment). Data from these Evaluation wells are therefore appropriate to determine whether the monitoring of a particular plume and source area may be stopped, and to support the determination of whether corresponding groundwater plume treatment systems may be decommissioned. In addition, Evaluation wells are used to support any groundwater evaluations that may be needed as a result of changing contaminant characteristics in downgradient Sentinel or AOC wells. Data from these wells also assist evaluations of predictions made through groundwater modeling efforts.

*Table 41. Sampling and Data Evaluation Protocols at Evaluation Wells*

| Location Code | Location Description | Sample Types/Frequencies | Analytes[a] | Data Evaluation |
|---|---|---|---|---|
| 00191 | East of former 903 Pad area | Biennial grabs; second calendar quarter (high-water conditions) | VOCs | See Figure 9 in Appendix D |
| 00203 | Downgradient (south) portion of SPP | Biennial grabs; second calendar quarter (high-water conditions) | VOCs, U | See Figure 9 in Appendix D |
| 00491 | Southeast of former 903 Pad area | Biennial grabs; second calendar quarter (high-water conditions) | VOCs | See Figure 9 in Appendix D |
| 00897 | Mound Site source area | Biennial grabs; second calendar quarter (high-water conditions) | VOCs | See Figure 9 in Appendix D |
| 3687 | East Trenches source area | Biennial grabs; second calendar quarter (high-water conditions) | VOCs | See Figure 9 in Appendix D |
| 03991 | East of East Trenches source area | Biennial grabs; second calendar quarter (high-water conditions) | VOCs | See Figure 9 in Appendix D |
| 05691 | East Trenches source area | Biennial grabs; second calendar quarter (high-water conditions) | VOCs | See Figure 9 in Appendix D |
| 07391 | Ryan's Pit source area | Biennial grabs; second calendar quarter (high-water conditions) | VOCs | See Figure 9 in Appendix D |
| 18199 | North of former Individual Hazardous Substance Site (IHSS) 118.1 source area | Biennial grabs; second calendar quarter (high-water conditions) | VOCs | See Figure 9 in Appendix D |
| 20902 | Northwest of former IHSS 118.1 source area | Biennial grabs; second calendar quarter (high-water conditions) | VOCs | See Figure 9 in Appendix D |
| 21505 | West of former Building 776/ Building 777 area | Biennial grabs; second calendar quarter (high-water conditions) | VOCs | See Figure 9 in Appendix D |
| 22205 | Downgradient (north) portion of SPP | Biennial grabs; second calendar quarter (high-water conditions) | VOCs, U | See Figure 9 in Appendix D |
| 22996 | East/northeast part of former Building 886 area | Biennial grabs; second calendar quarter (high-water conditions) | U, nitrate | See Figure 9 in Appendix D |
| 30900 | PU&D Yard Plume source area | Biennial grabs; second calendar quarter (high-water conditions) | VOCs, U, nitrate | See Figure 9 in Appendix D |
| 33502 | Oil Burn Pit (OBP) #1 source area | Biennial grabs; second calendar quarter (high-water conditions) | VOCs, U, nitrate | See Figure 9 in Appendix D |
| 33604 | OBP #1 source area | Biennial grabs; second calendar quarter (high-water conditions) | VOCs, U, nitrate | See Figure 9 in Appendix D |
| 33905 | North of former 231 Tanks area | Biennial grabs; second calendar quarter (high-water conditions) | VOCs | See Figure 9 in Appendix D |
| 40005 | West part of former Building 444 (B444) area | Biennial grabs; second calendar quarter (high-water conditions) | VOCs | See Figure 9 in Appendix D |
| 40205 | South part of former B444 area | Biennial grabs; second calendar quarter (high-water conditions) | VOCs, U | See Figure 9 in Appendix D |
| 50299 | East of former 903 Pad area | Biennial grabs; second calendar quarter (high-water conditions) | VOCs | See Figure 9 in Appendix D |
| 51605 | Downgradient, adjacent to GS13 | Biennial grabs; second calendar quarter (high-water conditions) | VOCs, U | See Figure 9 in Appendix D |
| 55905 | North part of former Building 559 (B559) area | Biennial grabs; second calendar quarter (high-water conditions) | VOCs | See Figure 9 in Appendix D |
| 56305 | West part of former B559 area | Biennial grabs; second calendar quarter (high-water conditions) | VOCs | See Figure 9 in Appendix D |
| 70705 | East part of former Building 707 area | Biennial grabs; second calendar quarter (high-water conditions) | VOCs | See Figure 9 in Appendix D |
| 79102 | SPP source area—north | Biennial grabs; second calendar quarter (high-water conditions) | VOCs, U, nitrate | See Figure 9 in Appendix D |
| 79202 | SPP source area—north | Biennial grabs; second calendar quarter (high-water conditions) | VOCs, U, nitrate | See Figure 9 in Appendix D |

*Table 41 (continued). Sampling and Data Evaluation Protocols at Evaluation Wells*

| Location Code | Location Description | Sample Types/Frequencies | Analytes[a] | Data Evaluation |
|---|---|---|---|---|
| 79302 | SPP source area—northeast | Biennial grabs; second calendar quarter (high-water conditions) | U, nitrate | See Figure 9 in Appendix D |
| 79402 | SPP source area—northeast | Biennial grabs; second calendar quarter (high-water conditions) | U, nitrate | See Figure 9 in Appendix D |
| 79502 | SPP source area—east | Biennial grabs; second calendar quarter (high-water conditions) | VOCs, U, nitrate | See Figure 9 in Appendix D |
| 79605 | SPP source area—east | Biennial grabs; second calendar quarter (high-water conditions) | VOCs | See Figure 9 in Appendix D |
| 88205 | South part of former Building 881 area | Biennial grabs; second calendar quarter (high-water conditions) | U, nitrate | See Figure 9 in Appendix D |
| 891WEL | OU 1 Plume source area | Biennial grabs; second calendar quarter (high-water conditions) | U, nitrate | See Figure 9 in Appendix D |
| 90402 | Southeast of former 903 Pad area | Biennial grabs; second calendar quarter (high-water conditions) | VOCs, U | See Figure 9 in Appendix D |
| 90804 | Southeast part of 903 Pad/Ryan's Pit Plume | Biennial grabs; second calendar quarter (high-water conditions) | VOCs | See Figure 9 in Appendix D |
| 91105 | OBP #2 source area | Biennial grabs; second calendar quarter (high-water conditions) | U, nitrate | See Figure 9 in Appendix D |
| B210489 | Downgradient of SPPTS | Biennial grabs; second calendar quarter (high-water conditions) | VOCs, U | See Figure 9 in Appendix D |
| P114689 | Southwest of former B559 area | Biennial grabs; second calendar quarter (high-water conditions) | VOCs, U | See Figure 9 in Appendix D |
| P115589 | West part of former Building 551 Warehouse area | Biennial grabs; second calendar quarter (high-water conditions) | VOCs, U | See Figure 9 in Appendix D |
| P208989 | SPP source area—north | Biennial grabs; second calendar quarter (high-water conditions) | VOCs, U, nitrate | See Figure 9 in Appendix D |
| P210189 | Solar Evaporation Pond area VOC plume source area | Biennial grabs; second calendar quarter (high-water conditions) | VOCs, U, nitrate | See Figure 9 in Appendix D |
| P416889 | Southeast of former B444 area | Biennial grabs; second calendar quarter (high-water conditions) | VOCs | See Figure 9 in Appendix D |
| P419689 | Southeast of former B444 area | Biennial grabs; second calendar quarter (high-water conditions) | VOCs | See Figure 9 in Appendix D |

**Notes:**
[a] Samples for the analysis of U are field-filtered using a 0.45-micrometer inline filter.
Nitrate is analyzed as nitrate+nitrite as nitrogen; this result is conservatively compared to the nitrate standard only.

**Abbreviations:**
B444 = former Building 444
B559 = former Building 559
IHSS = Individual Hazardous Substance Site
OBP = Oil Burn Pit
PU&D = Property Utilization and Disposal

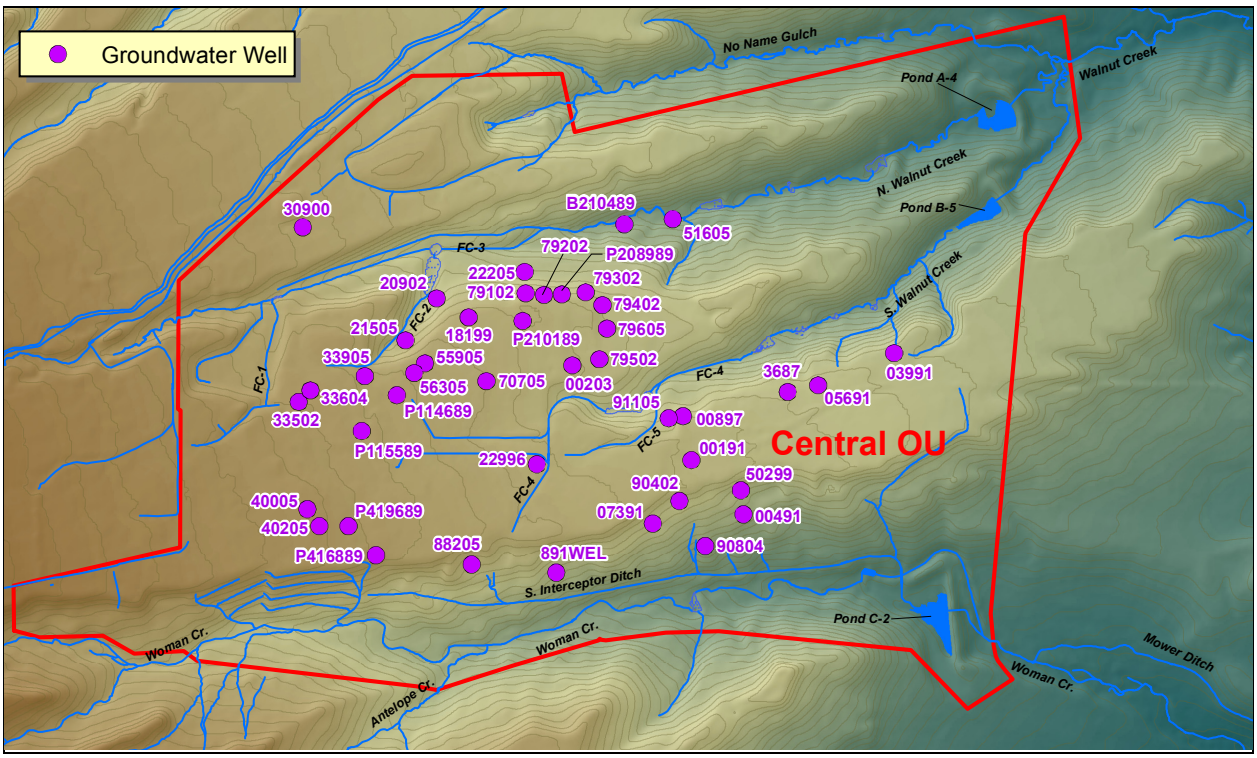



*Figure 51. Evaluation Well Locations*

### *Data Evaluation*

Evaluation wells were not scheduled for RFLMA monitoring in the fourth quarter of 2013. However, selected Evaluation wells were sampled in that quarter to investigate effects from the heavy precipitation in September 2013. Analytical data are generally consistent with previous results. Refer to Section 3.1.5 for discussion of Evaluation well data, including statistical results, and to Appendix B for analytical data and trend plots.

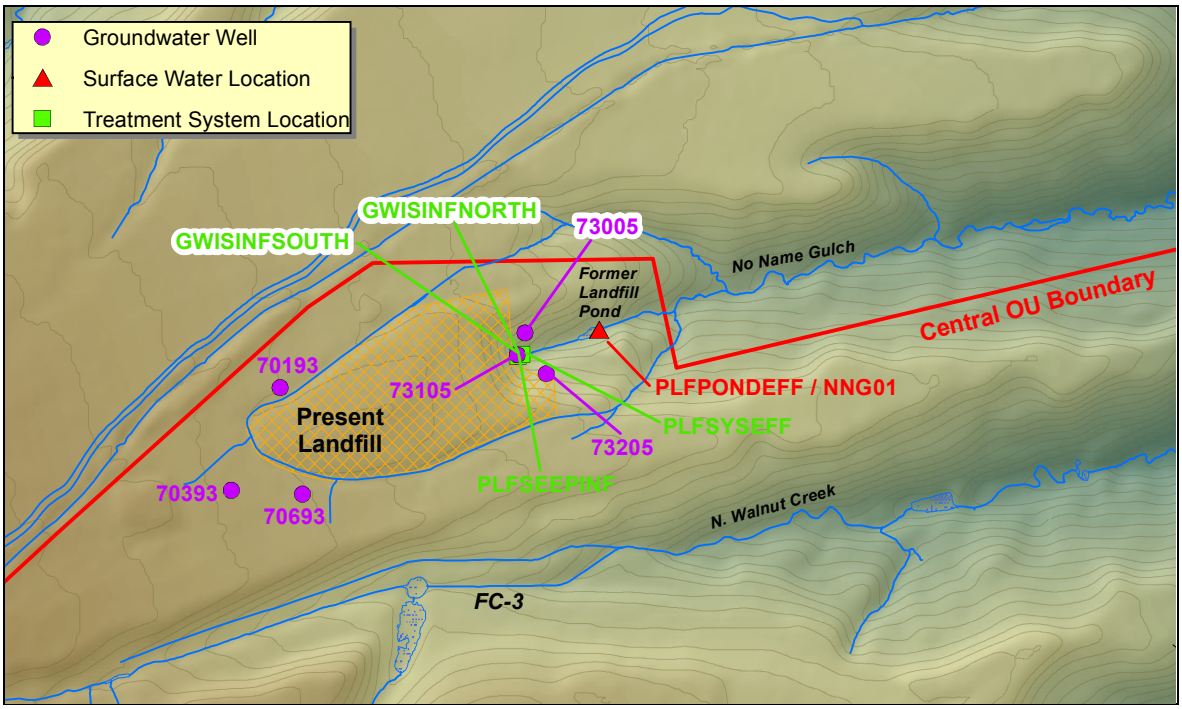
### *3.1.2.6 PLF Monitoring*

The PLF is located in the COU just north of the former Industrial Area (IA). This objective deals with monitoring surface water and groundwater at the PLF to determine the short- and long-term effectiveness of the remedy. These requirements were initially identified in the *Final Interim Measures/Interim Remedial Action for IHSS 114 and RCRA Closure of the RFETS Present Landfill*, Appendix B, "Post-Accelerated Action Monitoring and Long-Term Surveillance and Monitoring Considerations" (DOE 2004), and finalized in the PLF M&M Plan (DOE 2008a).

Water monitoring locations for the PLF are shown on Figure 52. The surface-water and treatment system monitoring requirements deal specifically with the PLFTS and are discussed in detail in Section 3.1.2.8. Details regarding the groundwater monitoring are provided below.

The RCRA monitoring network at the PLF comprises six wells: three are located upgradient of the landfill, and three are downgradient of the landfill but upgradient of the former Landfill Pond area. The RCRA wells are monitored in accordance with RFLMA. Decision rules are also set

forth in that document; see Appendix D for the RFLMA decision flowcharts. Additional monitoring wells are present in the general vicinity of the PLF; however, they do not contribute to the RCRA monitoring of the landfill and are discussed in other sections of this report.




**Notes:** PLFSYSEFF serves as both the treatment system effluent monitoring location and a performance surface-water location.

*Figure 52. PLF Monitoring Locations*

Sampling and data evaluation protocols for the RCRA wells at the PLF are provided in Table 42.

*Table 42. Sampling and Data Evaluation Protocols at PLF RCRA Monitoring Wells*

| Location Code | Location Description | Sample Types/ Frequencies | Analytes[a] | Data Evaluation |
|---|---|---|---|---|
| 70193 | Upgradient (northwest) of the upgradient end of the PLF | Quarterly (each calendar quarter) | VOCs, metals | See Figure 10 in Appendix D |
| 70393 | Upgradient (west/southwest) of the upgradient end of the PLF | Quarterly (each calendar quarter) | VOCs, metals | See Figure 10 in Appendix D |
| 70693 | Upgradient (southwest) of the upgradient end of the PLF | Quarterly (each calendar quarter) | VOCs, metals | See Figure 10 in Appendix D |
| 73005 | Downgradient (northeast) of the downgradient end of the PLF | Quarterly (each calendar quarter) | VOCs, metals | See Figure 10 in Appendix D |
| 73105 | Downgradient (east) of the downgradient end of the PLF at the PLFTS | Quarterly (each calendar quarter) | VOCs, metals | See Figure 10 in Appendix D |
| 73205 | Downgradient (southeast) of the downgradient end of the PLF | Quarterly (each calendar quarter) | VOCs, metals | See Figure 10 in Appendix D |

**Notes:**
[a] Samples for the analysis of metals are field-filtered using a 0.45-micrometer inline filter.
Laboratory analytes are limited to those based on the analytical methods listed in the PLF M&M Plan.

### *Data Evaluation*

All RCRA wells at the PLF were sampled in the fourth quarter of CY 2013. Results are included in Appendix B.

This section presents the evaluation of the PLF groundwater quality data for all of CY 2013. Monitoring performed in 2013 at the PLF RCRA wells is summarized in Table 43.

*Table 43. RCRA Groundwater Sampling Performed in 2013 at the PLF*

| Well | Location | Q1 | Q2 | Q3 | Q4 |
|---|---|---|---|---|---|
| 70193 | Upgradient | VOCs, metals | VOCs, metals | VOCs, metals | VOCs, metals |
| 70393 | Upgradient | VOCs, metals | VOCs, metals | VOCs, metals | VOCs, metals |
| 70693 | Upgradient | VOCs, metals | VOCs, metals | VOCs, metals | VOCs, metals |
| 73005 | Downgradient | VOCs, metals | VOCs, metals | VOCs, metals | VOCs, metals |
| 73105 | Downgradient | VOCs, metals | VOCs, metals | VOCs, metals | VOCs, metals |
| 73205 | Downgradient | VOCs, metals | VOCs, metals | VOCs, metals | VOCs, metals |

**Notes:** Q = quarter. Metals include U. Only RFLMA-defined (CDPHE et al. 2012) RCRA wells supporting the PLF are listed; other wells in the area (such as Sentinel and Evaluation wells) are omitted because they are not part of the RCRA monitoring network.

Downgradient water quality (as represented by analytical data from wells 73005, 73105, and 73205) was statistically compared against upgradient water quality (as represented by analytical data from wells 70193, 70393, and 70693). Generally, water quality in the upgradient wells continues to be more impacted than that in the downgradient wells, because upgradient wells 70393 and 70693 are within the margins of the Property Utilization and Disposal (PU&D) Yard Plume, an area of groundwater contaminated with VOCs. (The PU&D Yard Plume is discussed separately later in this report.)

Statistical evaluation of the analytical data from the PLF was performed using all valid, nonrejected data for upgradient and downgradient RCRA wells. An interwell comparison was made (i.e., comparing upgradient wells against downgradient wells) in accordance with RFLMA and the PLF M&M Plan, using the Analysis of Variance (ANOVA) procedure as performed using the Sanitas software package (Sanitas Technologies 2013). The data were also assessed for trends, again using Sanitas and the S-K trending method in keeping with the findings of previous studies that indicated this is the most appropriate method for Rocky Flats groundwater data (K-H 2004a).

The ANOVA evaluation of the groundwater analytical data from PLF RCRA wells indicates that groundwater sample results from one or more of the downgradient wells are statistically higher in the concentration of certain constituents. As in previous years, all of these constituents are metals. Also consistent with previous years, these ANOVA results must be considered carefully, as quite a few of the statistical conclusions may not be valid due to the presence of numerous nondetects and/or estimated concentrations in the dataset. Table 44 summarizes the ANOVA conclusions for 2013. These results are identical to those reported for 2012 (DOE 2013b) and almost identical to those reported for prior years (DOE 2010b, DOE 2011c, DOE 2012).

*Table 44. Results of Groundwater ANOVA Evaluation for 2013 at the PLF*

| Analyte | 73005 | 73105 | 73205 |
|---|---|---|---|
| Boron | x (est) | x | X |
| Cadmium | | | x (U, est) |
| Chromium | x (U, est) | | |
| Copper | | | x (U, est) |
| Nickel | | x (U, est) | x (U, est) |
| Selenium | x (est) | | x |
| Uranium | x (est) | x (est) | x |
| Zinc | | x (est) | |

**Notes:** x = analyte is present in groundwater at a statistically significant higher concentration in the indicated downgradient well compared to upgradient wells. This notation is assigned the qualifier "U" if the dataset contains at least 25% nondetects, and "est" if it contains at least 25% estimated values.

As mentioned above and flagged in Table 44, the analytical data sets include many nondetects and estimated concentrations. (Results with a J qualifier are defined as estimated; the B qualifier may indicate the constituent was also identified in the blank, or that the result is greater than the method detection limit but less than the practical quantitation limit. As such, B-qualified data may also be interpreted as estimated quantities.) The accumulating, qualified data (i.e., flagged as nondetect or with a J or B) is what has led to the addition to this table of several metals over the years since 2007, including cadmium (Cd), Cr, copper (Cu), nickel (Ni), and zinc (Zn). In fact, the statistical results for Cd at well 73205, Cr at well 73005, Cu at well 73205, Ni at wells 73105 and 73205, and Zn in samples from 73105 are based on data sets containing *only* qualified data; not a single result is unqualified. In addition, the statistical outcome for selenium (Se) at well 73005 is based on a data set in which more than three quarters of the results are qualified. Of those analyte-well pairs listed in Table 44, only the data for boron (B), U, and Se at well 73205 are based on data sets in which at least half the results are unqualified.

Changes to detection limits represent another complication with respect to performing and interpreting the results of statistical evaluations and the associated summary presented in Table 44 above. The detection limits for Cr and Ni have decreased since mid-2008. Prior to that date, the corresponding results were consistently nondetect; since that date, results have fallen between the older and newer detection limits, and are consistently qualified as estimated. The data replacement approach used for nondetects in such cases leads to an appearance of consistently low values (0.001, to be specific) when the constituent was not detected under the older detection limit, followed by detections at estimated concentrations that are higher than the replacement value of 0.001. This can affect the outcome of the ANOVA assessment as well as the calculated trends (as indicated previously; see Figure 6 and related discussion for an example). Therefore, because of this abundance of nondetects and estimated concentrations, the results of statistical calculations utilizing these data may not be valid. Additional data will be required to evaluate the validity of these ANOVA and trending determinations.

Sections 3.1.1.2 and 3.1.5 provide more detailed discussions of statistical trend testing using the S-K method. The results of these statistical calculations for the downgradient PLF wells are summarized below in Table 45. The statistical calculations in Table 45 are almost identical to statistical trending results of previous years. The difference in 2013 compared to 2012 is that a 95-percent level of confidence is now calculated for B for all three downgradient wells;

previously, this was not the case at well 73005. Increasing trends of the same statistical significance are calculated for Cr and Se in groundwater at well 73005, and for Ni in groundwater at well 73105, although the trends for Cr and Ni may not be valid, as noted above in the discussion on the ANOVA results. (Additional information and summary results of trend testing are provided in subsequent sections of this report; see also Appendix B for statistical output, including trend plots.)

*Table 45. Results of Groundwater S-K Trend Testing for 2013 at the PLF Downgradient Wells*

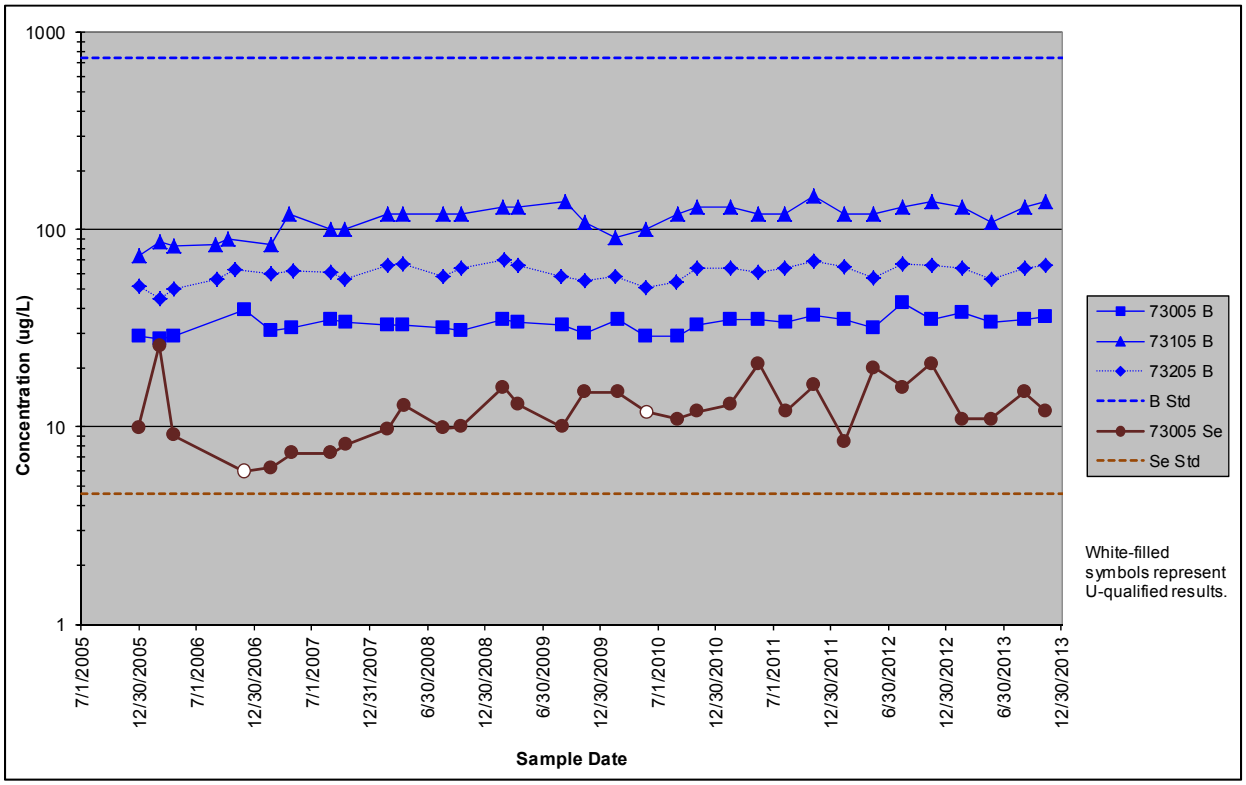
| Analyte | 73005 | 73105 | 73205 |
|---|---|---|---|
| B | x (est) | x | x |
| Cr | x (U, est) | | |
| Ni | | x (U, est) | |
| Se | x (est) | | |

**Notes:** x = analyte is on an increasing trend, with a statistical significance of 95%, in the indicated downgradient well. This notation is assigned the qualifier "U" if the dataset contains at least 25% nondetects, and "est" if it contains at least 25% estimated values.

Note that statistically significant trends are also calculated for some constituents in groundwater from upgradient wells. For example, B is suggested as increasing in wells 70193 and 70693 at lower levels of statistical confidence. In each of these cases, the calculated trends are almost certainly affected by the numerous qualified data, including nondetects and estimated results. Identification of statistical trends in upgradient RCRA well data is not required by the RFLMA, but was performed for informational purposes. These trend results are summarized later in this report. In addition, U in well 73105 is suggested to be on a decreasing trend with a statistical significance of 95 percent. Again, uranium data for this well include numerous estimated values.

As discussed above and indicated in Table 44 and Table 45, the data for several of these constituents largely represent nondetects and/or estimated values. As explained in Section 3.1.1.2 and illustrated in Figure 6 (which uses Cr in well 73005 as the example), data replacement can strongly affect the calculated trend of a constituent represented by a data set that includes numerous nondetects. Because this is the case with the Cr at well 73005 and Ni at well 73105, the calculated trends for those constituents may not be viable. Also, as discussed above, the change in detection limits may be another factor in these suggested trends.

Figure 53 presents a time-series plot of B in all three downgradient wells, and Se in 73005. Note that nondetects are called out, but estimated values are not plotted differently. (Plots of Cr in 73005 and Ni in 73105 are not included because of the numerous nondetects. However, all calculated trend plots are provided in Appendix B.) Concentrations of B are well below their associated RFLMA Table 1 standard, but Se in well 73005 is above the corresponding RFLMA standard. Although the data set for Se at 73005 contains a large number of estimated results, the unqualified detections are consistently similar in concentration to the results reported as estimated, suggesting the estimated data are representative.




**Notes:** Constituents and corresponding RFLMA standards (CDPHE et al. 2012): B = boron, 750 µg/L; Se = selenium, 4.6 µg/L. This figure shows only those analyte-well combinations that were (1) identified in the ANOVA evaluation of PLF groundwater data as having statistically significant higher concentrations in the downgradient RCRA well (as listed in Table 44), (2) on an increasing concentration trend at the 95% level of significance (Table 45), and (3) predominantly represented by detections. The nondetects are highlighted, but numerous other results were qualified but are not shown differently for the sake of simplicity. Note the logarithmic concentration scale.

*Figure 53. Consistently Detected Constituents Meeting Both ANOVA and Trending Decision Criteria at the PLF Through 2013*

The highest reported concentration of Se in samples from well 73005 collected in 2013 was 15 µg/L; the associated RFLMA Table 1 value is 4.6 µg/L. The highest concentration of B in any of these three downgradient wells was 140 µg/L (the RFLMA Table 1 value is 750 µg/L). The highest reported concentration of Cr at well 73005 in 2013 was estimated at 2.3 µg/L (the RFLMA Table 1 value is 50 µg/L). Ni in well 73105 was estimated at up to 3.4 µg/L (RFLMA Table 1: 123 µg/L). Therefore, of these constituents only the Se in well 73005 exceeded RFLMA values.

As in most other years, no VOCs were detected in samples from downgradient PLF RCRA wells in 2013.

The constituents identified via the ANOVA statistical evaluation are all found in natural settings, and the statistical results summarized above—irrespective of issues with nondetects and estimated values—may not reflect the presence of contaminants related to the PLF. For example, B is present in evaporite minerals, metamorphic minerals, and in coals and similar deposits of carbonaceous fossilized organic matter. Lithologic logs from some of these wells (including one upgradient and all three downgradient) note the presence of fossilized organics (i.e., substances

akin to lignite or coal) at the depth corresponding to the screened interval. Thus, these wells may produce groundwater with higher concentrations of B as an artifact of the geology and variations in screened materials.

Similarly, the presence of Se at elevated concentrations may be related to regional mineralization and the prevalence of coals and organic-rich sediments, clays, and iron oxides in the geologic intervals screened by PLF wells (and most monitoring wells at Rocky Flats). The sulfide mineralization that drew prospectors to Colorado and is evident in the mountains west of the Site would be a source of Se, as might shales that are closer to the Site. Se would be liberated as those rocks and minerals weather. Clays, coals, and iron oxides could then act to sorb the mobile Se and may be present in the screened interval of these wells.

RFLMA Attachment 2 states that if a constituent is found to be present at a statistically significant higher concentration in a downgradient well than in the upgradient wells (i.e., results of ANOVA analysis), *and* is on an increasing trend (S-K trending results), then consultation is triggered. Both of these conditions are met for the wells and constituents listed in Table 45: B in all three wells, Cr and Se in well 73005, and Ni in well 73105.

Many of these same statistical conclusions have been reached in previous years; for example, see the 2009, 2010, 2011, and 2012 Annual Reports (DOE 2010b, 2011c, 2012, 2013b). The consultative process has been initiated in response (for example, see Contact Record 2010-05). In accordance with Contact Record 2011-03, the 2012 consultation on April 5, 2012, did not generate a new contact record. Similarly, consultation was held on March 13, 2013, regarding the results of statistical evaluations of the 2012 groundwater data, and concluded that no response action was required, and no modification of RFLMA monitoring is needed. After reviewing the results of statistical evaluation of the 2013 groundwater data presented in this annual report the RFLMA Parties may decide that subsequent consultation regarding the appropriate response is required. Such consultation, if it occurs, will be documented in a new contact record (Contact Record 2011-03).

According to RFLMA, calculated 85th percentile concentrations from downgradient PLF wells are also to be compared to the corresponding standards to support the exit strategy. However, the data to be used in this comparison are from the previous two periodic (i.e., CERCLA) reviews. These downgradient PLF wells were installed in 2005, and consequently were represented by only about 8 years of data as of the end of 2013. Therefore, although CERCLA reviews were conducted in 2007 and 2012, such a comparison cannot properly be completed at this time.

Groundwater quality at the PLF is impacted on the upgradient side by VOCs from the PU&D Yard Plume. (Refer to the separate discussion of this plume in Section 3.1.5.) As noted above, data from the downgradient RCRA wells in 2013 showed no detections of VOCs.

Groundwater flow at the PLF is strongly affected by the Groundwater Intercept System (GWIS), which is designed to divert groundwater around the perimeter of the PLF rather than through the landfill wastes. The GWIS includes a slurry wall and perforated drain around the upgradient and sidegradient perimeter of the PLF and acts to isolate groundwater within the PLF from groundwater outside of the PLF. (Refer to the previously published reports referenced earlier in this section for more detail on the GWIS and related discussions.) Previous RCRA and groundwater annual reports have confirmed the effectiveness of this isolation. Because the

GWIS is located between the upgradient PLF RCRA wells and the downgradient PLF RCRA wells, estimating seepage velocities as discussed in Section 3.1.3.5 between those sets of wells is not appropriate.

#### *3.1.2.7 OLF Monitoring*

The OLF is located in the COU just south of the former IA. This objective addresses monitoring surface water and groundwater at the OLF to determine the short- and long-term effectiveness of the remedy. These requirements were initially identified in the *Final Interim Measure/Interim Remedial Action for the Original Landfill (Including IHSS Group SW-2; IHSS 115, Original Landfill and IHSS 196, Filter Backwash Pond),* Appendix B, "Post-Accelerated Action Monitoring and Long-Term Surveillance and Maintenance Considerations" (DOE 2005), and finalized in the OLF M&M Plan (DOE 2009a).

Four groundwater monitoring wells monitor the OLF and are classified as RCRA wells in RFLMA; three of these wells were installed in 2005. One of the OLF RCRA wells is located upgradient of the landfill, and three are downgradient of the landfill but upgradient of Woman Creek. The RCRA wells are monitored in accordance with RFLMA. Decision rules are also set forth in that document; see Appendix D for the RFLMA decision flowcharts. Additional monitoring wells are present in the general vicinity of the OLF; however, they do not contribute to the RCRA monitoring of the facility and are therefore discussed in other sections of this report.

Surface-water and RCRA groundwater monitoring locations for the OLF are shown on Figure 54. Sampling and data evaluation protocols are summarized in Table 46 and Table 47.

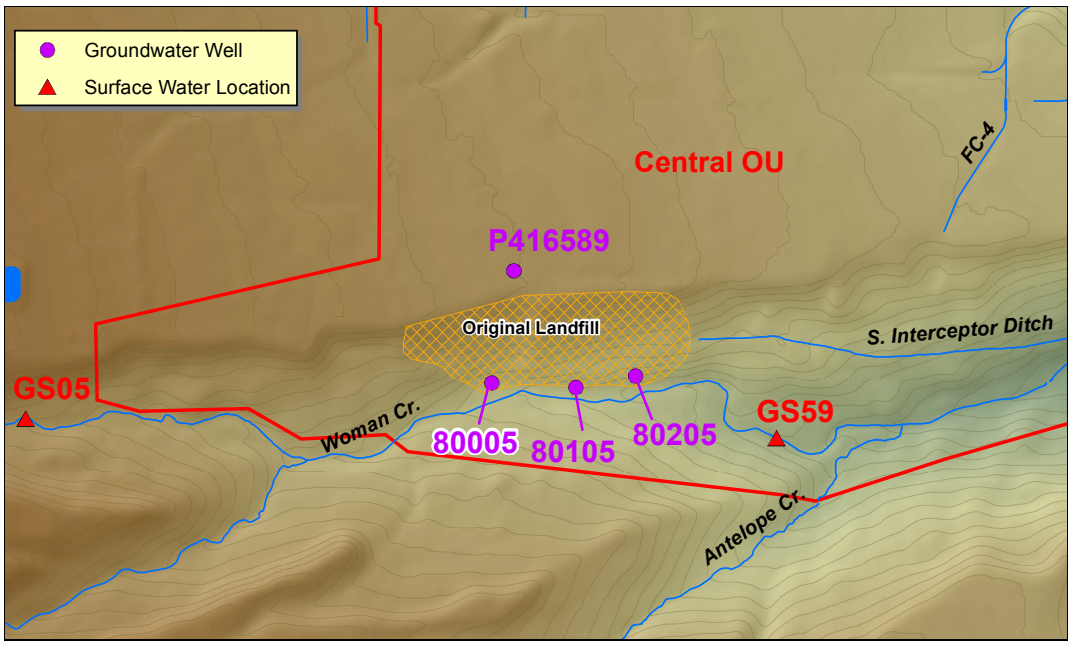



*Figure 54. OLF Monitoring Locations*

*Table 46. Sampling and Data Evaluation Protocols at OLF Surface-Water Monitoring Locations*

| Location Code | Location Description | Sample Types/ Frequencies | Analytes[b] | Data Evaluation |
|---|---|---|---|---|
| GS05; upgradient | Woman Creek at west POU fenceline | Quarterly grab samples[a] | Total U; dissolved and total metals; VOCs; mercury | See Figure 12 in Appendix D |
| GS59; downgradient | Woman Creek 800 feet downstream of OLF | Quarterly grab samples[a] | Total U; dissolved and total metals; VOCs; mercury | See Figure 12 in Appendix D |

**Notes:**
[a] Samples for total U and metals are currently collected as continuous flow-paced composites; decisions specifically for the OLF monitoring objective require only quarterly grabs.
[b] Laboratory analytes are limited to those based on the analytical methods listed in the OLF M&M Plan.

*Table 47. Sampling and Data Evaluation Protocols at OLF RCRA Monitoring Wells*

| Location Code | Location Description | Sample Types/ Frequencies | Analytes[a] | Data Evaluation |
|---|---|---|---|---|
| P416589 | Upgradient (north) of the OLF | Quarterly (each calendar quarter) | VOCs, SVOCs, metals | See Figure 10 in Appendix D |
| 80005 | Downgradient (south) of the western portion of the OLF | Quarterly (each calendar quarter) | VOCs, SVOCs, metals | See Figure 10 in Appendix D |
| 80105 | Downgradient (south) of the central portion of the OLF | Quarterly (each calendar quarter) | VOCs, SVOCs, metals | See Figure 10 in Appendix D |
| 80205 | Downgradient (south) of the eastern portion of the OLF | Quarterly (each calendar quarter) | VOCs, SVOCs, metals | See Figure 10 in Appendix D |

**Notes:**
[a] Samples for the analysis of metals are field-filtered using a 0.45-micrometer inline filter. Metals include U. Laboratory analytes are limited to those based on the analytical methods listed in the OLF M&M Plan.

**Abbreviations:**
SVOCs = semivolatile organic compounds.

### *Data Evaluation*

Analytical results for GS59 and GS05 are compared, according to Figure 12 in Appendix D, to the appropriate surface-water standard in Table 1 of RFLMA Attachment 2. During the fourth quarter of CY 2013, routine sampling at monitoring location GS59 showed results for selenium of 5.5 µg/L, above the surface-water standard of 4.6 µg/L. This composite sample was collected during the period from October 29, 2013, to January 9, 2014. According to RFLMA evaluation protocols, this result triggered sampling for selenium at an increased frequency. Due to winter ice conditions and very little flow, the subsequent composite sample was completed on March 6, 2014. At the time of this report's publication, analysis had not been completed. There were no other instances at GS59 where analytes were detected above the applicable standards during CY 2013.

All RCRA wells at the OLF were sampled in the fourth quarter of CY 2013. Results are included in Appendix B.

This section presents the evaluation of the CY 2013 groundwater quality data for the OLF, previously known as OU 5. All RCRA wells are monitored quarterly. Monitoring performed in 2013 is summarized in Table 48.

*Table 48. RCRA Groundwater Sampling Performed in 2013 at the OLF*

| Well | Location | Q1 | Q2 | Q3 | Q4 |
|---|---|---|---|---|---|
| P416589 | Upgradient | VOCs, metals, SVOCs | VOCs, metals, SVOCs | VOCs, metals, SVOCs | VOCs, metals, SVOCs |
| 80005 | Downgradient | VOCs, metals, SVOCs | VOCs, metals, SVOCs | VOCs, metals, SVOCs | VOCs, metals, SVOCs |
| 80105 | Downgradient | VOCs, metals, SVOCs | VOCs, metals, SVOCs | VOCs, metals, SVOCs | VOCs, metals, SVOCs |
| 80205 | Downgradient | VOCs, metals, SVOCs | VOCs, metals, SVOCs | VOCs, metals, SVOCs | VOCs, metals, SVOCs |

**Notes:** Q = quarter. Metals include U. SVOCs = semivolatile organic compounds. Only RCRA wells supporting the OLF are listed; other wells in the area (such as AOC, Sentinel, and Evaluation wells) are omitted because they are not part of the RCRA monitoring network.

In addition to being monitored and evaluated similarly to RCRA wells (i.e., sampled quarterly, with resulting analytical data evaluated by upgradient-downgradient comparisons), the three downgradient wells are also evaluated in the manner of Sentinel wells. Specifically, data from these wells are statistically evaluated using 85th percentile concentrations to compare against surface-water standards, and data trends are constructed as warranted to determine a need for action.

As with the PLF, statistical evaluation of the analytical data from the OLF was performed using all nonrejected data for upgradient and downgradient RCRA wells. An interwell comparison was made (i.e., comparing the upgradient well against downgradient wells) in accordance with RFLMA and the OLF M&M Plan (DOE 2009a), using the ANOVA procedure as performed with the Sanitas software package (Sanitas Technologies 2013). The data were also evaluated for statistical trends, again using Sanitas and the S-K trending method in keeping with the findings of previous studies indicating this method to be most appropriate for Rocky Flats groundwater data (K-H 2004a).

RFLMA-required consultation with the regulators is required if either of the following two conditions is true of OLF groundwater: (1) concentrations of certain constituents are statistically higher in downgradient than upgradient groundwater, or (2) concentrations of constituents in a downgradient well are on an increasing trend meeting the 95-percent level of significance. Results of these statistical evaluations are summarized in the following paragraphs.

An ANOVA evaluation of the groundwater analytical data from OLF RCRA wells indicates that groundwater samples from the downgradient wells are statistically higher in the concentration of certain constituents. No VOCs or semivolatile organic compounds (SVOCs) were found in downgradient wells at statistically higher concentrations than in upgradient wells, but the concentrations of three metals were calculated to be statistically higher in one or more downgradient wells. These results are summarized in Table 49, and are almost identical to those reported in the annual report for 2012 (DOE 2013b) and very similar to those presented in earlier annual reports (e.g., DOE 2010b, 2011c, and 2012). The calculation for U at well 80105 is new as of 2013; the highest concentration reported over the year was 14 µg/L (RFLMA threshold is 120 µg/L).

*Table 49. Results of Groundwater ANOVA Evaluation for 2013 at the OLF*

| Analyte | 80005 | 80105 | 80205 |
|---|---|---|---|
| B | x | x | x |
| Ni | | | x (U, est) |
| U | | x | x |

**Notes:** x = analyte is present in groundwater at a statistically significant higher concentration in the indicated downgradient well compared to upgradient wells. This notation is assigned the qualifier "U" if the dataset contains at least 25% nondetects, and "est" if it contains at least 25% estimated values.

It is important to stress that, similar to the discussion above regarding the PLF RCRA wells, the Ni data set for well 80205 contains only qualified results—either nondetects, estimated concentrations, or results rendered questionable because the constituent was also detected in the laboratory blank. In addition, as noted above for the PLF, the detection limit for this constituent was lowered in 2008, after which what had previously been reported as nondetects (and, for these statistical calculations, the associated values were replaced with 0.001) were now reported as estimated values. This can impact the ANOVA calculations as well as lead to the suggestion of an increasing trend. For these reasons, the finding that Ni at well 80205 is elevated with respect to upgradient groundwater is suspect. The highest concentration of Ni reported from this well in 2013 was 9 µg/L (RFLMA Table 1 standard: 123 µg/L).

S-K statistical trending calculations were also completed for analytical data from downgradient wells at the OLF. Results from 2013 are identical to those reported in 2012 (DOE 2013b), when B in 80205 was the first increasing trend meeting the criterion of adequate statistical significance (Table 50). Although not listed in the table, B is calculated to be on a decreasing trend at the 95-percent level of significance in groundwater at well 80005, and is increasing at a lower level of statistical significance in the upgradient well (P416589). All calculated trends are summarized in a later section of this report, and the associated summary tables and plots are presented in Appendix B.

*Table 50. Results of Groundwater S-K Trend Testing for 2013 at OLF Downgradient Wells*

| Analyte | 80005 | 80105 | 80205 |
|---|---|---|---|
| B | | | x |

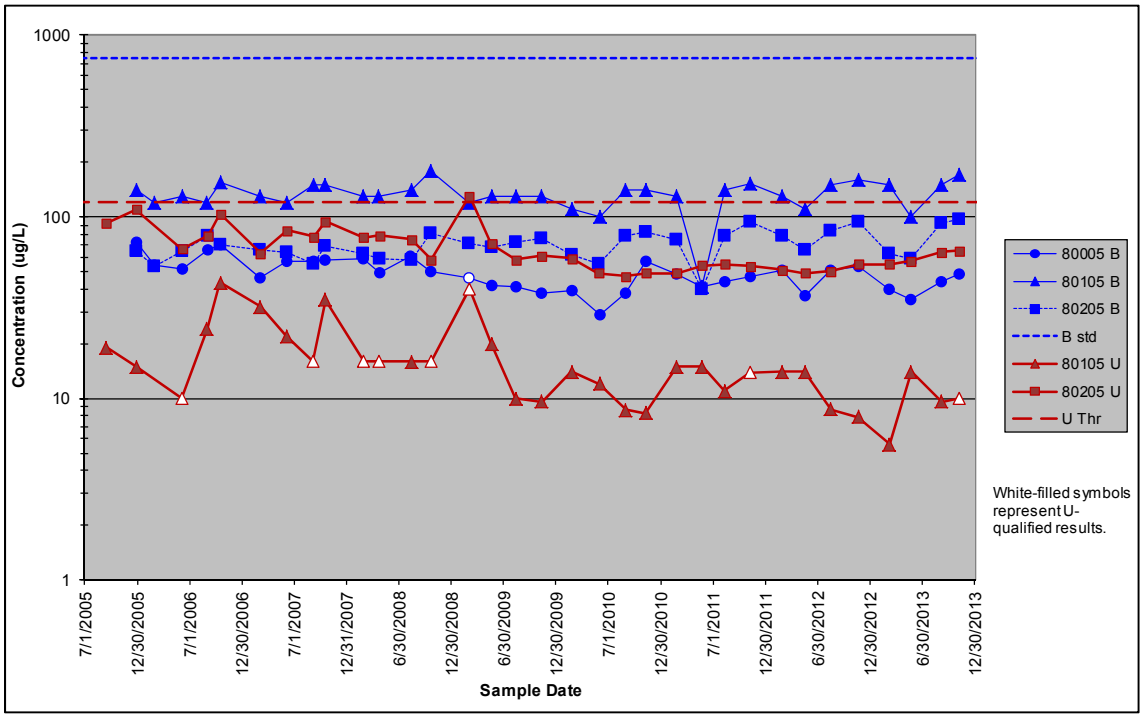
**Notes:** x = analyte is on an increasing trend, with a statistical significance of 95%, in the indicated downgradient well. This notation is assigned the qualifier (U) if the dataset contains at least 25% nondetects.

RFLMA instructs that if concentrations in downgradient wells are found to be significantly higher than in an associated upgradient well, the consultative process is initiated to determine the appropriate response. All three downgradient wells produce groundwater samples with statistically higher concentrations of B than the upgradient well, and the same applies to concentrations of Ni (if the quality of the data are not questioned) in well 80205, and U in wells 80105 and 80205. Except for the results for Ni in 80205 and for U in well 80105, this is identical to ANOVA results reported since 2007 (DOE 2008b, 2009d, 2010b, 2011c, 2012, 2013b). RFLMA also instructs that the presence of a statistically significant increasing trend in a constituent at a downgradient OLF well triggers consultation, as is the case with B in well 80205.

Previous consultation on the statistical results related to OLF groundwater has taken place (for example, see Contact Record 2010-05). More recently, consultation was held on March 13, 2013, regarding the results of statistical evaluations of the 2012 groundwater data. This regulatory consultation concluded that no response action is required, and no modification of RFLMA monitoring is needed. After reviewing the results of statistical evaluation of the 2013 groundwater data presented in this annual report the RFLMA Parties may decide that subsequent consultation regarding the appropriate response is required. Such consultation, if it occurs, will be documented in a new contact record (Contact Record 2011-03).

The concentrations of the constituents in downgradient OLF groundwater as identified through ANOVA and S-K trending are all well below the associated RFLMA values. The RFLMA Table 1 standard for B is 750 µg/L, and the highest concentration reported in 2013 from any of the three downgradient OLF wells was 170 µg/L (from well 80105). At well 80205, which has produced samples leading to the statistical calculation of an increasing trend in B, the highest concentration in 2013 was 96.2 µg/L. As for Ni, which is suggested as having a higher concentration at downgradient well 80205 than in the upgradient well, the highest validated detection in 2013 was an estimated (J-qualified) concentration of 4.5 µg/L; the Table 1 value is 123 µg/L. The highest concentration of U reported from well 80105 in 2013 was 14 µg/L and from well 80205 was 64.8 µg/L; the associated threshold is 120 µg/L. As reported previously (DOE 2012, 2013b) and again confirmed using 2013 data, results of statistical trending calculations indicate U at 80205 is decreasing with a statistical significance of 95 percent. Groundwater from this well was analyzed for anthropogenic U content in late 2007 and found to be 100 percent natural (DOE 2008b).

Figure 55 provides time-series plots of reported B and U concentrations in groundwater from the wells listed in Table 49. (Due to the questions of data quality, Ni at well 80205 is not illustrated.) Figure 56 presents the calculated trend plot for B at well 80205, and does not use a logarithmic concentration scale.




**Notes:** Refer to text for explanation of how constituents were selected for this figure. Illustrated RFLMA action levels (CDPHE et al. 2012): B standard = 750 µg/L; U Thr (threshold) = 120 µg/L. Several detections were qualified but for simplicity are not shown differently. Note logarithmic concentration scale.

*Figure 55. B and U in Downgradient Groundwater from OLF RCRA Wells Identified in 2013 ANOVA Data Evaluations*

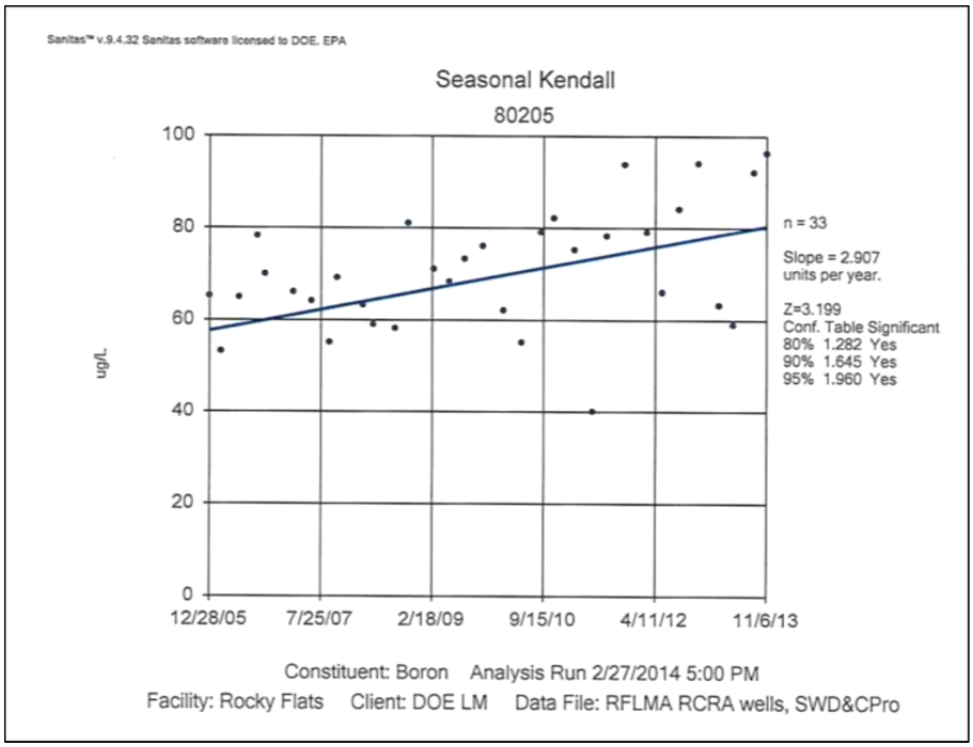



*Figure 56. Calculated S-K Trend Plot for Boron at Downgradient OLF Well 80205*

As discussed above with respect to the PLF groundwater results, the suggestion of higher concentrations of these constituents in downgradient groundwater than in upgradient groundwater at the OLF may be a result of natural geological and geochemical conditions, and not necessarily related to the presence of the OLF.

Data reported in 2013 from downgradient RCRA wells at the OLF include one validated detection of a VOC and three validated detections of a single SVOC (Table 51). In every case, the result is estimated (J-qualified), and is well below the associated RFLMA Table 1 standard. Neither of these constituents has been consistently detected in downgradient groundwater from the OLF. Note that diethyl phthalate was also detected in the upgradient well, P416589, in a sample collected on September 4; the concentration was estimated at 1 µg/L (i.e., higher than is estimated in two of the downgradient wells). In previous years, several VOCs and SVOCs have been detected at very low concentrations in downgradient OLF groundwater, but these detections have never been consistent from year to year.

*Table 51. VOCs and SVOCs Detected in 2013 at Downgradient Wells at the OLF*

| Well | Sample Date | Analyte | Result | Units | Lab Qualifier |
|---|---|---|---|---|---|
| 80005 | 9/5/2013 | Diethyl phthalate | 0.5 | µg/L | J |
| 80005 | 11/6/2013 | Methylene chloride | 0.98 | µg/L | J |
| 80105 | 9/5/2013 | Diethyl phthalate | 0.66 | µg/L | J |
| 80205 | 9/5/2013 | Diethyl phthalate | 1.1 | µg/L | J |

**Notes:** J = analyte detected, result is estimated. Applicable RFLMA standards are 4.6 µg/L (methylene chloride) and 5,600 µg/L (diethyl phthalate).

According to RFLMA, downgradient OLF wells are also assessed in a manner consistent with that used for Sentinel wells (CDPHE et al. 2012); concentrations are evaluated for statistically significant (95 percent) trends, and 85th percentile concentrations are assessed in comparison with the applicable RFLMA standards or thresholds. As stated above, the only analyte with an increasing trend meeting the 95 percent level of significance for the downgradient wells was B in well 80205. RFLMA instructs that calculated 85th percentile concentrations from downgradient OLF wells are to be compared against the corresponding standards to support the exit strategy. However, as with downgradient RCRA wells at the PLF, the data to be used in this comparison are from the previous two CERCLA reviews. These downgradient OLF wells were installed in 2005, and consequently were represented by only about 8 years of data as of the end of 2013. Therefore, such a comparison cannot be properly completed at this time.

Groundwater flow at the OLF is not affected by controls such as the GWIS at the PLF. Groundwater flows beneath the pediment surface on the north side of the OLF in a general west-to-east direction. As it nears the southern edge of the pediment, closest to the OLF, groundwater moves in a more south-southeasterly direction. This latter general flow direction applies to groundwater moving through the OLF.

Groundwater flow velocities were calculated (see Section 3.1.3.5) for OLF well pair P416589 (the upgradient well) and 80105 (the middle downgradient well). The resulting estimates for the travel time from the upgradient to downgradient well based on water level data collected in 2013 are approximately 2.75 to 3 years (Table 60), approximately the same as in 2011 and 2012 (DOE 2012, 2013b). Note that this calculated velocity is simplistic and applies only to pure

water; the migration of dissolved constituents, including groundwater contaminants, would be retarded to varying degrees.

Seeps are also present at the OLF and have been observed in this area for decades (as well as being suggested on aerial photographs taken before the Rocky Flats Plant came into existence in the 1950s). Additional discussion of seeps at the OLF is provided in Section 3.1.3.6; a discussion of analytical data from grab samples collected in 2011 from selected seeps on the OLF is provided in the 2011 Annual Report (DOE 2012).

#### *3.1.2.8 Groundwater Treatment System Monitoring*

Contaminated groundwater is intercepted and treated in four areas of the Site. Three of these systems (MSPTS, ETPTS, and SPPTS) include a groundwater intercept trench (collection trench), which is similar to a French drain with an impermeable membrane on the downgradient side. Groundwater entering the trench is routed through a drain pipe into one or more treatment cells, where it is treated and then discharged to the subsurface, and eventually reaches surface water. The fourth system (PLFTS) treats water from the north and south components of the GWIS and flow from the PLF seep.

Water monitoring at the MSPTS, ETPTS, and SPPTS includes a minimum of three sample-collection points: untreated influent entering the treatment system, treated effluent exiting the system, and a surface-water performance location. At the PLFTS, the treated effluent and surface-water sampling locations are typically the same; this is discussed in further detail below.

The fundamental questions at each system are whether (1) influent-water quality indicates that treatment is still necessary, (2) effluent-water quality indicates that system maintenance is required, and (3) surface-water quality suggests impacts from inadequate treatment of influent.

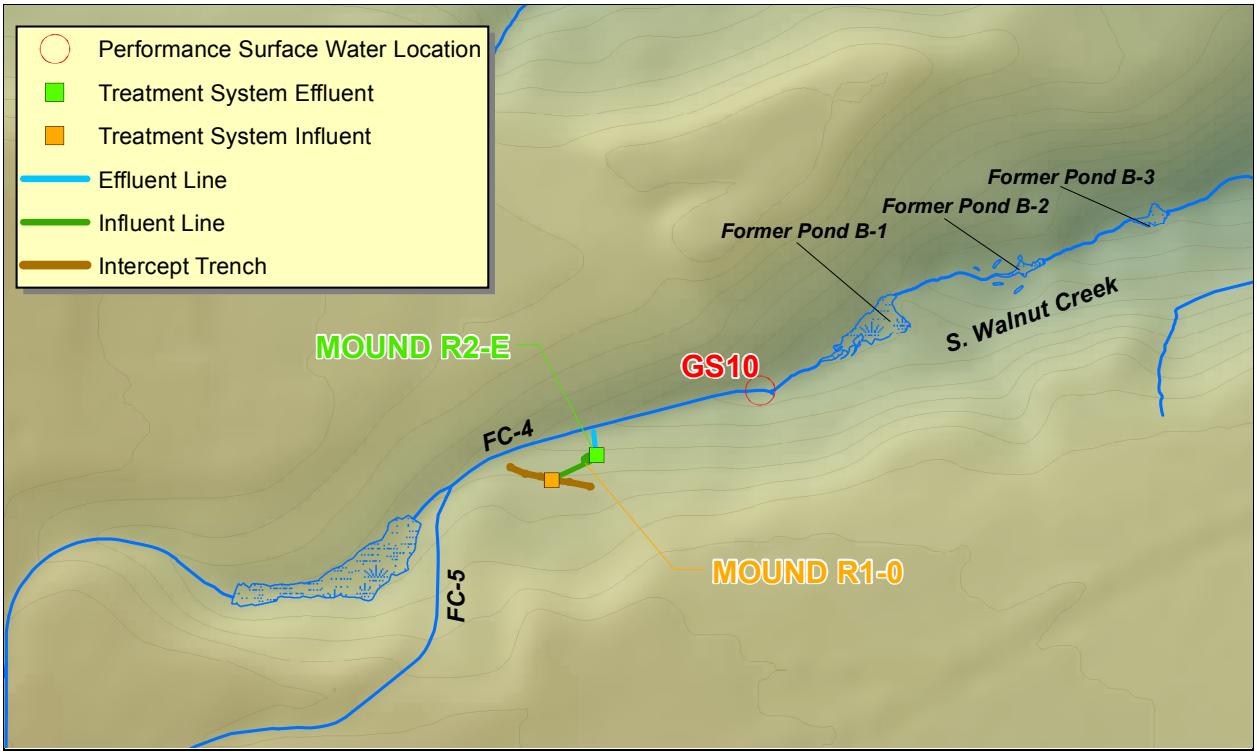
Note that groundwater monitoring wells also support the MSPTS, ETPTS, and SPPTS. (Wells are also present in the vicinity of the PLFTS, but their objectives differ as they directly support the PLF as RCRA wells.) These locations are discussed in the sections that correspond to their respective objectives (i.e., text describing Sentinel and Evaluation wells) and that discuss groundwater plume characteristics.

***Mound Site Plume Treatment System***

RFLMA monitoring locations specific to the MSPTS are shown on Figure 57. Sampling and data evaluation protocols are summarized in Table 52. In addition to the monitoring locations shown, one well is monitored as a Sentinel well (see related text above), and several piezometers are present within the collection trench. The piezometers are retained for troubleshooting purposes.

*Table 52. RFLMA Sampling and Data Evaluation Protocols at MSPTS Monitoring Locations*

| Location Code | Location Description | Sample Types/Frequencies | Analytes | Data Evaluation |
|---|---|---|---|---|
| MOUND R1-0 | Influent sampling location | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs | See Figure 11 in Appendix D |
| MOUND R2-E | Effluent sampling location | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs | See Figure 11 in Appendix D |
| GS10 | Downgradient surface-water performance location | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs | See Figure 11 in Appendix D |




**Notes:** The intercept trench also captures water from a former 72-inch storm drain utility corridor (not shown) that previously emptied to South Walnut Creek (shown here as FC-4). This corridor runs from south to north, approximately parallel to the dominant trend of FC-5 shown here. It was backfilled and tied into the western portion of the intercept trench during Site closure activities. See the 2006 Annual Report (DOE 2007b) for additional discussion, and subsequent sections of this annual report for water quality updates.

*Figure 57. RFLMA MSPTS Monitoring Locations*

### *Data Evaluation*

All MSPTS locations listed in Table 52 were scheduled for routine monitoring in the fourth quarter of CY 2013. Results are provided in Appendix B and are discussed in Section 3.1.5.

In addition to the RFLMA locations at the MSPTS, locations associated with the air stripper that polishes effluent from the treatment cells and is housed within the effluent manhole were

sampled in the fourth quarter to continue evaluation of this component. This is discussed in Section 3.1.5.

### *East Trenches Plume Treatment System*

RFLMA monitoring locations specific to the ETPTS are shown on Figure 58. Sampling and data evaluation protocols are summarized in Table 53. In addition to the monitoring locations shown, several monitoring wells are present in this area, and several piezometers are present within the collection trench. Each of the wells is monitored as a Sentinel well (see related text above). The piezometers are retained for troubleshooting purposes.

*Table 53. RFLMA Sampling and Data Evaluation Protocols at ETPTS Monitoring Locations*

| Location Code | Location Description | Sample Types/Frequencies | Analytes | Data Evaluation |
|---|---|---|---|---|
| ET INFLUENT | Influent sampling location | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs | See Figure 11 in Appendix D |
| ET EFFLUENT | Effluent sampling location | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs | See Figure 11 in Appendix D |
| POM2 | Downgradient surface-water performance location | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | VOCs | See Figure 11 in Appendix D |

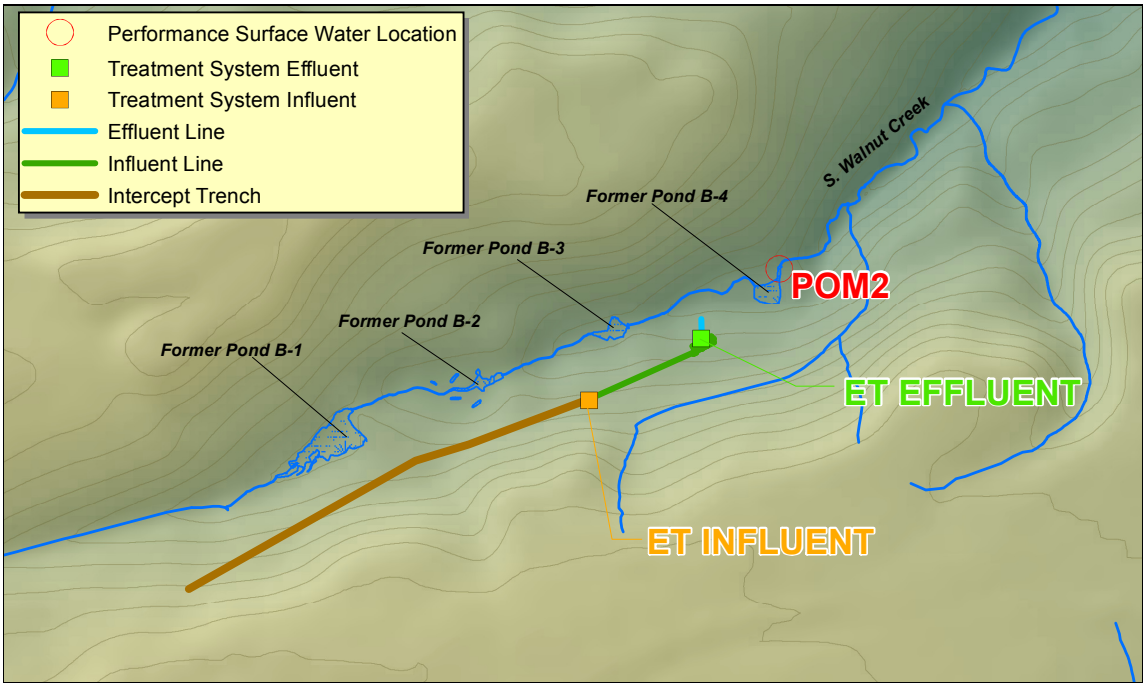



*Figure 58. RFLMA ETPTS Monitoring Locations*

### *Data Evaluation*

All ETPTS locations listed in Table 53 were scheduled for routine monitoring in the fourth quarter of CY 2013. Results are provided in Appendix B and are discussed in Section 3.1.5.

In addition to the RFLMA locations at the ETPTS, a location associated with the air stripper that is housed within the influent manhole was sampled in the fourth quarter to continue evaluation of this component. This is discussed in Section 3.1.5.

### *Solar Ponds Plume Treatment System*

RFLMA monitoring locations specific to the SPPTS are presented on Figure 59. Sampling and data evaluation protocols are summarized in Table 54. In addition to the monitoring locations shown, several monitoring wells are present, and several piezometers are present within the collection trench. The wells are monitored as either Sentinel wells or Evaluation wells (see related text above). The piezometers are retained for troubleshooting purposes.

*Table 54. RFLMA Sampling and Data Evaluation Protocols at SPPTS Monitoring Locations*

| Location Code | Location Description | Sample Types/Frequencies | Analytes | Data Evaluation |
|---|---|---|---|---|
| SPIN | Influent sampling location | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | U, nitrate | See Figure 11 in Appendix D |
| SPOUT | Effluent sampling location | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | U, nitrate | See Figure 11 in Appendix D |
| GS13[a] | Downgradient surface-water performance location | Semiannual grabs; second and fourth calendar quarters (high- and low-water conditions) | U, nitrate | See Figure 11 in Appendix D |

**Notes:**
[a] Samples collected for U at GS13 are typically flow-paced and unfiltered. U data at GS13 support other monitoring objectives that are not addressed here.
Nitrate is analyzed as nitrate+nitrite as nitrogen; this result is conservatively compared to the nitrate standard only.

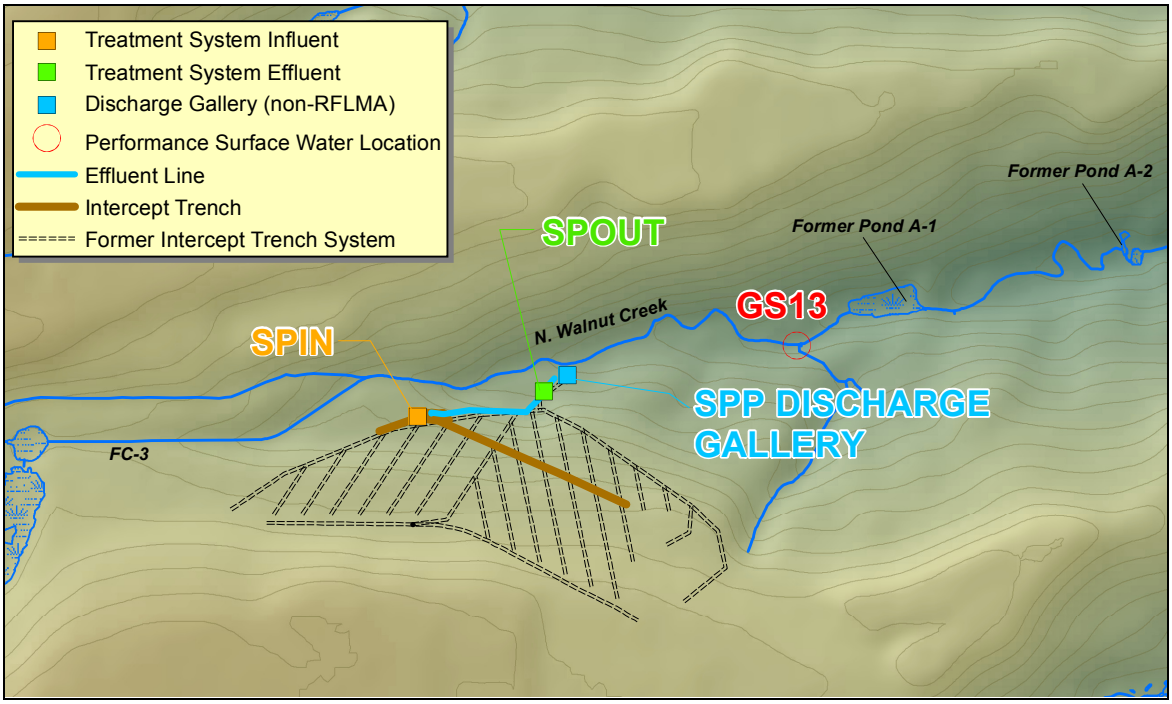



*Figure 59. RFLMA SPPTS Monitoring Locations*

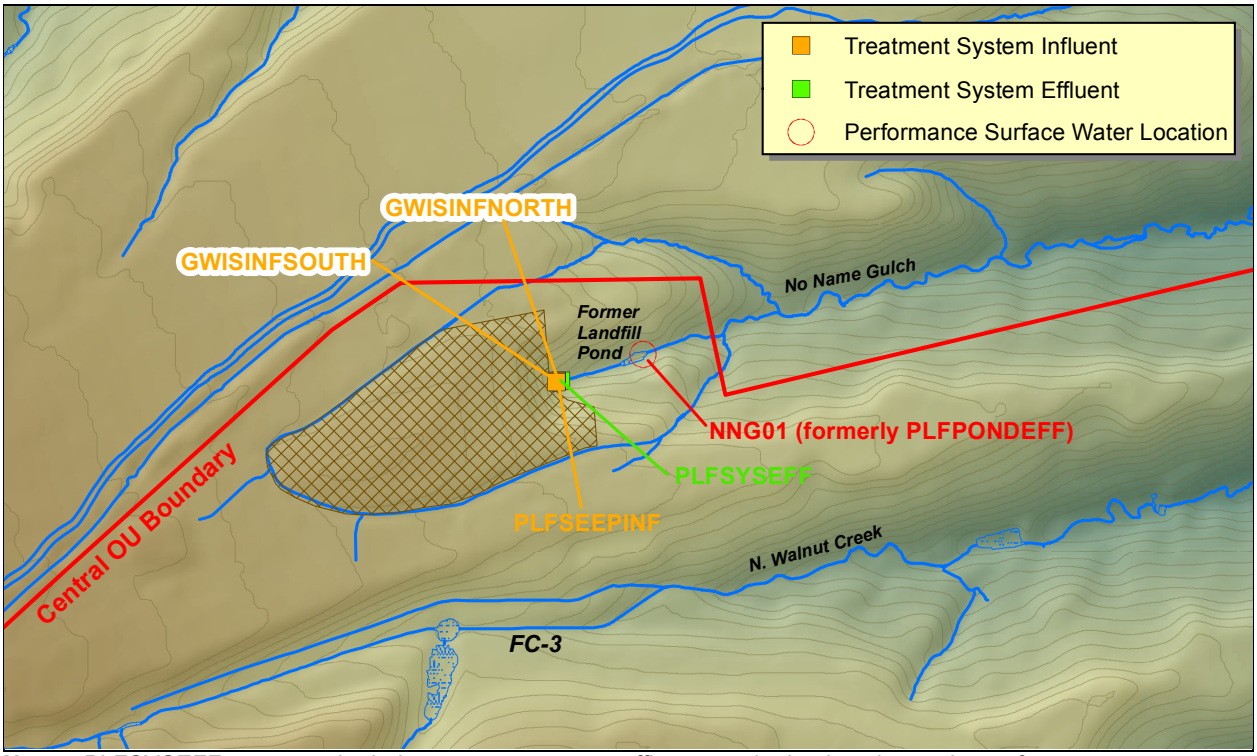
### *Data Evaluation*

All SPPTS locations listed in Table 54 were scheduled for routine monitoring in the fourth quarter of CY 2013. Results are included in Appendix B; see Section 3.1.5 for discussion.

In addition to the RFLMA locations, in the fourth quarter the SPPTS Discharge Gallery, often referred to colloquially as the DG, was sampled. Extra (non-RFLMA) samples were collected from several system locations to support system operation, optimization, and performance (see Section 3.1.5); one of these, SPOUT, was also sampled to support the ongoing Adaptive Management Plan requirements.

### *PLF Treatment System*

Water monitoring locations for the PLF are shown on Figure 60. The general groundwater monitoring requirements deal specifically with the RCRA wells and are discussed in detail in Section 3.1.2.6. Details regarding surface-water and treatment system monitoring are provided below.




**Notes:** PLFSYSEFF serves as both the treatment system effluent monitoring location and a performance surface-water monitoring location.

*Figure 60. PLFTS Monitoring Locations*

As part of PLF closure, a passive seep interception and treatment system was installed to treat landfill seep water and GWIS water. There are three sources of influent to the treatment system: two GWIS pipes and the PLF seep. Effluent for the treatment system eventually flows to the former Landfill Pond area. This section presents the monitoring data for the treatment system effluent as well as the former Landfill Pond area if the treatment system effluent exceeds surface-water standards. Details regarding PLFTS monitoring can be found in the PLF M&M Plan.

Monitoring locations for the PLFTS are shown on Figure 60. Sampling and data evaluation protocols are summarized in Table 55. As of December 21, 2007, collection of samples at the GWIS locations (GWISINFNORTH and GWISINFSOUTH) was discontinued. This action was taken subsequent to the consultative process and, in accordance with the Groundwater Treatment Systems flowchart (Appendix D), it was documented in Contact Record 2007-08.

*Table 55. Sampling and Data Evaluation Protocols at PLFTS Monitoring Locations*

| Location Code | Location Description | Sample Types/ Frequencies | Analytes | Data Evaluation |
|---|---|---|---|---|
| GWISINFNORTH | Northern GWIS influent to the treatment system | Discontinued | VOCs, total U, total and dissolved metals, nitrate[a] | See Figure 11 in Appendix D |
| GWISINFSOUTH | Southern GWIS influent to the treatment system | Discontinued | VOCs, total U, total and dissolved metals, nitrate[a] | See Figure 11 in Appendix D |
| PLFSEEPINF | Landfill seep influent to the treatment system | Quarterly grabs | VOCs, total U, total and dissolved metals | See Figure 11 in Appendix D |
| PLFSYSEFF | Effluent from the treatment system | Quarterly grabs | VOCs, total U, total and dissolved metals, SVOCs | See Figure 11 in Appendix D |
| NNG01 (formerly PLFPONDEFF) | Former Landfill Pond area at the downstream (east) end | As needed; triggered by data evaluation | As needed; determined by decision rule | See Figure 11 in Appendix D |

**Notes:** GWISINFNORTH and GWISINFSOUTH may still be periodically sampled for investigative purposes only.
[a] Nitrate is analyzed as nitrate+nitrite as nitrogen.

### *Data Evaluation*

Analytical results for the treatment system effluent (PLFSYSEFF) are compared to the appropriate surface-water standards listed in Table 1 of RFLMA Attachment 2. During CY 2013 there were only three analytes detected above the applicable standard:

- During the second quarter of CY 2013, routine sampling of the treated effluent exiting the system (monitoring location PLFSYSEFF) showed results for selenium of 8.6 µg/L, above the surface-water standard of 4.6 µg/L. According to RFLMA evaluation protocols, this result triggered monthly sampling for selenium. The first monthly sample was collected on May 15, 2013. Selenium was not detected in this sample and monthly sampling was discontinued.
- During the third quarter of CY 2013, routine sampling of the treated effluent exiting the system (monitoring location PLFSYSEFF) showed results for arsenic of 11 µg/L, above the surface water standard of 10 µg/L. According to RFLMA evaluation protocols, this result triggered monthly sampling for arsenic. The first two monthly samples, collected on October 29, 2013, and November 27, 2013, also showed arsenic above the standard at 34 µg/L and 12 µg/L, respectively. A third monthly sample for arsenic was then collected on January 21, 2014. Analytical results for this sample showed arsenic below the standard at 8.5 µg/L and monthly sampling was discontinued.
- During the fourth quarter of CY 2013, routine sampling of the treated effluent exiting the system (monitoring location PLFSYSEFF) showed results for VC of 0.21 µg/L, above the surface water standard of 0.2 µg/L. According to RFLMA evaluation protocols, this result triggered increased sampling for VC. The first two monthly samples collected on November 27, 2013, and January 21, 2014, also showed VC above the standard at 0.29 µg/L and 0.28 µg/L, respectively. A subsequent sample for VC was collected on February 26, 2014, and the results were pending when this document was published.

### *3.1.2.9 Predischarge Monitoring*

This monitoring objective is intended to evaluate whether pond water from Ponds A-4, B-5, or C-2 is expected to meet water-quality standards (see Table 1 of RFLMA Attachment 2) at downstream POCs prior to opening a valve to initiate discharge. Predischarge samples are collected at Ponds A-4, B-5, and C-2 on North Walnut Creek, South Walnut Creek, and Woman Creek, respectively. These locations are shown on Figure 61. Sampling and data evaluation protocols are summarized in Table 56.

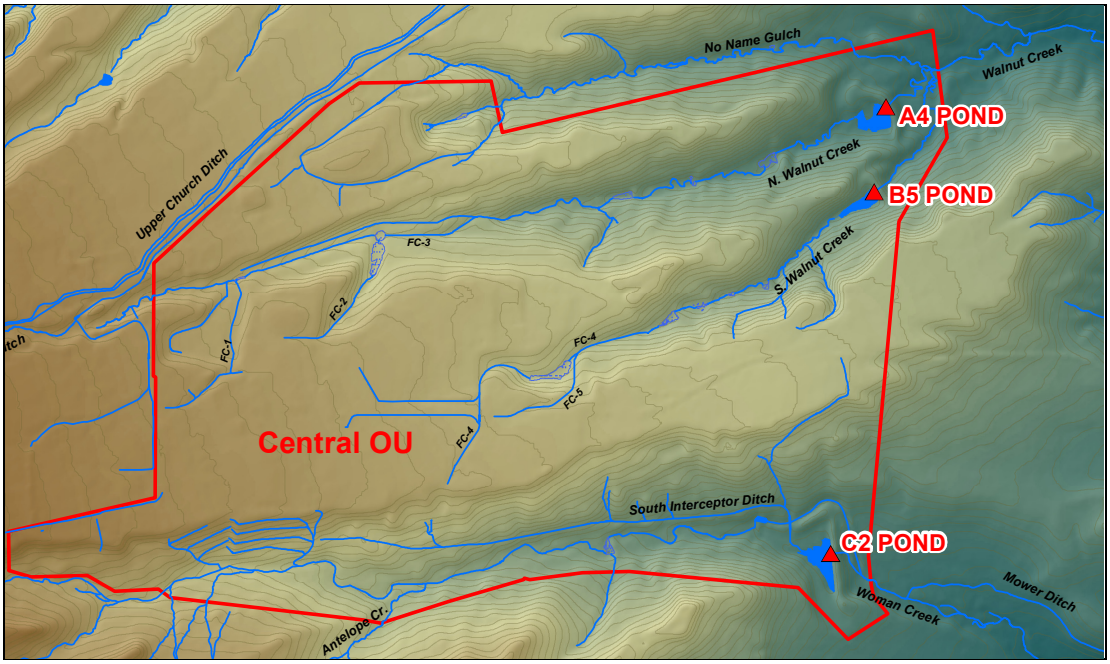



*Figure 61. Predischarge Sampling Locations*

*Table 56. Sampling and Data Evaluation Protocols at Predischarge Monitoring Locations*

| Location Code | Location Description | Sample Types/ Frequencies | Analytes | Data Evaluation |
|---|---|---|---|---|
| A4 POND | Pond A-4 at east end of pond near outlet works | Prior to opening outlet valve | Pu, Am, total U, nitrate[a] | Review with regulators prior to initiating discharge |
| B5 POND | Pond B-5 at east end of pond near outlet works | Prior to opening outlet valve | Pu, Am, total U, nitrate[a] | Review with regulators prior to initiating discharge |
| C2 POND | Pond C-2 at east end of pond near outlet works | Prior to opening outlet valve | Pu, Am, total U | Review with regulators prior to initiating discharge |

**Notes:**
[a] Nitrate is analyzed as nitrate+nitrite as nitrogen; the nitrate+nitrite result is conservatively compared to the nitrate standard only.

### *Data Evaluation*

During CY 2013, no predischarge samples were collected from Ponds A-4, B-5, or C-2. All three terminal ponds were operated in a flow-through mode for all of CY 2013.

### 3.1.3 Rocky Flats Hydrology

The following section provides information for all automated surface-water monitoring and precipitation gage locations at the Site that operated during CY 2013. For locations with continuous flow measurement, graphical discharge summaries are provided. Graphical summaries are also provided for all precipitation gage locations. Numerical discharge and precipitation values are included in the tables in Appendix A.

Groundwater hydrology is also addressed. This includes a discussion of groundwater levels in various areas of interest via the preparation of hydrographs and potentiometric surface maps. Flow velocities are also calculated. Hydrographs for monitoring wells are included in Appendix A.

#### *3.1.3.1 General Hydrologic Setting*

Streams and seeps at the Site are largely ephemeral, with stream reaches gaining or losing flow, depending on the season and precipitation amounts. Section 3.1.3.6 discusses the 2013 efforts to document observed seeps at the Site. Surface-water flow across the Site is primarily from west to east, with three major drainages traversing the Site. In 2013, three ponds within the COU collected and managed surface-water runoff. The Site drainages and ponds, including their respective pertinence to this report, are described below and shown on Figure 62.

The major stream drainages leading out of the Refuge, from north to south, are Rock Creek, Walnut Creek, and Woman Creek. North Walnut Creek flows through Pond A-4, and South Walnut Creek flows through Pond B-5; both are tributaries to Walnut Creek. The hydrologic routing diagram (as of December 31, 2013) for the locations included in this report is shown on Figure 63.

The groundwater hydrology is generally characterized by relatively thin, shallow, saturated materials (in the COU, typically on the order of a few dozen feet thick or less, and less than 50 feet deep). This shallow saturated interval occurs within the unconsolidated Rocky Flats Alluvium, hillslope colluvium, valley-fill alluvium, artificial fill, and the weathered portion of the underlying bedrock. Collectively, these materials are referred to as the upper hydrostratigraphic unit (UHSU). Regionally, groundwater flows from west to east within the UHSU of the pediment surfaces, except where locally diverted toward the generally east-west trending drainages that bisect these pediments. Groundwater typically discharges at seeps and springs along pediment edges, or as baseflow to surface water. Vertical flow is sharply limited by the low-permeability claystones underlying the unconsolidated surficial materials. This underlying low-permeability bedrock surface comprises the Arapahoe and Laramie Formations, which are typically undifferentiated; the gentle eastward dip of the unconformity marking the contact between this bedrock and the overlying unconsolidated surficial materials acts to direct the groundwater flow. Locally, this bedrock may include sandstone lenses that subcrop or are sufficiently shallow to be included in the UHSU. For a more thorough description of the hydrogeology at Rocky Flats, refer to the EG&G hydrogeologic report (EG&G 1995a).

### *Surface Water*

*Walnut Creek*

Walnut Creek receives surface-water flow from the central third of the Refuge, including the majority of the COU. It consists of several tributaries: McKay Ditch, No Name Gulch, North Walnut Creek, and South Walnut Creek. These tributaries join Walnut Creek upstream of the Refuge's eastern boundary (Indiana Street). East of Indiana Street, Walnut Creek flows through a diversion structure normally configured to divert flow to the Broomfield Diversion Ditch around Great Western Reservoir and into Big Dry Creek. The Walnut Creek tributaries, from north to south, are described below.

#### *McKay Ditch*

The McKay Ditch was formerly a tributary to Walnut Creek within the Refuge boundary but was modified in July 1999 to allow for diversion into a new pipeline to keep McKay Ditch water from commingling with water in Walnut Creek upstream of Indiana Street. Although not normally a contributor to Walnut Creek (depending on headgate configuration), the McKay Ditch drainage is described here to clarify water routing. The new configuration allows the City and County of Broomfield to direct water through the McKay Ditch, across the northern portion of the Refuge around the COU, through the McKay Bypass Pipeline, and directly into Great Western Reservoir, without entering Walnut Creek. This configuration prevents the commingling of McKay Ditch water with water originating in the COU. McKay Ditch (as well as both the McKay Bypass Canal and McKay Bypass Pipeline) are outside the COU; these features are not maintained by LM.

#### *No Name Gulch*

This drainage is located downstream of the PLF. A surface-water diversion ditch is constructed around the perimeter of the PLF to divert surface-water runoff around the landfill area to No Name Gulch. Effluent from the PLFTS is also a surface-water source to No Name Gulch. Although the majority of No Name Gulch is outside the COU, it reenters the COU and joins Walnut Creek just upstream of the COU eastern boundary.

#### *North Walnut Creek*

Runoff from the northern portion of the COU flows into this drainage, which has one remaining pond: Pond A-4. The capacity of Pond A-4 is approximately 32 million gallons (99 acre-feet). In the normal operational configuration, water flows through the former Pond A-1, A-2, and A-3 areas to Pond A-4. Pond A-4 is normally operated in flow-through mode allowing water to flow directly to lower Walnut Creek. The existing outlet works tower maintains approximately 10 percent of capacity (3.3 million gallons) during flow-through. If a valve closure at Pond A-4 causes water to temporarily be retained, a predischarge sample is collected prior to resuming discharge. Criteria for emergency discharge, regardless of predischarge pond sampling results, are detailed in the *Emergency Response Plan for Rocky Flats Site Dams* (ERP) (DOE 2010d).

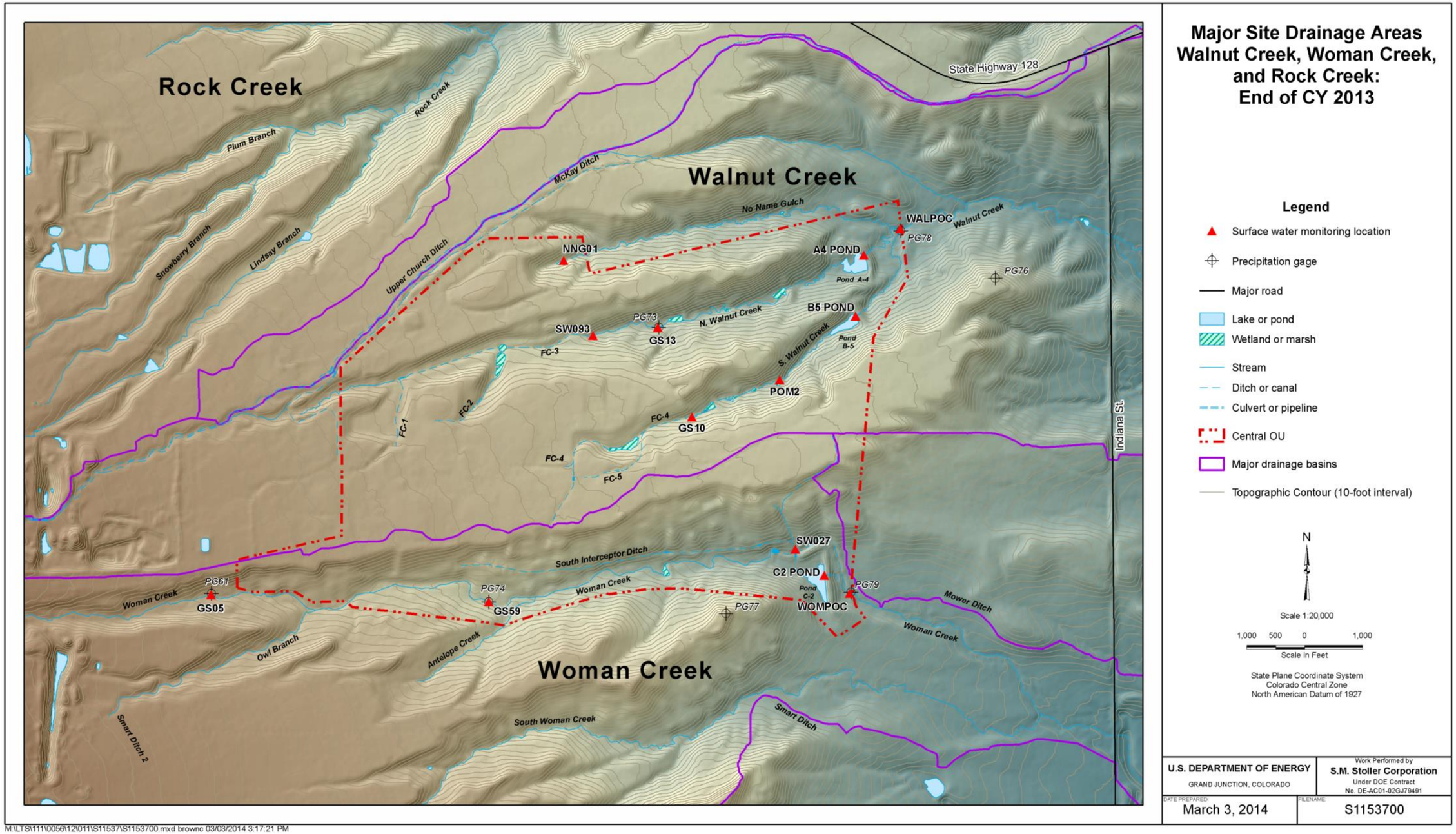



*Figure 62. Major Site Drainage Areas—Walnut Creek, Woman Creek, and Rock Creek: End of CY 2013*

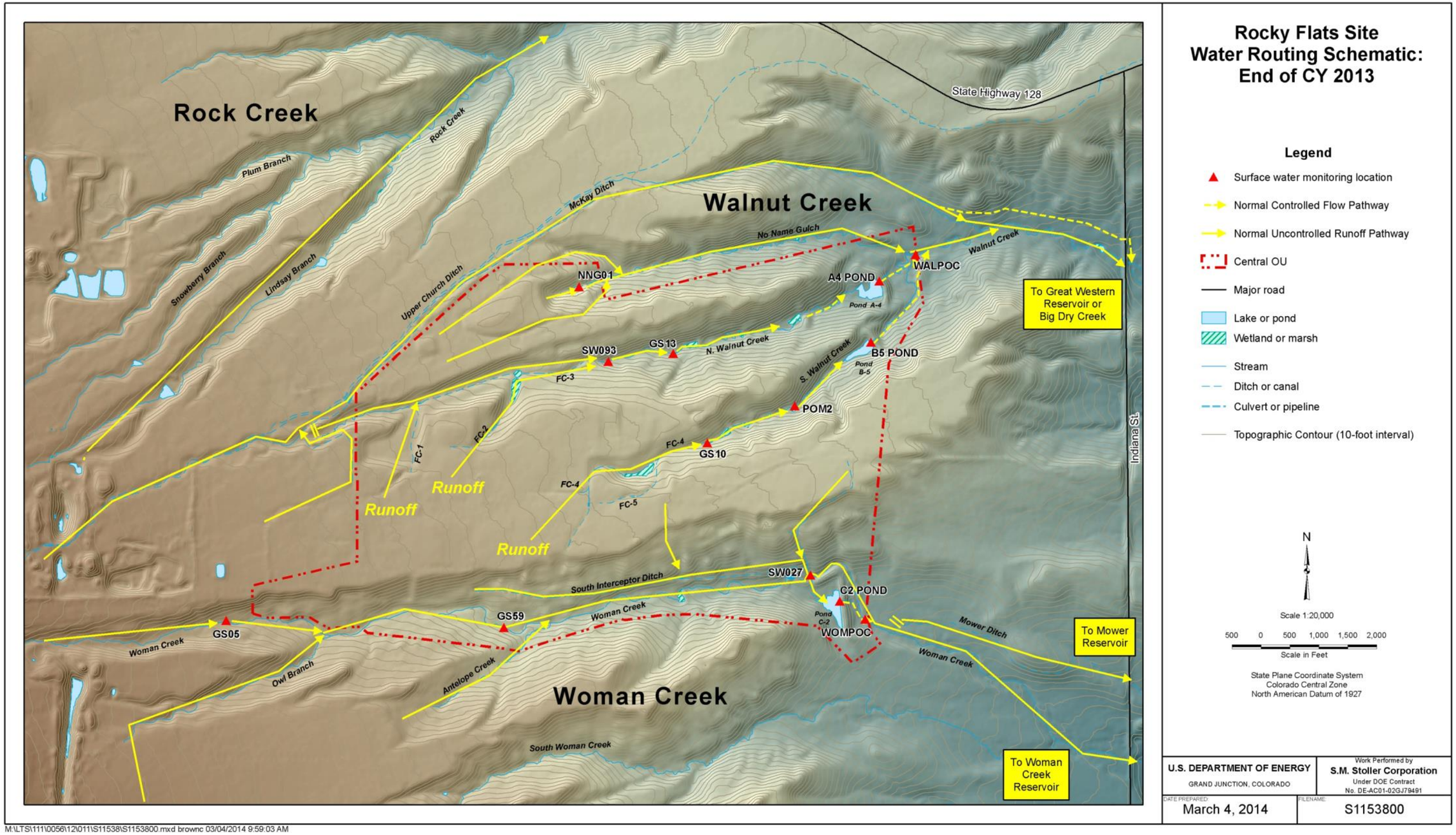



*Figure 63. Rocky Flats Site Water Routing Schematic: End of CY 2013*

### *South Walnut Creek*

Runoff from the central portion of the COU flows into this drainage, which has one remaining pond: Pond B-5. The capacity of Pond B-5 is approximately 23 million gallons (71 acre-feet). In the normal operational configuration, water flows through the former Pond B-1, B-2, B-3, and B-4 areas to Pond B-5. Pond B-5 is normally operated in a flow-through mode allowing water to flow directly to lower Walnut Creek. The existing outlet works tower maintains approximately 10 percent of capacity (2.5 million gallons) during flow-through. If a valve closure at Pond B-5 causes water to temporarily be retained, a predischarge sample is collected prior to resuming discharge. Criteria for emergency discharge, regardless of predischarge pond sampling results, are detailed in the ERP.

### *Woman Creek*

South of the COU is Woman Creek, which flows through the C-1 wetland (Dam C-1 was breached in 2004) and offsite onto Refuge lands toward Indiana Street. The Woman Creek drainage basin extends eastward from the base of the foothills, near Coal Creek Canyon, to Standley Lake. In the current configuration, Woman Creek flows into the Standley Lake Protection Project, also known as the Woman Creek Reservoir, located east of Indiana Street and upstream of Standley Lake, where the water is held until it is pump-transferred to Walnut Creek by the Woman Creek Reservoir Authority.

#### *South Interceptor Ditch*

In the southern portion of the COU, and a tributary to Pond C-2, is the SID drainage. Surface-water runoff from the southern portion of the COU is intercepted by the SID, which flows from west to east into Pond C-2. Woman Creek water does not enter Pond C-2, but is diverted around Pond C-2 through the Woman Creek Diversion Canal. The capacity of Pond C-2 is approximately 23 million gallons (70 acre-feet). Pond C-2 is normally operated in a flow-through mode. The existing outlet works tower maintains approximately 2 percent of capacity (0.4 million gallon) during flow-through. If a valve closure at Pond C-2 causes water to temporarily be retained, a predischarge sample is collected prior to resuming discharge. Criteria for emergency discharge, regardless of predischarge pond sampling results, are detailed in the ERP.

#### *Other Drainages*

The third major drainage, other than Walnut and Woman Creeks, is Rock Creek. The Rock Creek drainage covers the northwestern portion of the Refuge. East-sloping alluvial plains to the west, several small stock ponds within the creek bed, and multiple steep gullies and stream channels to the east characterize the drainage channel. This entire basin is outside the COU.

Smart Ditch/South Woman Creek, located south of Woman Creek, is also completely outside the COU. The D-Series Ponds (D-1 and D-2) are located on Smart Ditch. This drainage and these ponds are not maintained by LM.

### *3.1.3.2 Surface-Water Hydrologic Data Presentation*

***Flow Data Collection and Computation***

Data obtained at a continuous surface-water gaging station on a stream or conveyance, such as an irrigation ditch, consist of a continuous record of stage,[5] individual measurements of flow throughout a range of stages, and notations regarding factors that might affect the relation of stage to flow rate. These data, together with supplemental information such as climatological records, are used to compute daily mean discharges.

Continuous records of stage are obtained with electronic recorders that store stage values at selected time intervals or secondarily with radio-telemetry data-collection platforms that transmit near real-time data at selected time intervals to a central database for subsequent processing. Direct field measurements of flow are made with current meters, using methods adapted by the U.S. Geological Survey, or with flumes or weirs that are calibrated to provide a relation of observed stage to flow rate. These methods are described by Carter and Davidian (1968) and by Rantz (1982a, 1982b).

In computing flow records for nonstandard flow-control devices, results of individual measurements are plotted against the corresponding stage, and stage-flow rate relation curves are constructed. From these curves, rating tables indicating the computed flow rate for any stage within the range of the measurements are prepared. For standard devices (e.g., flumes and weirs), rating tables indicating the flow rate for any stage within the range of the device are prepared based on the geometry of the device. If it is necessary to define extremes of flow outside the range of the device, the curves can be extended using (1) logarithmic plotting, (2) velocity-area studies, (3) results of indirect measurements of peak flow rate, such as slope-area or contracted-opening measurements, and computation of flow over dams or weirs, or (4) step-back-water techniques.

Daily mean discharges are computed by averaging the individual flow measurements using the stage-flow rate curves or tables. If the stage-flow rate relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is determined by the shifting-control method, in which correction factors based on the individual flow rate measurements and notes by the personnel making the measurements are applied to the gage heights before the flow rates are determined from the curves or tables. This shifting-control method also is used if the stage-flow rate relation is changed temporarily because of aquatic vegetation growth or debris on the control. For some gaging stations, formation of ice in the winter can obscure the stage-flow rate relations so that daily mean discharges need to be estimated from other information, such as temperature and precipitation records, notes of observations, and records for other gaging stations in the same or nearby basins for comparable periods.

For most gaging stations, there may be periods when no gage-height record is obtained or the recorded gage height is faulty so that it cannot be used to compute daily mean discharge. This record loss occurs when recording instruments malfunction or otherwise fail to operate properly, intakes are plugged, the stilling well is frozen, or for various other reasons. For such periods, the

[5] Stage is the water level (in units such as feet or meters) in a conveyance structure.

daily discharges are estimated from the recorded range in stage, previous or following record, field discharge measurements, climatological records, and comparison with other gaging-station records from the same or nearby basins. Information explaining how estimated daily discharge values are identified in gaging-station records is provided in the "Identifying Estimated Daily Discharge" section.

*Data Presentation*

The information published for each continuous-record surface-water gaging station consists of six parts: the station description, a map showing the drainage area for the station, a plot of the daily mean discharge for the calendar years(s), a table of daily mean discharge values for the calendar year with summary data, a tabular statistical summary of monthly mean discharge data for the calendar year, and a summary statistics table that includes statistical data of annual discharge and runoff. The tables are included in Appendix A, and the other information is presented below.

*Station Description*

The station description provides, under various headings, descriptive information including gaging-station location, drainage area, period of record, and gage information. The following information is provided:

- Location—This entry provides the gaging station state plane coordinates and geographic location. Gaging station state plane coordinates were obtained by geographic positioning system or digitized from Site geographic information system (GIS) coverages.
- Drainage Area—This entry provides the drainage area (in acres) of the gaged basin. If, because of unusual natural conditions or artificial controls, some part of the basin does not contribute flow to the total flow measured at the gage, the noncontributing drainage area also is identified. Drainage area is usually measured using digital techniques and the most accurate maps available. Because the type of map available might vary from one drainage basin to another, the accuracy of digitized drainage areas also can vary. Drainage areas are updated as better maps become available. Some of the gaging stations included in this report measure stage and flow rate in channels that convey water to or from reservoirs or other features; these channels might have little or no contributing drainage area. Drainage areas in this report were provided by Site GIS coverages.[6]
- Period of Record—This entry provides the period for which the Site has been collecting records at the gage. This entry includes the month and year of the start of collection of hydrologic records by the Site and the words "to current year" if the records are to be continued into the following year.
- Gage—This entry provides the type of gage currently in use and a condensed history of the types and locations of previous gages.

[6] Drainage area maps show Site configuration at the end of CY 2010.

*Daily Mean Discharge Values*

The daily mean discharge values computed for each gaging station during a calendar year are listed in the body of the data tables in Appendix A. In the monthly "Flow Rate" summary part of the table, the line headed "Average" lists the average flow rate in cubic feet per second during the month, and the lines headed "Maximum" and "Minimum" list the maximum and minimum daily mean discharges for each month. Total discharge for the month also is expressed in cubic feet, gallons, and acre-feet. The term "Partial Data" denotes a month with incomplete data.

*Summary Statistics*

A section of the table titled "Annual Summaries for CY 2013" follows the monthly mean data section. This section provides a statistical summary of annual flow rates and discharge for the labeled calendar year. The applicable units are to the left of the table value. The term "Partial Data" denotes a year with incomplete data.

*Identifying Estimated Daily Discharge*

Estimated daily discharges published in water-discharge tables and figures of this annual report are identified by *italicizing* individual daily values or through color coding in hydrographs. For periods of no data, a gap is shown on the hydrographs.

*Other Records Available*

Information used in the preparation of the records in this report, such as discharge-measurement notes, gage-height records, and rating tables, are on file. Information on the availability of the unpublished information or on the published statistical analyses is available from personnel involved with data collection at the Site.

#### *3.1.3.3 Surface-Water Discharge Data Summaries*

***Refuge Discharge Summary***

Discharge summaries for the two major drainages on the Refuge receiving flow from the COU (Walnut and Woman Creeks at Indiana Street) are given on Figure 64 and Figure 65.[7] Walnut Creek flows are measured at GS03 and Woman Creek flows are measured at GS01. A summary of CY 2013 COU discharge at both WALPOC and WOMPOC is given in the next section. Through CY 2004, Walnut Creek discharged larger volumes than Woman Creek due to the contribution of imported water and runoff from impervious surfaces. After physical completion in CY 2005, the reduction of discharge in Walnut Creek and the corresponding change in relative volumes is clearly observed.

[7] The pre-closure period is for the dates January 1, 1997–October 1, 2004; the post-closure period is for the dates October 1, 2005–December 31, 2013.

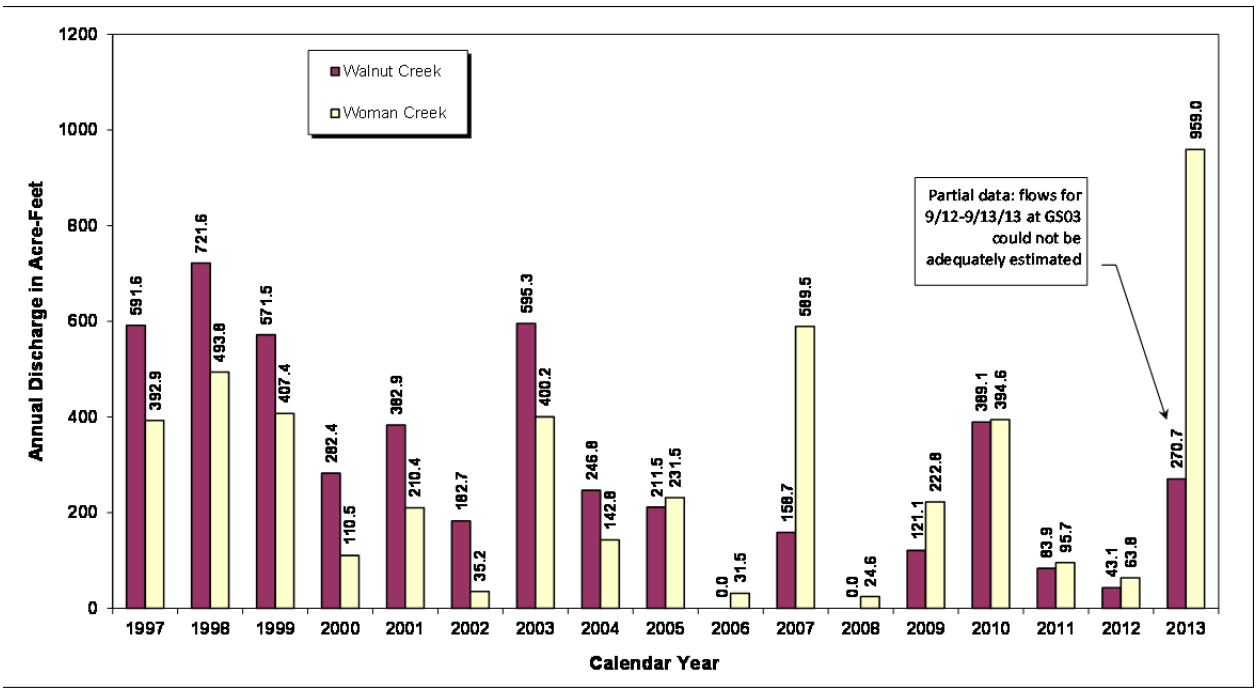



*Figure 64. Annual Discharge Summary from Major Site Drainages: CY 1997–2013*

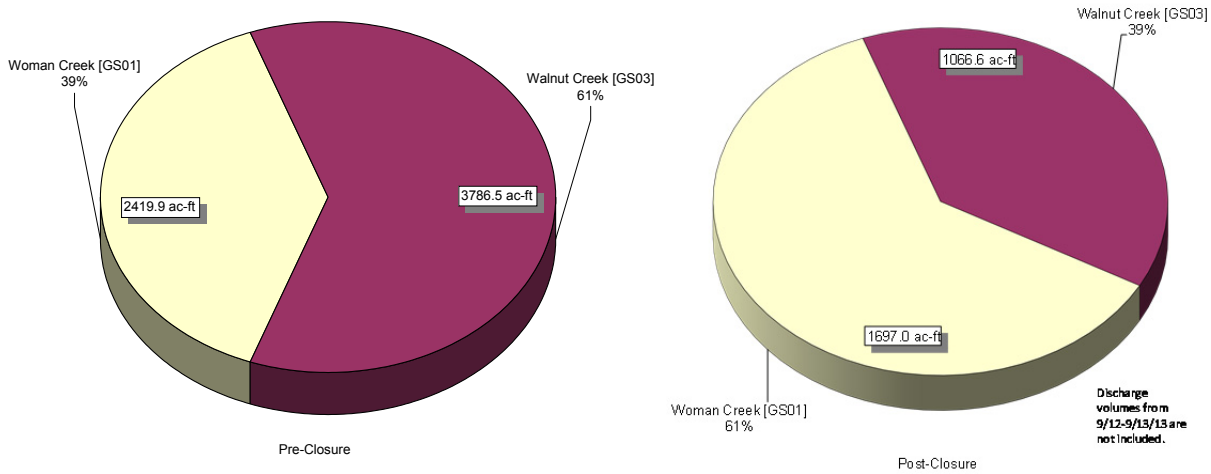



*Figure 65. Relative Total Discharge Summary from Major Site Drainages: Pre- and Post-Closure Periods*

## *Site Discharge Summary*

Discharge summaries for the two major drainages draining the COU (Walnut and Woman Creeks) are given on Figure 66 and Figure 67. Walnut Creek flows are measured at WALPOC and Woman Creek flows are measured at WOMPOC. Since both locations were recently installed in September 2011, these figures only show CY 2011–2013 discharge volumes.

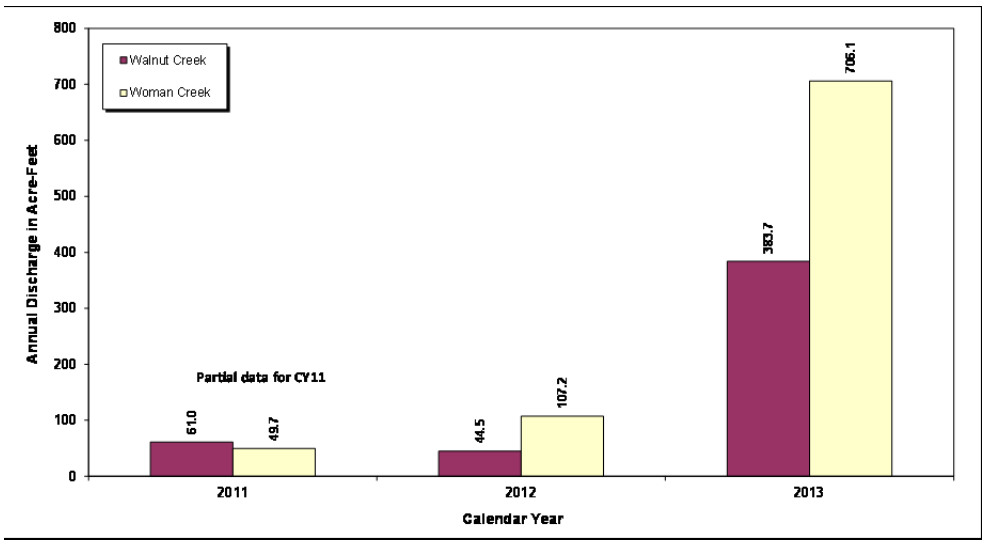



*Figure 66. Annual Discharge Summary from COU Drainages: CY 2011–2013*

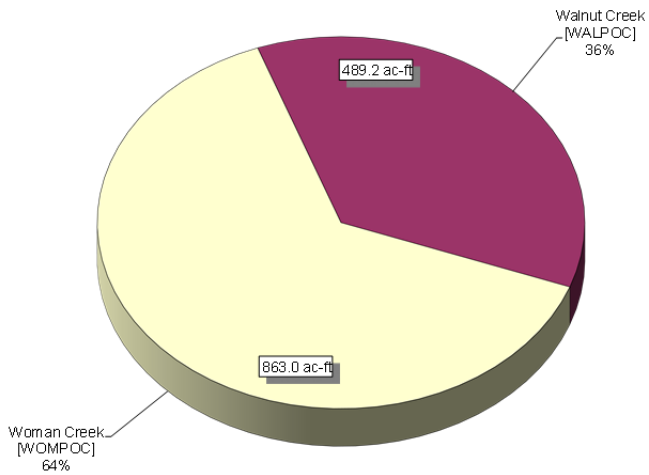


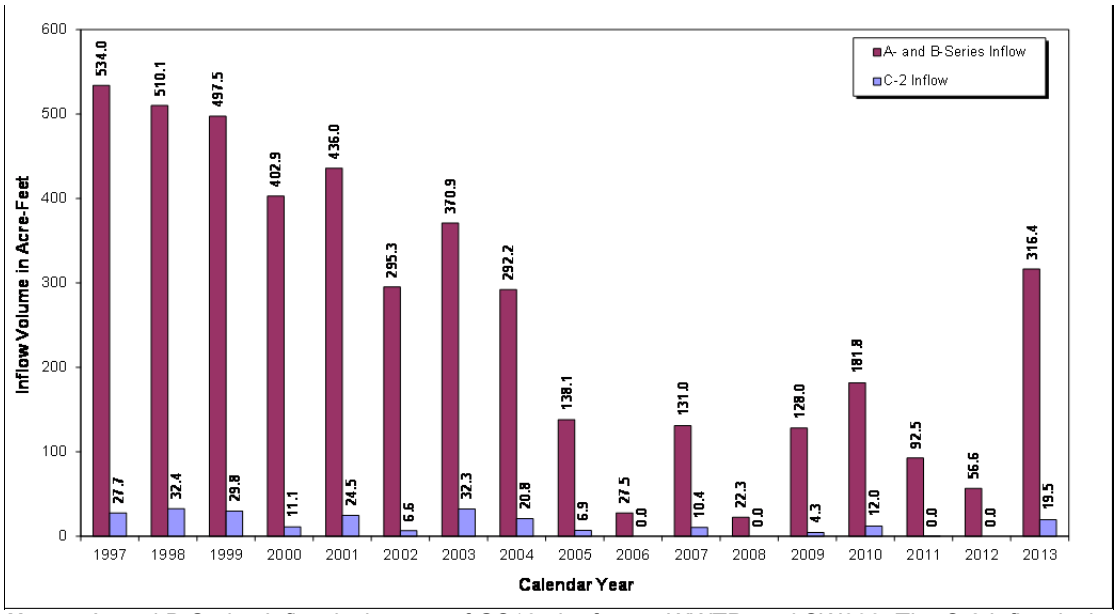

*Figure 67. Relative Total Discharge Summary from COU Drainages: CY 2011–2013*

### *Pond Discharge Summary*

Figure 68 and Figure 69 show the annual ponds inflows and outflows, respectively. Due to the historic intermittent pump transfers of Pond B-5 water to Pond A-4, the flow volumes for the A- and B-Series Ponds are combined. The reduction in pond water volumes as the Site progressed toward closure is clearly observed. Figure 70 and Figure 71 show the relative total CY 1997–2013 discharge volumes from the ponds (as measured at GS08, GS11, and GS31) and from the major drainages tributary to the ponds (as measured at GS10, SW027, SW093, and the former Wastewater Treatment Plant (WWTP) [995POE]).[8, 9] Pond inflows do not necessarily

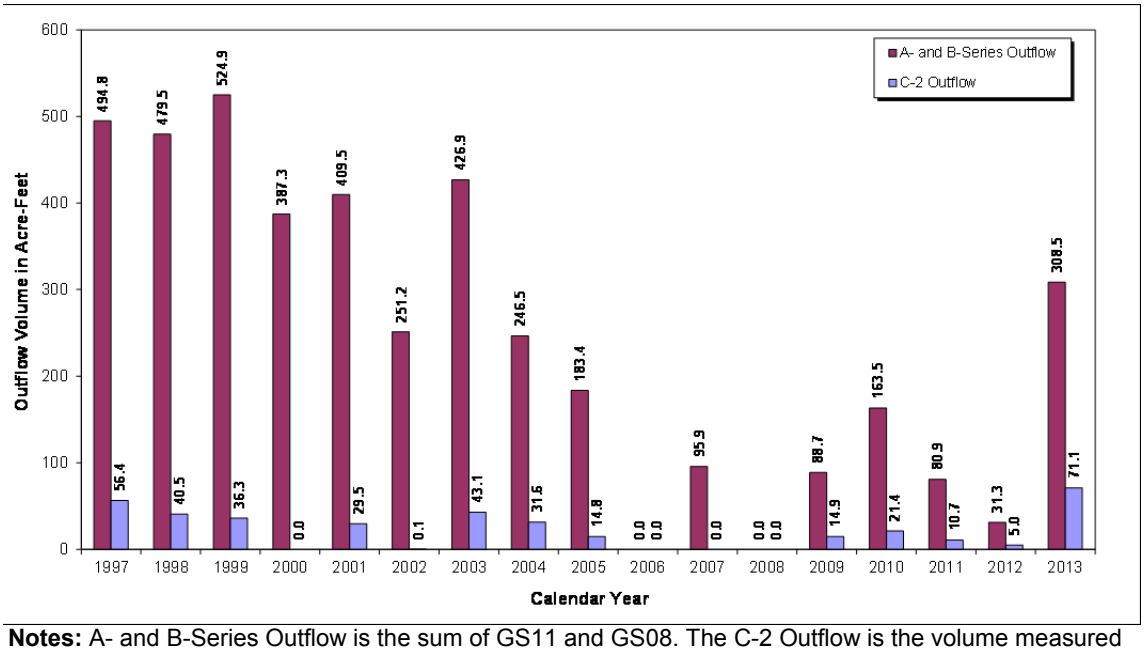
[8] The WWTP was removed from service on November 4, 2004.
[9] The pre-closure period is for the dates January 1, 1997–October 1, 2004; the post-closure period is for the dates October 1, 2005–December 31, 2013.

equal outflows for any given year due to the storage of water in the ponds across water years, evaporative/seepage losses/gains, and local runoff to the ponds.




**Notes:** A- and B-Series Inflow is the sum of GS10, the former WWTP, and SW093. The C-2 Inflow is the volume measured at SW027.

*Figure 68. Pond Inflows: CY 1997–2013*




**Notes:** A- and B-Series Outflow is the sum of GS11 and GS08. The C-2 Outflow is the volume measured at GS31.

*Figure 69. Pond Outflows: CY 1997–2013*

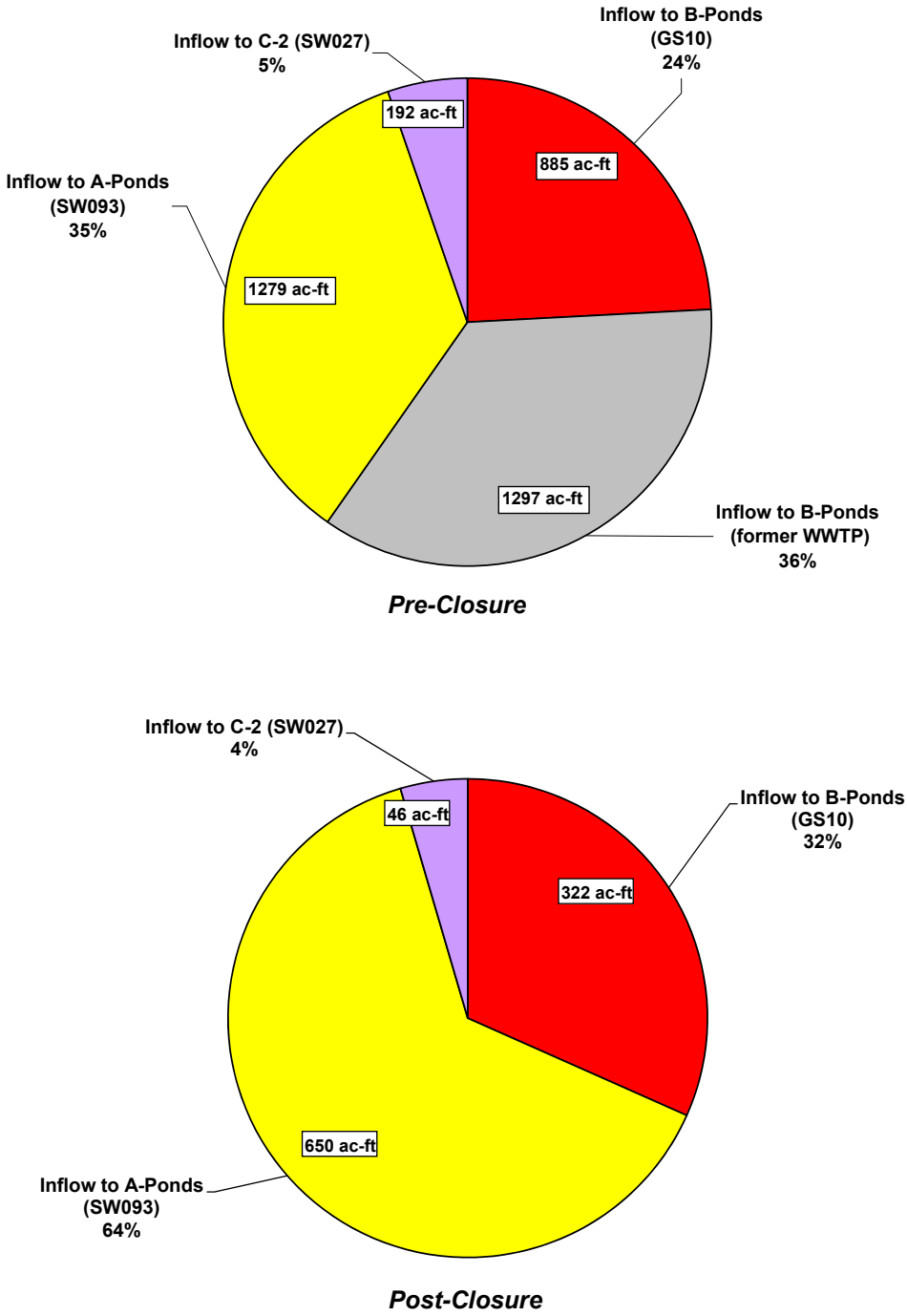



*Figure 70. Relative Total Inflow Volumes for Site Ponds: Pre- and Post-Closure Periods*

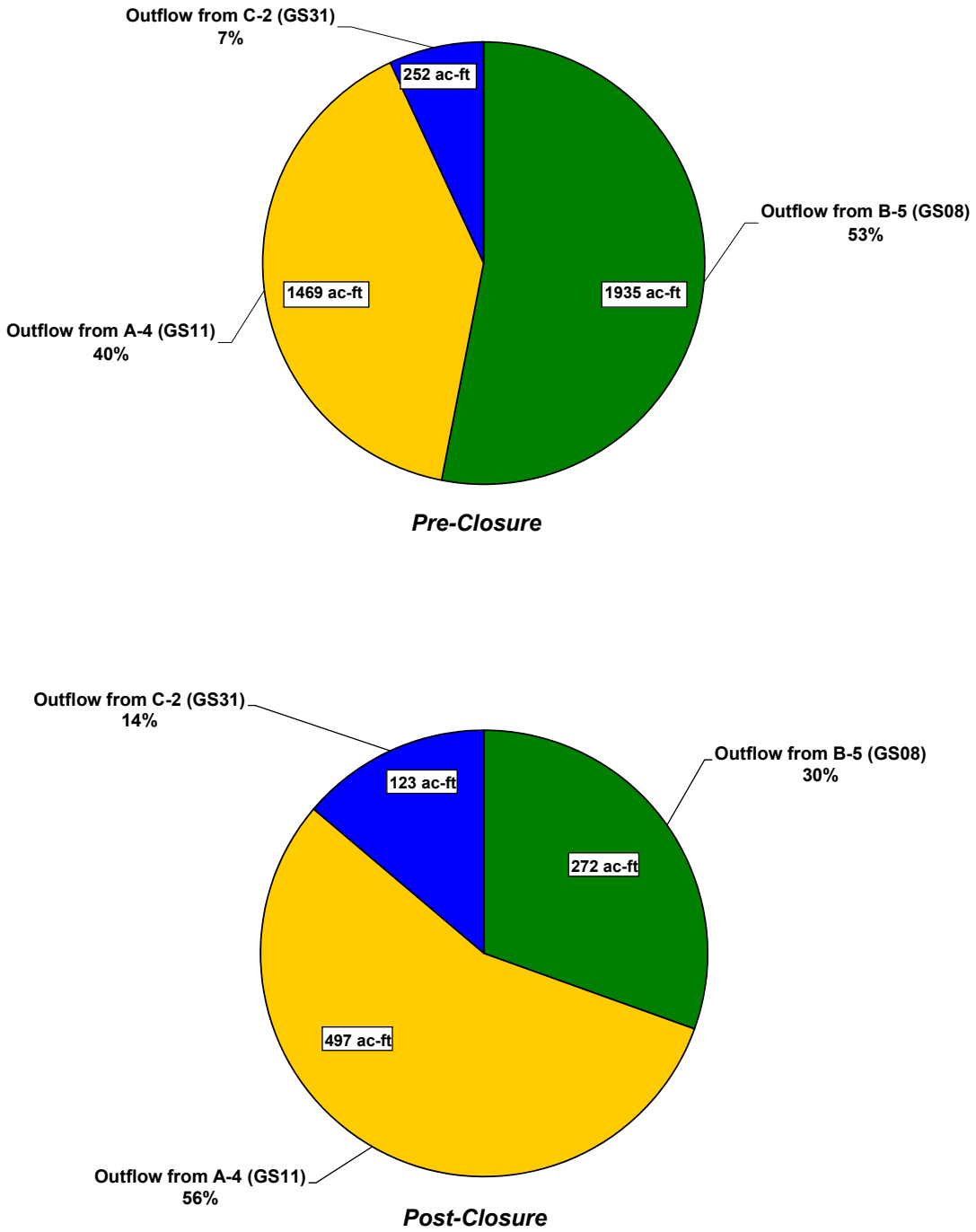



*Figure 71. Relative Total Outflow Volumes for Site Ponds: Pre- and Post-Closure Periods*

### *GS01: Woman Creek at Indiana Street*

***Location***—Woman Creek 200 feet upstream of Indiana Street; State Plane: E2093824, N744889.

***Drainage Area***—The basin includes the Woman Creek drainage and southern portions of the COU; areas west of Highway 93 also contribute runoff (total drainage acreage undetermined).

***Period of Record***—September 16, 1991, to current year.

***Gage***—Water-stage recorder and 18-inch Parshall flume (flume is located just east of Indiana Street, sampling conducted on Refuge property); prior to March 24, 1998, flow measurement was at the onsite sampling location using a 9-inch Parshall flume.

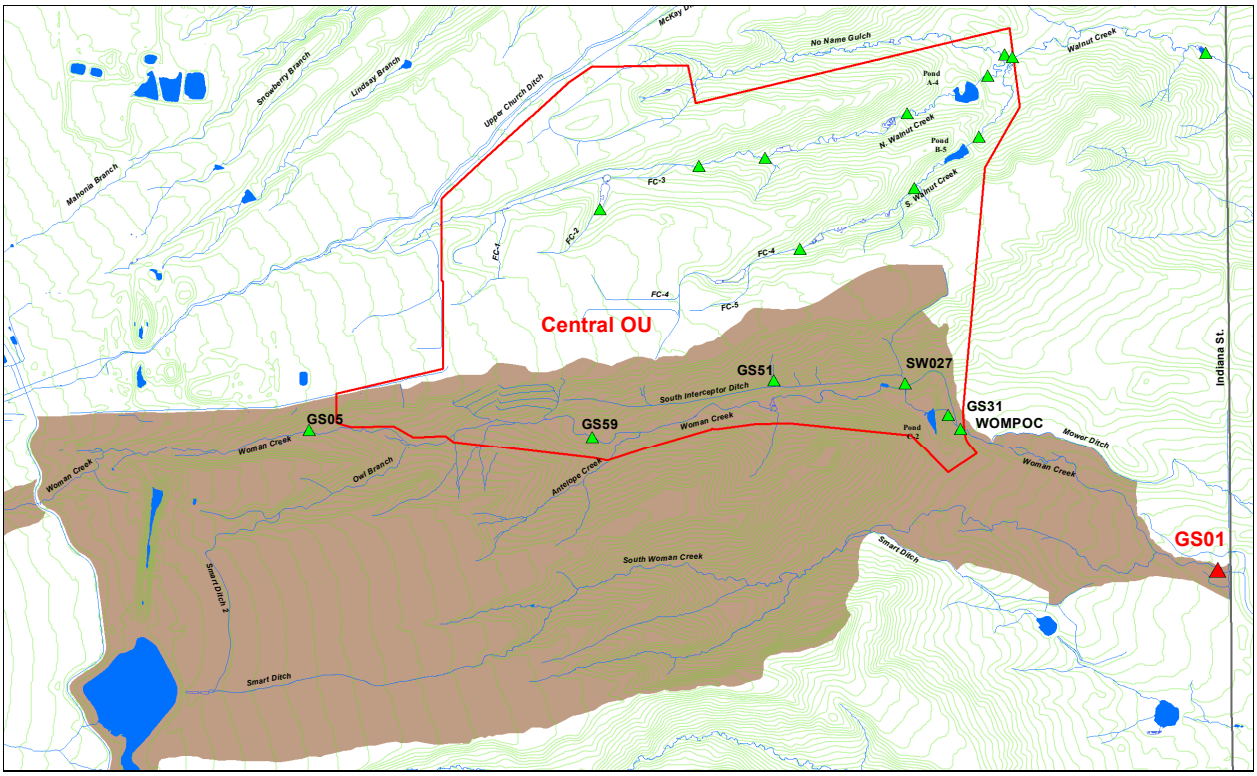



*Figure 72. GS01 Drainage Area*

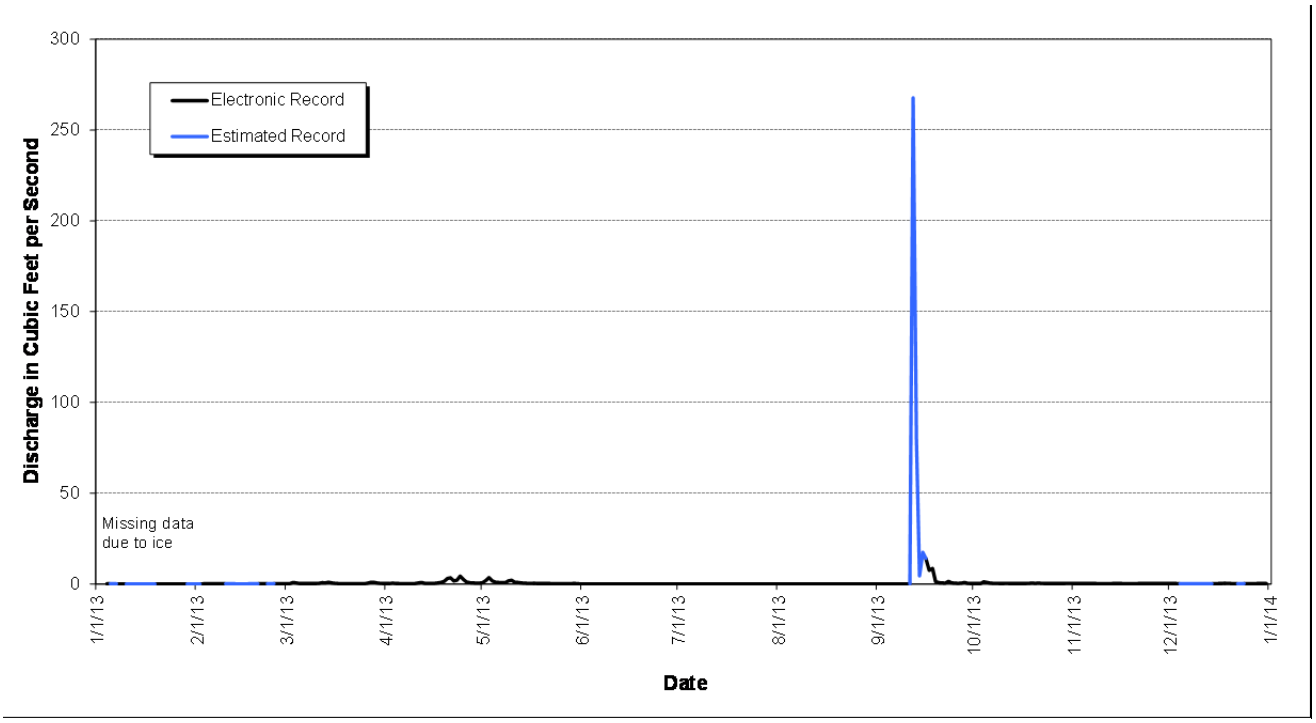



*Figure 73. CY 2013 Mean Daily Hydrograph at GS01: Woman Creek at Indiana Street*

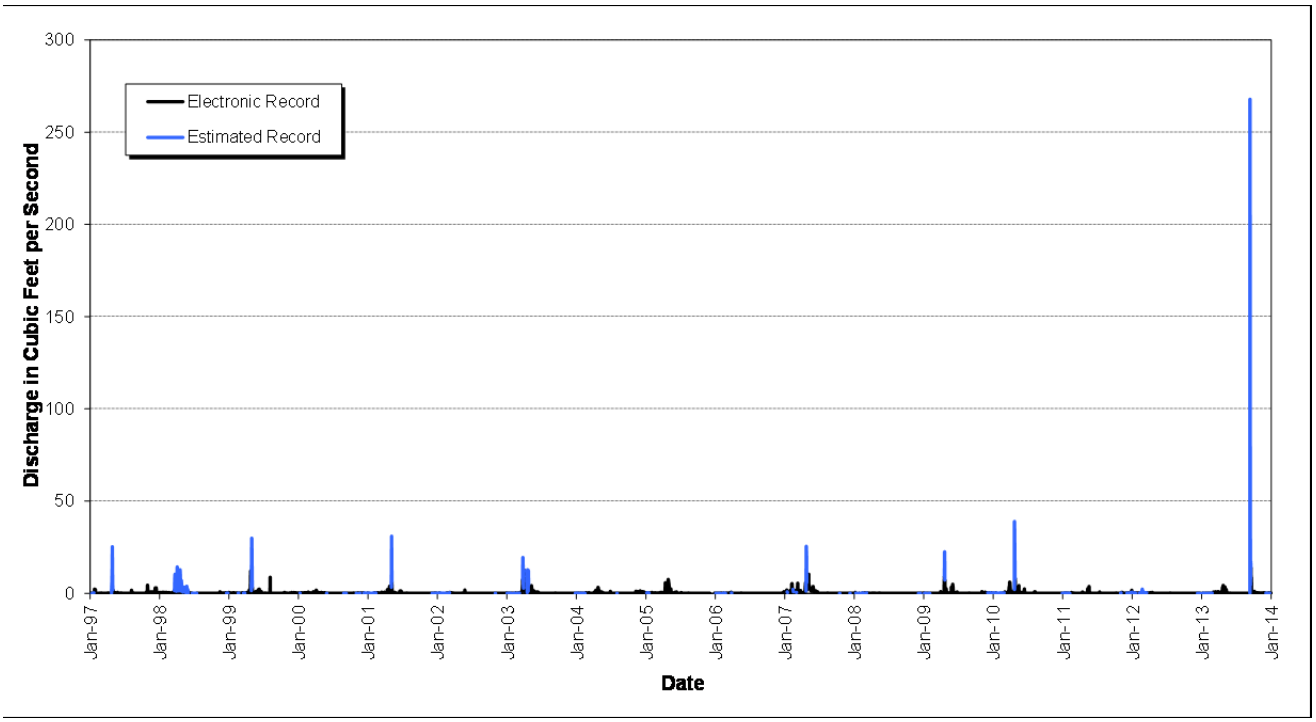



*Figure 74. CY 1997–2013 Mean Daily Hydrograph at GS01: Woman Creek at Indiana Street*

### *GS03: Walnut Creek at Indiana Street*

***Location***—Walnut Creek at Flume Pond outlet upstream of Indiana Street; State Plane: E2093618, N753646.

***Drainage Area***—The basin includes the Walnut Creek drainage and the majority of the COU; areas west of Highway 93 also contribute runoff (total drainage acreage undetermined).

***Period of Record***—September 2, 1991, to current year.

***Gage***—Water-stage recorder and parallel 6-inch and 36-inch Parshall flumes prior to November 5, 2002. Rated stream section during flume construction (GS03T; November 5, 2002–February 12, 2003). Three-foot HL flume starting February 12, 2003.

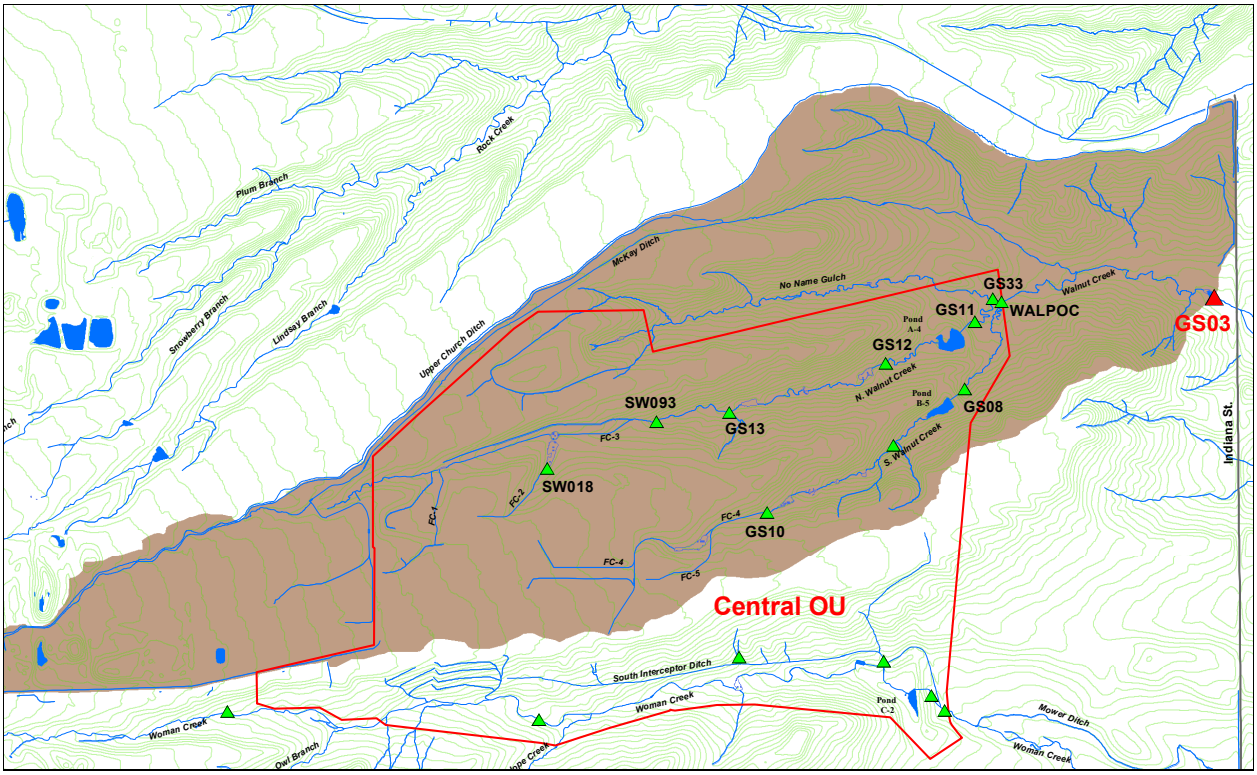



*Figure 75. GS03 Drainage Area*

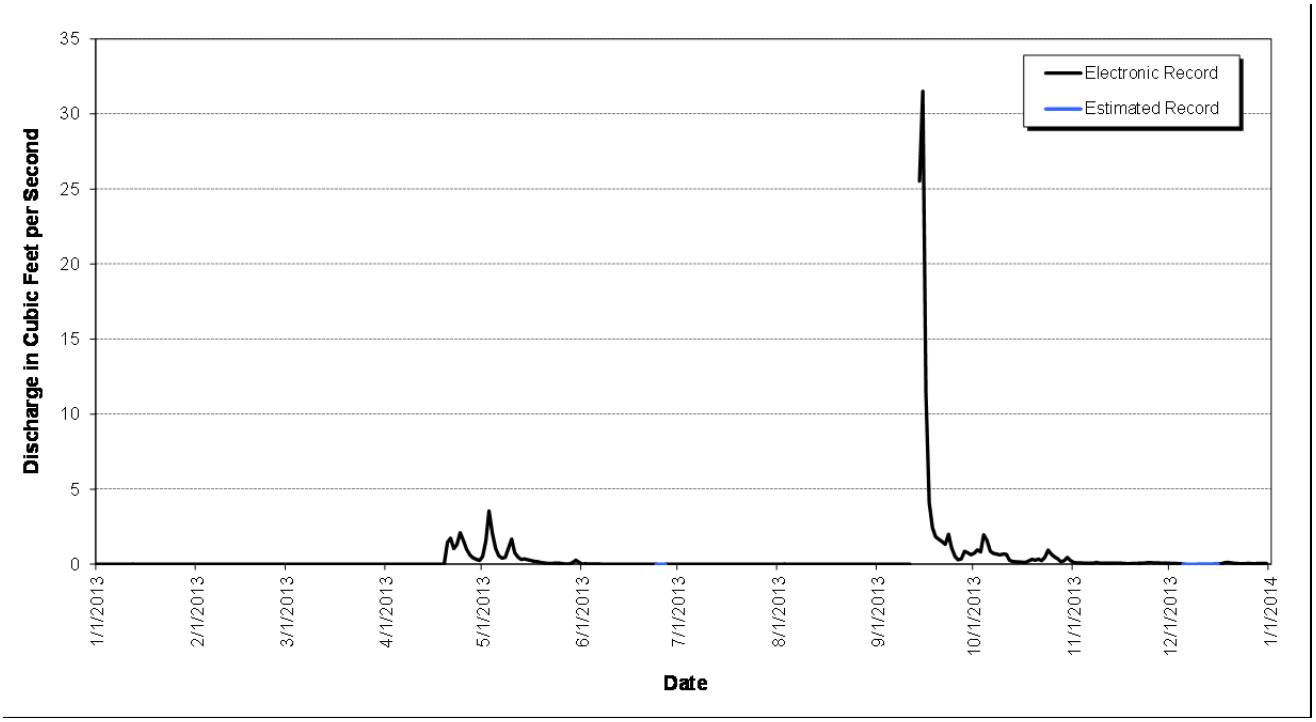



*Figure 76. CY 2013 Mean Daily Hydrograph at GS03: Walnut Creek at Indiana Street*

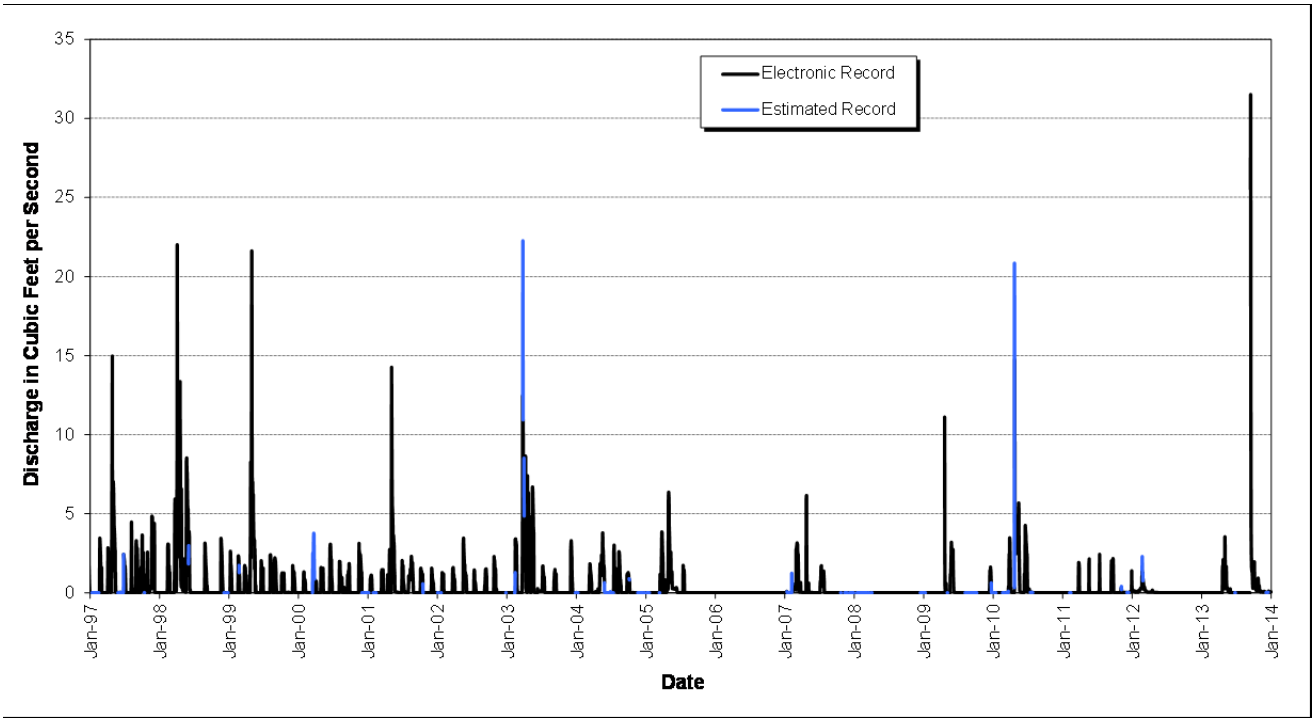



*Figure 77. CY 1997–2013 Mean Daily Hydrograph at GS03: Walnut Creek at Indiana Street*

### *WOMPOC: Woman Creek at Eastern COU Boundary*

***Location***—Woman Creek 60 feet upstream of eastern COU boundary; State Plane: E2089468, N747282.

***Drainage Area***—The basin includes the Woman Creek drainage and southern portions of the COU; areas west of Highway 93 also contribute runoff (total drainage acreage undetermined).

***Period of Record***—September 28, 2011, to current year.

***Gage***—Water-stage recorder and 3-foot HL flume.

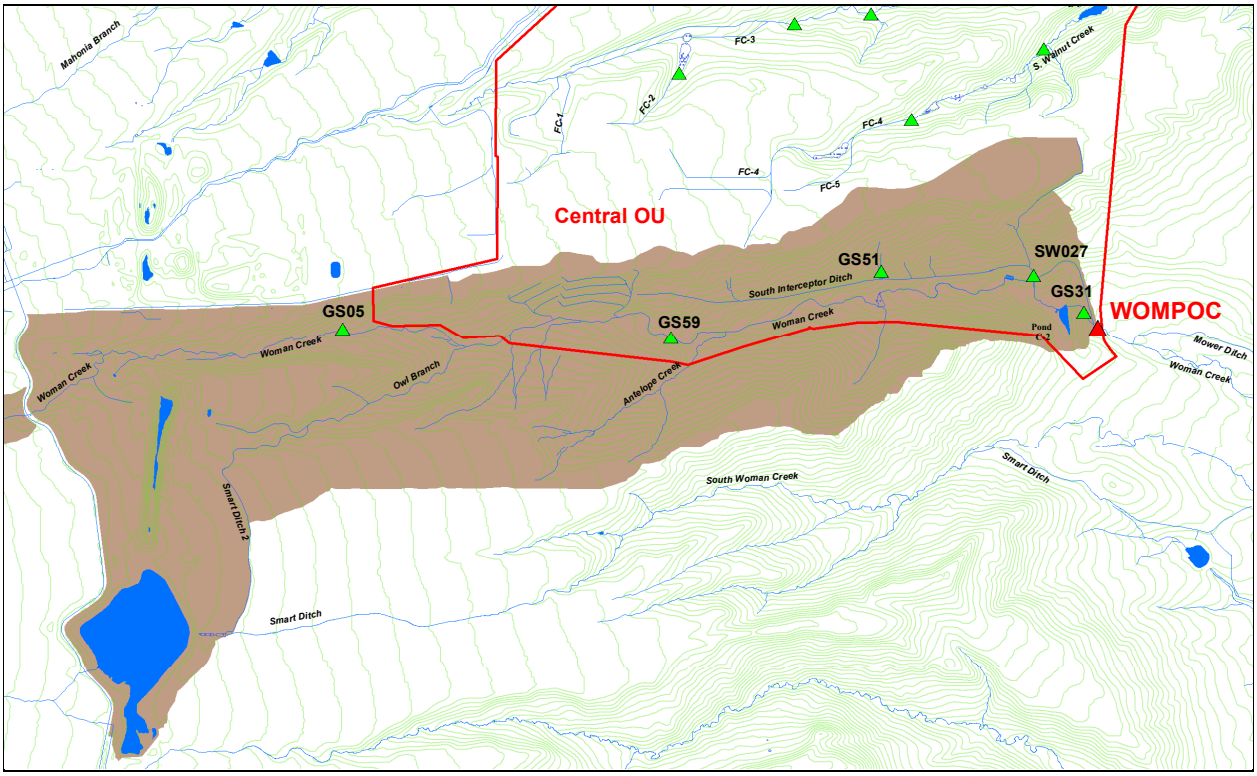



*Figure 78. WOMPOC Drainage Area*

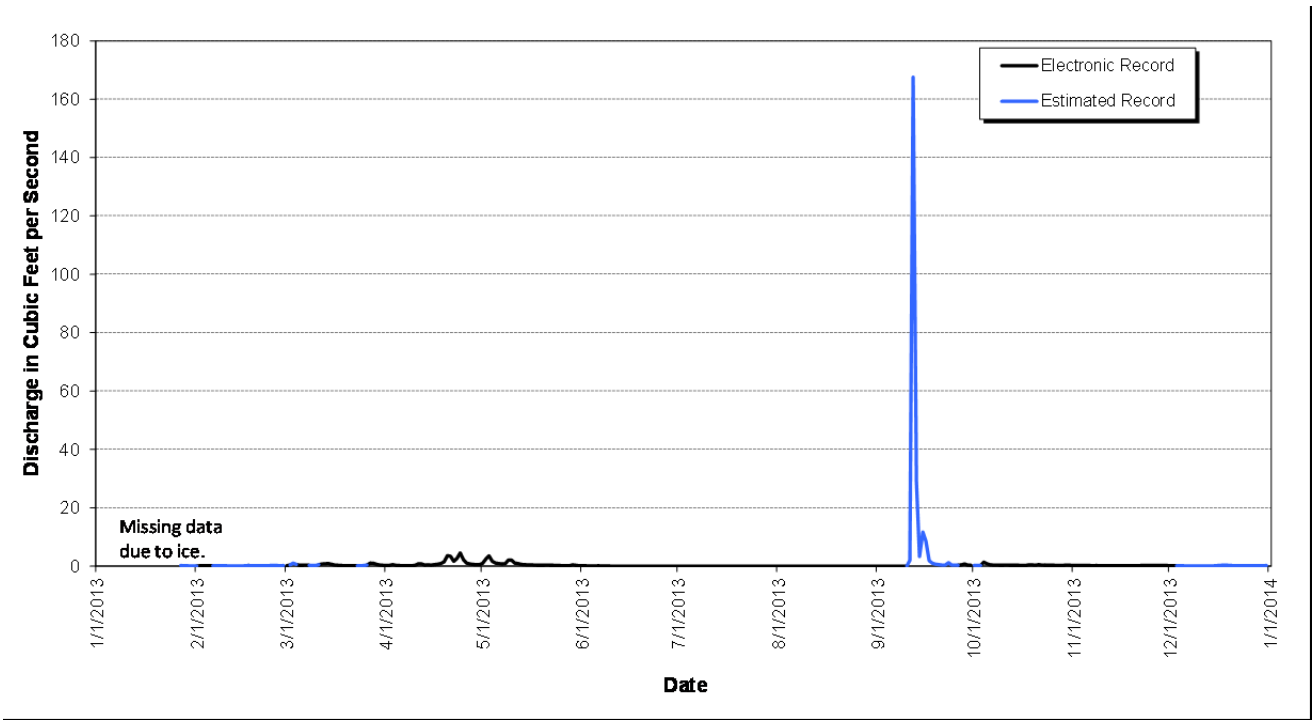



*Figure 79. CY 2013 Mean Daily Hydrograph at WOMPOC: Woman Creek at Eastern COU Boundary*

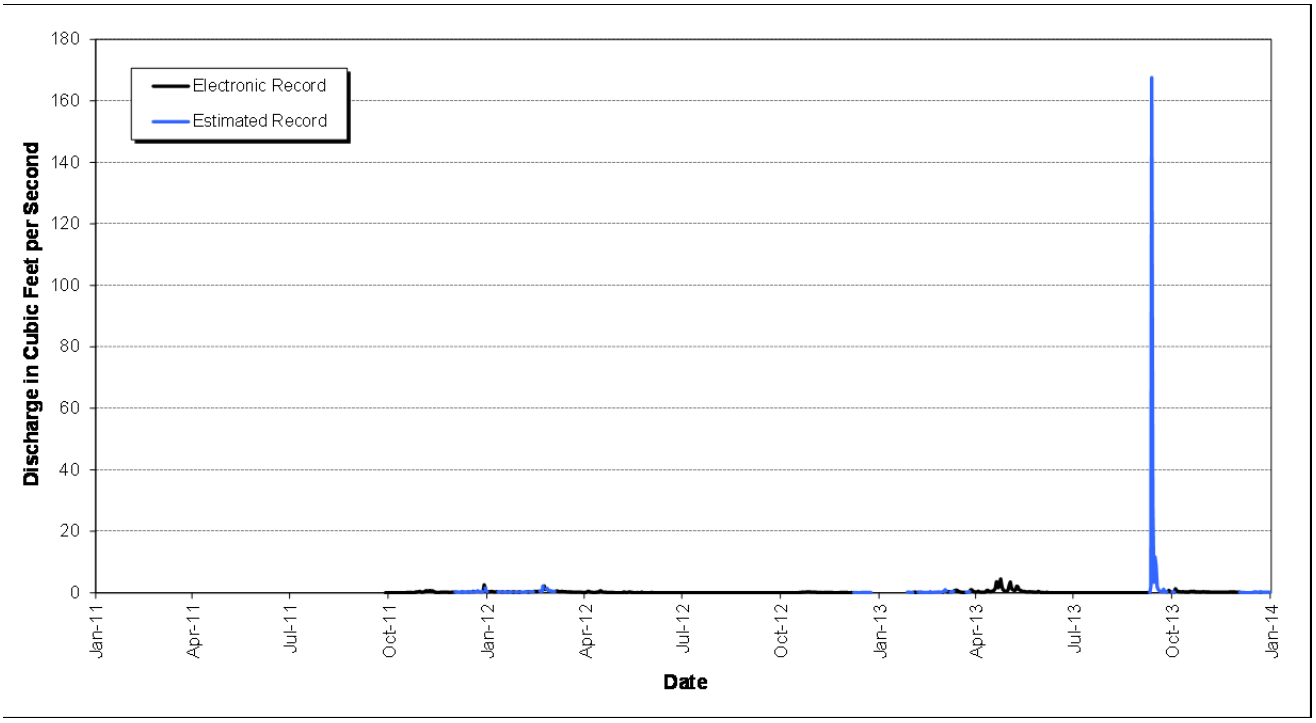



*Figure 80. CY 2011–2013 Mean Daily Hydrograph at WOMPOC: Woman Creek at Eastern COU Boundary*

### *WALPOC: Walnut Creek at Eastern COU Boundary*

***Location***—Walnut Creek 15 feet upstream of eastern COU boundary; State Plane: E2090341, N753574.

***Drainage Area***—The basin includes the No Name Gulch, North Walnut Creek, and South Walnut Creek drainages, including a majority of the COU (total of 1051.6 acres).

***Period of Record***—September 9, 2011, to current year.

***Gage***—Water-stage recorder and 3-foot HL flume.

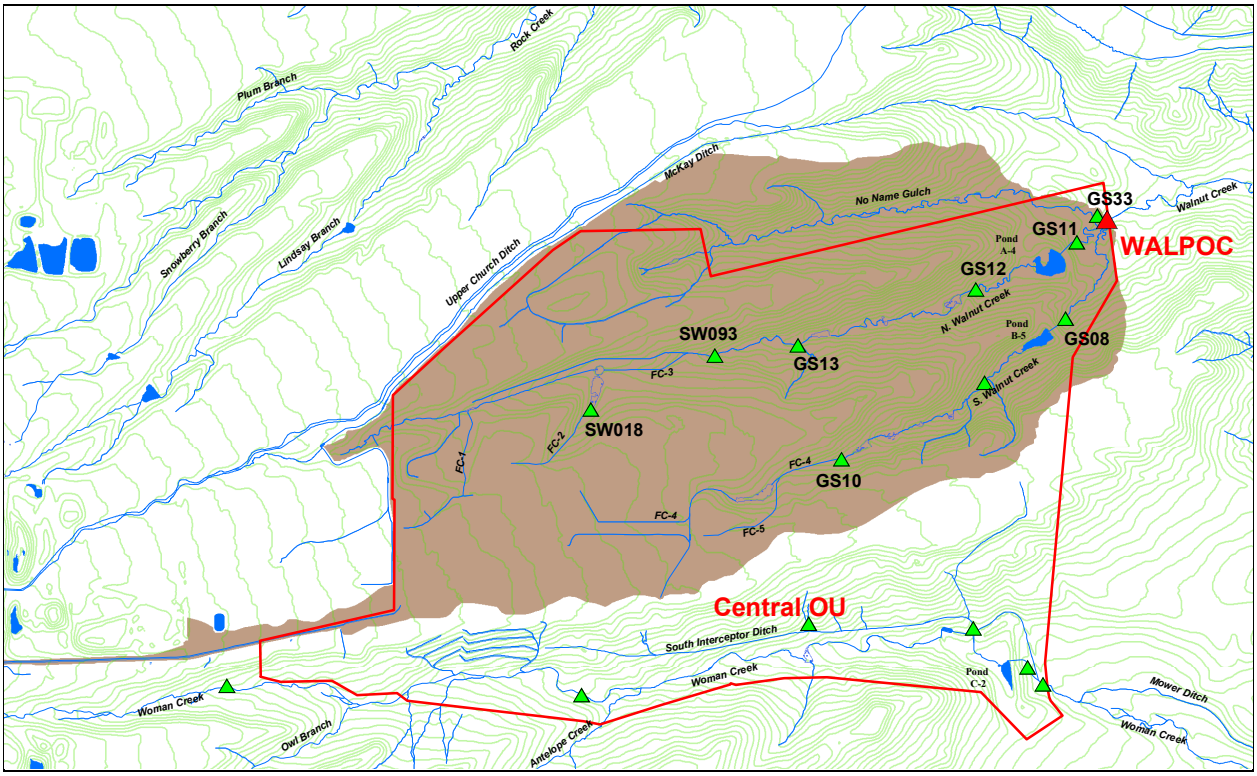



*Figure 81. WALPOC Drainage Area*

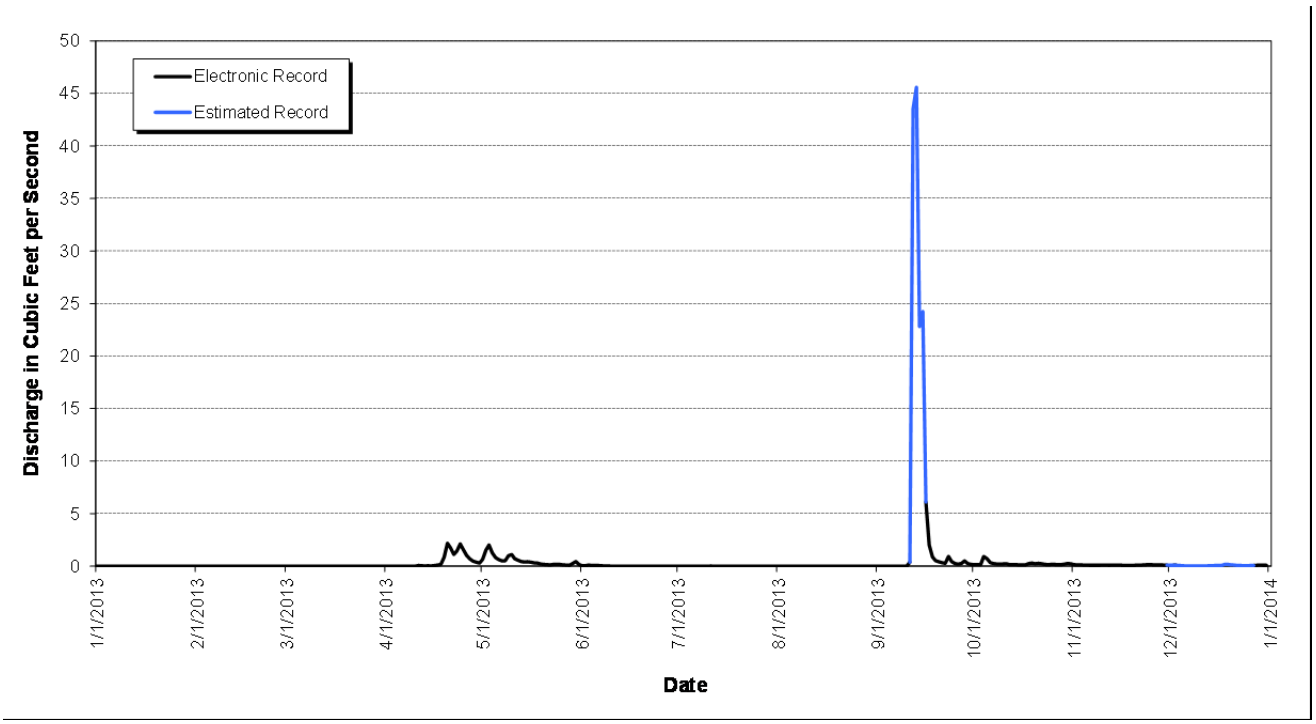



*Figure 82. CY 2013 Mean Daily Hydrograph at WALPOC: Walnut Creek at Eastern COU Boundary*

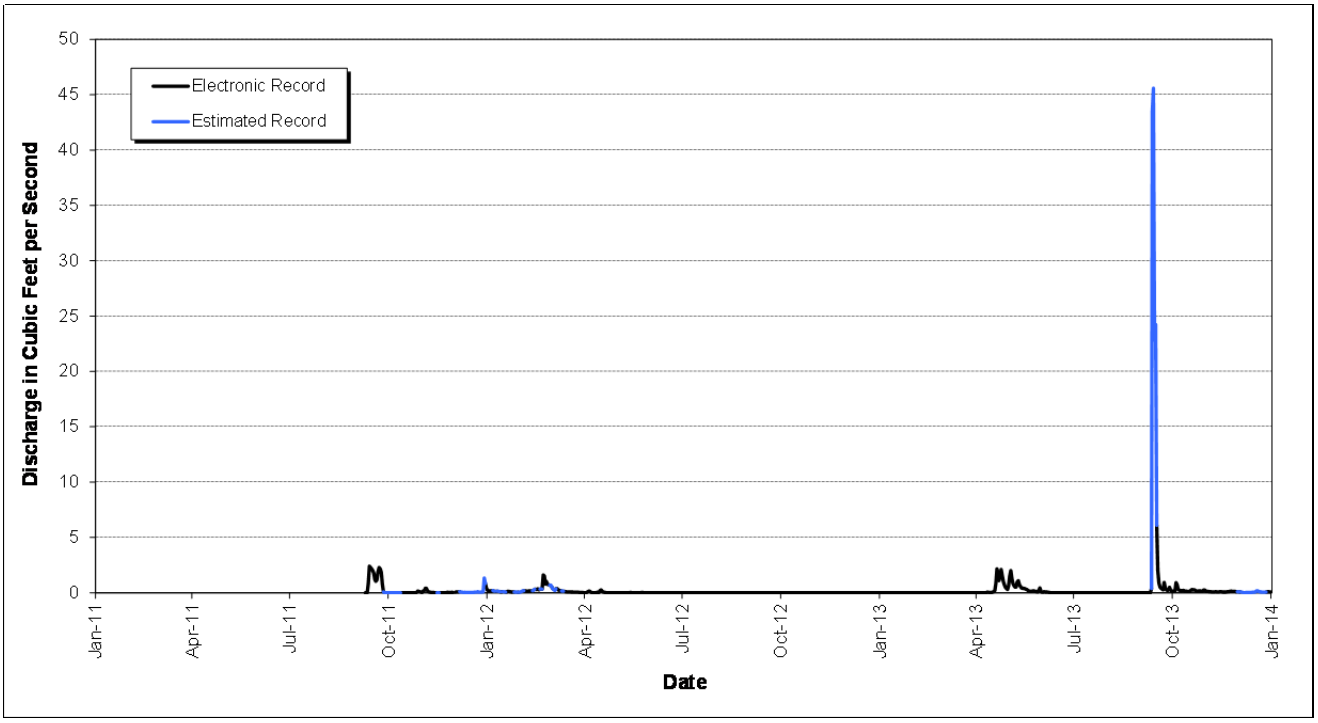



*Figure 83. CY 2011–2013 Mean Daily Hydrograph at WALPOC: Walnut Creek at Eastern COU Boundary*

### *GS05: North Woman Creek at West Fenceline*

***Location***—Woman Creek east of western Site boundary; State Plane: E2078429, N747264.

***Drainage Area***—The basin includes a portion of the Woman Creek drainage; areas west of Highway 93 also contribute runoff (total drainage acreage undetermined).

***Period of Record***—September 23, 1991, to current year.

***Gage***—Water-stage recorder and 9-inch Parshall flume with weir insert.

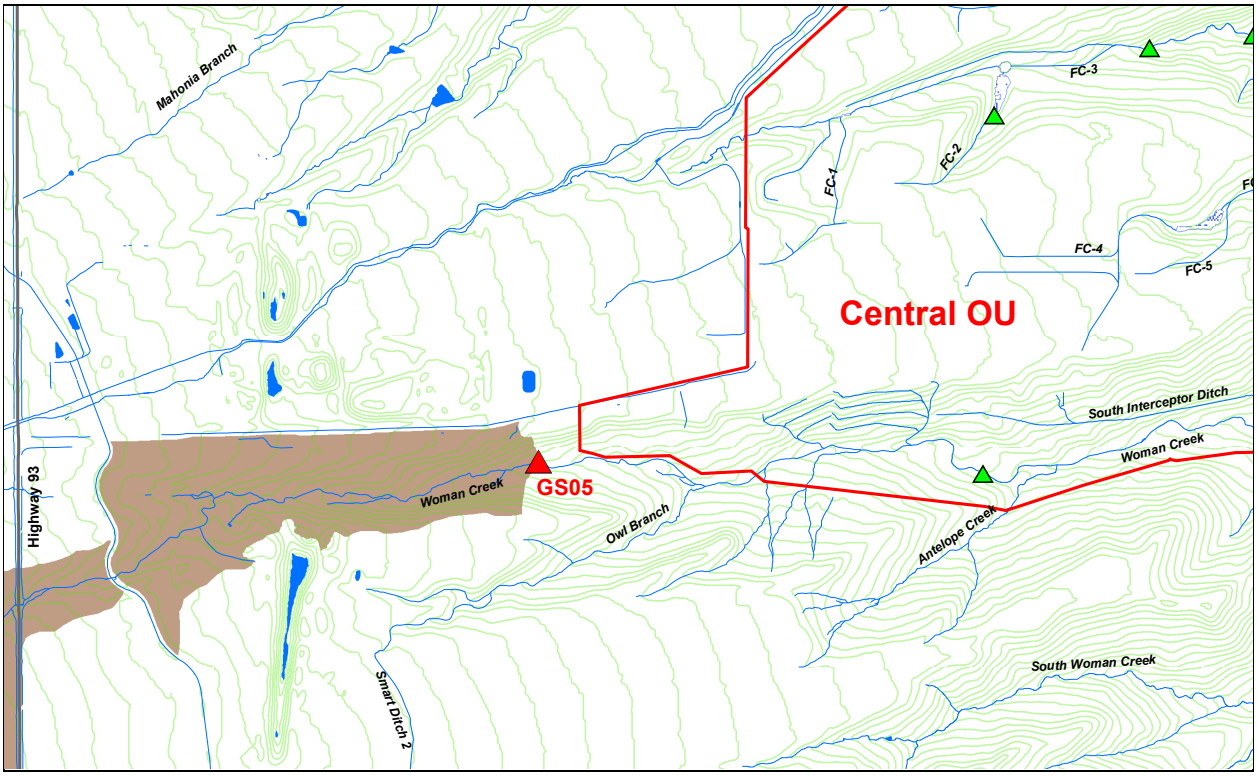



*Figure 84. GS05 Drainage Area*

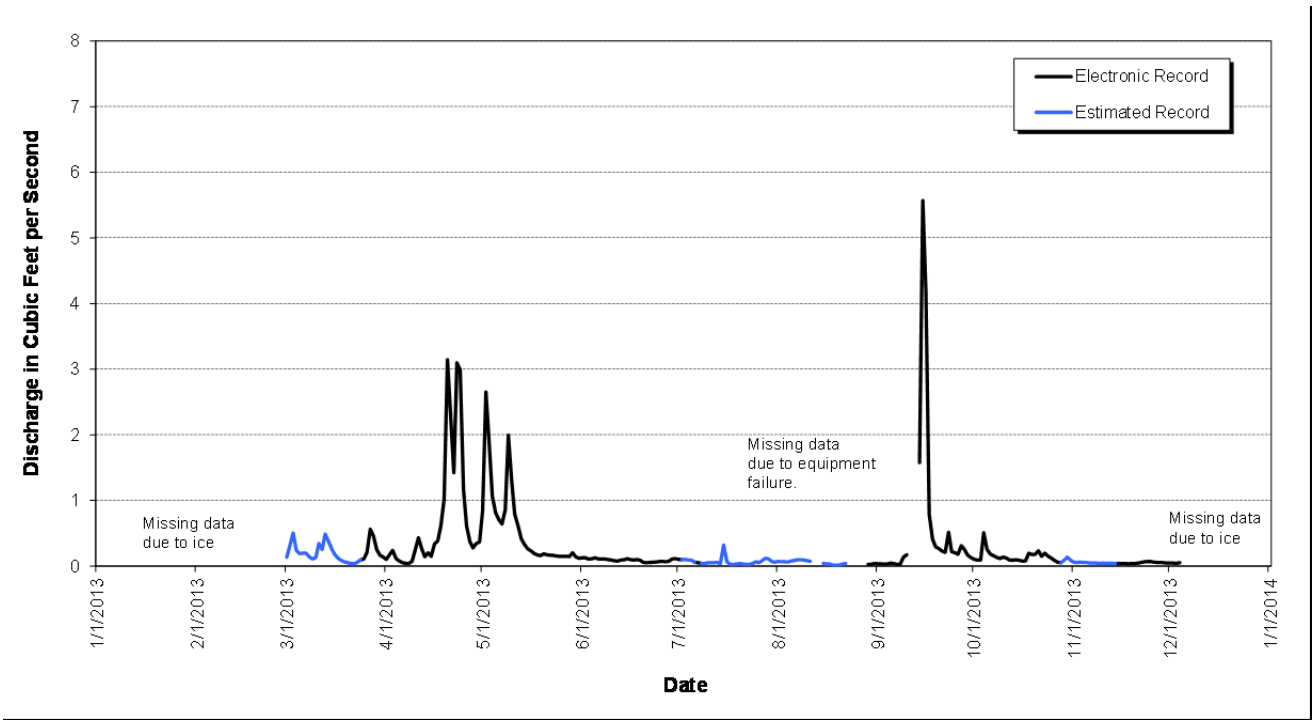



*Figure 85. CY 2013 Mean Daily Hydrograph at GS05: North Woman Creek at West Fence Line*

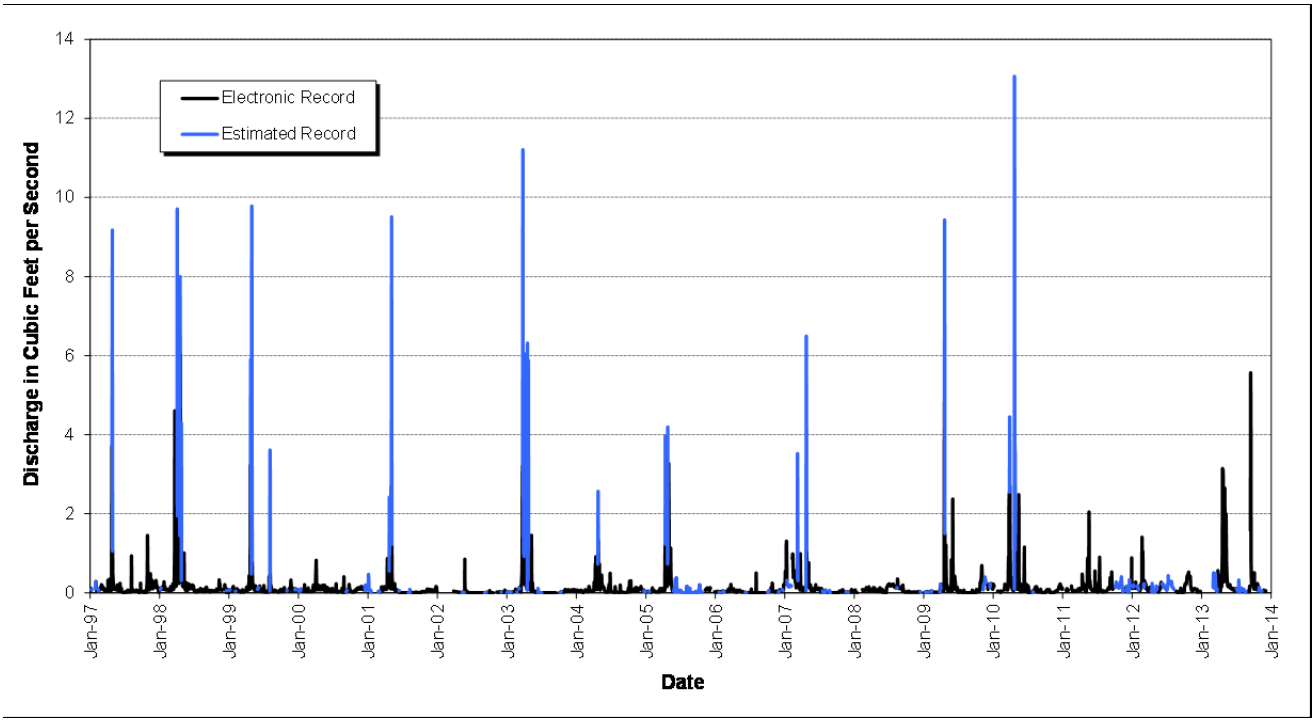



*Figure 86. CY 1997–2013 Mean Daily Hydrograph at GS05: North Woman Creek at West Fence Line*

### *GS08: South Walnut Creek at Pond B-5 Outlet*

***Location***—South Walnut Creek at Pond B-5 outlet; State Plane: E2089778, N752231.

***Drainage Area***—The basin includes the South Walnut Creek drainage and central portions of the COU (total of 311.0 acres).

***Period of Record***—March 23, 1994, to current year.

***Gage***—Water-stage recorder and 24-inch Parshall flume with weir insert.

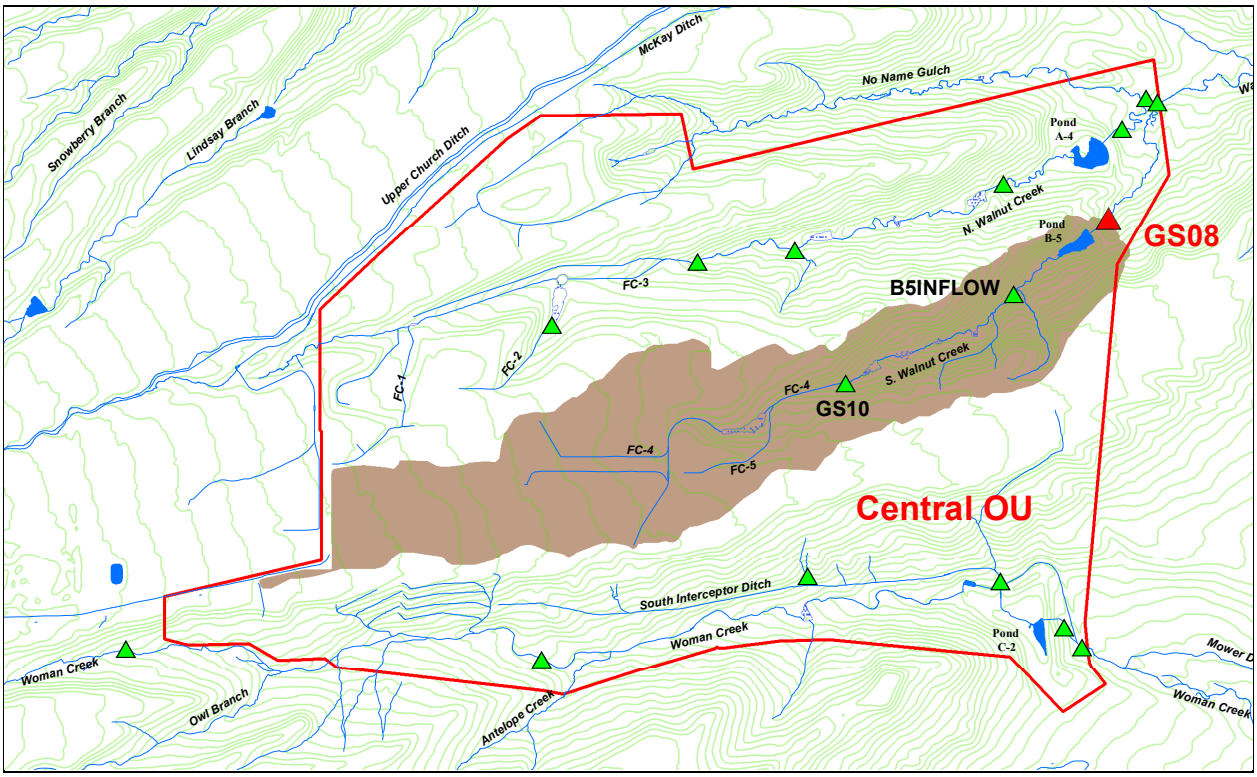



*Figure 87. GS08 Drainage Area*

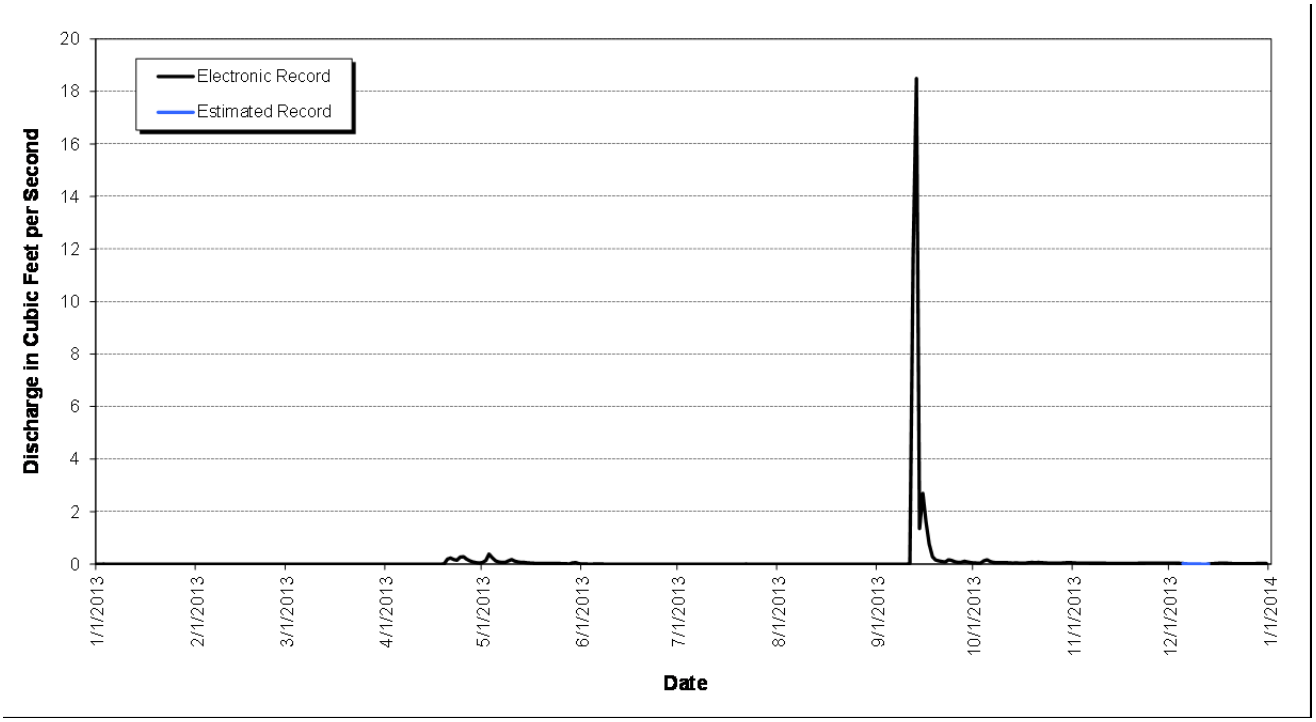



*Figure 88. CY 2013 Mean Daily Hydrograph at GS08: South Walnut Creek at Pond B-5 Outlet*

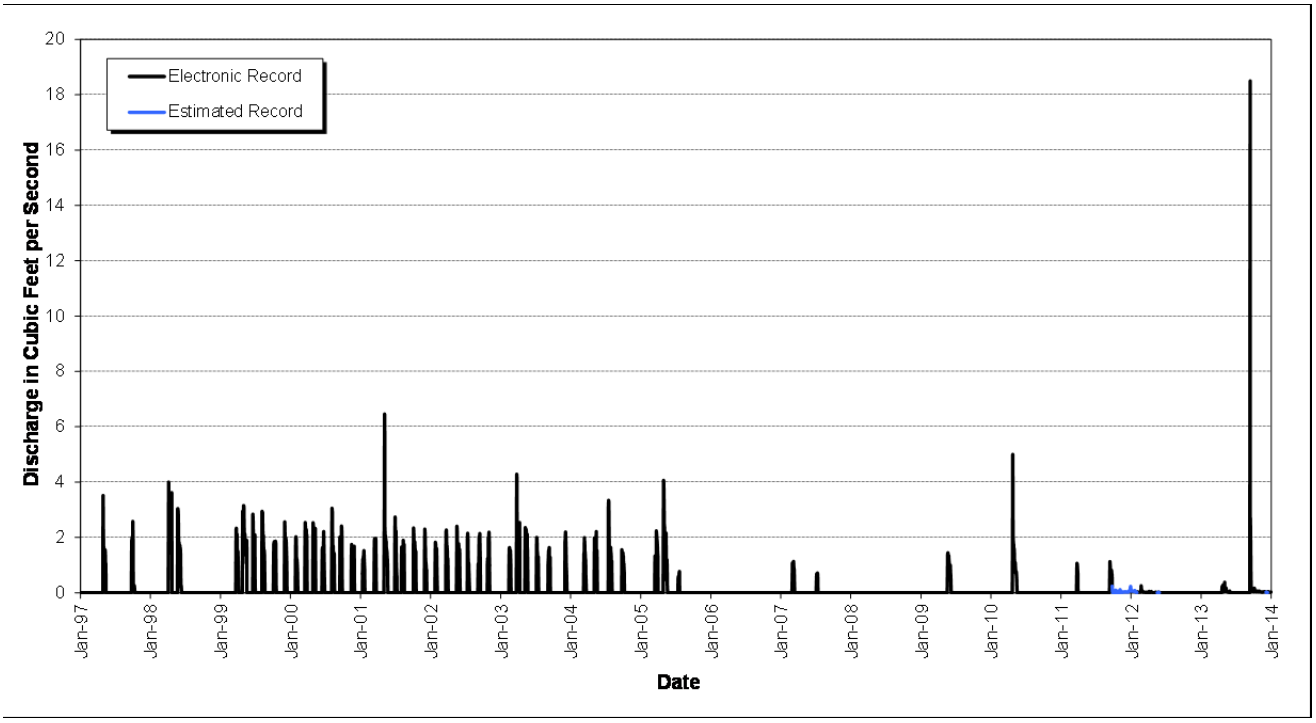



*Figure 89. CY 1997–2013 Mean Daily Hydrograph at GS08: South Walnut Creek at Pond B-5 Outlet*

### *GS10: South Walnut Creek at Former Pond B-1*

***Location***—South Walnut Creek above former Pond B-1; State Plane: E2086741, N750329.

***Drainage Area***—The basin includes the central portion of the COU (total of 206.0 acres).

***Period of Record***—April 1, 1993, to current year.

***Gage***—Water-stage recorder and 9-inch Parshall flume with weir insert through 8/26/2013. H-flume (2.5 foot) after 8/27/2013.

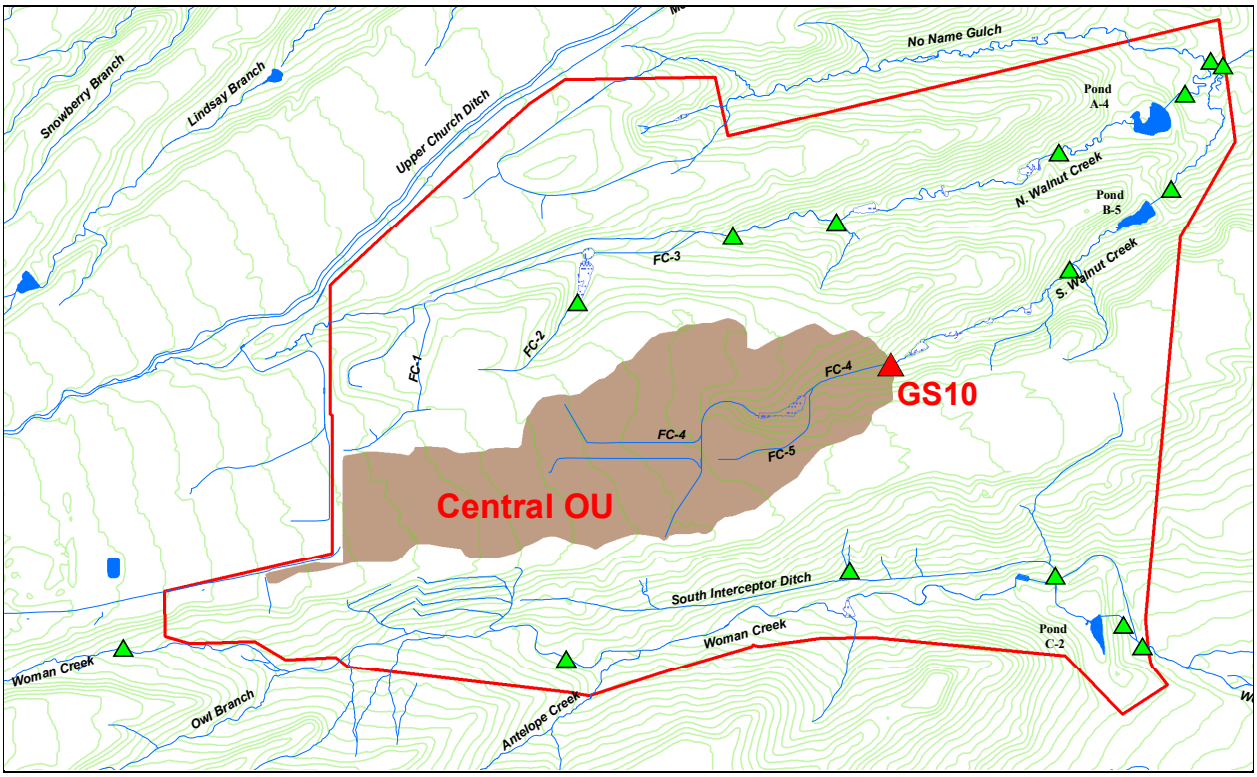



*Figure 90. GS10 Drainage Area*

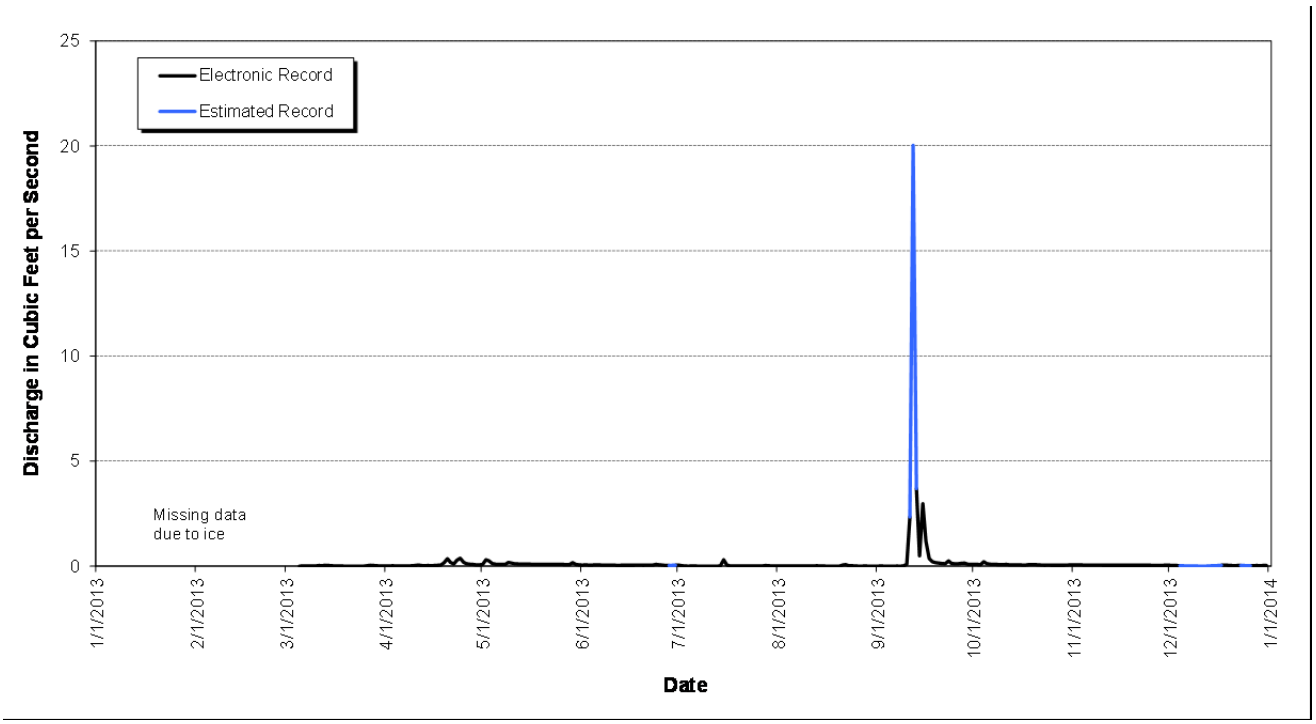



*Figure 91. CY 2013 Mean Daily Hydrograph at GS10: South Walnut Creek at Former Pond B-1*

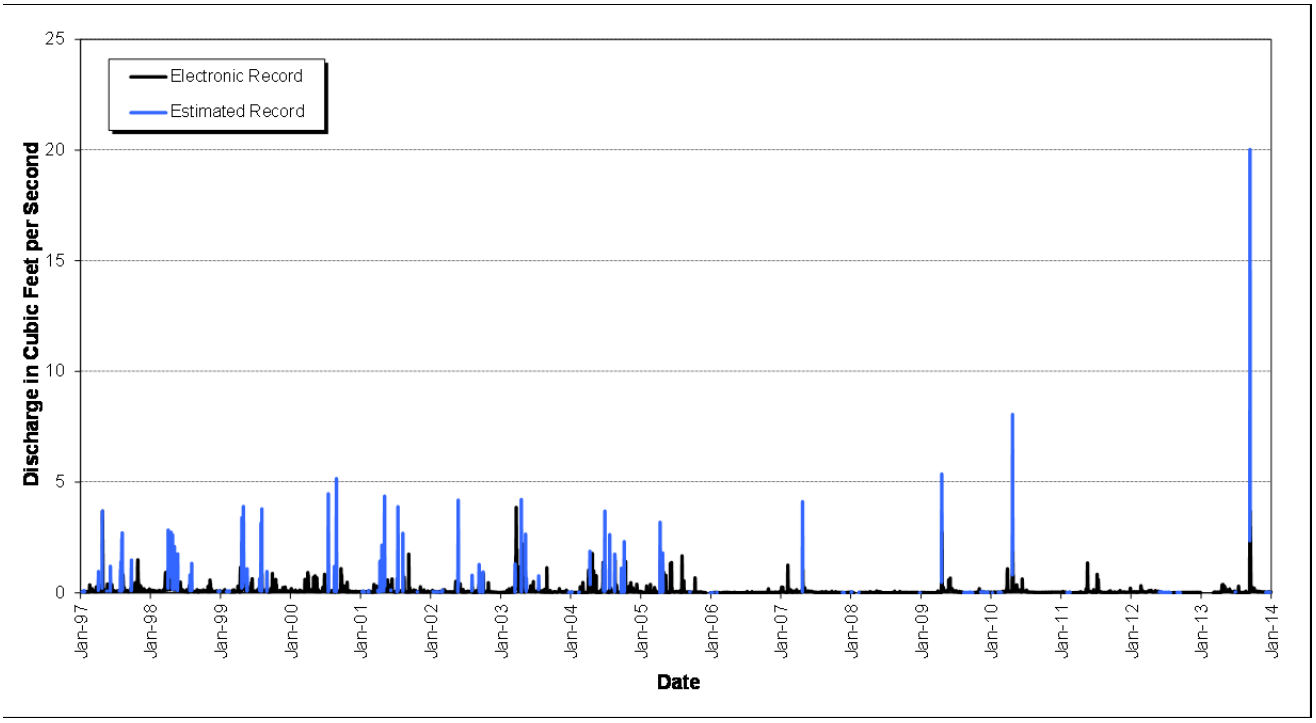



*Figure 92. CY 1997–2013 Mean Daily Hydrograph at GS10: South Walnut Creek at Former Pond B-1*

### *GS11: North Walnut Creek at Pond A-4 Outlet*

***Location***—North Walnut Creek at Pond A-4 outlet; State Plane: E2089930, N753265.

***Drainage Area***—The basin includes the North Walnut Creek drainage and northern portions of the COU (total of 395.0 acres).

***Period of Record***—May 12, 1992, to current year.

***Gage***—Water-stage recorder and 24-inch Parshall flume with weir insert.

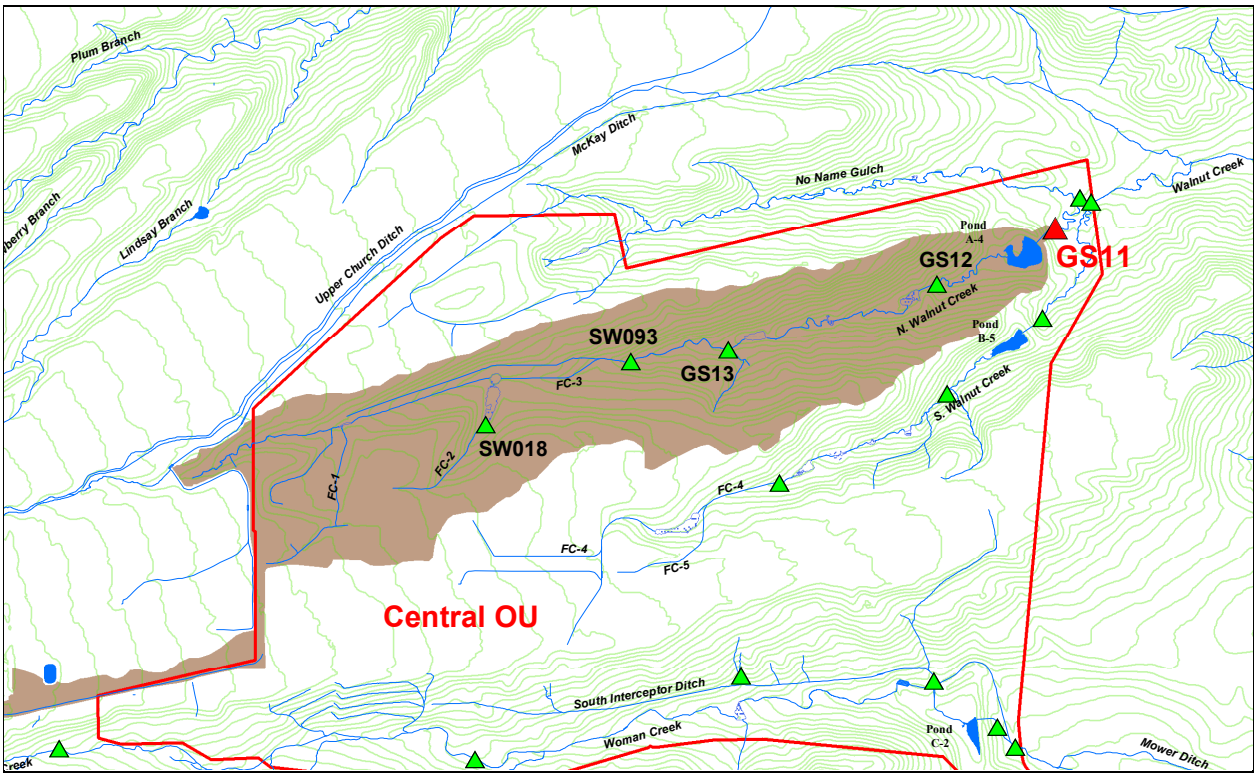



*Figure 93. GS11 Drainage Area*

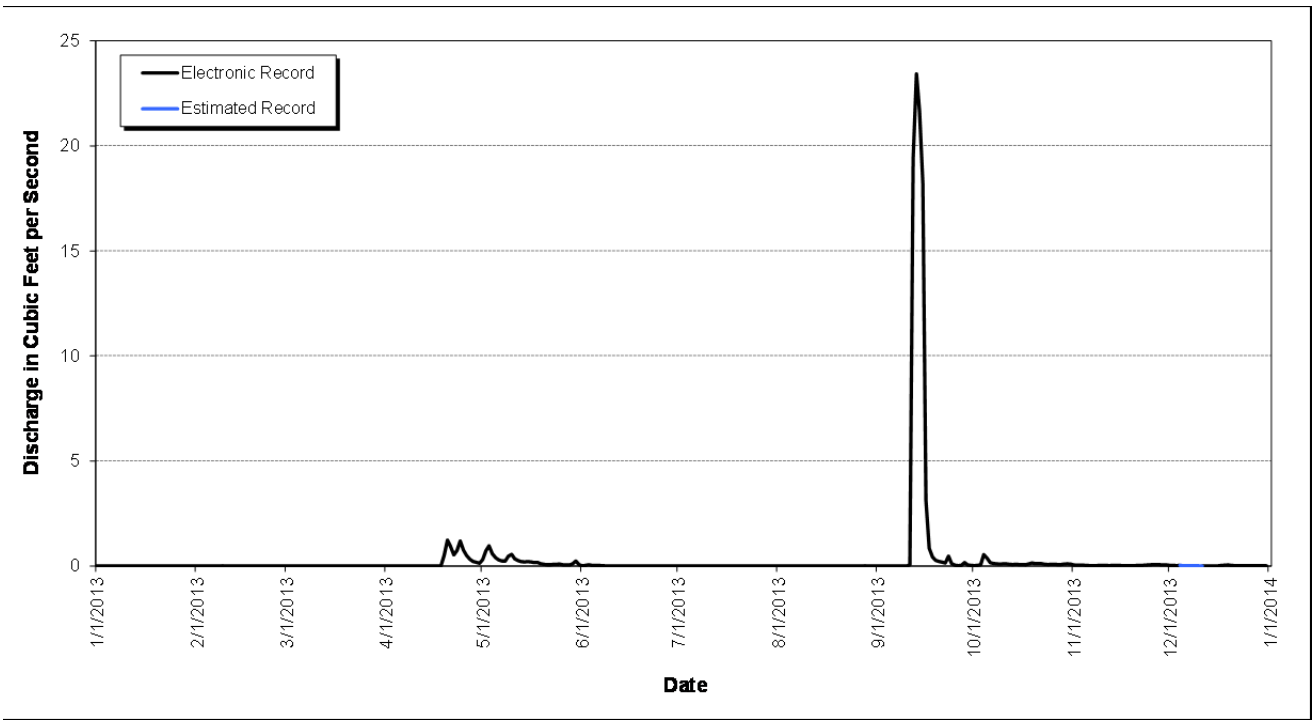



*Figure 94. CY 2013 Mean Daily Hydrograph at GS11: North Walnut Creek at Pond A-4 Outlet*

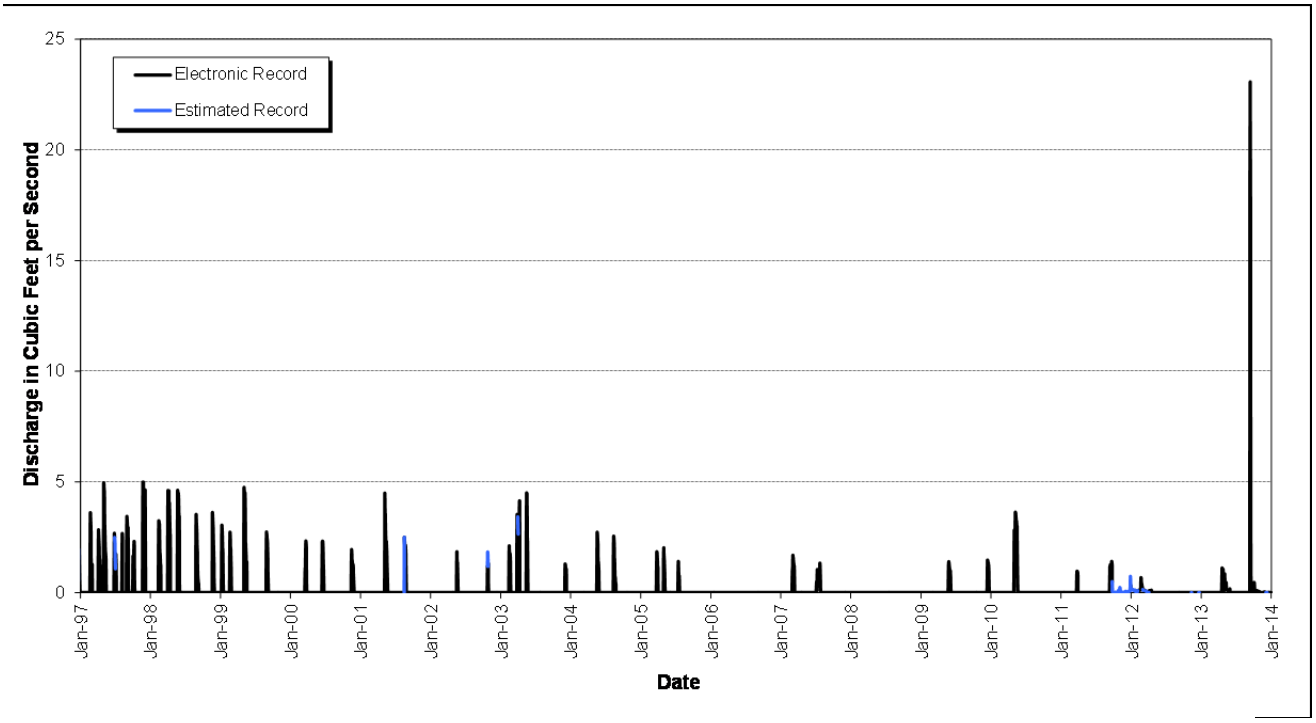



*Figure 95. CY 1997–2013 Mean Daily Hydrograph at GS11: North Walnut Creek at Pond A-4 Outlet*

### *GS12: North Walnut Creek at Former Pond A-3 Outlet*

***Location***—North Walnut Creek at former Pond A-3 outlet; State Plane: E2088564, N752629.

***Drainage Area***—The basin includes the North Walnut Creek drainage and northern portions of the COU (total of 361.7 acres).

***Period of Record***—May 13, 1992, to current year.

***Gage***—Water-stage recorder and 30-inch Parshall flume.

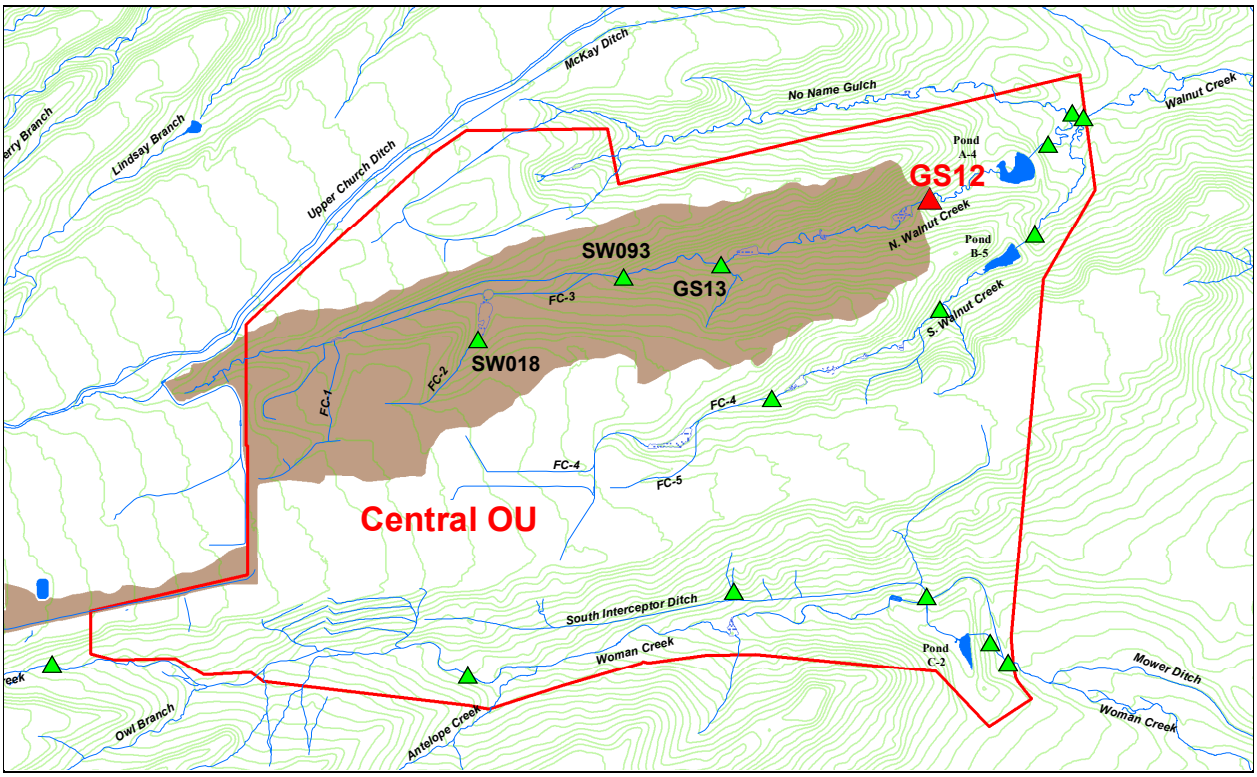



*Figure 96. GS12 Drainage Area*

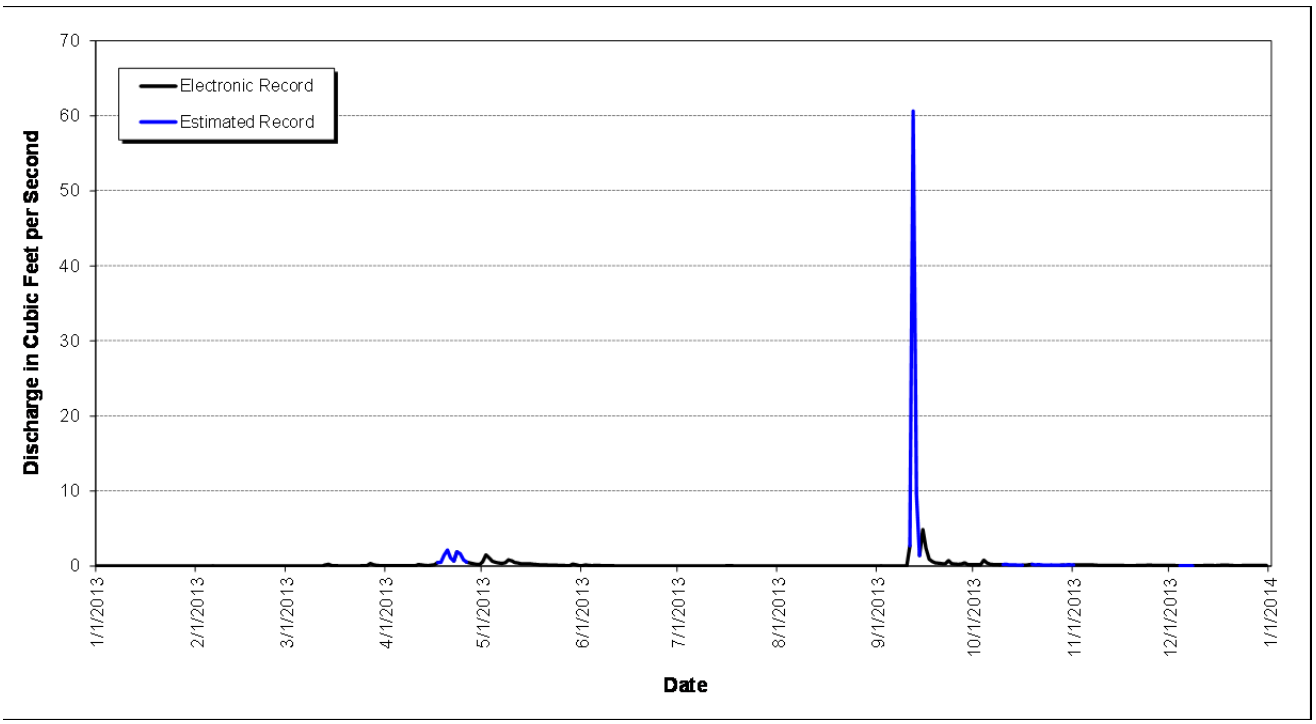



*Figure 97. CY 2013 Mean Daily Hydrograph at GS12: North Walnut Creek at Former Pond A-3 Outlet*

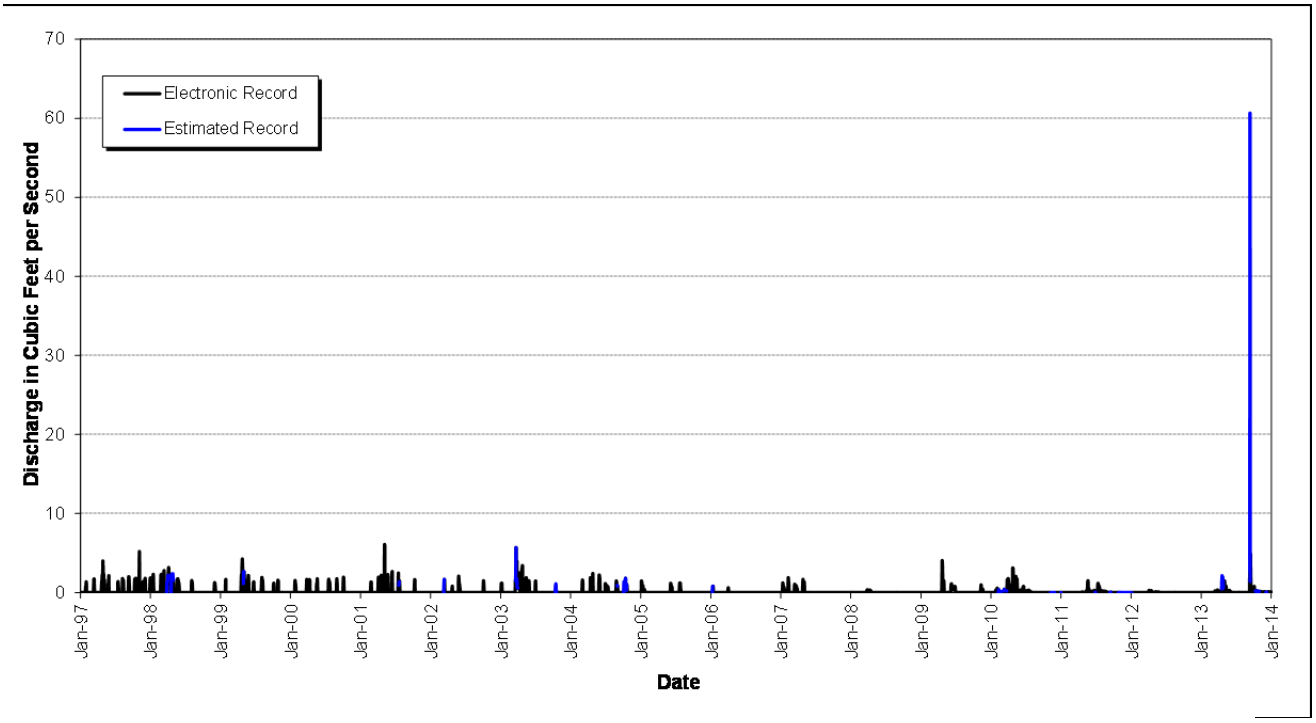



*Figure 98. CY 1997–2013 Mean Daily Hydrograph at GS12: North Walnut Creek at Former Pond A-3 Outlet*

### *GS13: North Walnut Creek at Former Pond A-1*

***Location***—North Walnut Creek at former Pond A-1; State Plane: E2086153, N751870.

***Drainage Area***—The basin includes the North Walnut Creek drainage and northwestern portions of the COU (total of 260.8 acres).

***Period of Record***—October 1, 2005, to current year.

***Gage***—Water-stage recorder and 6-inch Parshall flume.

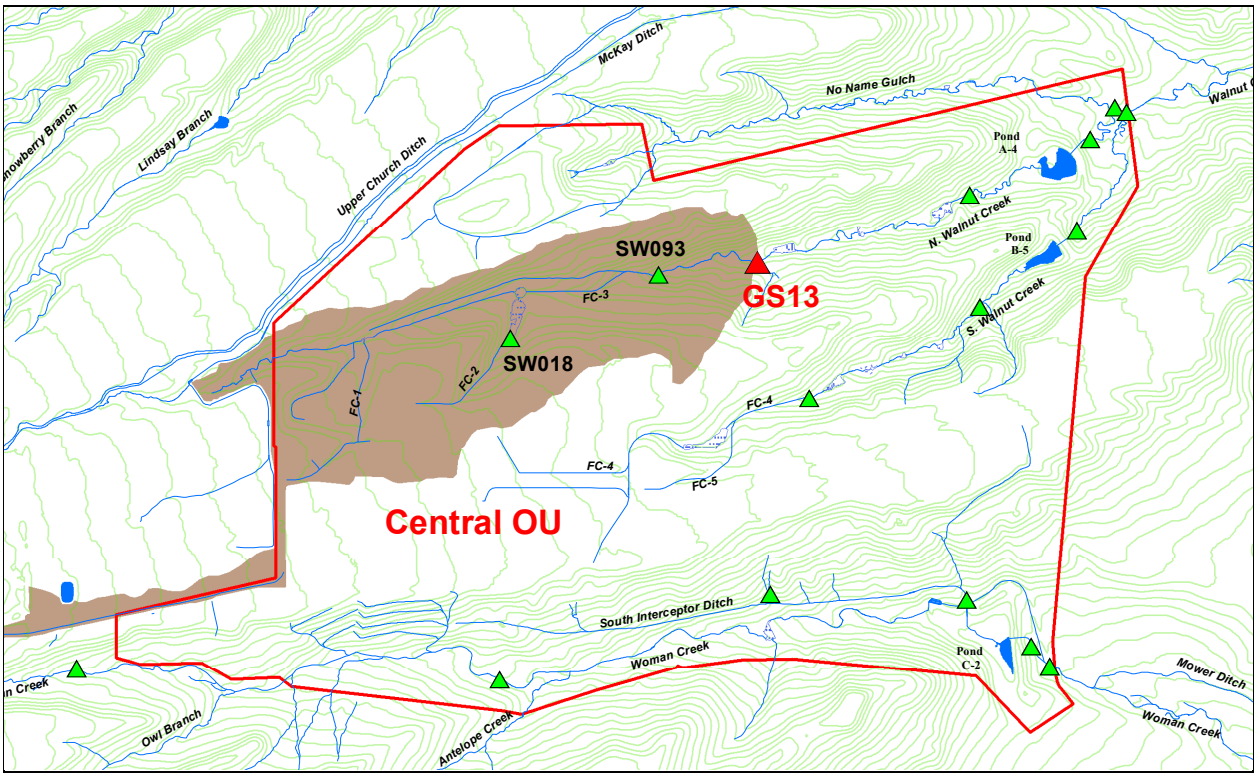



*Figure 99. GS13 Drainage Area*

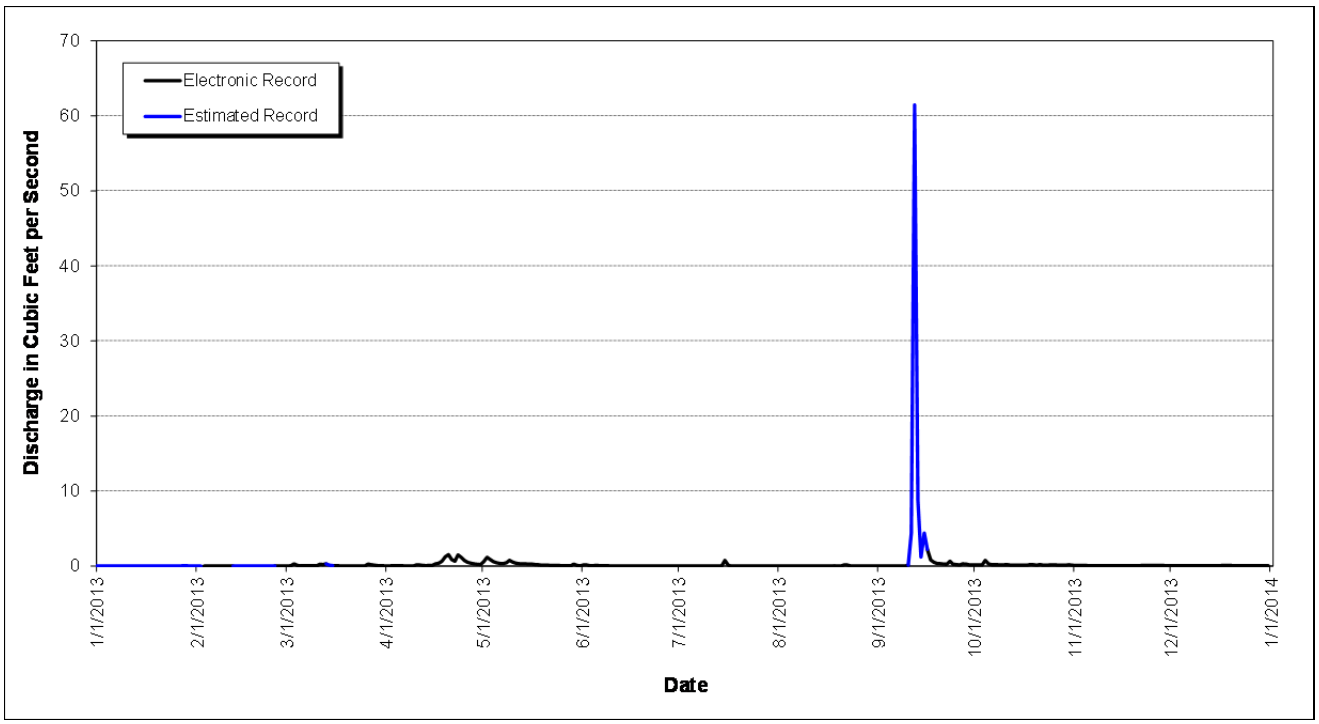



*Figure 100. CY 2013 Mean Daily Hydrograph at GS13: North Walnut Creek at Former Pond A-1*

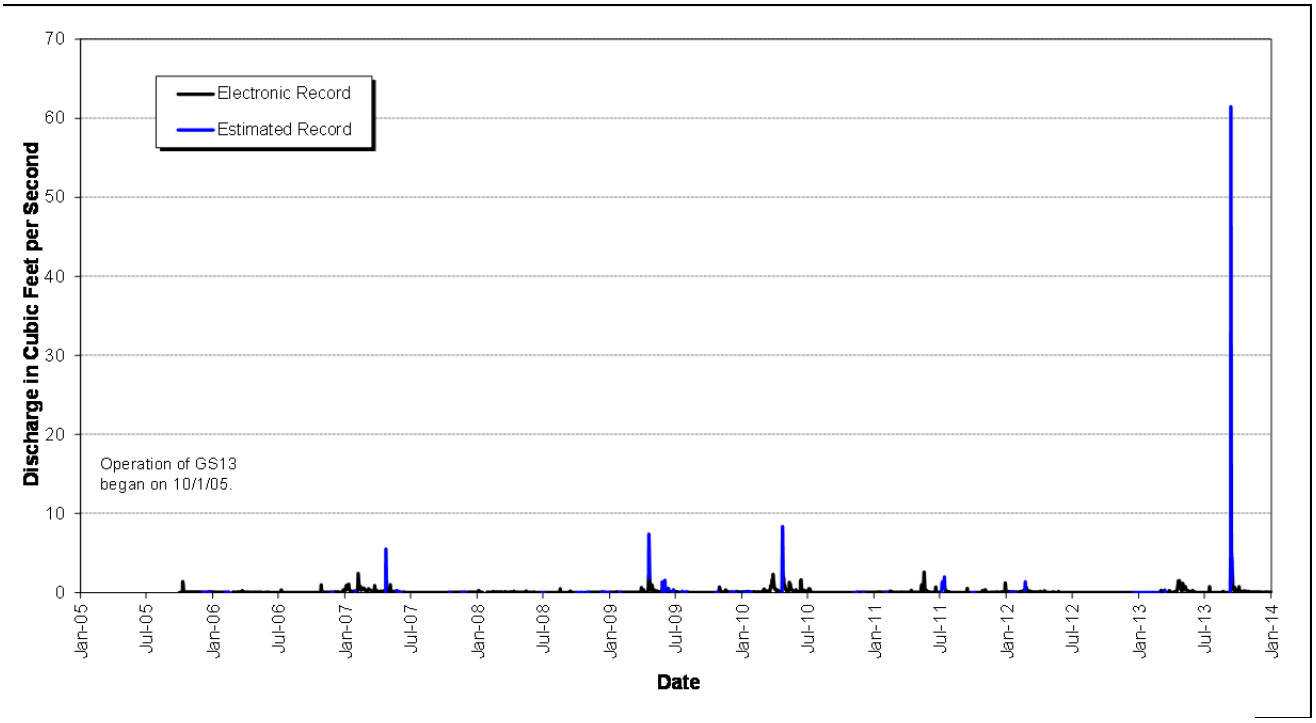



*Figure 101. CY 2005–2013 Mean Daily Hydrograph at GS13: North Walnut Creek at Former Pond A-1*

### *GS31: Woman Creek at Pond C-2 Outlet*

***Location***—Pond C-2 outlet; State Plane: E2089261, N747512.

***Drainage Area***—The basin includes a portion of the southern COU draining to the SID and the area surrounding Pond C-2 (total of 204.1 acres).

***Period of Record***—October 1, 1996, to current year.

***Gage***—Water-stage recorder and 24-inch Parshall flume.

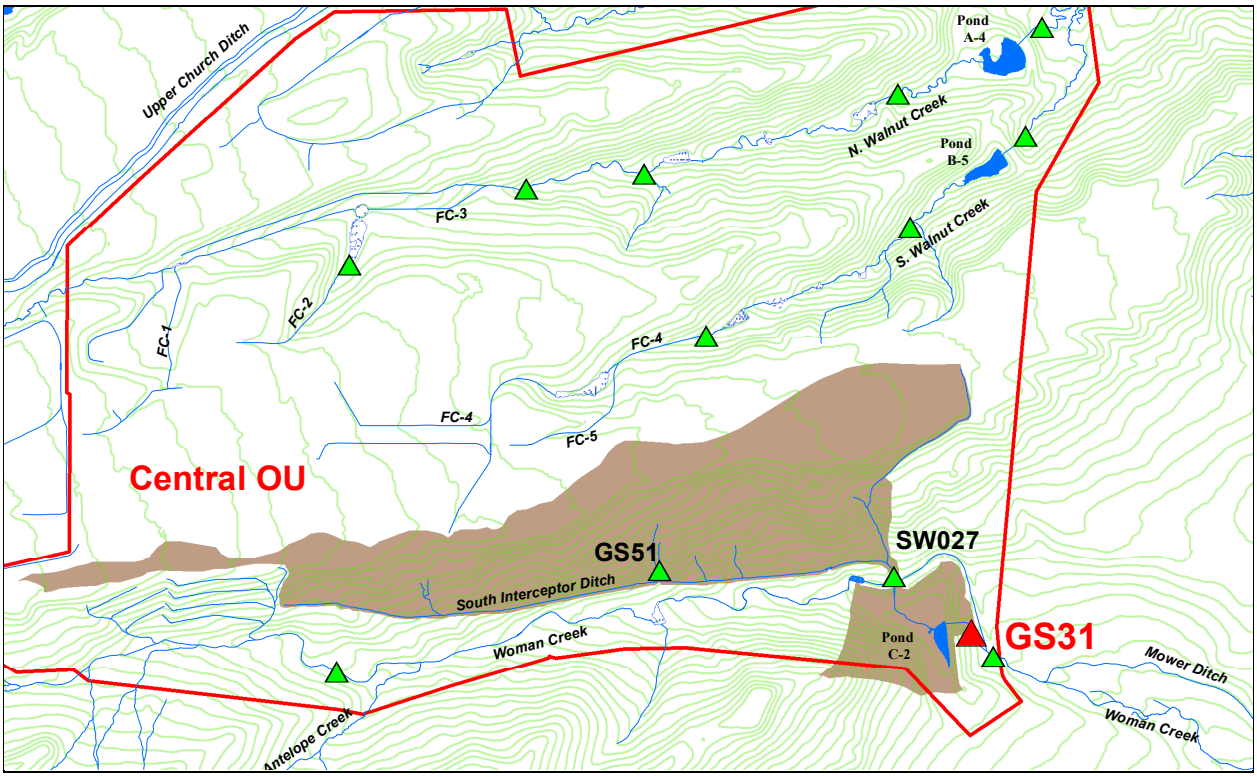



*Figure 102. GS31 Drainage Area*

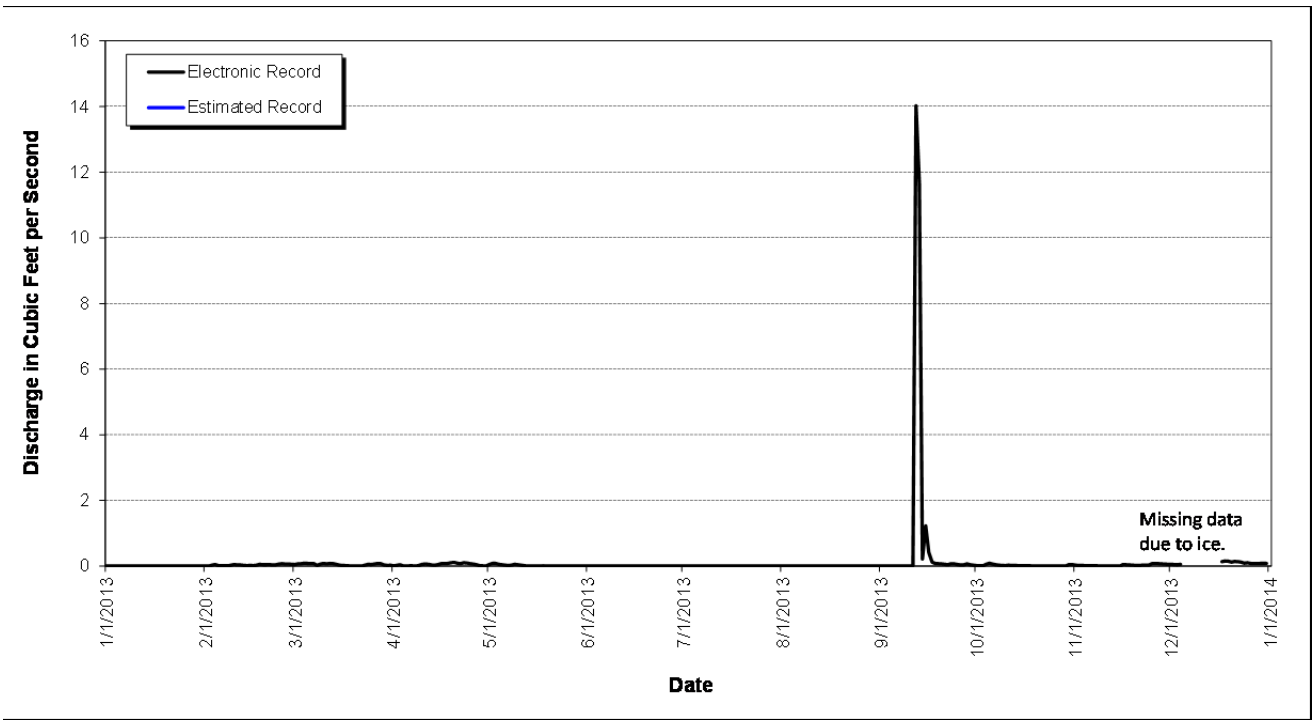



*Figure 103. CY 2013 Mean Daily Hydrograph at GS31: Woman Creek at Pond C-2 Outlet*

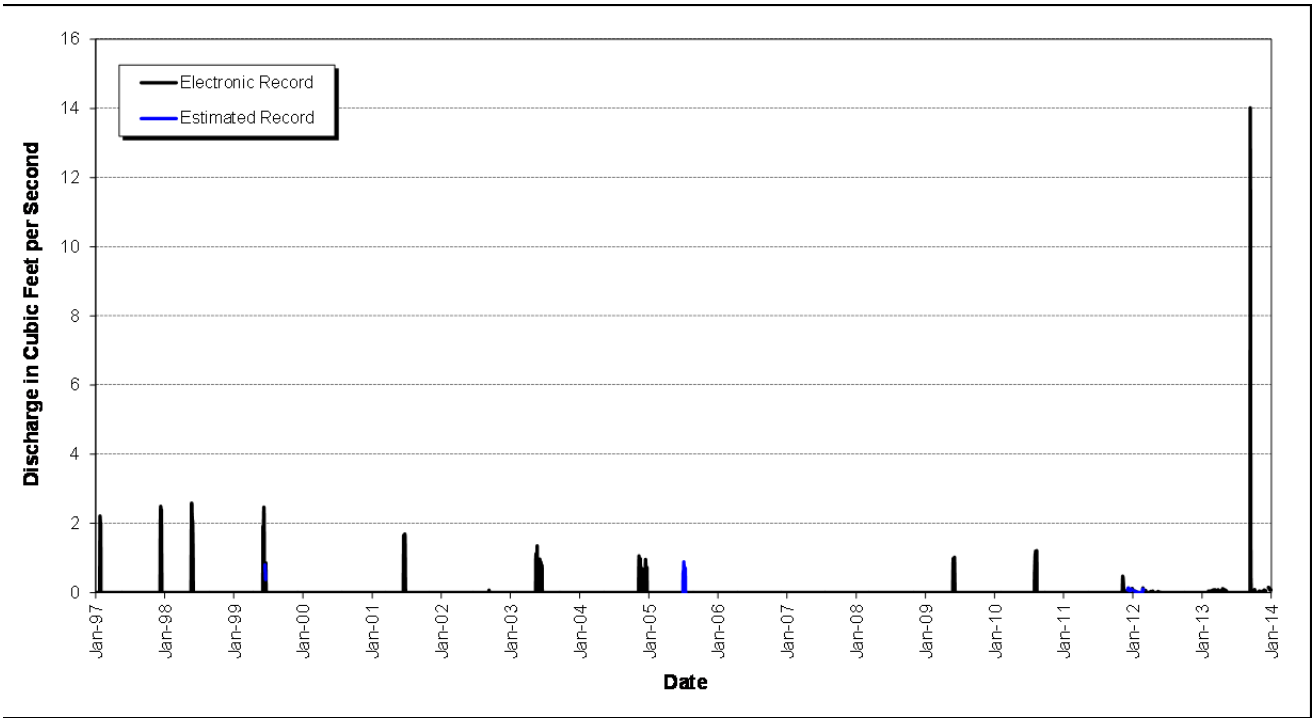



*Figure 104. CY 1997–2013 Mean Daily Hydrograph at GS31: Woman Creek at Pond C-2 Outlet*

***GS33: No Name Gulch at Walnut Creek***

***Location***—No Name Gulch at Walnut Creek; State Plane: E2090210, N753623.

***Drainage Area***—The basin is the No Name Gulch drainage (total of 295.3 acres).

***Period of Record***—September 16, 1997, through December 31, 2013.

***Gage***—Water-stage recorder and 9.5-inch Parshall flume.

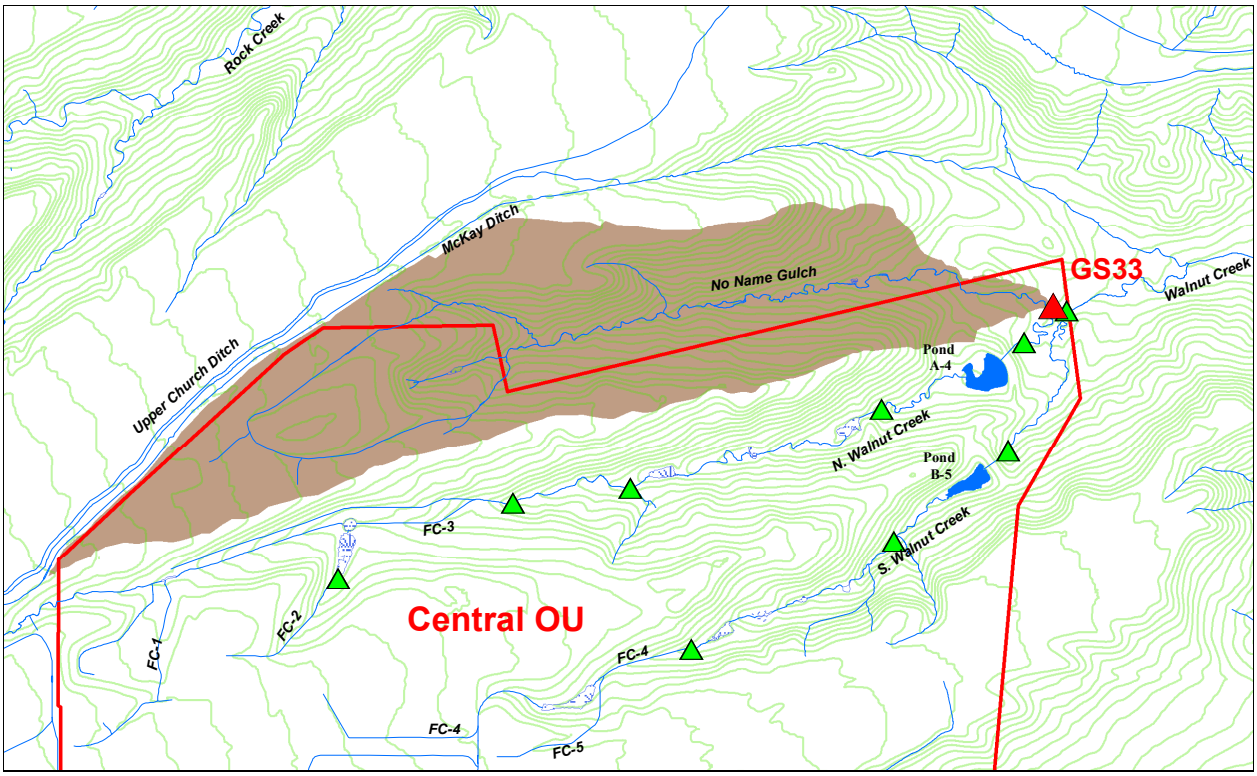



*Figure 105. GS33 Drainage Area*

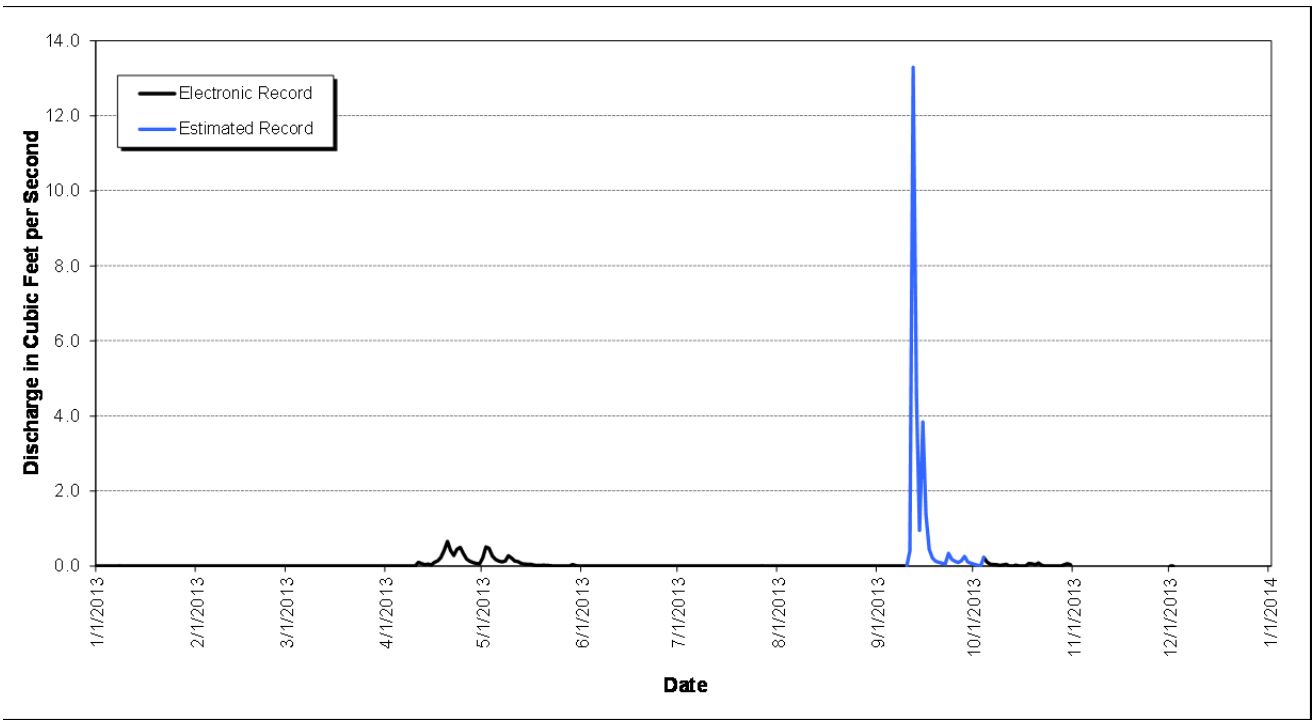



*Figure 106. CY 2013 Mean Daily Hydrograph at GS33: No Name Gulch at Walnut Creek*

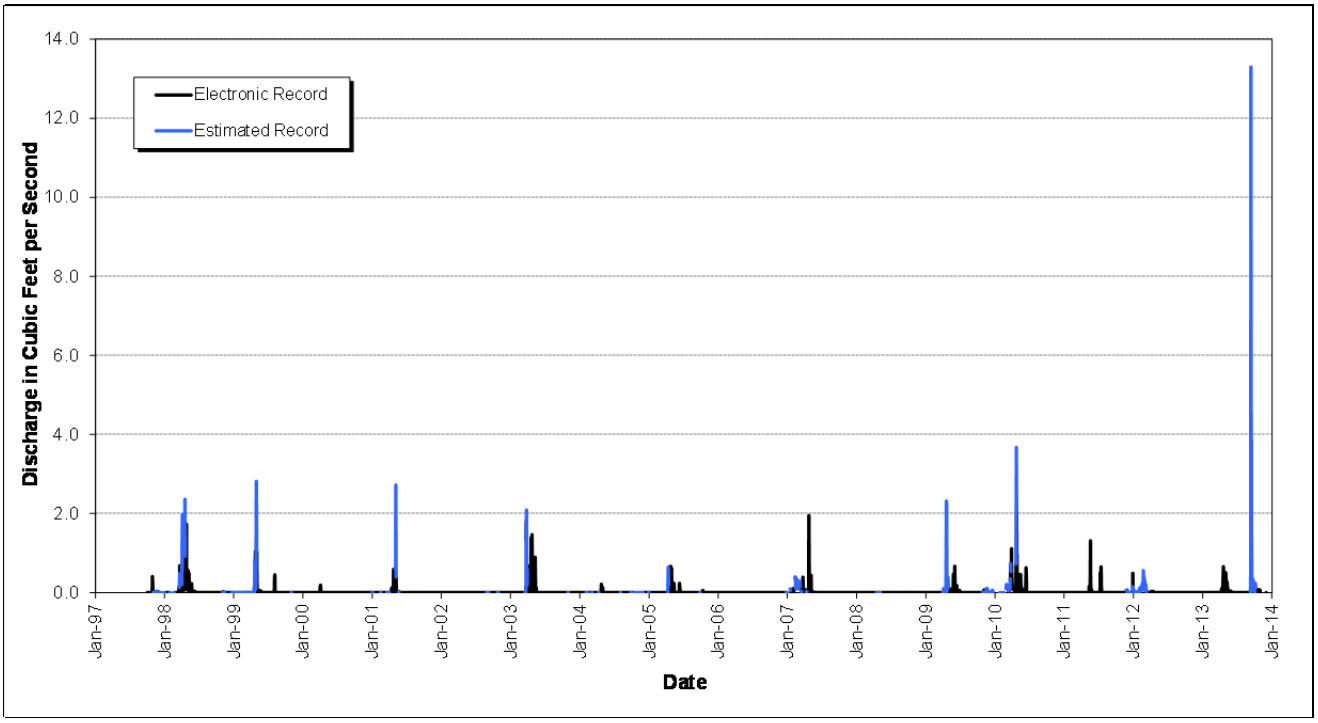



*Figure 107. CY 1997–2013 Mean Daily Hydrograph at GS33: No Name Gulch at Walnut Creek*

### *GS51: Ditch South of Former 903 Pad*

***Location***—Ditch south of former 903 Pad; State Plane: E2086300, N748102.

***Drainage Area***—The basin includes an area south and west of the former 903 Pad (total of 16.0 acres).

***Period of Record***—August 13, 2001, to current year.

***Gage***—Water-stage recorder and 0.75-foot H-flume.

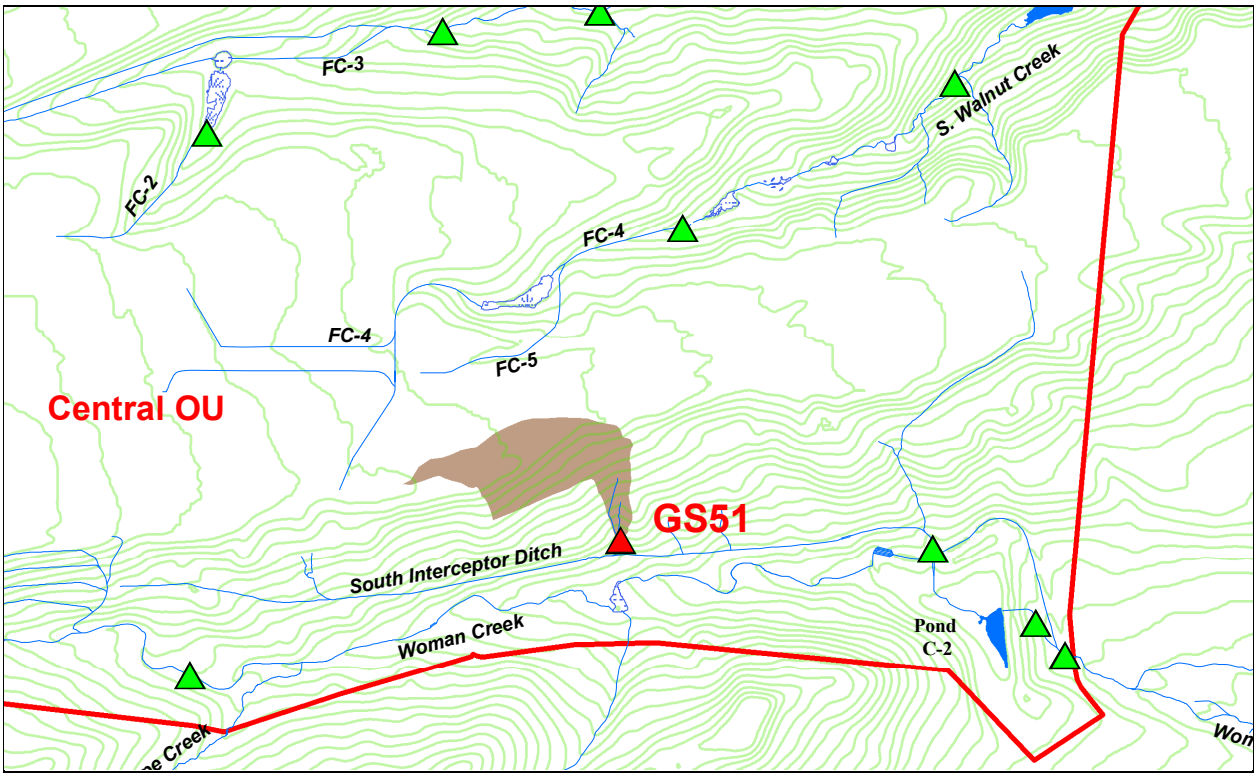



*Figure 108. GS51 Drainage Area*

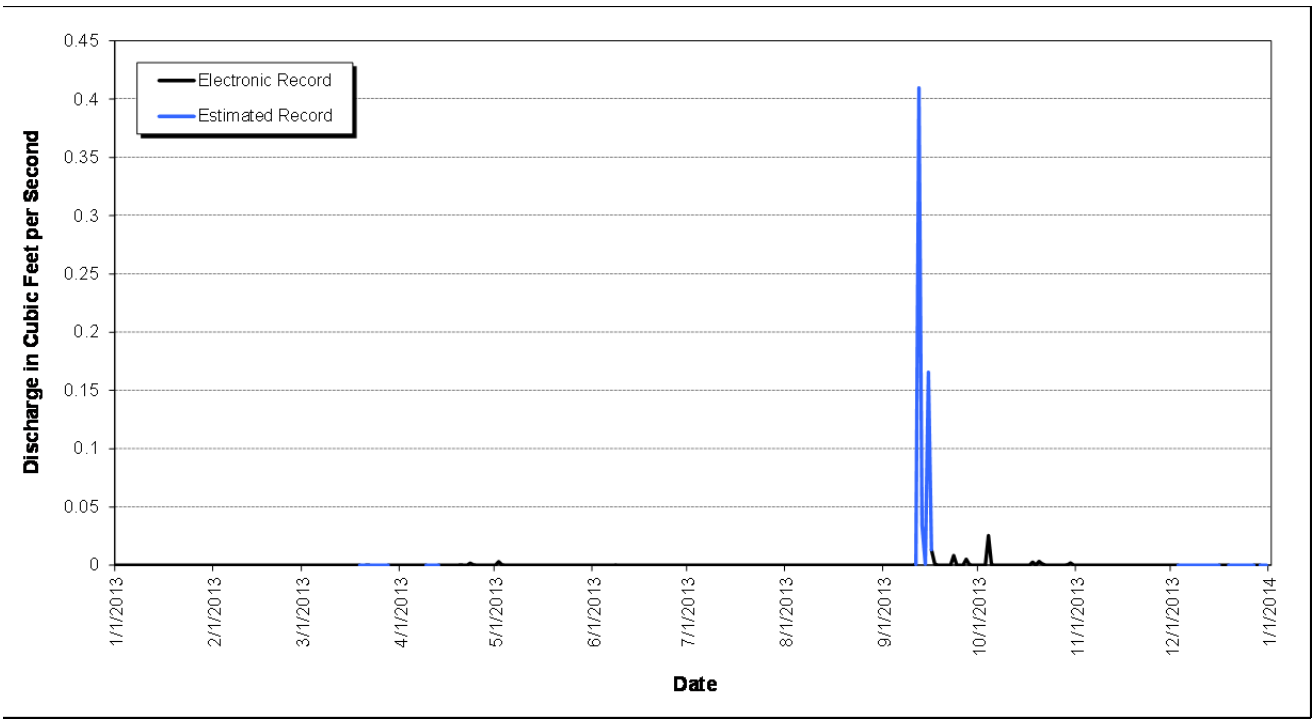



*Figure 109. CY 2013 Mean Daily Hydrograph at GS51: Ditch South of 903 Pad*

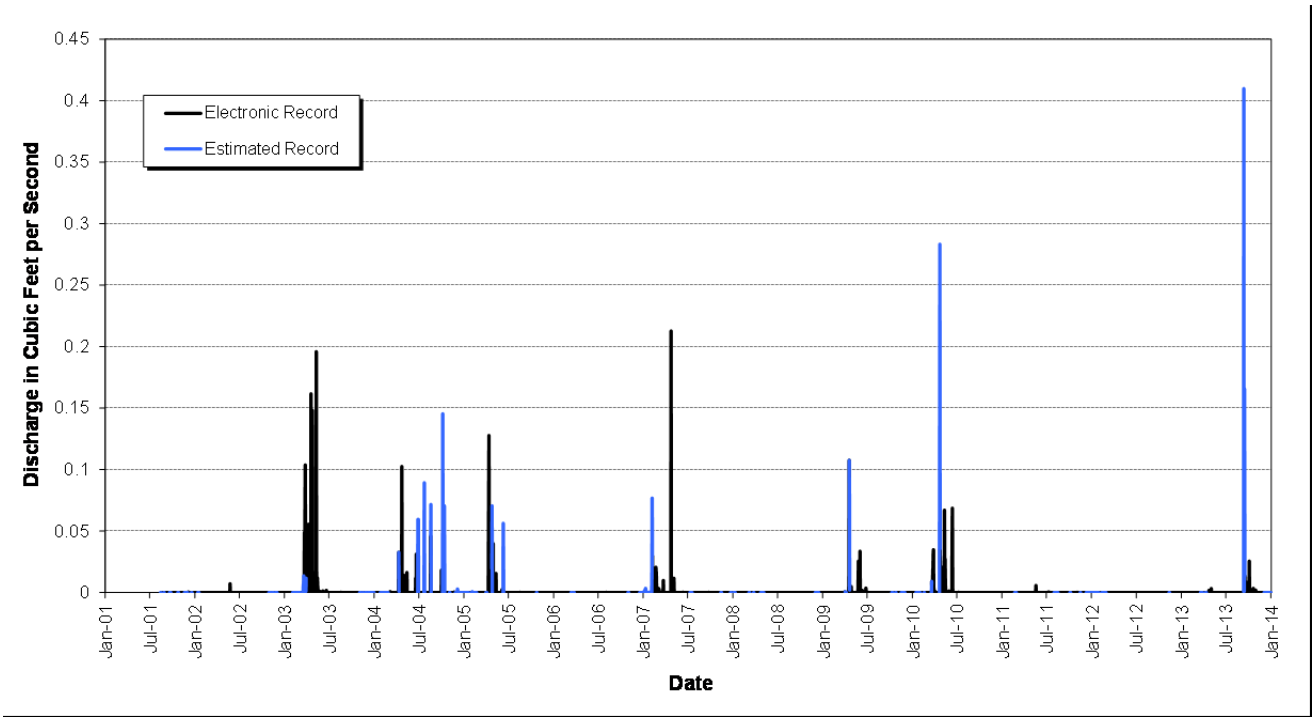



*Figure 110. CY 2001–2013 Mean Daily Hydrograph at GS51: Ditch South of 903 Pad*

### *GS59: Woman Creek Upstream of Antelope Springs Confluence*

***Location***—Woman Creek 900 feet upstream of Antelope Springs confluence; State Plane: E2083228, N747139.

***Drainage Area***—The basin includes upstream reaches of Woman Creek; areas west of Highway 93 also contribute runoff (total drainage acreage undetermined).

***Period of Record***—November 20, 2002, to current year.

***Gage***—Water-stage recorder and 1.5-foot Parshall flume.

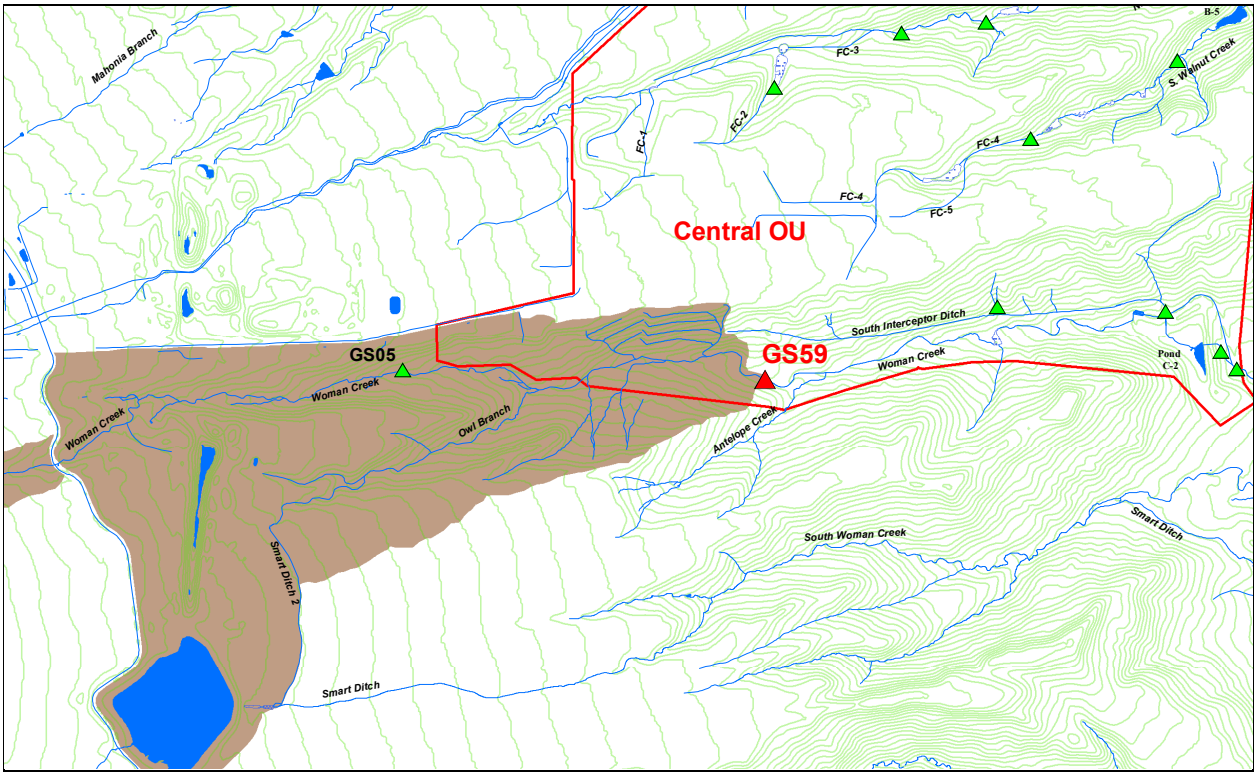



*Figure 111. GS59 Drainage Area*

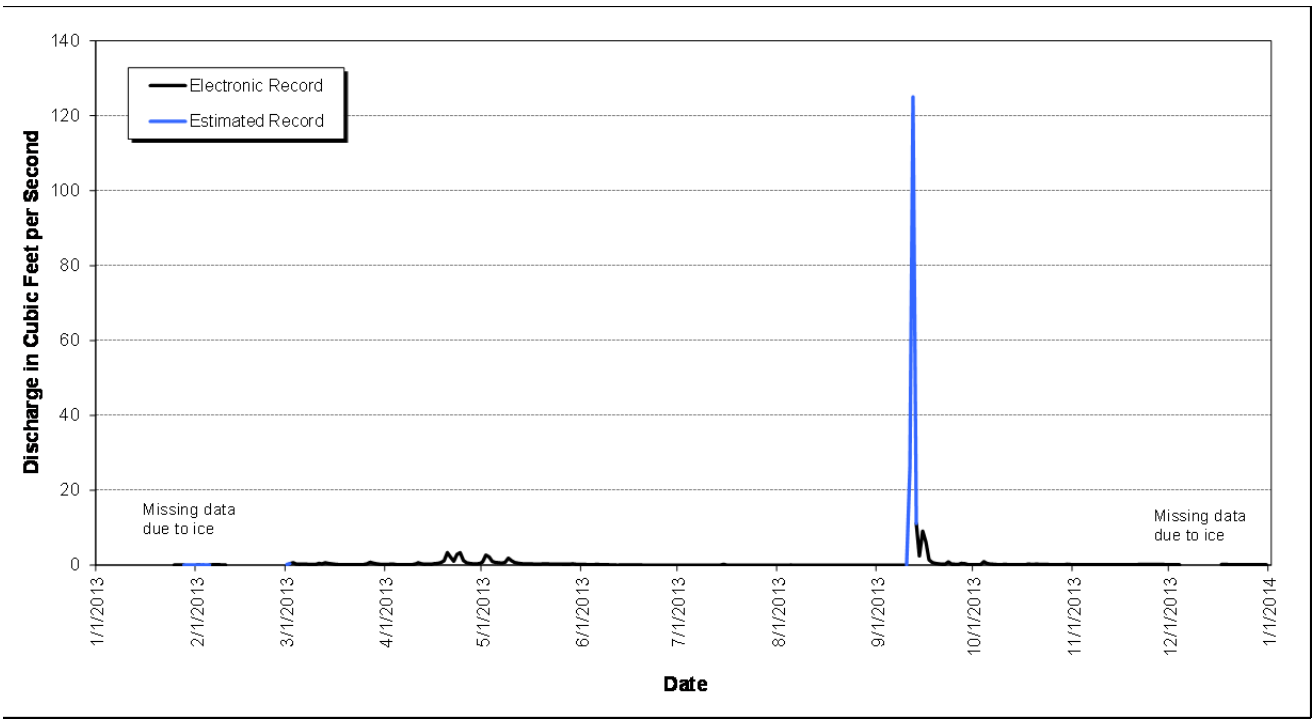



*Figure 112. CY 2013 Mean Daily Hydrograph at GS59: Woman Creek Upstream of Antelope Springs Confluence*

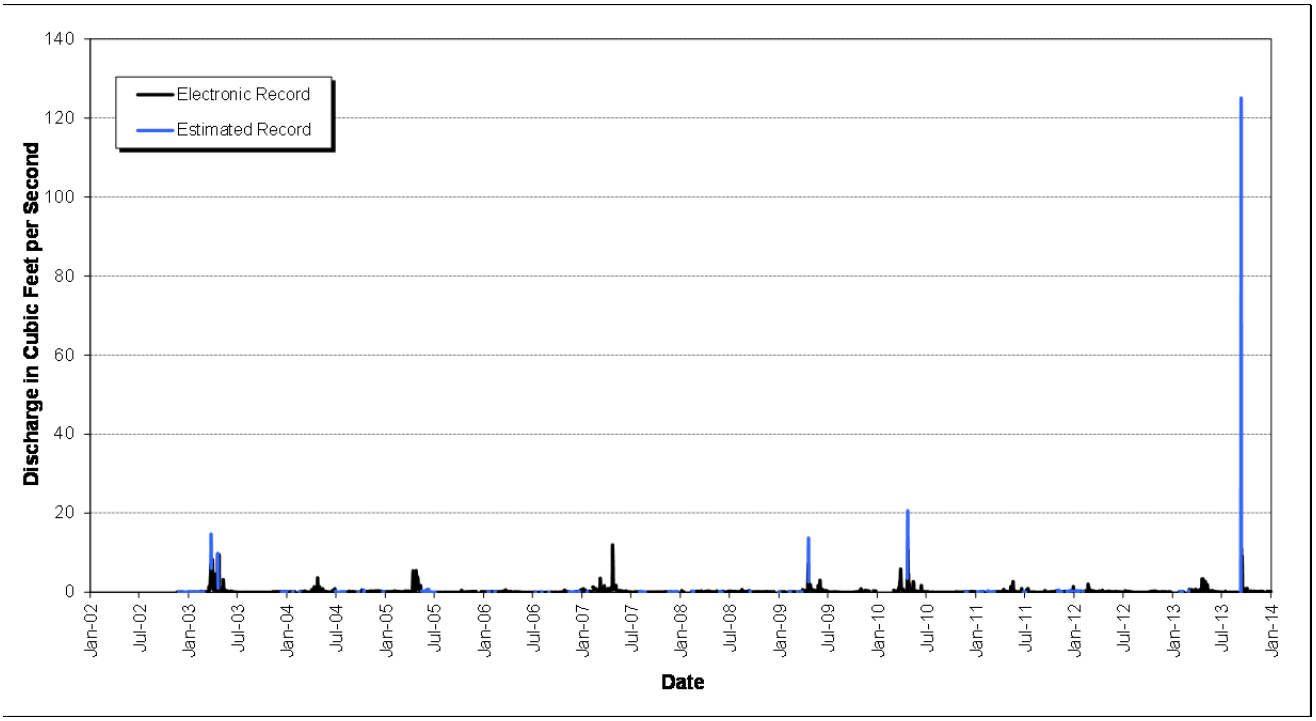



*Figure 113. CY 2002–2013 Mean Daily Hydrograph at GS59: Woman Creek Upstream of Antelope Springs Confluence*

### *B5INFLOW: South Walnut Creek Above Pond B-5*

***Location***—South Walnut Creek 500 feet upstream of Pond B-5; State Plane: E2088676, N751358.

***Drainage Area***— The basin includes the central portion of the COU and the former B-Series Ponds (total of 260.3 acres).

***Period of Record***—June 17, 2010, to current year.

***Gage***—Water-stage recorder and 9-inch Parshall flume.

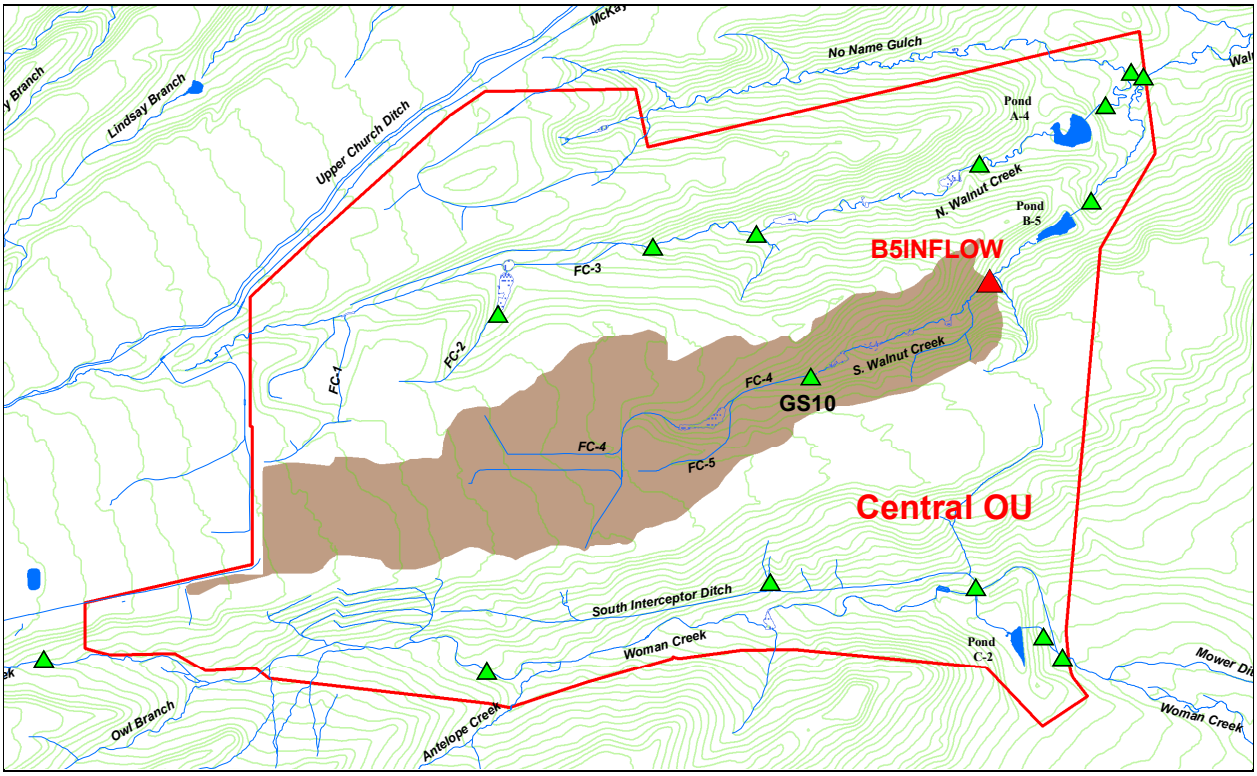



*Figure 114. B5INFLOW Drainage Area*

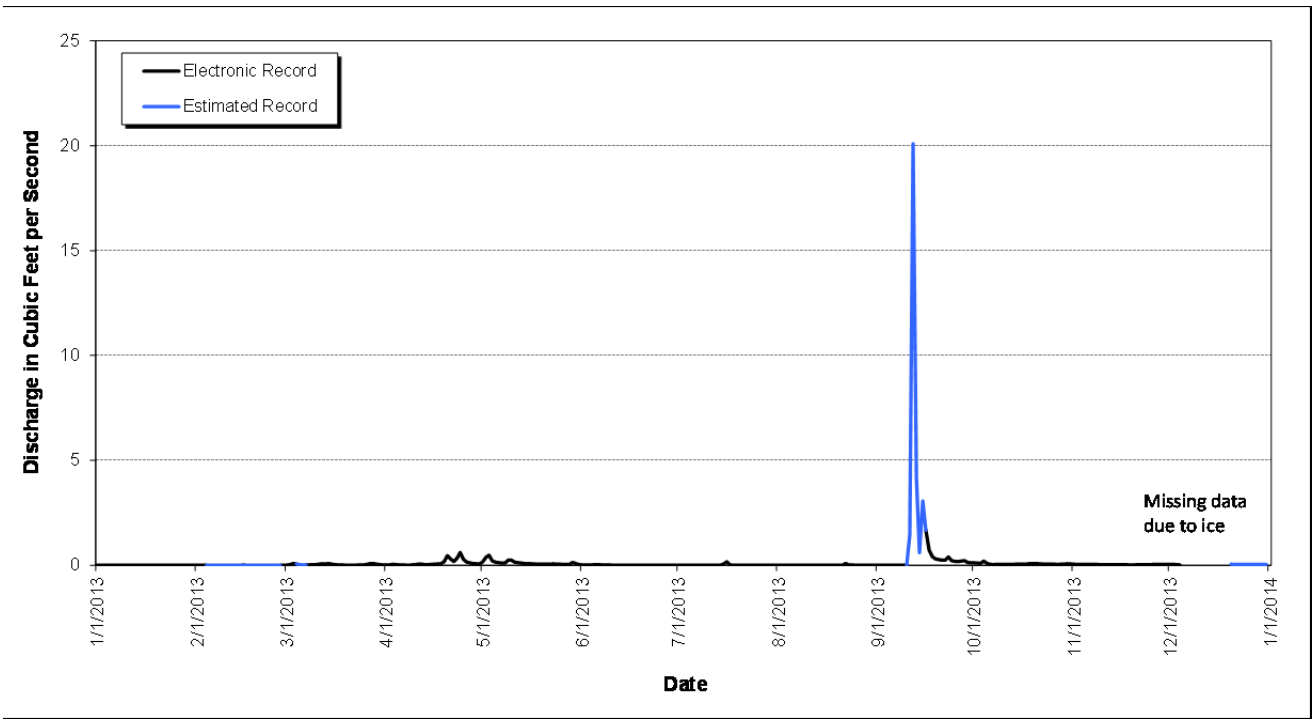



*Figure 115. CY 2013 Mean Daily Hydrograph at B5INFLOW: South Walnut Creek Above Pond B-5*

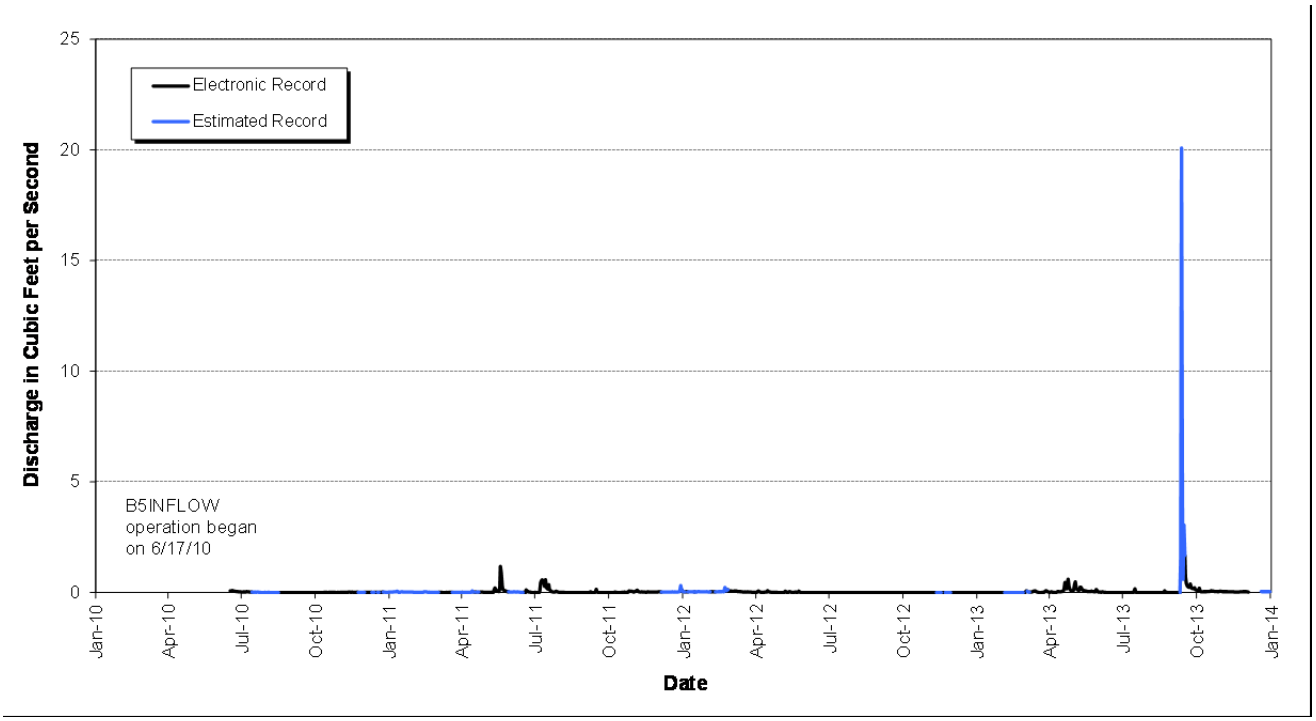



*Figure 116. CY 2010–2013 Mean Daily Hydrograph at B5INFLOW: South Walnut Creek Above Pond B-5*

### *SW018: FC-2 at FC-2 Wetland*

***Location***—FC-2 drainage just upstream of FC-2 wetland; State Plane: E2083351, N751006.

***Drainage Area***—The basin includes FC-2 areas tributary to North Walnut Creek (total of 42.4 acres).

***Period of Record***—October 10, 2003 through December 31, 2013.

***Gage***—Water-stage recorder and 1-foot Parshall flume through September 12, 2006. One-foot H flume installed on September 13, 2006.

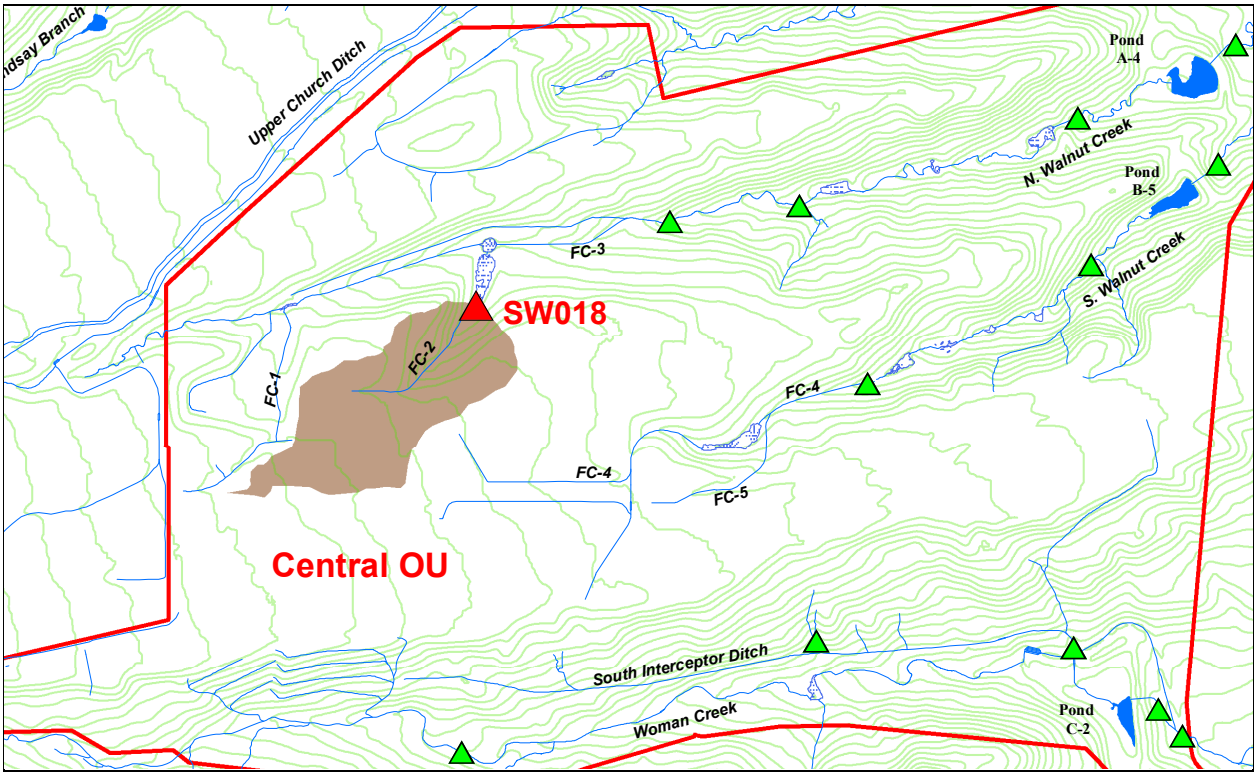



*Figure 117. SW018 Drainage Area*

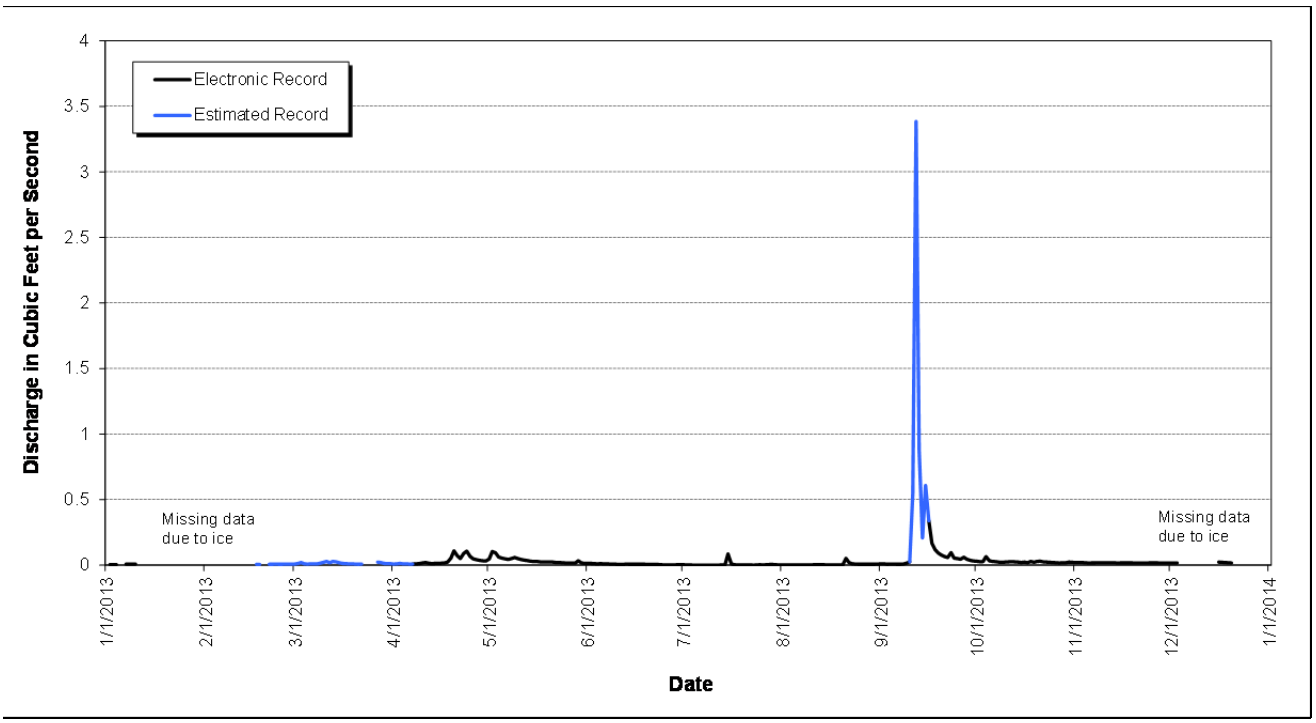



*Figure 118. CY 2013 Mean Daily Hydrograph at SW018: FC-2 at FC-2 Wetland*

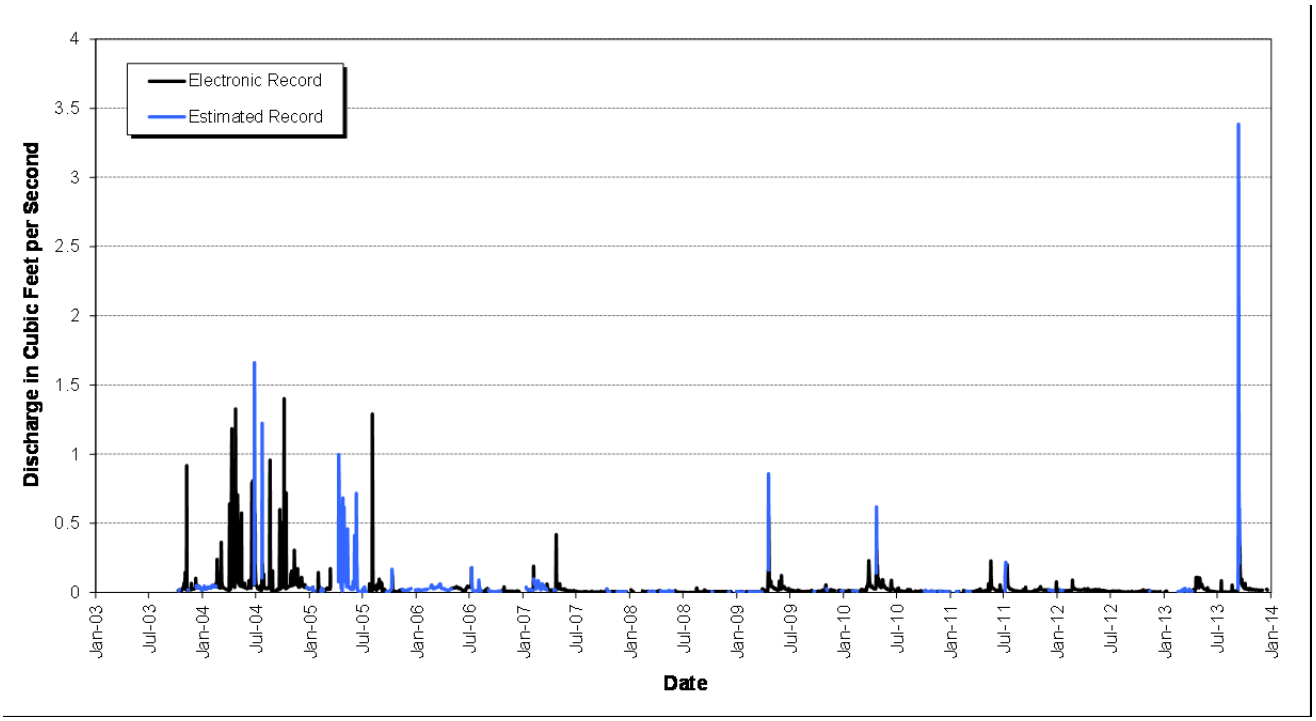



*Figure 119. CY 2003–2013 Mean Daily Hydrograph at SW018: FC-2 at FC-2 Wetland*

### *SW027: SID at Pond C-2*

***Location***—East end of SID at Pond C-2; State Plane: E2088527, N748044.

***Drainage Area***—The basin includes a portion of the southern COU drained by the SID (total of 177.6 acres).

***Period of Record***—September 11, 1991, to current year.

***Gage***—Water-stage recorder and dual parallel 120° V-notch weirs.

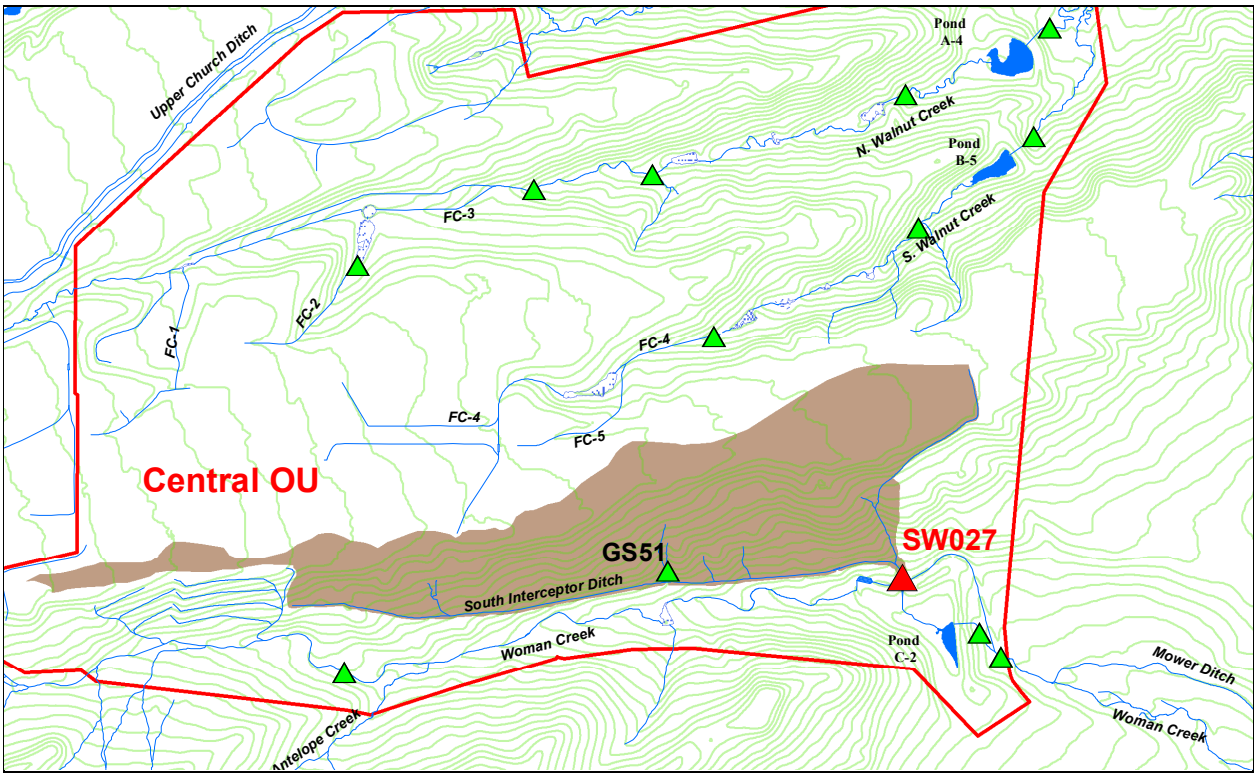



*Figure 120. SW027 Drainage Area*

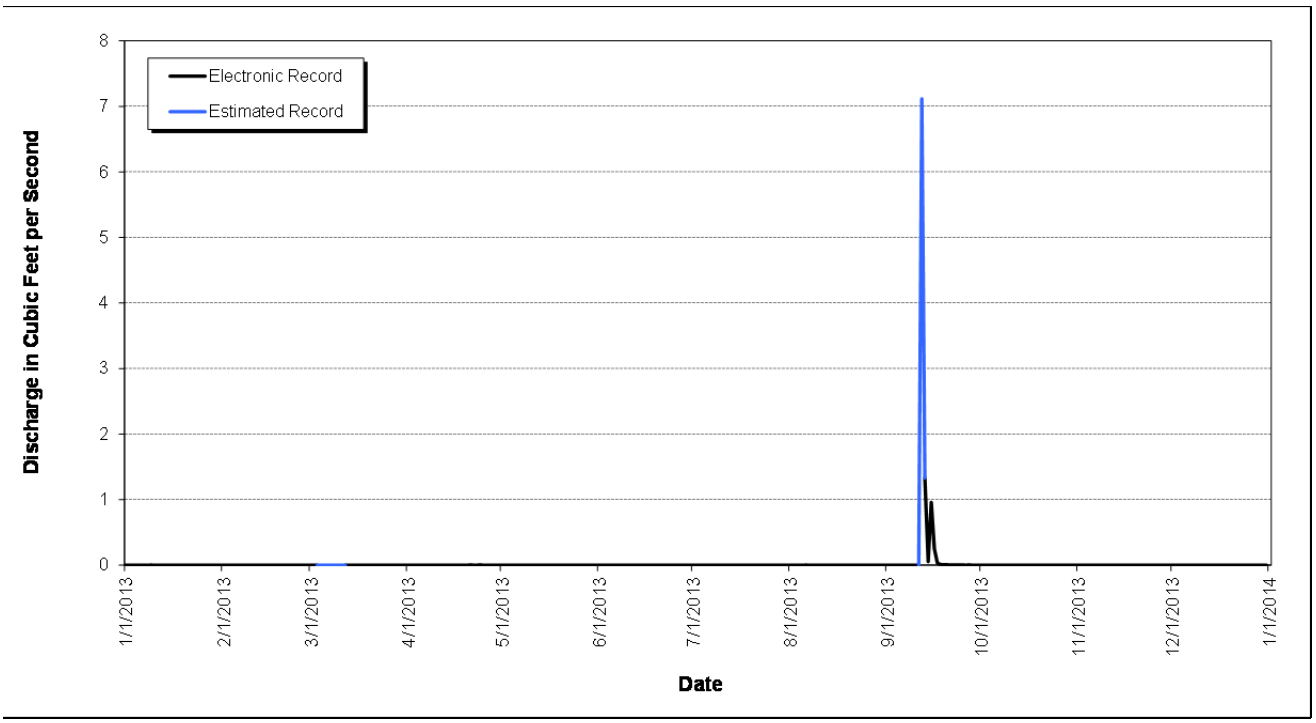



*Figure 121. CY 2013 Mean Daily Hydrograph at SW027: SID at Pond C-2*

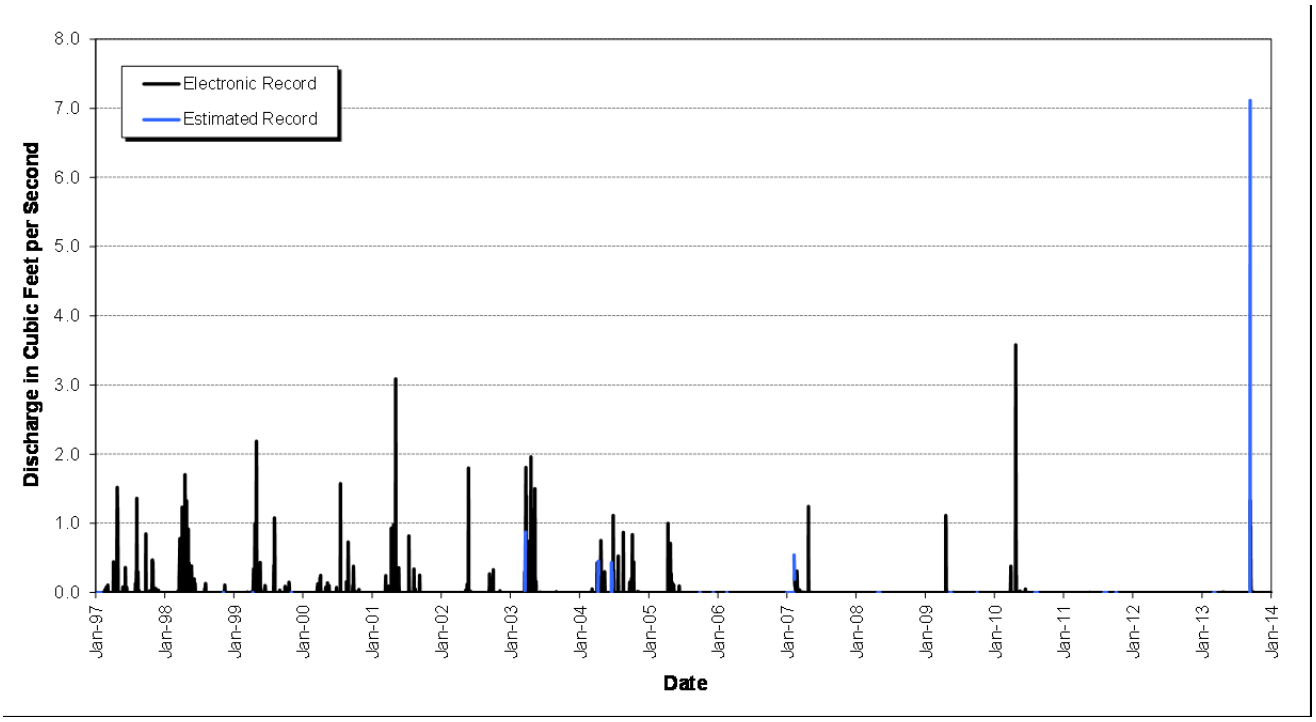



*Figure 122. CY 1997–2013 Mean Daily Hydrograph at SW027: SID at Pond C-2*

### *SW093: North Walnut Creek Upstream of former Pond A-1*

***Location***—North Walnut Creek 1,300 feet above former Pond A-1; State Plane: E2085030, N751730.

***Drainage Area***—The basin includes the northwestern portion of the COU drained by FC-3 (total of 220.0 acres).

***Period of Record***—September 11, 1991, to current year.

***Gage***—Water-stage recorder and 36-inch suppressed, rectangular, sharp-crested weir to January 27, 2003; rated stream section during new flume construction (SW093T; January 27, 2003–May 29, 2003). Three-foot H flume starting May 29, 2003.

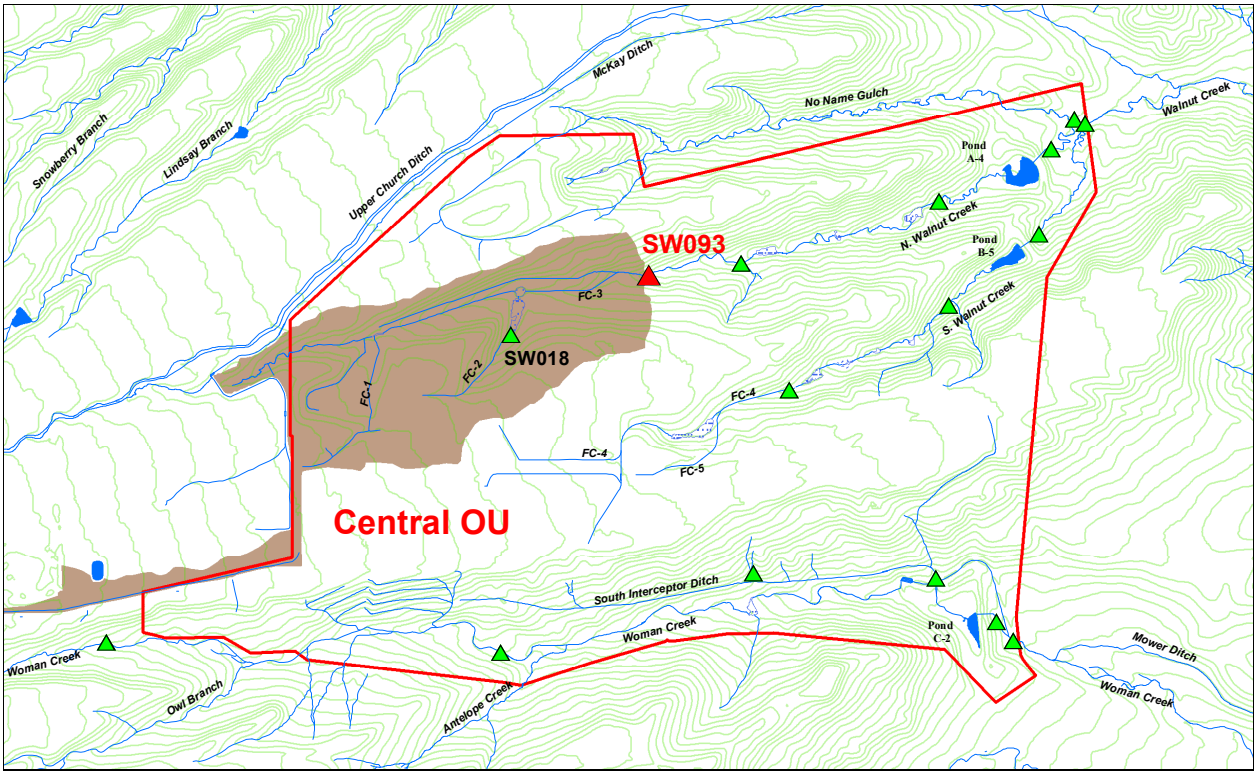



*Figure 123. SW093 Drainage Area*

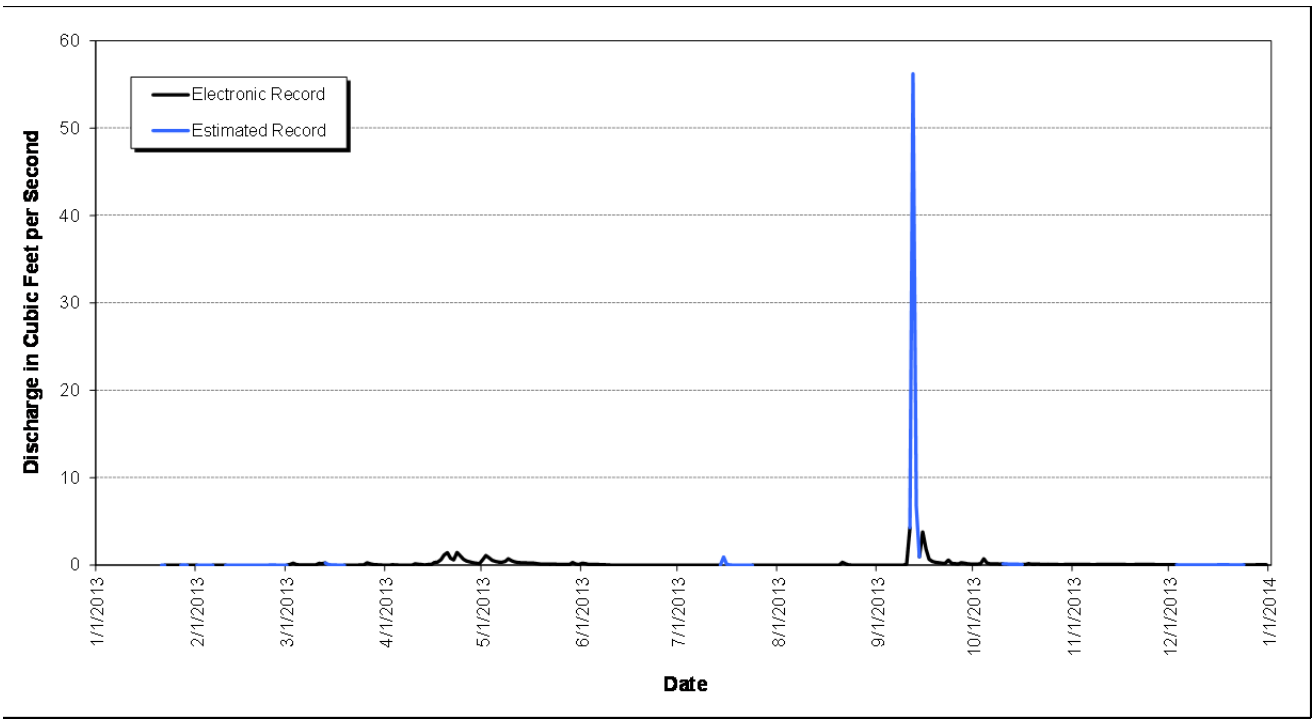



*Figure 124. CY 2013 Mean Daily Hydrograph at SW093: North Walnut Creek Upstream of former Pond A-1 Bypass*

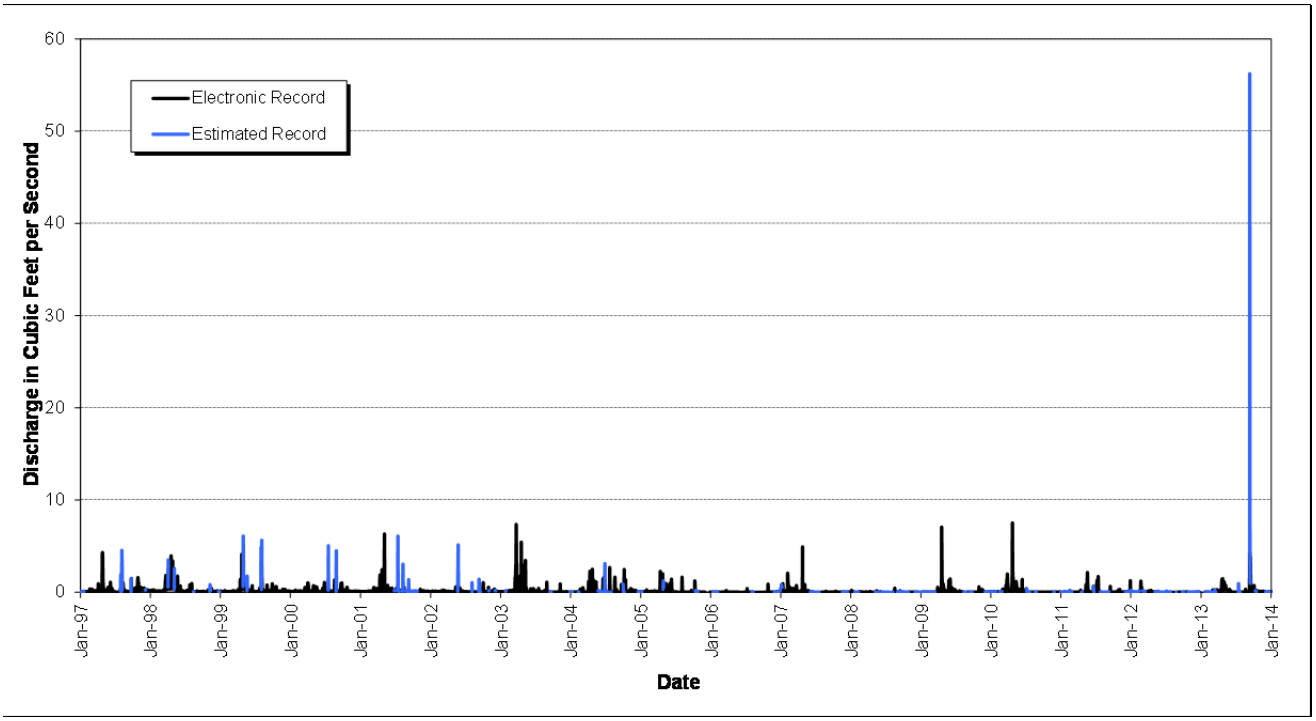



*Figure 125. CY 1997–2013 Mean Daily Hydrograph at SW093: North Walnut Creek Upstream of former Pond A-1 Bypass*

### *3.1.3.4 Precipitation Data*

During CY 2013, ten precipitation gages were operated as part of the automated surface-water monitoring network (Table 57 and Figure 126). The locations employ tipping-bucket rain gages generally mounted at ground level. Precipitation totals are logged on 5-minute intervals, 15-minute intervals, or both. The gages are not heated and will not accurately record equivalent precipitation for all snowfall events. The following sections present several figures (Figure 127, Figure 128, Figure 129, Figure 130, Figure 131, and Figure 132) summarizing the precipitation data collected for CY 1997–2013.

*Table 57. Monitoring Network Precipitation Gage Information*

| Location Code (Surface-Water Gage) | Easting (State Plane) | Northing (State Plane) | Period of Operation |
|---|---|---|---|
| PG58 [GS01] | 2093835.22 | 744921.16 | 10/11/1996–current year |
| PG59 [GS03] | 2093598.99 | 753629.51 | 4/1/1996–current year |
| PG61 [GS05] | 2078432.10 | 747285.45 | 4/1/1996–current year |
| PG73 [GS13] | 2086169.70 | 751862.47 | 9/27/2005–current year |
| PG74 [GS59] | 2083245.00 | 747172.00 | 9/5/2006–current year |
| PG75 [SW018] | 2083522.00 | 751181.00 | 3/27/2008–current year |
| PG76 [NA] | 2091963.00 | 752705.00 | 3/28/2007–current year |
| PG77 [NA] | 2087329.00 | 746937.00 | 8/23/2007–current year |
| PG78 [WALPOC] | 2090350.00 | 753546.00 | 9/9/2011–current year |
| PG77 [WOMPOC] | 2089488.00 | 747308.00 | 9/27/2011–current year |

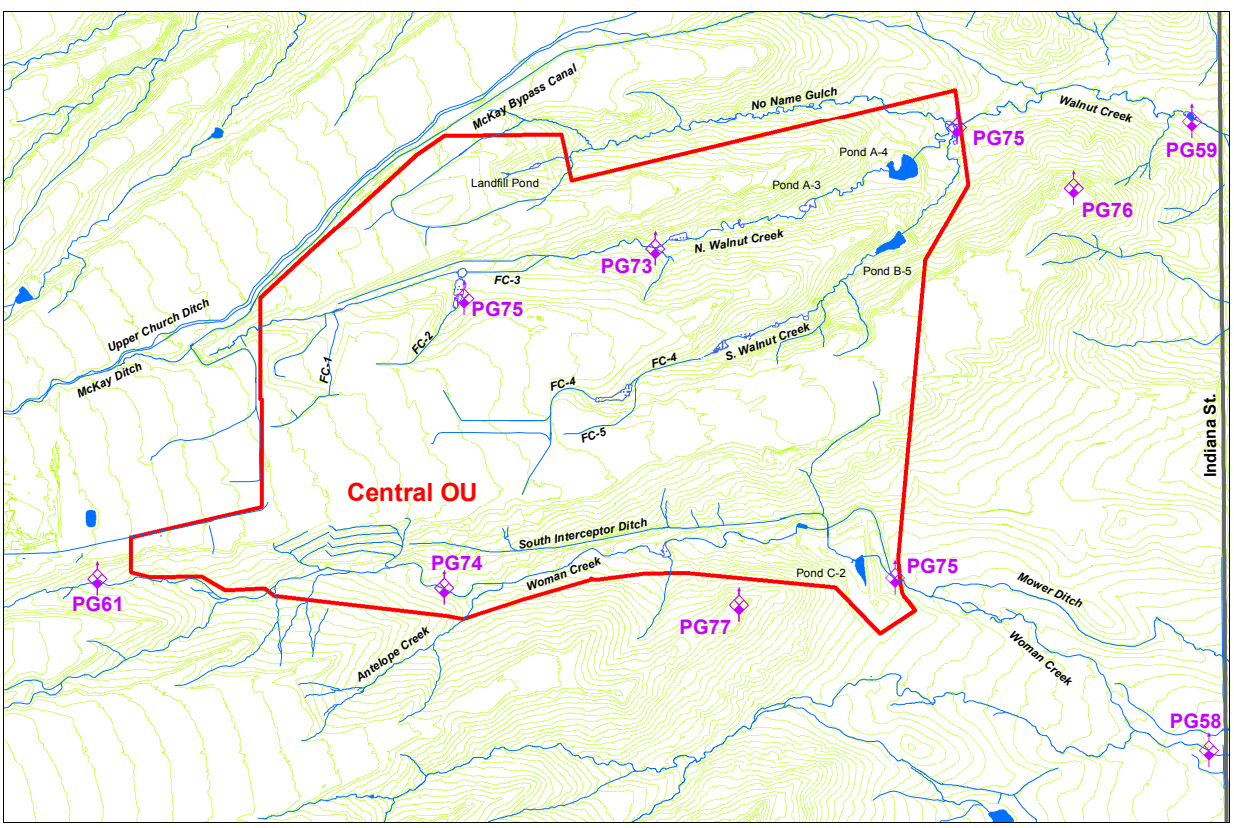
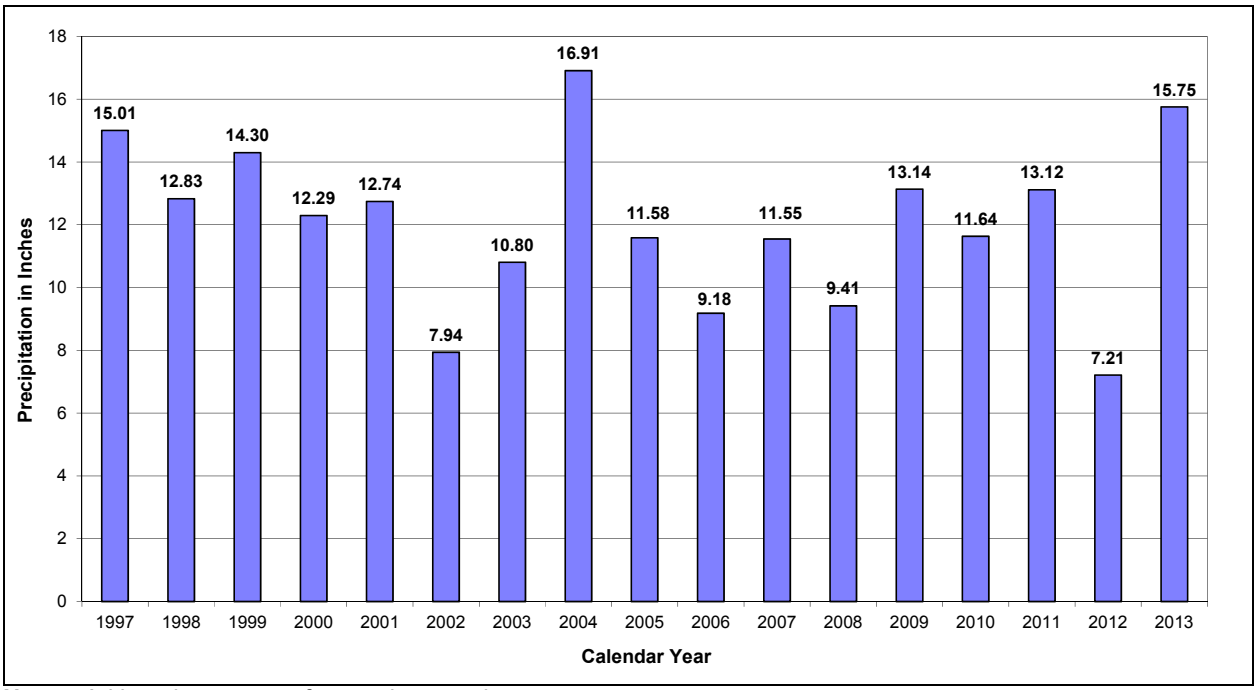


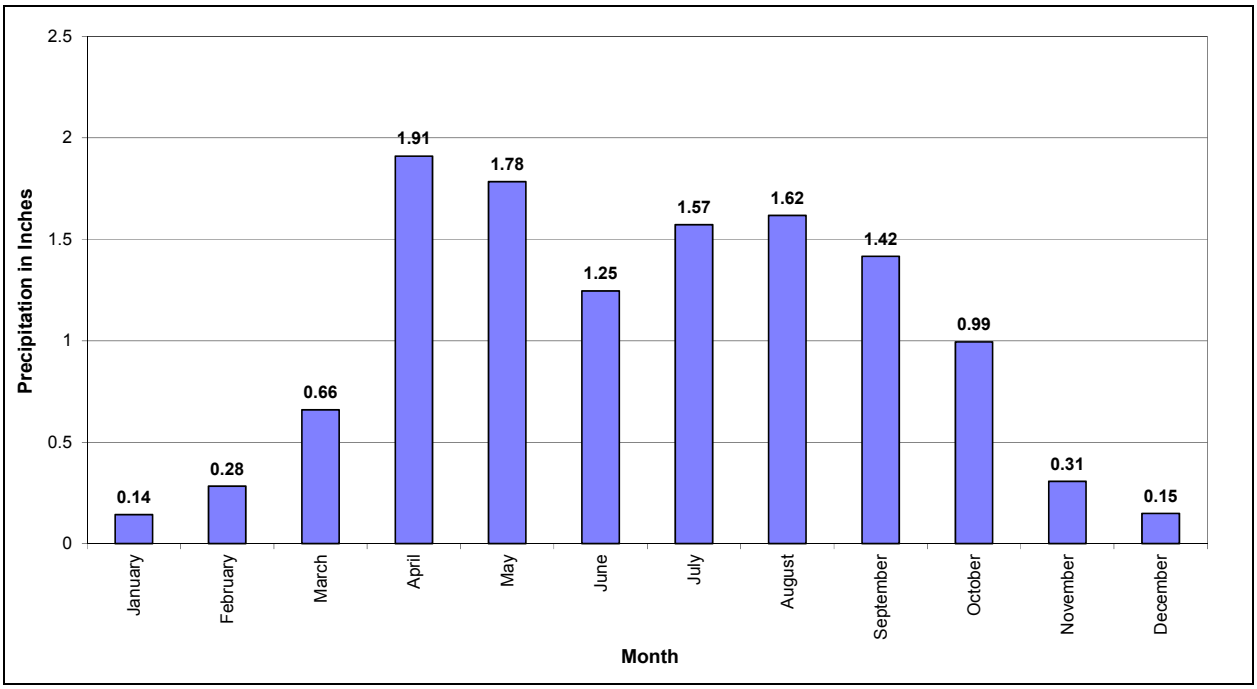

*Figure 126. Site Precipitation Gages: CY 2013*

## *CY 1997–2013 Summary*



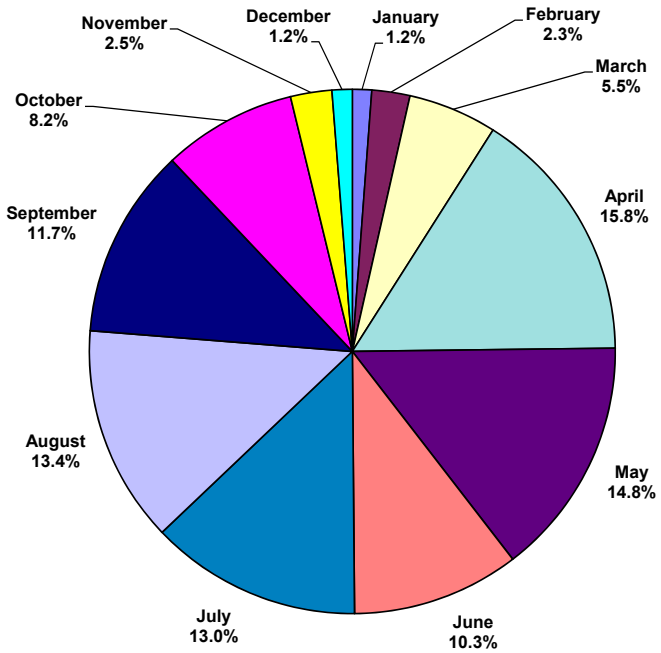

**Notes:** Arithmetic average of gages in operation.

*Figure 127. Annual Total Precipitation for CY 1997–2013*




**Notes:** Arithmetic average of gages in operation.

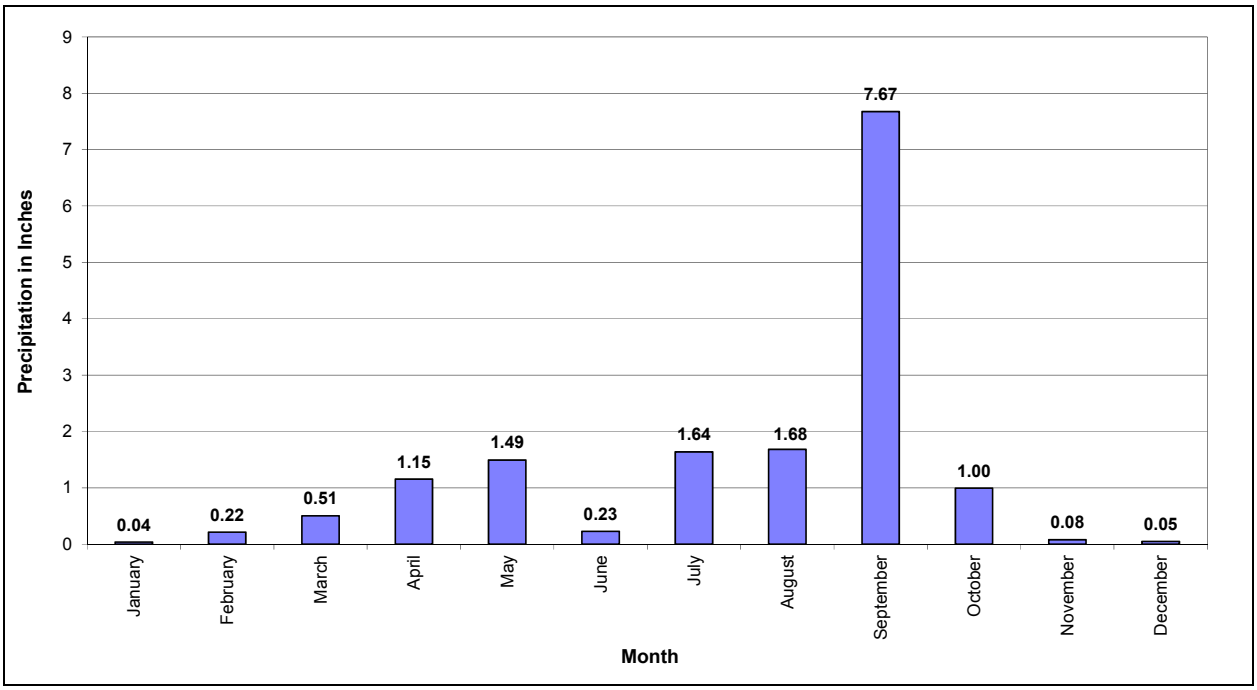
*Figure 128. Average Monthly Precipitation for CY 1997–2013*




**Notes:** Arithmetic average of gages in operation.

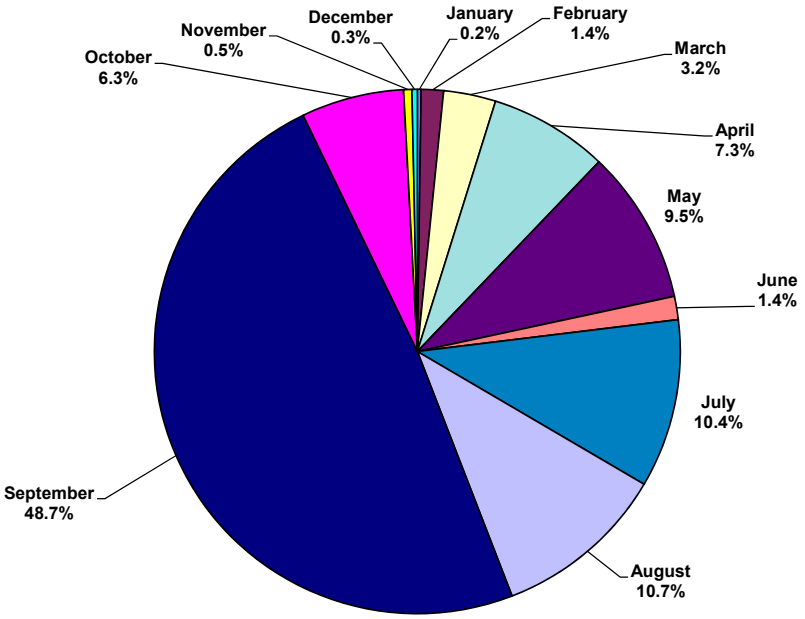
*Figure 129. Relative Monthly Precipitation Totals for CY 1997–2013*

## *CY 2013 Summary*



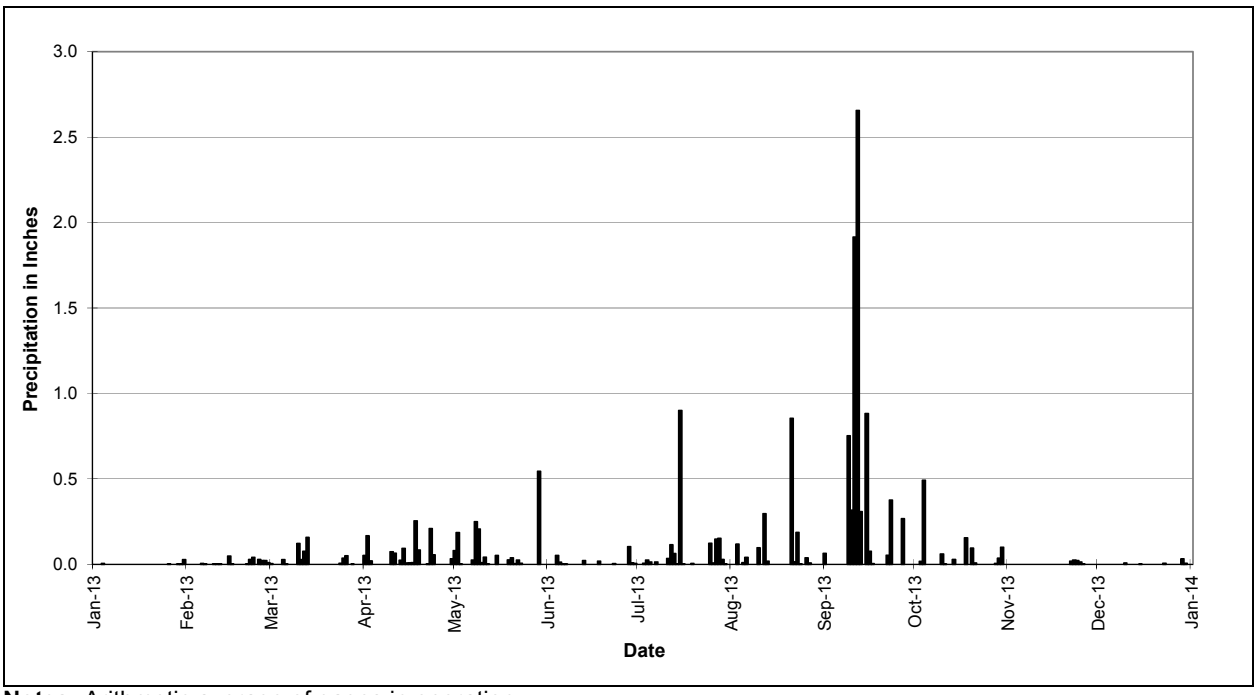

**Notes:** Arithmetic average of gages in operation.

*Figure 130. Monthly Precipitation for CY 2013*




**Notes:** Arithmetic average of gages in operation.

*Figure 131. Relative Monthly Precipitation Volumes for CY 2013*




**Notes:** Arithmetic average of gages in operation.

*Figure 132. Daily Precipitation Totals for CY 2013*

### *3.1.3.5 Groundwater Flow*

This section summarizes groundwater elevations and flow characteristics. Groundwater elevation data are discussed through the construction and interpretation of potentiometric surface maps and hydrographs. Groundwater flow characteristics are then assessed.

***Groundwater Elevations***

Groundwater elevation data were manually collected at the start of the second and fourth quarters in 2013; these data are included in Appendix A. In previous years water levels were also measured at selected wells using dedicated instrumentation. This system was retired in 2011, and this topic is summarized in the 2011 Annual Report (DOE 2012).

The second and fourth quarter groundwater elevation data were plotted and hand-contoured to create potentiometric surface maps. The potentiometric surface map for second quarter CY 2013 is included as Figure 130. The map for the fourth quarter of CY 2013 is included as Figure 131. These maps are derived from manual water level measurements.

Monitoring wells at Rocky Flats are screened within the UHSU. The UHSU encompasses unconsolidated surface materials such as Rocky Flats Alluvium, hillslope colluvium, valley-fill alluvium, and artificial fill (all of which are often referred to as "alluvium"), and underlying weathered bedrock (the Cretaceous-age Laramie Formation or the Cretaceous-age Arapahoe Formation). A well screened entirely within the weathered bedrock may yield different water levels than an adjacent well screened entirely within the alluvium.

Potentiometric surface maps for 2013 are based on many fewer locations than maps from pre-closure years and are, therefore, less detailed in comparison. Due to the distribution of groundwater contamination, the areas of interest in post-closure years are the former IA and adjacent areas; groundwater monitoring data from the unimpacted former Buffer Zone provide no meaningful data.

Wells are labeled as dry if there is no water measured or if the water level measured is below the bottom of the screened interval (water below the screen is stagnant and may not reflect the actual groundwater level). The locations labeled as dry may indicate areas where the UHSU is unsaturated. These areas are a result of limited groundwater, caused by a reduction in recharge from precipitation (e.g., droughts, such as that in 2002), or local conditions that may result from an engineered structure such as the groundwater intercept trenches that collect groundwater and route it to the associated treatment systems. (Effects from the reduction in contributions from artificial sources—such as removal of water lines, foundation drains, and dust suppression water—were recognized in early post-closure years, but are no longer evident.) However, some wells in the monitoring network do not fully penetrate the UHSU; therefore, a location that is depicted as dry does not necessarily indicate that it is in an area of unsaturated UHSU, as the UHSU may be saturated at depths greater than that of the dry well.

Unsaturated areas were generally unchanged from those observed in recent years. For example, well 95299, which is located adjacent to and downgradient of the ETPTS groundwater intercept trench, was dry. This well has been dry (as monitored quarterly) since 2000 with one exception; water was encountered in the well in late 2006. This area is typically dry due to the dewatering

effects of the trench. Conversely, well 90299, which had been observed to be dry since October 2007, recharged in the relatively moist year of 2010 and continued to present groundwater for sampling through the dry year of 2012. However, in 2013 water was no longer available at this well.

Groundwater flow paths in 2013 are consistent with conditions observed in recent years, as estimated from the potentiometric surface maps (Figure 133 and Figure 134). As noted above, unsaturated areas in 2013 are very similar to those depicted in recent years. In most areas of the Site the second quarter of 2013 was noticeably dryer than the fourth quarter, as illustrated by lower water levels measured in wells during second quarter. This is due to a continuation of the dry conditions experienced in 2012 and the significant precipitation the Site received in September, 2013, just before the fourth-quarter water level measurements were collected in October. As discussed above in Section 3.1.3.4, the Site received over 7 inches of rain in September. These fourth-quarter water levels reflect the groundwater recharge from that event. Taken as a whole, 2013 was very wet, with total precipitation estimated at almost 16 inches. (Refer to Section 3.1.3.4 for a discussion of climate and precipitation measurement, including the fact that precipitation in the form of snow is not accurately reflected in estimates of total precipitation at the Site.) This is the second highest amount of precipitation measured at the Site during the time period 1997–2013. Omitting 2013, total precipitation for that period has ranged from 7.21 inches (2012) to 16.91 inches (2004). However, as discussed in greater detail below and elsewhere in this report, this total precipitation masks the fact that much of the year was relatively dry.

Second quarter water levels, measured in early April 2013, followed a dry first quarter. The effects of the September storm events, which resulted in historic flooding along the Front Range including in the immediate area around (and especially north of) Rocky Flats, can be seen in the higher water levels observed at most wells during the fourth quarter.

***Hydrographs***

Water level measurements can provide fundamental indicators of the groundwater regime and are critical to a meaningful evaluation of groundwater quantity, quality, and flow. Hydrographs are used to evaluate the groundwater levels at Rocky Flats and are included in Appendix A. Selected hydrographs are discussed here, but it may be helpful to refer to the referenced hydrographs throughout the following discussion.

As in previous annual reports issued since the Site was closed, water level data for original and replacement wells are combined into a single hydrograph under the assumption that the corresponding data are continuous, or that any discontinuities that may be present do not meaningfully affect decisions that may be based on these hydrographs. Before any important decisions based on hydrographs are made, details of well replacement should be considered.

Water level data used for these hydrographs include routine, pre-sampling, and any nonroutine measurements that may have been made at RFLMA wells and other groundwater locations. These data were then reviewed and prepared for display by merging the data with water level data used to generate hydrographs for the 2012 annual report. The resulting hydrographs show water levels for current (and predecessor, as applicable) wells together with historic water levels (i.e., dating to the start of 2000 or from the date of the original well's construction, if later than 2000).

Water level elevations were calculated by subtracting the measured depth to water from the surveyed elevation of the top of the well casing. When wells were found to be dry, the water level posted on the hydrograph is equivalent to the elevation of the bottom of the well casing, as calculated from the total depth of well casing recorded during its installation. The same water level is posted when the measured water level is found to be below the bottom of the screened interval, because this water is not in hydraulic connection with saturated materials and is therefore likely not representative of groundwater in the surrounding formation.

Previous annual reports have noted and discussed that water levels were unstable due to site closure activities and that it would take several years for water levels to become stabilized. A high level technical review was completed in 2011 by Hydro Systems, LLC to analyze post-closure analytical and water level data. An increase in head had been predicted across most of the IA in the 2002 water balance report (K-H 2002a). As confirmed in the technical review and as illustrated on the hydrographs, water levels do in fact display an increase in elevation from pre- to post-closure averages, generally agreeing with the direction of water level change (increase, static, decrease) predicted by this model. There are a number of reasons for the observed increases; one obvious major factor is the increased infiltration and groundwater recharge following removal of impervious surfaces.

The water balance model anticipated removal and disruption of facilities, but did not incorporate changes in sampling methods as an input; this change was not considered or implemented until after Site closure. However, it has proven to be a significant factor in the rising water levels measured at several locations over the past years. This is discussed in detail in previous reports, e.g., the annual reports for 2011 and 2012 (DOE 2012 and 2013b, respectively).

Seasonal and sampling effects represented especially strong influences on the hydrographs prepared for the 2012 Annual Report due to the very dry conditions of that year (59 percent of the average from 1997 through 2012). Although seasonal effects remain a strong influence, sampling-related effects were not as meaningful in 2013.

Measured total precipitation for 2013 was closer to normal than 2012. However, when viewed at a quarterly or monthly scale rather than annual totals, precipitation in 2013 was anomalous.

Precipitation in CY 2013 was recorded at eight gage locations across the site and Refuge. The estimated “total” precipitation recorded in 2013 was 15.76 inches (as measured by unheated rain gages, which do not accurately reflect precipitation totals related to snowfall; therefore, this value typically under-represents the actual amount of precipitation received). This value is approximately 130 percent of the historic (1997–2012) average precipitation of 12.08 inches per year. As summarized in Table 58 and Table 59 below, precipitation historically has been greatest during the second and third calendar quarters (9.55 inches) of each year. During CY 2013 the precipitation measured in the second and third quarters (13.86 inches) was 68.9 percent higher than historical (1997–2012) values for this time period. Much of this increase is due to a rain event that occurred September 11 through September 15, 2013, that caused significant flooding across much of the Front Range of Colorado. Note, however, that with the exception of the third quarter, the other quarters of 2013 were dryer than the historical averages.

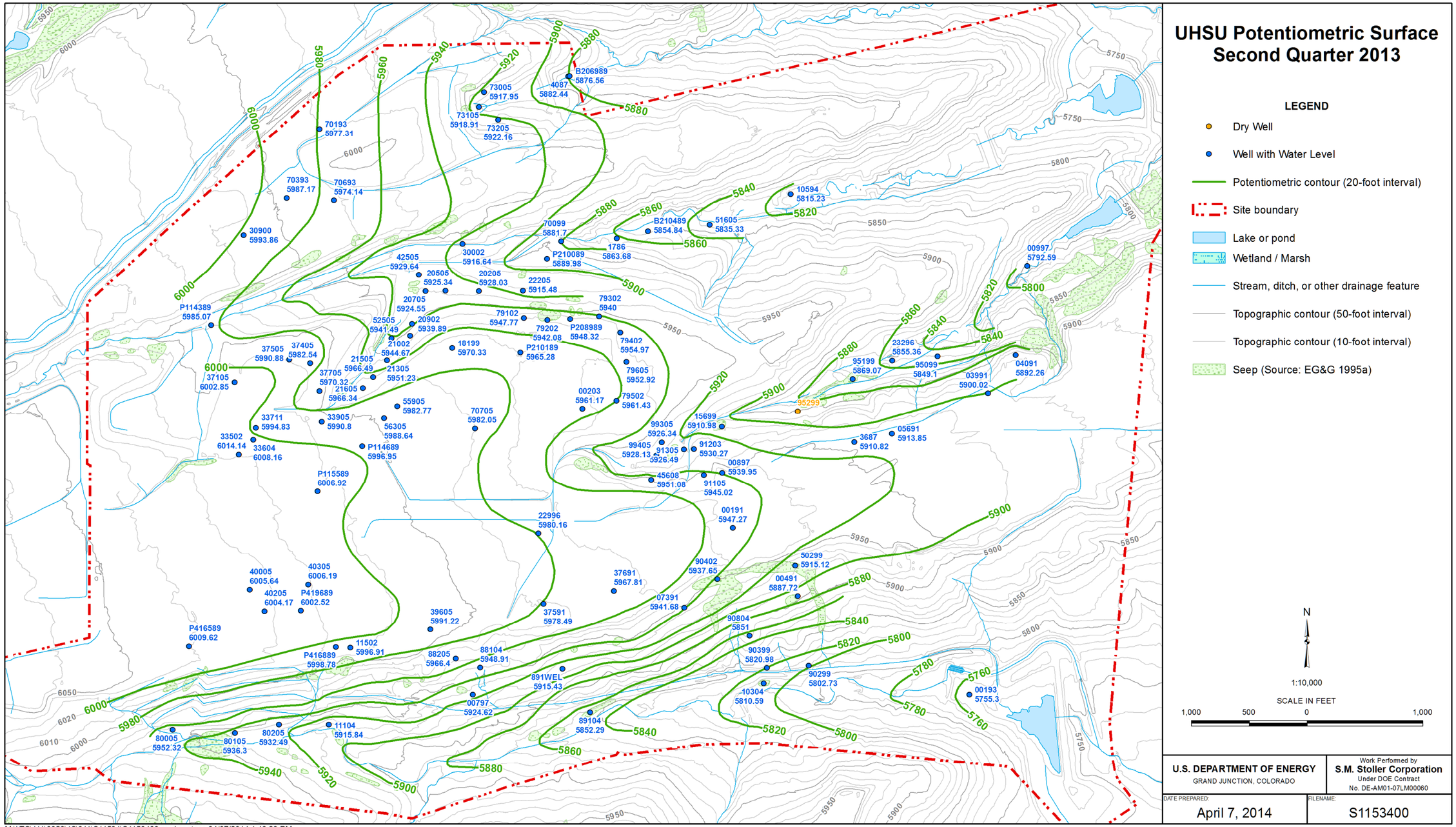



*Figure 133. UHSU Potentiometric Contours: Second Quarter CY 2013*

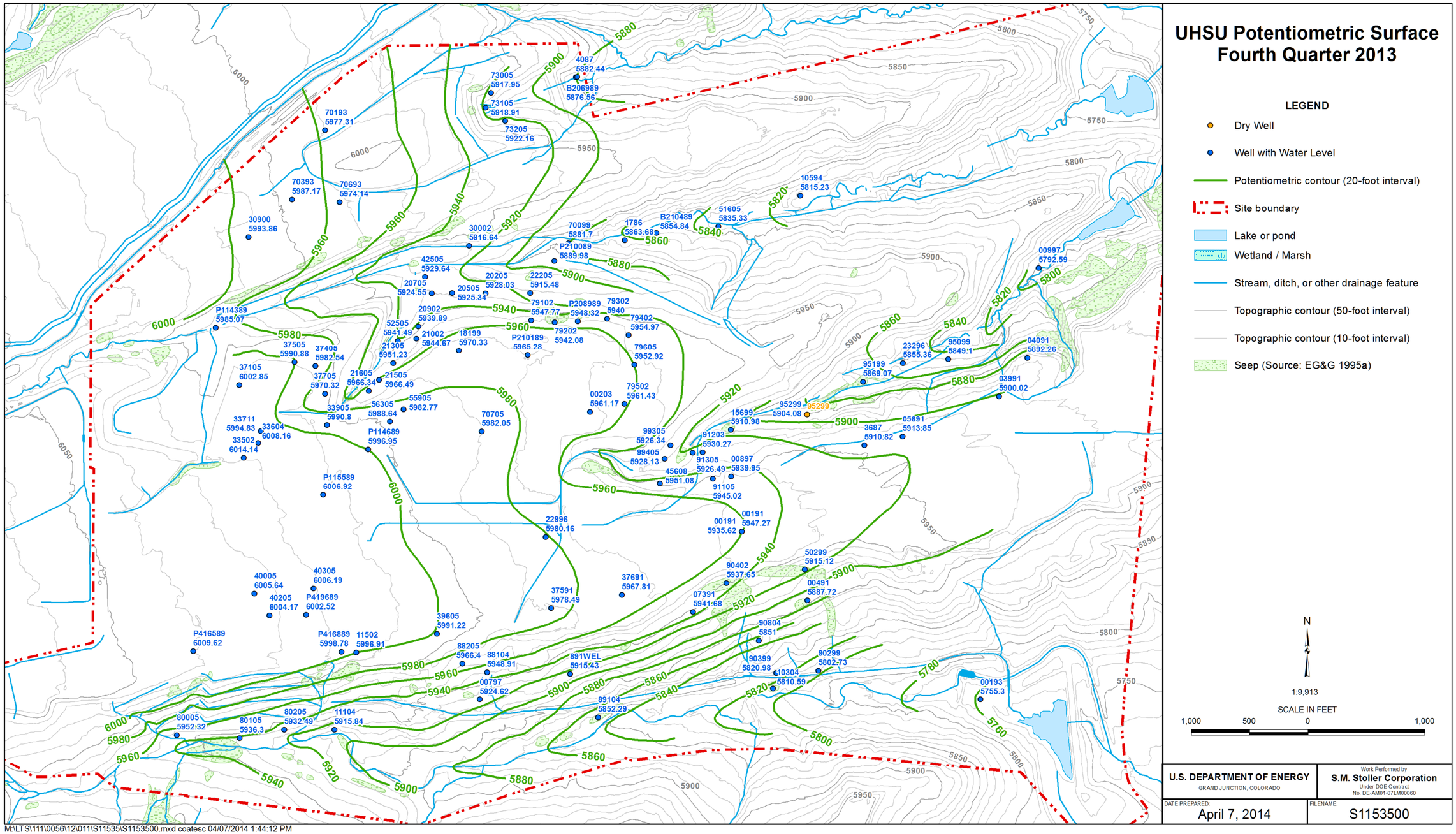



*Figure 134. UHSU Potentiometric Contours: Fourth Quarter CY 2013*

*Table 58. Total CY 2013 Monthly Precipitation Data for the Site*

| Month | Precipitation (inches) |
|---|---|
| January | 0.04 |
| February | 0.22 |
| March | 0.51 |
| April | 1.15 |
| May | 1.49 |
| June | 0.23 |
| July | 1.64 |
| August | 1.68 |
| September | 7.67 |
| October | 1.00 |
| November | 0.08 |
| December | 0.05 |
| **Total Annual** | **15.76** |

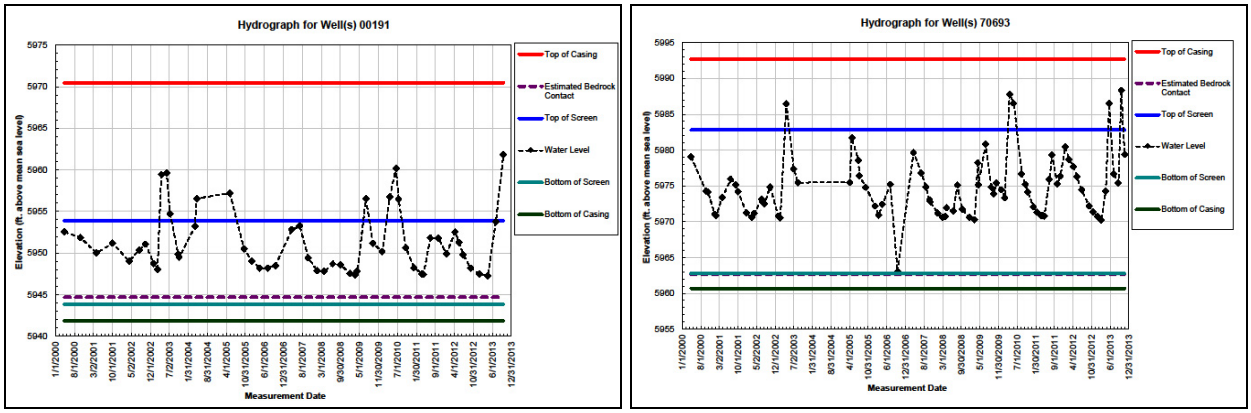
**Notes:** Values are averaged from eight tipping bucket rain gages across the Site. This total does not include snowfall totals.

*Table 59. Precipitation in CY 2013 by Quarter, Compared with Average Precipitation by Quarter*

| Period | CY 2013 | Historical Average (1997–2012) |
|---|---|---|
| 1st Quarter (January–March) | 0.77 | 1.08 |
| 2nd Quarter (April–June) | 2.87 | 4.94 |
| 3rd Quarter (July–September) | 10.99 | 4.61 |
| 4th Quarter (October–December) | 1.13 | 1.45 |
| **Total Annual** | **15.76** | **12.08** |

**Notes:** The precipitation for 2003 incorporates March data from the Site's former 61-meter meteorology tower, which included a heated precipitation gage that recorded precipitation from the multi-foot March 2003 snowstorm more accurately than did the unheated gages operated by the Water Programs Group.

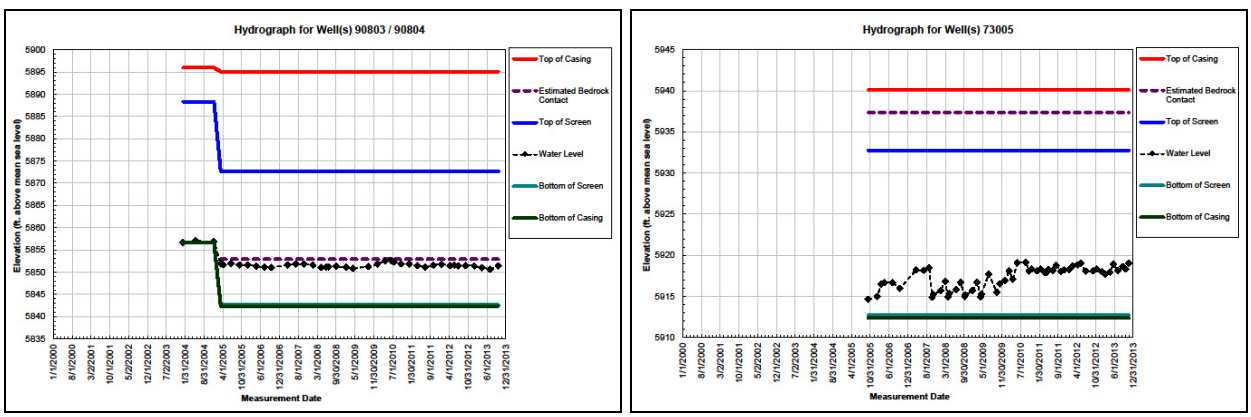
The significant rain event that occurred in September of 2013 is very noticeable on many of the hydrographs. Many of the well locations most strongly affected by this high precipitation are located on a pediment surface rather than in a drainage. These wells show a rapid water level rise in the fourth quarter of 2013; again, these fourth-quarter water level measurements were performed in early October, just weeks after the flood occurred. Some of the wells located upgradient of the PLF (e.g., 70393, 70693), in the former Building 444 (B444) area (P419689), in the former Contractor's Yard (37691), and in the former 903 Pad area (00191) show some of the most significant fourth-quarter rises in water levels (see examples in Figure 135). In some cases, a rise of more than 5 feet is evident. Some wells represented by additional water level data after this October measurement, collected when the wells were sampled, show falling water levels following the high level measured shortly after the floods; for example, the water level in wells 15699 (by the MSPTS) and 11502 (located south of the B444 area) had already fallen a few feet after the October measurement, as had the same PLF wells identified above.




**Notes:** Left: hydrograph for well 00191. Right: hydrograph for well 70693. See Appendix B for these and other hydrographs.

*Figure 135. Example Hydrographs Showing Strong Response to September, 2013 Rains*

In contrast, the water levels in some other wells showed no apparent response to the heavy September rains. Examples are given by some wells within the Woman Creek drainage, such as wells 10304 (adjacent to former Pond C-1) and 11104 (east of the OLF buttress), and wells in some other areas (45608 in the constructed hillside south of former B991, 891WEL in former OU 1, and 90804 monitoring beneath a slump on the 903 Pad Hillside). In contrast to some B444-area wells, 40305 (located on the east side of the former complex) also shows no effect. The downgradient PLF wells appear to have been effectively isolated from the event by the landfill; this is most evident on the hydrograph for well 73005. Two hydrographs are provided as examples in Figure 136, below.

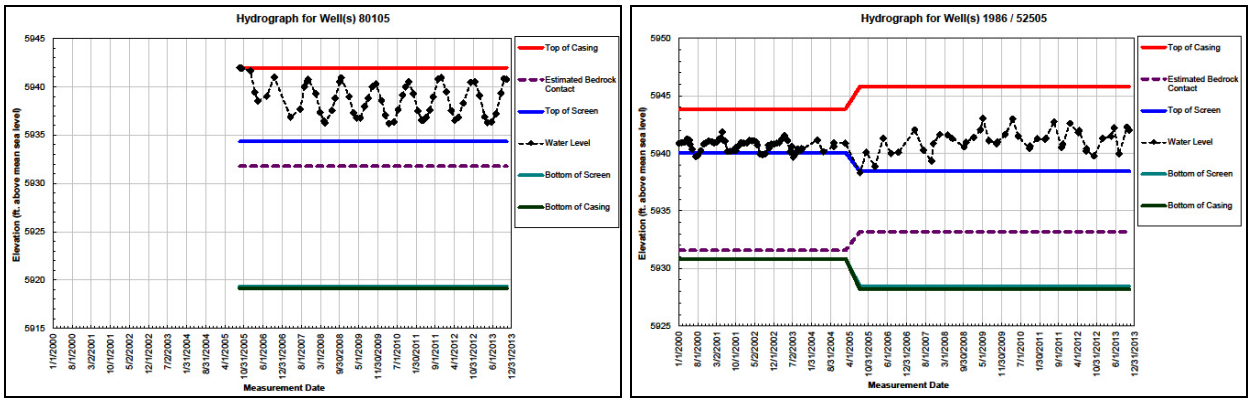



**Notes:** Left: hydrograph for well 90804. Right: hydrograph for well 73005. See Appendix B for these and other hydrographs.

*Figure 136. Example Hydrographs Showing Minimal Response to September, 2013 Rains*

Most wells within drainages, however, have water levels that retain a seasonal pattern and responded accordingly throughout 2013. This is most clearly illustrated by the hydrographs for downgradient OLF wells 80105 and 80205. Some wells present a seasonal pattern overlain with a response to the heavy rains that resembles that of a moist spring. Well 10594 in North Walnut Creek and well 52505 in the unnamed tributary to North Walnut Creek (near former

Building 771 [B771]) responded in this manner. Examples of strong seasonal patterns are provided below in Figure 137.




**Notes:** Left: hydrograph for well 80105. Right: hydrograph for well 52505. See Appendix B for these and other hydrographs.

*Figure 137. Example Hydrographs Showing Seasonal Patterns*

Broadly speaking, groundwater elevations within drainages appeared to respond less dramatically to the heavy rains of September. Instead, hydrographs of wells in these areas often tend to show a smoothed, seasonal pattern that varies fairly evenly from more moist to more dry conditions. This is interpreted as a reflection of the seasonally higher water levels that come with spring runoff, for example, and the effects of evapotranspiration (ET), which increase in the spring and remain strong throughout the growing season. Hydrographs for wells on the pediment surface, and some located on hillsides, are more strongly dominated by effects of ET and recharge events than by spring runoff. In the first part of 2013 the hydrographs for these wells tend to reflect the lower water levels of the preceding dry year (2012) continuing for some time, followed by a much stronger response to the heavy precipitation in September. In the semiarid climate of Rocky Flats, cyclical wet-dry conditions can be expected to be more common in a stream valley than a pediment, and this is largely reflected in these hydrographs.

The effects of the floods of September 2013 will continue to be evaluated. As the year ended, groundwater on average was elevated compared to more normal years, and flows—such as to treatment systems—were higher than is typical in the fourth quarter. If the first half of 2014 is dry, continuing effects should be easily identified on the hydrographs; however, if 2014 is a wet year, it will be more difficult to isolate continuing effects from this extreme event. The 2014 Annual Report will provide a summary discussion and updated hydrographs for all wells.

### *Groundwater Flow Velocities*

Groundwater flow directions and velocities in 2013 are generally consistent with those reported in 2012. Flow directions, water level data, geological information, and completed well designs and locations support the selection of several well pairs for the calculation of linear groundwater flow velocities, also referred to as seepage velocities. In conjunction with the potentiometric surface maps, a pair of wells is potentially useful for these calculations if a line drawn between them is perpendicular (or nearly so) to the potentiometric contour lines between the two wells, and there are no intervening drainages or artificial groundwater control structures (such as the

groundwater intercept trenches that are a component of three of the four treatment systems, and the GWIS at the PLF). Based on the potentiometric surface maps for 2013 (Figure 133 and Figure 134), the same well pairs selected for use in the 2012 Annual Report (DOE2013b) are used in this report, with one exception: one well pair is added in the area of the MSPTS, as discussed in greater detail below.

The seepage velocity ($v$) may be calculated using the Darcy equation:

$$v = \left(K/n\right)\left(dh/dl\right)$$

where

$K$ = hydraulic conductivity
$n$ = effective porosity
$dh/dl$ = hydraulic gradient.

This calculation is most sensitive to the hydraulic gradient and value of K used, because for all calculations of $v$ in this report a porosity of 0.1 (consistent with previous Annual RFCA Groundwater Monitoring Reports as well as post-closure RFLMA reports) is used.

The hydraulic gradients were calculated from groundwater elevation data collected in the second and fourth quarters of 2013. Results of the hydraulic gradient calculation typically differ slightly when data are used from different quarters, but the differences are typically not large. The largest difference in hydraulic gradients was calculated for Oil Burn Pit (OP) #1 well pair 33604-33711, where the gradient was 0.129 for the second quarter and 0.070 for the fourth quarter. Compared to others at the Site in 2013, this is a relatively large difference. It is due to the significantly larger difference in second-quarter water levels at the two wells, which is driven by the substantially lower second-quarter water level in downgradient well 33711. The lower water level in the second quarter at well 33711 was not a unique occurrence in 2013, and was observed in several other wells. During second quarter, the difference in the groundwater elevations measured at 33604 and 33711 was over 13 feet, while the fourth quarter difference was approximately 7 feet. This larger variation in water level observed during second quarter is reflected in the steeper gradient compared to fourth quarter.

As noted above, previous annual reports (e.g., DOE 2012, 2013b) have discussed the change, formalized in 2009, that revised sampling methods implemented at low-producing wells to one that minimized dewatering. While removing water during sample collection may still affect water levels, of course, these impacts on measured water levels should be much less than those observed prior to this procedural modification.

Calculated seepage velocities are only useful as estimates. Table 60 presents the flow velocities calculated using the 2013 data for selected well pairs. These velocities are hypothetical and represent pure water; therefore, they are most often used to estimate the travel time of conservative (nonreactive) constituents. Reactive constituents tend to migrate more slowly than nonreactive constituents, and also more slowly than the calculated velocity. These calculated velocities do not take into account properties such as sorption and chemical reactions (e.g., precipitation, abiotic and biologically-driven degradation, and volatilization) that can strongly influence the transport of dissolved constituents including groundwater contaminants.

*Table 60. Calculated Flow Velocities for 2013*

| Well Pair | Area | 2011 Quarter | Geological Unit | WL Elevation, Well 1 | WL Elevation, Well 2 | dh (ft) | dl (ft) | dh/dl (hydraulic gradient) | Calculated K (cm/s) | v (ft/yr) | Time to Traverse Transect (yr) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P115589-P114689 | North IA | 2 | Qrf | 6006.92 | 5996.95 | 9.97 | 550.14 | 0.018 | 4.18E-04 | 78.38 | 7.02 |
| P115589-P114689 | North IA | 4 | Qrf | 6011.88 | 6000.85 | 11.03 | 550.14 | 0.020 | 4.18E-04 | 86.71 | 6.34 |
| P114689-21605 | North IA/B559 | 2 | Qrf / Qrf/KaKlclst | 5996.95 | 5966.34 | 30.61 | 503.78 | 0.061 | 3.14E-04 | 197.22 | 2.55 |
| P114689-21605 | North IA/B559 | 4 | Qrf / Qrf/KaKlclst | 6000.85 | 5973.29 | 27.56 | 503.78 | 0.055 | 3.14E-04 | 177.73 | 2.83 |
| 56305-21505 | B559 | 2 | Qrf/KaKlclst | 5988.64 | 5966.49 | 22.15 | 368.91 | 0.060 | 2.09E-04 | 130.11 | 2.84 |
| 56305-21505 | B559 | 4 | Qrf/KaKlclst | 5993.42 | 5968.92 | 24.5 | 368.91 | 0.066 | 2.09E-04 | 143.61 | 2.57 |
| 18199-20505 | B771 | 2 | KaNo.1ss / Qrf/KaKlclst | 5970.33 | 5925.34 | 44.99 | 500.43 | 0.090 | 4.99E-04 | 463.90 | 1.08 |
| 18199-20505 | B771 | 4 | Qrf/KaNo.1ss/ Qrf/KaKlclst | 5978.01 | 5937.26 | 40.75 | 500.43 | 0.081 | 4.06E-04 | 342.24 | 1.46 |
| P416589-80105 | OLF | 2 | Qrf / Qrf/KaKlclst | 6009.62 | 5936.3 | 73.32 | 846.63 | 0.087 | 3.14E-04 | 281.10 | 3.01 |
| P416589-80105 | OLF | 4[a] | Qrf / Qrf/KaKlclst | 6021.27 | 5940.84 | 80.43 | 846.63 | 0.095 | 3.14E-04 | 308.63 | 2.74 |
| 40005-80205 | OLF | 2 | Qrf/KaKlclst | 6005.64 | 5932.49 | 73.15 | 1194.95 | 0.061 | 2.09E-04 | 132.65 | 9.01 |
| 40005-80205 | OLF | 4 | Qrf/KaKlclst | 6012.48 | 5932.44 | 80.04 | 1194.95 | 0.067 | 2.09E-04 | 145.15 | 8.23 |
| 40305-39605 | South IA | 2 | Qrf/KaKlslt / KaKlclst | 6006.19 | 5991.22 | 14.97 | 1126.39 | 0.013 | 1.12E-04 | 15.42 | 73.05 |
| 40305-39605 | South IA | 4 | Qrf/KaKlslt / KaKlclst | 6011.96 | 5999.38 | 12.58 | 1126.39 | 0.011 | 1.12E-04 | 12.94 | 87.03 |
| 40005-P419689 | South IA | 2 | Qrf/KaKlclst / Qrf/KaNo.1ss | 6005.64 | 6002.52 | 3.12 | 478.87 | 0.007 | 4.06E-04 | 27.38 | 17.49 |
| 40005-P419689 | South IA | 4 | Qrf/KaKlclst / Qrf/KaNo.1ss | 6012.48 | 6009.51 | 2.97 | 478.87 | 0.006 | 4.06E-04 | 26.07 | 18.37 |
| P419689-11502 | South IA | 2 | Qrf/KaNo.1ss/ KaKlclst | 6002.52 | 5996.91 | 5.61 | 535.27 | 0.010 | 3.02E-04 | 32.74 | 16.35 |
| P419689-11502 | South IA | 4 | Qrf/KaNo.1ss/ Qrf/KaKlclst | 6009.51 | 6000.68 | 8.83 | 535.27 | 0.016 | 4.06E-04 | 69.33 | 7.72 |

*Table 60 (continued). Calculated Flow Velocities for 2013*

| Well Pair | Area | 2011 Quarter | Geological Unit | WL Elevation, Well 1 | WL Elevation, Well 2 | dh (ft) | dl (ft) | dh/dl (hydraulic gradient) | Calculated K (cm/s) | v (ft/yr) | Time to Traverse Transect (yr) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 40305-22996 | South IA/ 800 Area | 2 | Qrf/KaKlclst / Qrf | 6006.19 | 5980.16 | 26.03 | 2037.05 | 0.013 | 3.14E-04 | 41.48 | 49.11 |
| 40305-22996 | South IA/ 800 Area | 4 | Qrf/KaKlclst / Qrf | 6011.96 | 5982.25 | 29.71 | 2037.05 | 0.015 | 3.14E-04 | 47.34 | 43.03 |
| 88205-00797 | 881 Hillside | 2 | Qrf/KaKlclst / Qrf | 5966.4 | 5924.62 | 41.78 | 343.12 | 0.122 | 3.14E-04 | 395.59 | 0.87 |
| 88205-00797 | 881 Hillside | 4 | Qrf/KaKlclst / Qrf | 5970.81 | 5925.4 | 45.41 | 343.12 | 0.132 | 3.14E-04 | 429.96 | 0.80 |
| 00191-00491 | 903 Pad-Lip | 2 | Qrf/KaKlclst | 5947.27 | 5887.72 | 59.55 | 816.98 | 0.073 | 2.09E-04 | 157.95 | 5.17 |
| 00191-00491 | 903 Pad-Lip | 4 | Qrf/KaKlclst | 5961.84 | 5891.51 | 70.33 | 816.98 | 0.086 | 2.09E-04 | 186.54 | 4.38 |
| 07391-10304 | Ryan's Pit/ Woman Ck. | 2 | Qrf/KaKlclst / Qc/KaKlclst | 5941.68 | 5810.59 | 131.09 | 948.74 | 0.138 | 1.28E-04 | 183.37 | 5.17 |
| 07391-10304 | Ryan's Pit/ Woman Ck. | 4 | Qrf/KaKlclst / Qc/KaKlclst | 5944 | 5809.56 | 134.44 | 948.74 | 0.142 | 1.28E-04 | 187.67 | 5.06 |
| 33502-33711 | Oil Burn Pit #1 | 2[b] | Qrf/ Qrf/KaKlclst | 6014.14 | 5994.83 | 19.31 | 271.46 | 0.071 | 3.14E-04 | 230.89 | 1.18 |
| 33502-33711 | Oil Burn Pit #1 | 4 | Qrf/ Qrf/KaKlclst | 6018.35 | 6007.11 | 11.24 | 271.46 | 0.041 | 3.14E-04 | 134.40 | 2.02 |
| 33502-33604 | Oil Burn Pit #1 | 2 | Qrf / Qrf/KaKlclst | 6014.14 | 6008.16 | 5.98 | 177.63 | 0.034 | 3.14E-04 | 109.27 | 1.63 |
| 33502-33604 | Oil Burn Pit #1 | 4 | Qrf / Qrf/KaKlclst | 6018.35 | 6014.39 | 3.96 | 177.63 | 0.022 | 3.14E-04 | 72.36 | 2.45 |
| 33604-33711 | Oil Burn Pit #1 | 2[b] | Qrf/KaKlclst | 6008.16 | 5994.83 | 13.33 | 103.49 | 0.129 | 2.09E-04 | 279.12 | 0.37 |
| 33604-33711 | Oil Burn Pit #1 | 4 | Qrf/KaKlclst | 6014.39 | 6007.11 | 7.28 | 103.49 | 0.070 | 2.09E-04 | 152.44 | 0.68 |
| 91105-91203 | Oil Burn Pit #2 | 2 | Qrf/KaKlslt / Qrf/KaKlclst | 5945.02 | 5930.27 | 14.75 | 242.17 | 0.061 | 3.21E-04 | 202.24 | 1.20 |
| 91105-91203 | Oil Burn Pit #2 | 4 | Qrf/KaKlslt / Qrf/KaKlclst | 5948.67 | 5935.11 | 13.56 | 242.17 | 0.056 | 3.21E-04 | 185.92 | 1.30 |
| 91105-15699 | Oil Burn Pit #2 | 2 | Qrf/KaKlslt / Qrf/KaKlclst | 5945.02 | 5910.98 | 34.04 | 447.14 | 0.076 | 3.21E-04 | 252.78 | 1.77 |
| 91105-15699 | Oil Burn Pit #2 | 4 | Qrf/KaKlslt / QrfKaKlclst | 5948.67 | 5915.23 | 33.44 | 447.14 | 0.075 | 3.21E-04 | 248.32 | 1.80 |

*Table 60 (continued). Calculated Flow Velocities for 2013*

| Well Pair | Area | 2011 Quarter | Geological Unit | WL Elevation, Well 1 | WL Elevation, Well 2 | dh (ft) | dl (ft) | dh/dl (hydraulic gradient) | Calculated K (cm/s) | v (ft/yr) | Time to Traverse Transect (yr) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| P210189-79102 | Solar Evaporation Ponds (SEPs) | 2 | KaKlslt / KaKlclst | 5965.28 | 5947.77 | 17.51 | 301.98 | 0.058 | 1.48E-05 | 8.90 | 33.92 |
| P210189-79102 | SEPs | 4 | Qrf/KaKlslt / KaKlclst/ KaNo.1 ss | 5972.18 | 5952.29 | 19.89 | 301.98 | 0.066 | 3.09E-04 | 210.52 | 1.43 |
| 79102-22205 | North of SEPs | 2 | KaKlclst / KaKlslt | 5947.77 | 5915.48 | 32.29 | 235.62 | 0.137 | 1.48E-05 | 21.04 | 11.20 |
| 79102-22205 | North of SEPs | 4 | KaKlclst / KaKlslt | 5952.29 | 5919.32 | 32.97 | 235.62 | 0.140 | 1.48E-05 | 21.43 | 11.00 |
| 79502-99305 | SEPs/B991 | 2 | KaKlclst / Qrf/KaKlclst | 5961.43 | 5926.34 | 35.09 | 532.37 | 0.066 | 1.05E-04 | 71.72 | 7.42 |
| 79502-99305 | SEPs/B991 | 4 | Qrf/KaKlclst | 5963.34 | 5929.78 | 33.56 | 532.37 | 0.063 | 2.09E-04 | 136.60 | 3.90 |
| 70393-70693 | PU&D/PLF | 2 | Qrf | 5987.17 | 5974.14 | 13.03 | 410.48 | 0.032 | 4.18E-04 | 137.29 | 2.99 |
| 70393-70693 | PU&D/PLF | 4 | Qrf | 5997.18 | 5988.21 | 8.97 | 410.48 | 0.022 | 4.18E-04 | 94.51 | 4.34 |
| 30900-30002 | PU&D/ N. Walnut Ck. | 2 | Qrf/KaNo.1ss / KaKlclst | 5993.86 | 5916.64 | 77.22 | 1890.74 | 0.041 | 3.02E-04 | 127.59 | 14.82 |
| 30900-30002 | PU&D/ N. Walnut Ck. | 4 | Qrf/KaNo.1ss / KaKlclst | 6004.55 | 5927.34 | 77.21 | 1890.74 | 0.041 | 3.02E-04 | 127.60 | 14.82 |

**Abbreviations:**
cm/s = centimeters/second
ft = feet
ft/yr = feet per year
yr = years
SEP = Solar Evaporation Pond

For each well pair, the value of K, the hydraulic conductivity, selected for this calculation was based on the predominant lithologic unit comprising the saturated materials screened by each member of the well pair. This is based on the core logs for the respective wells and the published geology (EG&G 1995b), as well as information from the hydrographs (i.e., whether the saturated interval is typically restricted to the bedrock or includes surficial materials). If more than one lithology is represented in the screened interval of a well and, from the hydrographs, also appears to comprise a meaningful fraction of the saturated interval, an average K was calculated from the lithologies. K values used for these calculations are from the EG&G hydrogeologic report (EG&G 1995a), Table G-2, with subsequently modified values for Rocky Flats Alluvium and valley-fill alluvium (RMRS 2000a; Safe Sites 2001, 2002).

One factor that may cause significant error in estimated seepage velocities is the presence of artificial fill in many portions of the former IA. The K value for Rocky Flats Alluvium is used because the source of the fill was typically deposits of Rocky Flats Alluvium. However, it is unlikely that the backfilled (i.e., reworked) alluvium has the internal structure of or is as compacted as the original deposits, resulting in a higher effective porosity and K value than the published values for Rocky Flats Alluvium. Where well pairs cross former buildings that were backfilled with concrete rubble and alluvium, the effective porosity and K values may be higher still. For this report, well pairs crossing areas of sufficiently thick backfill deposits may use the K value for Rocky Flats Alluvium rather than that for the original lithology, under the assumption that the entire area of backfill/regrading has a hydraulic conductivity closer to that of Rocky Flats Alluvium than to a lower-permeability unit.

As stated above, these calculated velocities are based in part on data displayed on the hydrographs: where water is shown above the bedrock contact, hydraulic conductivities for the unconsolidated surficial material (e.g., Rocky Flats Alluvium or colluvium), as well as bedrock to account for water flowing through this unit, are included for this calculation. If the hydrographs show that water is typically restricted to the bedrock, the K value for the generalized bedrock type at that well is selected. Note that, similar to the highly heterogeneous alluvial deposits, the bedrock lithologies are also variable (e.g., from claystone to silty claystone to clayey siltstone to siltstone), as is often reflected in cores from the screened interval of a given well; however, a single K value is selected to represent the well.

Estimated seepage velocities in 2013 (Table 60) range from a low of 8.90 feet per year (ft/yr) within the bedrock from well P210189 to well 79102, on top of the pediment in the vicinity of the former Solar Evaporation Ponds (SEPs) and in an area of both VOC contamination (the Solar Ponds-Area VOC Plume) and nitrate and uranium contamination (the SPP); to a high of 463.90 ft/yr within the artificial fill and bedrock from well 18199 (near the source area of the Individual Hazardous Substance Site (IHSS) 118.1 or Carbon Tetrachloride Plume) down the hill to well 20505 in the vicinity of the former Building 771 area. Refer to Figure 4 for the locations of the wells listed in Table 60.

The corresponding travel time between each well in a well pair ranges from approximately 4 months (from well 33604 to well 33711 in the vicinity of former OBP #1 and within the VC Plume) to over 87 years (from well 40305 to well 39605 in the southern IA). However, once again these are estimated velocities for pure water; and second, the hydraulic gradients can be seen to change significantly from season to season between wells in some well pairs as a result of precipitation and seasonal recharge patterns. For example, the gradients between wells P416589 and 80105 (0.087 and 0.095 for second and fourth quarters, respectively) lead to

corresponding calculated velocities of 281.10 ft/yr and 308.63 ft/yr—travel times of approximately 3 and 2.7 years, respectively. As illustrated, these estimates are very sensitive to measured water levels, again underscoring the potential importance of the change in sample collection procedures mentioned above and more thoroughly discussed in previous reports (e.g., DOE 2012, 2013b).

The one well pair added for this 2013 report is 91105-15699. The former well is located at the downgradient edge of the remediated, former OBP #2; and the latter well is located downgradient of the MSPTS groundwater intercept trench that collects and routes the OBP #2-related groundwater to the MSPTS for treatment. As such, this is not a completely valid selection, because this trench exerts a dominant control on groundwater flow in this area. (In addition, a constructed drain is present that routes flow from the OBP #2 area into that trench.) However, given that groundwater from well 15699 shows the impacts of OBP #2 contaminants, this well pair was included for informational purposes. Calculated seepage velocities here are approximately 250 ft/yr, for a total travel time estimated at a little less than 2 years—again, ignoring the presence of the constructed drain and the trench.

As in previous years, there are instances in which the estimated travel times for a given well pair vary widely between the second and fourth quarter. This is most often related to differences in gradient from one quarter to the other, as explained above; when groundwater elevations are very similar in both members of a well pair, a low gradient is calculated, which results in a slower travel time; when elevations are very different, the gradient is steeper, resulting in a higher calculated velocity. Differences in travel times can also be a result of differences in the hydraulic conductivity values used in the calculations, also discussed above. One well pair in which both conditions (different gradient, different conductivities) affected the estimated travel times is well pair P419689-11502 (Table 60). The former well is located on the southern side of the former B444 complex, and the latter is located farther to the southeast, at the southern edge of the pediment where it is bisected by the Woman Creek drainage. The gradients calculated for this well pair are 0.010 and 0.016 for second and fourth quarters, respectively. During the second quarter, the groundwater monitored at these wells was within the Rocky Flats Alluvium and Arapahoe No. 1 Sandstone (well P419689) and within the claystone bedrock at well 11502. The higher water levels in the fourth quarter brought groundwater at well 11502 up into the Rocky Flats Alluvium, which has a higher conductivity than the claystone; this higher water level therefore effectively increased the overall hydraulic conductivity. The combined effects of the increased gradient and higher conductivity value led to a significantly quicker seepage velocity and total travel time in the fourth quarter. The results (Table 60) in the second quarter are 32.74 ft/yr and an estimated total travel time of 16.35 years, and in the fourth quarter are 69.33 ft/yr and 7.72 years. This points to the sensitivity of these seepage estimates, and further suggests caution be used when interpreting and applying them.

Other well pairs that may be of interest due to contaminants in the groundwater monitored by them include well pair 00191–00491 within the 903 Pad Plume. The travel times calculated for this well pair are very similar in second and fourth quarters, and average roughly 5 years. Close agreement is also evident for well pair 91105–91203 (OBP #2 source area and sidegradient to downgradient well, respectively), where the estimated 2013 travel times average approximately 15 months (Table 60).

Velocities and travel times were also estimated for the Ryan's Pit Plume area, where the source area is monitored by Evaluation well 07391, and the pathway to surface water is monitored by

AOC well 10304. The travel times estimated in 2013 (just over 5 years in both second and fourth quarters) are equivalent to those estimated in previous years (for example, see DOE 2011c, 2012, 2013b).

See Section 3.1.5 for additional discussion of groundwater quality in the various areas, including those described above. For a more detailed discussion of flow between well pairs by area, refer to the 2006 and 2007 Annual Reports [DOE 2007b, 2008b].

In general, the estimated flow paths and velocities calculated for 2013 are comparable to those calculated prior to Site closure (e.g., K-H 2004b) and are also very similar to those presented in the 2012 Annual Report (DOE 2013b), as well as previous annual reports.

The most important point to be made is that even though the years 2012-2013 included the driest year on record in 2012, and the most significant precipitation event in September 2013, the results of these calculations did not markedly change. (Again, the historical record to which this statement applies covers the period of 1997–2013.) The second-quarter 2013 estimates of seepage velocities are not much different from those calculated in previous post-closure years, and the same applies to the fourth-quarter velocities. Despite the relatively wide range of climatic conditions to which the Site was subject in this time frame, estimated groundwater flow paths and velocities remain consistent with previous results. Groundwater across the Site in the fourth quarter continued to re-equilibrate (recede to normal elevations) following the heavy September precipitation, but flow paths and calculated seepage velocities for this period are not markedly different.

#### *3.1.3.6 Seeps*

Seeps are common at the Rocky Flats Site. Seep distribution and occurrence are strongly controlled by geology and precipitation, and much of the discharge occurs at the contact between the Rocky Flats Alluvium and underlying claystone.

Seep locations posted on the second and fourth quarter CY 2013 potentiometric surface maps are slightly modified from those shown on the 1995 Hydrogeologic Characterization Report (EG&G 1995a). Although this 1995 depiction of seeps has been the best available map of the seeps for the Site for some time, it is no longer accurate, having been strongly affected by the removal of all artificial water sources and impermeable surfaces, as well as the overall land surface reconfiguration (e.g., excavations and placement of fill) in some areas. Thus, efforts to identify locations of existing seeps in the COU began in 2010. Although not a rigorous investigation, the project is designed to qualitatively establish the presence of seeps and document their general location.

One observation made during recent years is that seeps often occur where former building foundations, footer drains, and other features remain that contribute to groundwater reaching the surface. This observation supports the design of the monitoring network, which considered the anticipated post-closure groundwater flow directions.

Figure 138 presents the locations where seeps and wet areas were observed during June of CY 2013. Given the dry conditions in the spring prior to this seep mapping effort, the seeps that were observed were relatively small and isolated. The Site seep mapping efforts continue, with plans to delineate observed seeps during spring and summer of each year.

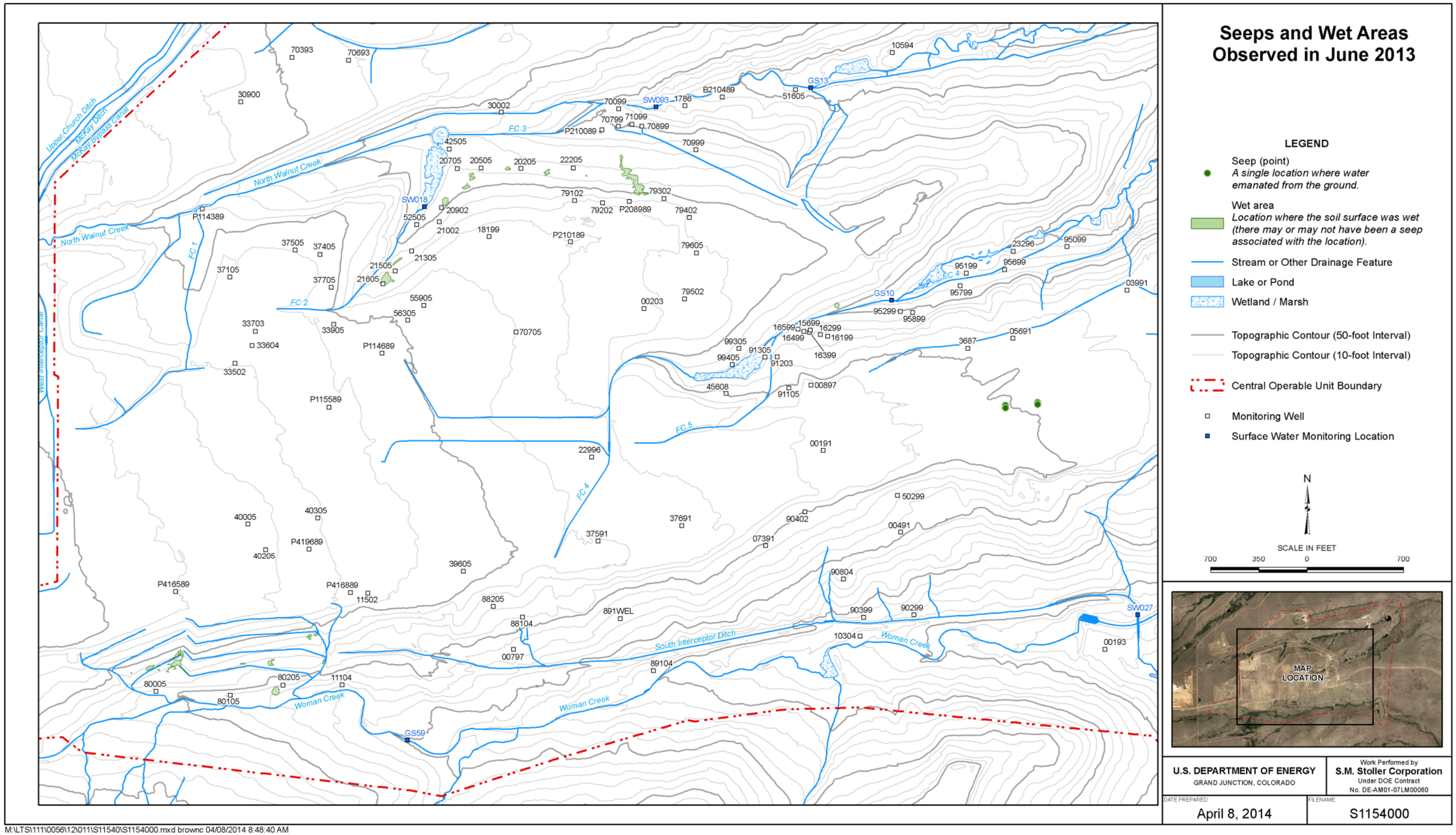



*Figure 138. Seeps and Wet Areas Observed in 2013*

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### 3.1.4 Surface-Water Data Interpretation and Evaluation

#### *3.1.4.1 Surface-Water Quality Summaries*

This section presents water quality summaries for selected analytes for the period January 1, 1997, through December 31, 2013 (CY 1997–2013) for the automated surface-water monitoring locations collecting flow-paced composite samples in CY 2013. Radionuclides summarized include Pu, Am,[10] and total U. Additionally, the POE metals (total beryllium [Be], dissolved Cd, total Cr, and dissolved silver [Ag]) and nitrate+nitrite as N[11] are also summarized. Additional analyses are also performed based on the specific monitoring objective. The results and evaluation for these additional analytes are presented in Section 3.1.2.1 through Section 3.1.2.9 by monitoring objective.

The summary values in this section should not be confused with the RFLMA required water-quality evaluations according to Attachment 2 in the RFLMA. The Pu, Am, and total U standards noted in this section apply only to POE (GS10, SW027, and SW093; Section 3.1.2.2) and POC (WALPOC, WOMPOC, GS01[12], and GS03[12]; Section 3.1.2.1) 30-day or 12-month rolling averages. Comparisons of standards to other summary statistics are noted in this section for reference only. POEs and POCs are highlighted in **bold** in the tables.

***Radionuclides***

The following summaries include all available results that were not rejected through the validation process.[13] Data are generally presented to decimal places as reported by the laboratories. Accuracy should not be inferred; minimum detectable concentrations, activities, and analytical errors are often greater than the precision presented. When a negative radionuclide result (e.g., –0.002 pCi/L) is reported by the laboratory due to blank correction, a value of 0.0 pCi/L is used for calculation purposes. When a sample has a corresponding field duplicate, the value used in calculations is the arithmetic average of the "real" and "duplicate" values.[14] When a sample has multiple "real" analyses (e.g., Site requested "reruns"), the value used in calculations is the arithmetic average of the multiple "real" analyses.

The Pu/Am ratio is calculated for each sample by dividing the Pu result by the corresponding Am result. Ratios are only calculated for samples where *both* the Pu and Am results are greater than 0.015 pCi/L (generally the minimum detectable activity for Pu and Am analyses) to exclude ratios for very low results with high relative error.

Each table includes only those locations where samples were collected that were analyzed for the referenced analyte. Maps are also included showing monitoring locations and the corresponding

[10] In this report, "plutonium" or "Pu" refers to plutonium-239, 240; and "americium" or "Am" refers to americium-241.
[11] Due to hold time requirements, the nitrate+nitrite as N summaries are based on grab sample results.
[12] Locations GS01 and GS03 were operated and evaluated as POCs through September 8, 2013, and September 27, 2013, respectively.
[13] Summaries do not include supplemental post-closure grab samples for uranium from GS13 that were collected to assess modifications to the SPPTS; only routine continuous flow-paced samples are included.
[14] Arithmetic averaging of radionuclide pairs is performed only when the RER is less than or equal to 5. If the RER is greater than 5, the radionuclide results are determined to be nonrepresentative. These results are not used for the calculation of summary statistics. A more thorough discussion of data management is given in Appendix B.1, "Surface-Water Analytical Data Evaluation Methods."

median values of the referenced parameter. Only locations that had four or more individual results are mapped.

Table 61 and Table 62 show that post-closure median Pu activities for all locations are below the RFLMA standard of 0.15 pCi/L. The 85th percentile activities are also below the standard for all locations except GS10. Figure 139 and Figure 140 show the pre- and post-closure median Pu activities, respectively.

*Table 61. Pre-Closure Summary Statistics for Pu-239, 240 Analytical Results (January 1, 1997–October 13, 2005)*

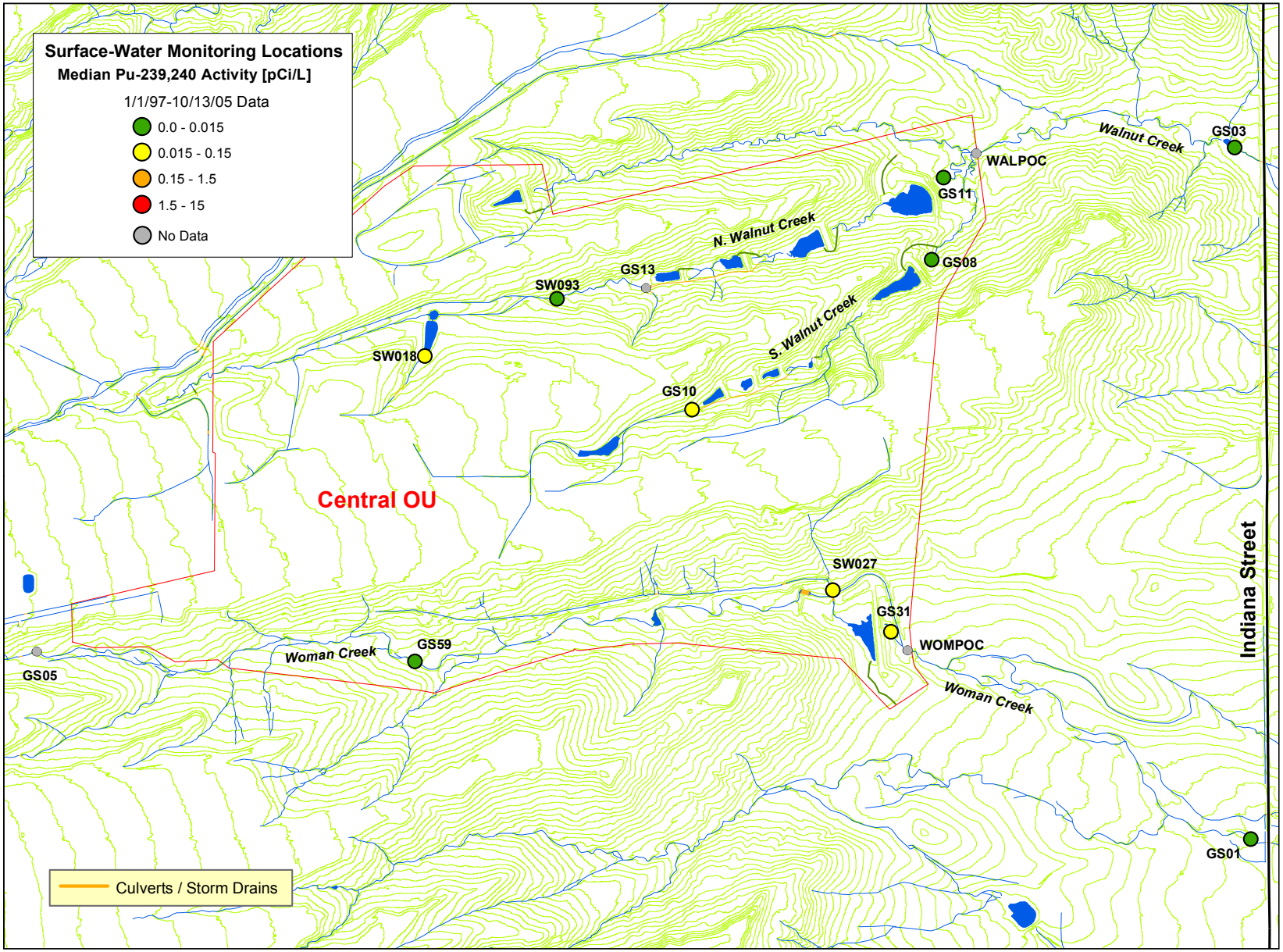
| Location | Samples (N) | Median (pCi/L) | 85th Percentile (pCi/L) | Maximum (pCi/L) |
|---|---|---|---|---|
| **GS01** | **165** | **0.002** | **0.008** | **0.024** |
| **GS03** | **257** | **0.005** | **0.016** | **0.220** |
| **WOMPOC** | **NA** | **NA** | **NA** | **NA** |
| **WALPOC** | **NA** | **NA** | **NA** | **NA** |
| GS05 | NA | NA | NA | NA |
| GS08 | 118 | 0.004 | 0.013 | 0.864 |
| **GS10** | **266** | **0.054** | **0.207** | **2.27** |
| GS11 | 89 | 0.002 | 0.009 | 0.070 |
| GS13 | NA | NA | NA | NA |
| GS31 | 26 | 0.017 | 0.094 | 0.348 |
| GS59 | 30 | 0.000 | 0.004 | 0.020 |
| **SW027** | **71** | **0.049** | **0.199** | **13.2** |
| **SW093** | **284** | **0.010** | **0.063** | **4.18** |

**Notes:** WOMPOC and WALPOC began operation on September 28, 2011, and September 9, 2011, respectively.
NA = analyte not sampled
**Bold** = POC or POE

*Table 62. Post-Closure Summary Statistics for Pu-239, 240 Analytical Results (October 13, 2005–December 31, 2013)*

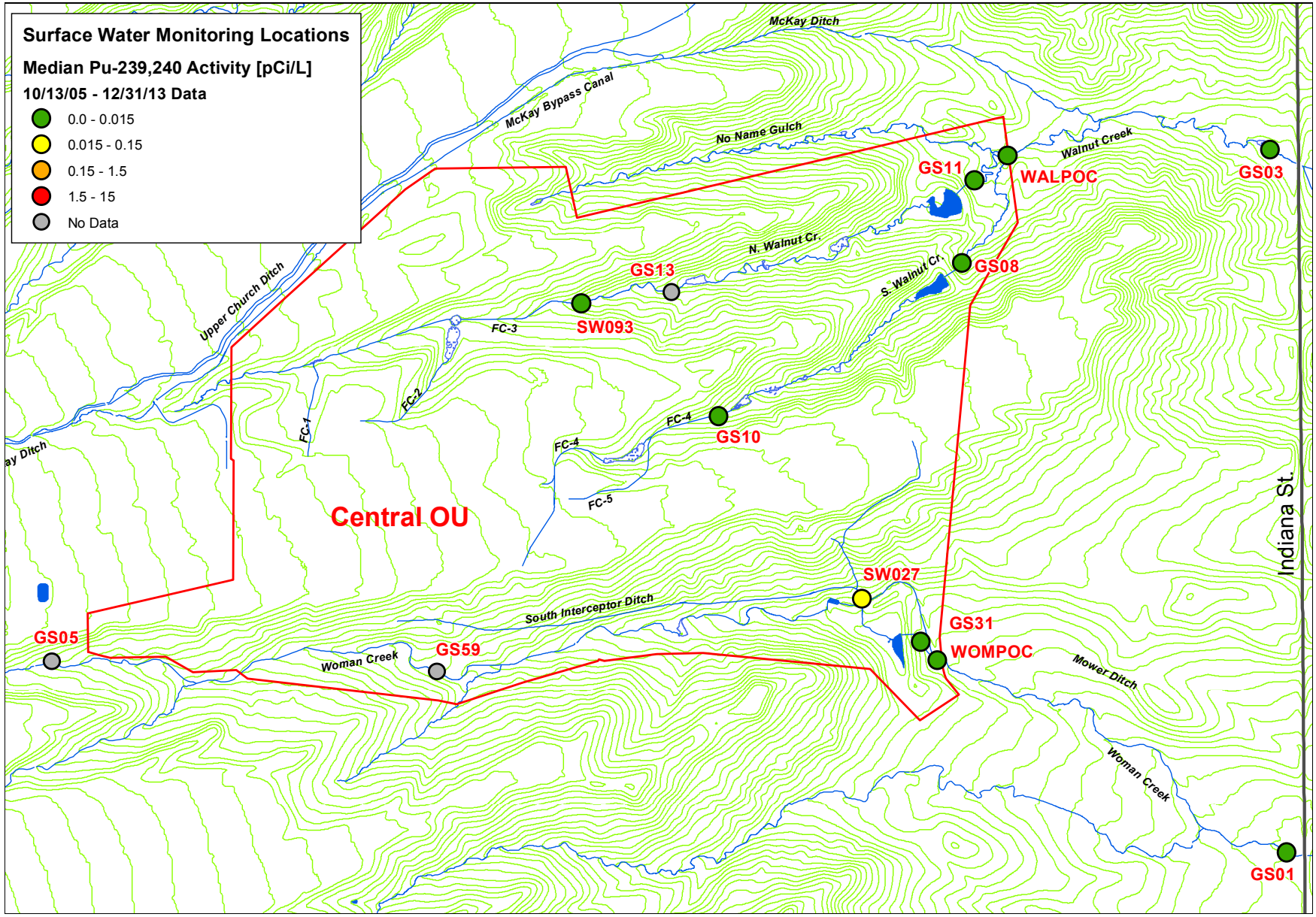
| Location | Samples (N) | Median (pCi/L) | 85th Percentile (pCi/L) | Maximum (pCi/L) |
|---|---|---|---|---|
| **GS01** | **113** | **0.002** | **0.008** | **0.025** |
| **GS03** | **88** | **0.003** | **0.011** | **0.042** |
| **WOMPOC** | **31** | **0.004** | **0.011** | **0.038** |
| **WALPOC** | **22** | **0.007** | **0.016** | **0.039** |
| GS05 | NA | NA | NA | NA |
| GS08 | 47 | 0.003 | 0.009 | 0.055 |
| **GS10** | **138** | **0.013** | **0.080** | **5.28** |
| GS11 | 49 | 0.003 | 0.008 | 0.046 |
| GS13 | NA | NA | NA | NA |
| GS31 | 22 | 0.005 | 0.014 | 0.090 |
| GS59 | NA | NA | NA | NA |
| **SW027** | **11** | **0.108** | **0.210** | **0.300** |
| **SW093** | **127** | **0.005** | **0.020** | **0.861** |
| | | | | |

**Notes:** WOMPOC and WALPOC began operation on September 28, 2011, and September 9, 2011, respectively.
NA = analyte not sampled
**Bold** = POC or POE




**Notes:** Only locations with four or more results are mapped.

*Figure 139. Median Pu-239, 240 Activities for CY 1997–October 13, 2005*




**Notes:** Only locations with four or more results are mapped.

*Figure 140. Post-Closure Median Pu-239, 240 Activities*

Table 63 and Table 64 show that post-closure median and 85th percentile Am activities for all locations are below the RFLMA standard of 0.15 pCi/L. Figure 141 and Figure 142 show median Am activities for pre- and post-closure, respectively.

*Table 63. Pre-Closure Summary Statistics for Am-241 Analytical Results (January 1, 1997–October 13, 2005)*

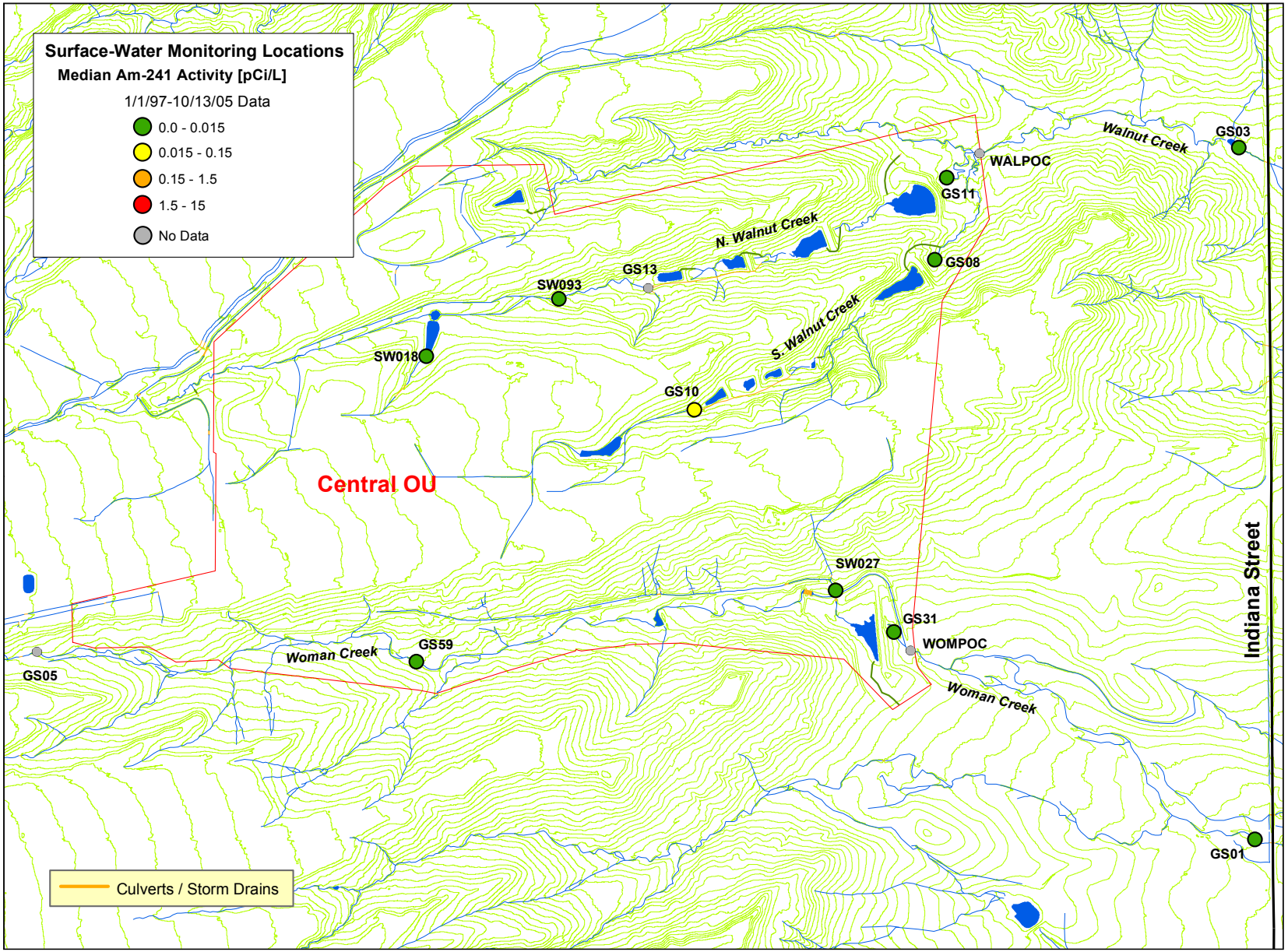
| Location | Samples (N) | Median (pCi/L) | 85th Percentile (pCi/L) | Maximum (pCi/L) |
|---|---|---|---|---|
| **GS01** | **164** | **0.001** | **0.008** | **0.054** |
| **GS03** | **258** | **0.006** | **0.018** | **0.066** |
| **WOMPOC** | **NA** | **NA** | **NA** | **NA** |
| **WALPOC** | **NA** | **NA** | **NA** | **NA** |
| GS05 | NA | NA | NA | NA |
| GS08 | 118 | 0.006 | 0.015 | 0.275 |
| **GS10** | **259** | **0.057** | **0.193** | **8.39** |
| GS11 | 88 | 0.003 | 0.010 | 0.047 |
| GS13 | NA | NA | NA | NA |
| GS31 | 26 | 0.009 | 0.020 | 0.116 |
| GS59 | 30 | 0.001 | 0.004 | 0.015 |
| **SW027** | **71** | **0.009** | **0.045** | **2.33** |
| **SW093** | **279** | **0.012** | **0.052** | **14.1** |

**Notes:** WOMPOC and WALPOC began operation on September 28, 2011, and September 9, 2011, respectively.
NA = Analyte not sampled
**Bold** = POC or POE

*Table 64. Post-Closure Summary Statistics for Am-241 Analytical Results (October 13, 2005–December 31, 2013)*

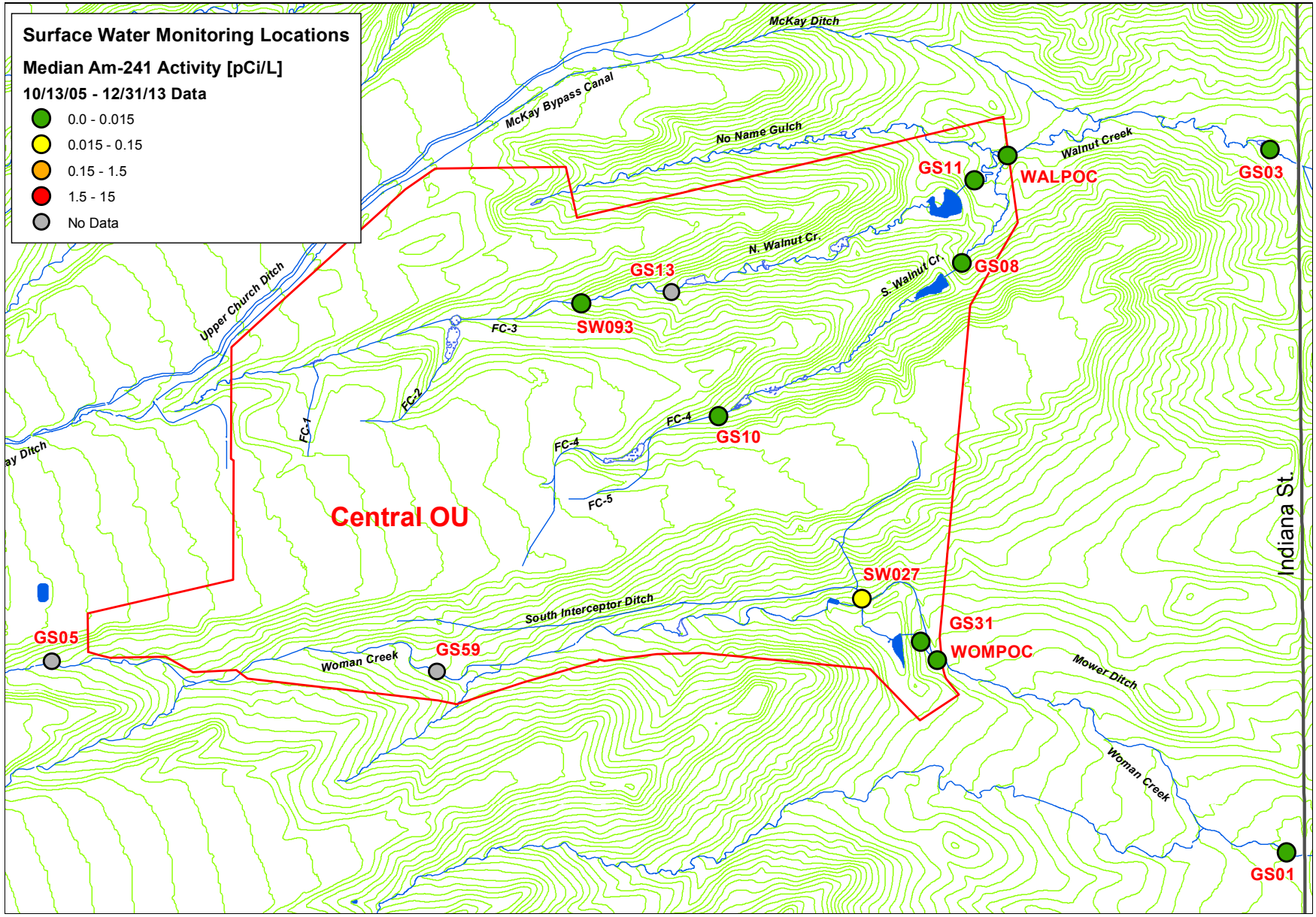
| Location | Samples (N) | Median (pCi/L) | 85th Percentile (pCi/L) | Maximum (pCi/L) |
|---|---|---|---|---|
| **GS01** | **113** | **0.001** | **0.006** | **0.057** |
| **GS03** | **88** | **0.002** | **0.008** | **0.036** |
| **WOMPOC** | **31** | **0.003** | **0.007** | **0.016** |
| **WALPOC** | **22** | **0.006** | **0.013** | **0.028** |
| GS05 | NA | NA | NA | NA |
| GS08 | 47 | 0.002 | 0.012 | 0.065 |
| **GS10** | **139** | **0.014** | **0.147** | **8.41** |
| GS11 | 49 | 0.003 | 0.008 | 0.027 |
| GS13 | NA | NA | NA | NA |
| GS31 | 22 | 0.002 | 0.007 | 0.041 |
| GS59 | NA | NA | NA | NA |
| **SW027** | **11** | **0.016** | **0.045** | **0.053** |
| **SW093** | **127** | **0.004** | **0.016** | **0.357** |

**Notes:** WOMPOC and WALPOC began operation on September 28, 2011, and September 9, 2011, respectively.
NA = Analyte not sampled
**Bold** = POC or POE




**Notes:** Only locations with four or more results are mapped.

*Figure 141. Median Am-241 Activities for CY 1997—October 13, 2005*




**Notes:** Only locations with four or more results are mapped.

*Figure 142. Post-Closure Median Am-241 Activities*

Table 65 and Table 66 show that post-closure median total U concentrations for all locations do not exceed the RFLMA standard of 16.8 µg/L. Recent data from several locations show total U levels in excess of 16.8 µg/L. These measurements are influenced by contributions of naturally occurring U in groundwater and hydrologic changes post-closure. Although the Site standard is 16.8 µg/L, it should be noted that the drinking water standard (i.e., the MCL) is 30 µg/L. Figure 143 and Figure 144 show median total U activities for pre- and post-closure, respectively.

*Table 65. Pre-Closure Summary Statistics for Total U Analytical Results (January 1, 1997–October 13, 2005)*

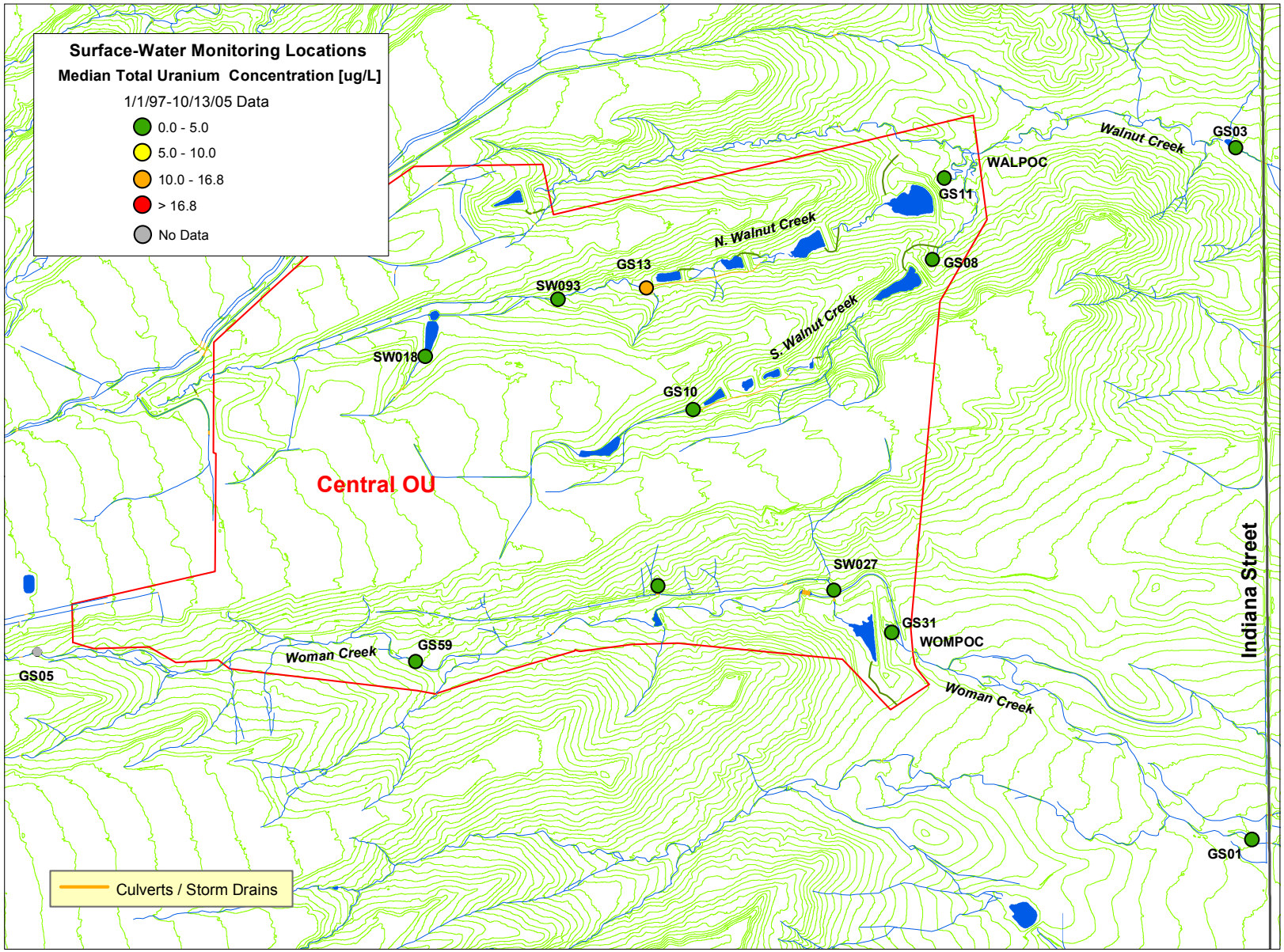
| Location | Samples (N) | Median (µg/L) | 85th Percentile (µg/L) | Maximum (µg/L) |
|---|---|---|---|---|
| **GS01** | **53** | **4.29** | **6.51** | **11.9** |
| **GS03** | **78** | **2.37** | **4.48** | **7.64** |
| **WOMPOC** | **NA** | **NA** | **NA** | **NA** |
| **WALPOC** | **NA** | **NA** | **NA** | **NA** |
| GS05 | NA | NA | NA | NA |
| GS08 | 118 | 1.83 | 3.09 | 9.88 |
| **GS10** | **266** | **4.48** | **7.15** | **20.5** |
| GS11 | 89 | 3.00 | 4.29 | 5.62 |
| GS13 | 68 | 11.7 | 17.2 | 33.0 |
| GS31 | 26 | 3.48 | 4.22 | 6.27 |
| GS59 | 31 | 0.93 | 1.74 | 4.66 |
| **SW027** | **71** | **2.06** | **4.47** | **8.70** |
| **SW093** | **284** | **3.99** | **6.35** | **11.1** |

**Notes:** WOMPOC and WALPOC began operation on September 28, 2011, and September 9, 2011, respectively.
NA = Analyte not sampled
**Bold** type = POC or POE

*Table 66. Post-Closure Summary Statistics for Total U Analytical Results (October 13, 2005–December 31, 2013)*

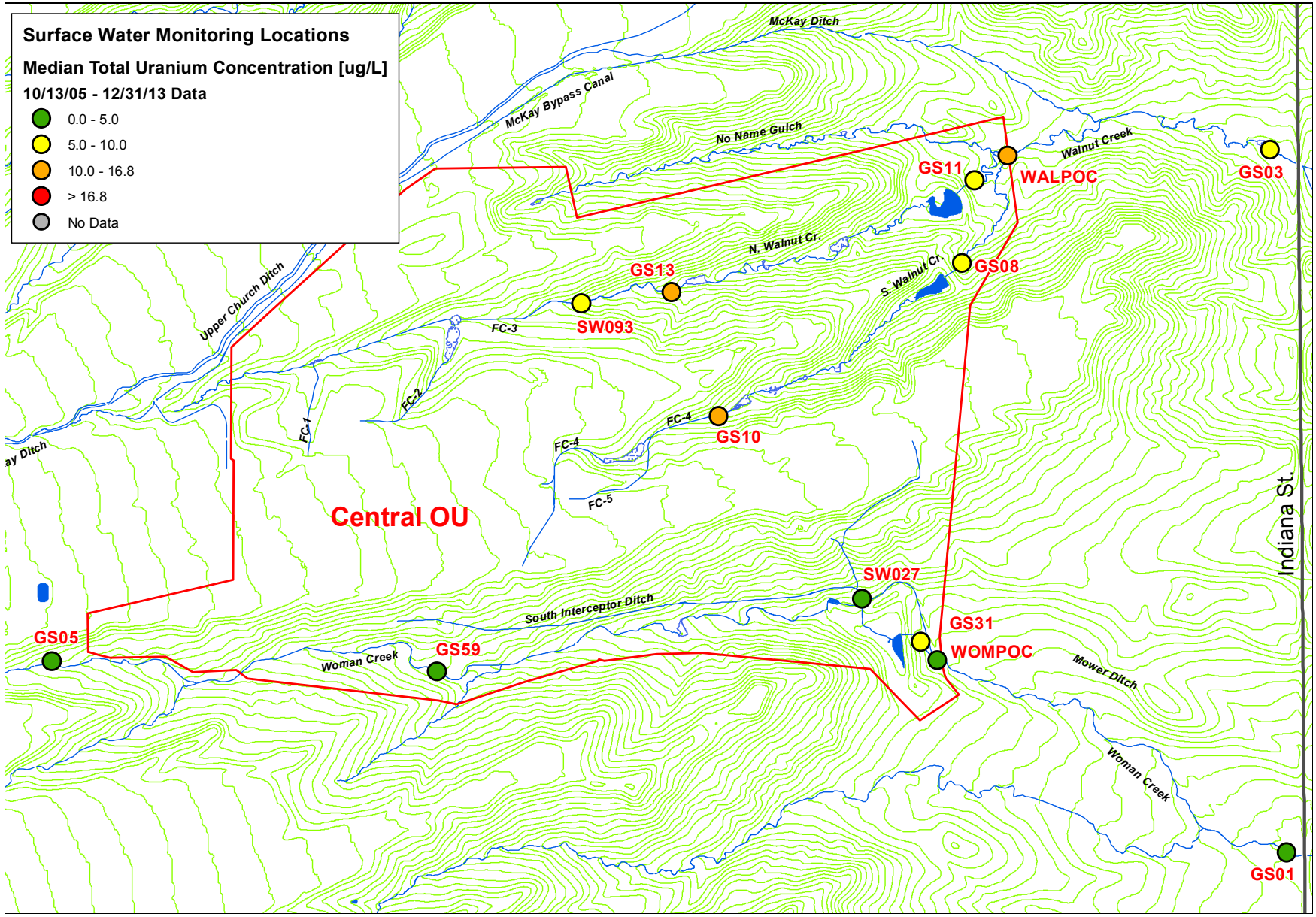
| Location | Samples (N) | Median (µg/L) | 85th Percentile (µg/L) | Maximum (µg/L) |
|---|---|---|---|---|
| **GS01** | **113** | **4.09** | **6.58** | **11.3** |
| **GS03** | **88** | **6.48** | **9.37** | **14.2** |
| **WOMPOC** | **31** | **3.29** | **5.01** | **7.11** |
| **WALPOC** | **22** | **11.5** | **14.2** | **18.8** |
| GS05 | 65 | 0.77 | 1.49 | 4.67 |
| GS08 | 47 | 8.64 | 13.8 | 17.2 |
| **GS10** | **139** | **16.8** | **27.9** | **89.2** |
| GS11 | 49 | 7.22 | 12.0 | 17.5 |
| GS13 | 104 | 15.5 | 38.5 | 63.6 |
| GS31 | 23 | 5.01 | 8.18 | 13.3 |
| GS59 | 62 | 1.38 | 2.20 | 9.30 |
| **SW027** | **11** | **3.24** | **5.80** | **7.07** |
| **SW093** | **127** | **7.22** | **11.4** | **23.4** |

**Notes:** WOMPOC and WALPOC began operation on September 28, 2011, and September 9, 2011, respectively.
NA = Analyte not sampled
**Bold** = POC or POE




**Notes:** Only locations with four or more results are mapped.

*Figure 143. Median Total U Concentrations for CY 1997—October 13, 2005*




**Notes:** Only locations with four or more results are mapped.

*Figure 144. Post-Closure Median Total U Concentrations*

Table 67 and Figure 145 show that post-closure median nitrate concentrations for most locations are below the standard of 10 mg/L. Location GS13 clearly shows the effects of the former Solar Ponds.

*Table 67. Post-Closure Summary Statistics for Nitrate+Nitrite as Nitrogen Analytical Results (October 13, 2005–December 31, 2013)*

| Location | Samples (N) | Median (mg/L) | 85th Percentile (mg/L) | Maximum (mg/L) |
|---|---|---|---|---|
| **GS03** | **63** | **0.78** | **3.70** | **6.70** |
| **WALPOC** | **22** | **0.72** | **3.87** | **7.69** |
| GS11 | 50 | 1.53 | 7.10 | 9.90 |
| GS13 | 115 | 24.0 | 57.7 | 140 |

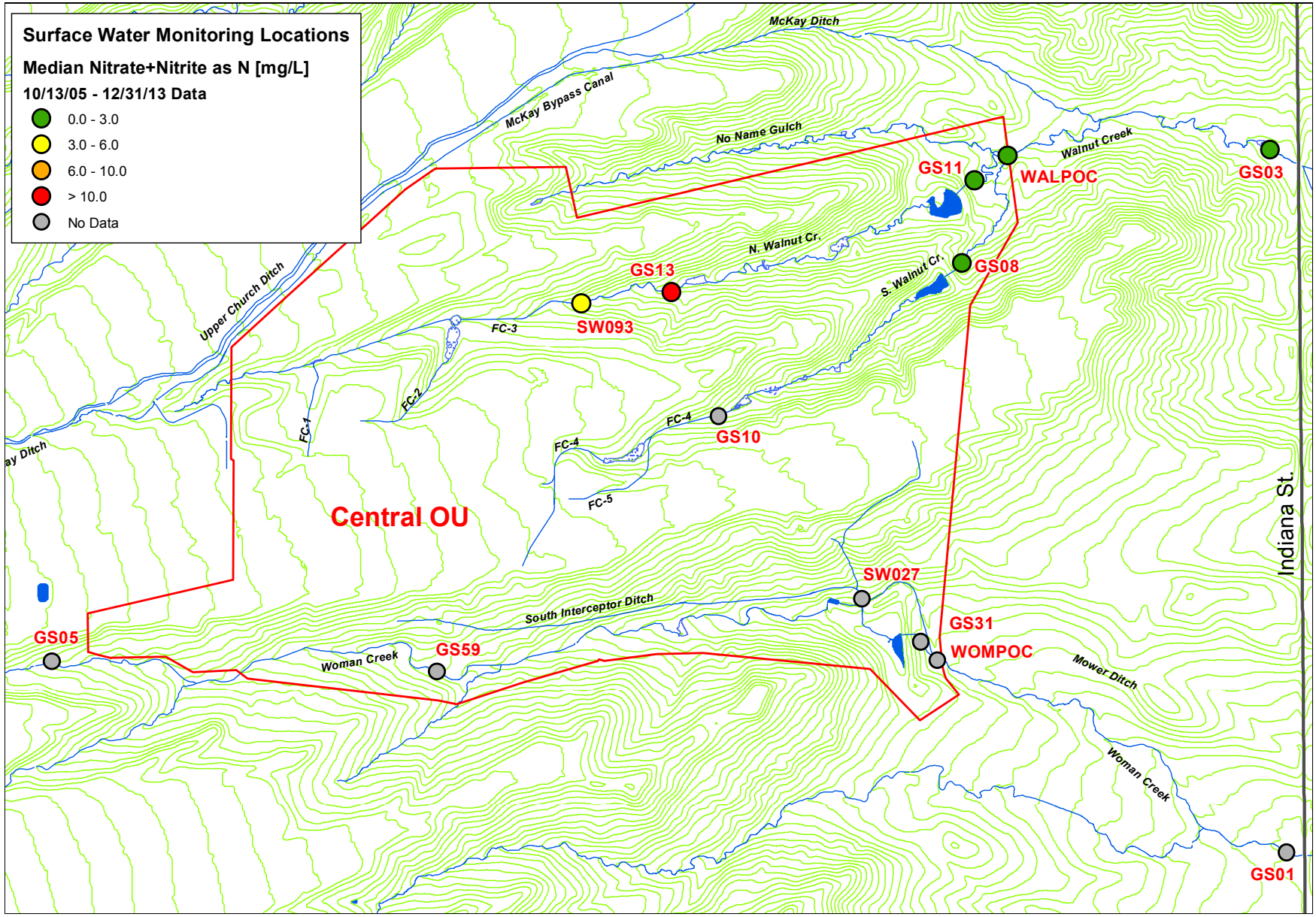
**Notes:** WALPOC began operation on September 9, 2011.
**Bold** = POC or POE

Table 68 and Table 69 list the average Pu/Am activity ratios for locations where samples are analyzed for Pu and Am. A ratio greater than one indicates Pu activity in excess of Am activity. Conversely, a ratio less than one indicates Am activity in excess of Pu activity. Generally, Pu activities are greater than Am activities in surface water at the Site. Post-closure data show patterns similar to those of pre-closure data. With the recent reportable values at GS10, the ratio there has shifted measurably towards americium. Figure 146 and Figure 147 present pre- and post-closure average Am/Pu ratios, respectively.

*Table 68. Pre-Closure Average Pu/Am Ratios for Analytical Results (January 1, 1997–October 13, 2005)*

| Location | Samples (N)[a] | Average Pu/Am Ratio |
|---|---|---|
| **GS01** | **1** | **1.5** |
| **GS03** | **14** | **2.1** |
| **WOMPOC** | **NA** | **NA** |
| **WALPOC** | **NA** | **NA** |
| GS05 | NA | NA |
| GS08 | 5 | 8.9 |
| **GS10** | **196** | **1.3** |
| GS11 | [b] | [b] |
| GS13 | NA | NA |
| GS31 | 4 | 3.9 |
| GS59 | [b] | [b] |
| **SW027** | **26** | **4.9** |
| **SW093** | **95** | **1.8** |

**Notes: Bold** = POC or POE
NA = Analyte not sampled
WOMPOC and WALPOC began operation on September 28, 2011, and September 9, 2011, respectively.
[a] Number of samples in which both Pu and Am activities were greater than 0.015 pCi/L
[b] No results greater than 0.015 pCi/L




**Notes:** Only locations with four or more results are mapped.

*Figure 145. Post-Closure Median Nitrate+Nitrite as Nitrogen Concentrations*

*Table 69. Post-Closure Average Pu/Am Ratios for Analytical Results (October 13, 2005–December 31, 2013)*

| Location | Samples (N)[a] | Average Pu/Am Ratio |
|---|---|---|
| **GS01** | [b] | [b] |
| **GS03** | **4** | **1.3** |
| **WOMPOC** | [b] | [b] |
| **WALPOC** | **2** | **1.1** |
| GS05 | NA | NA |
| GS08 | 3 | 1.8 |
| **GS10** | **52** | **0.8** |
| GS11 | 1 | 1.2 |
| GS13 | NA | NA |
| GS31 | 1 | 2.2 |
| GS59 | NA | NA |
| **SW027** | **6** | **5.0** |
| **SW093** | **12** | **2.1** |

**Notes: Bold** = POC or POE
NA = Analyte not sampled
WOMPOC and WALPOC began operation on September 28, 2011, and September 9, 2011, respectively.
[a] Number of samples in which both Pu and Am activities were greater than 0.015 pCi/L
[b] No results greater than 0.015 pCi/L

## *POE Metals*

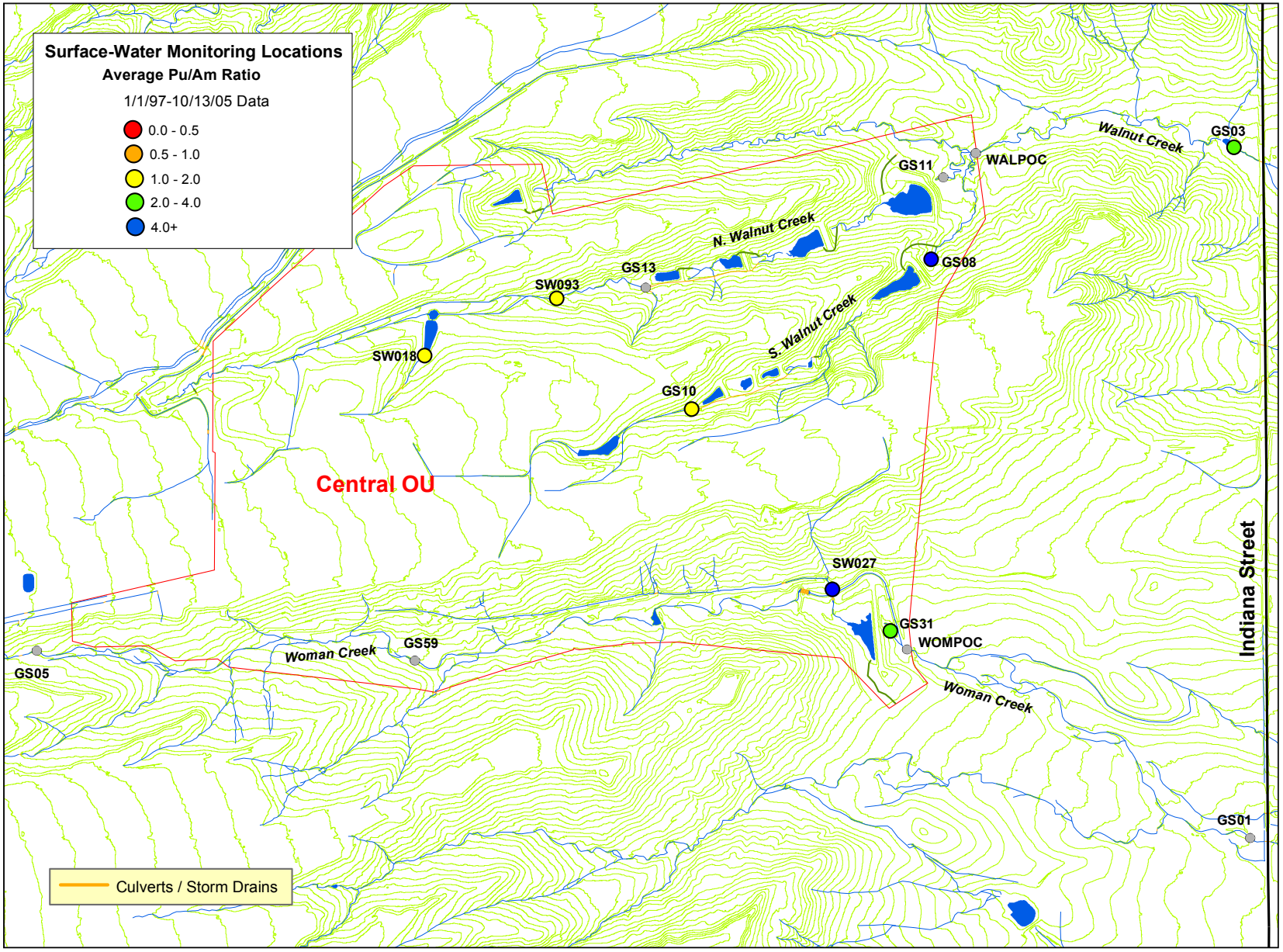
The following summaries include all results that were not rejected through the validation process. Data are generally presented to decimal places as reported by the laboratories. Accuracy should not be inferred; minimum detectable concentrations and analytical errors are often greater than the precision presented. When a nondetect is returned from the laboratory for metals analyses, one-half the detection limit is used for calculations. When a sample has a corresponding field duplicate, the value used in calculations is the arithmetic average of the "real" value and the "duplicate."[15] When a sample has multiple "real" analyses (Site-requested "reruns"), the value used in calculations is the arithmetic average of the multiple "real" analyses.

Table 70, Table 71, Table 72, Table 73, Table 74, and Table 75 present summary statistics for the POE metals. All three POEs generally show reduced metals concentrations post-closure.

*Table 70. Pre-Closure Summary Statistics for POE Metals Results from GS10 (January 1, 1997–October 13, 2005)*

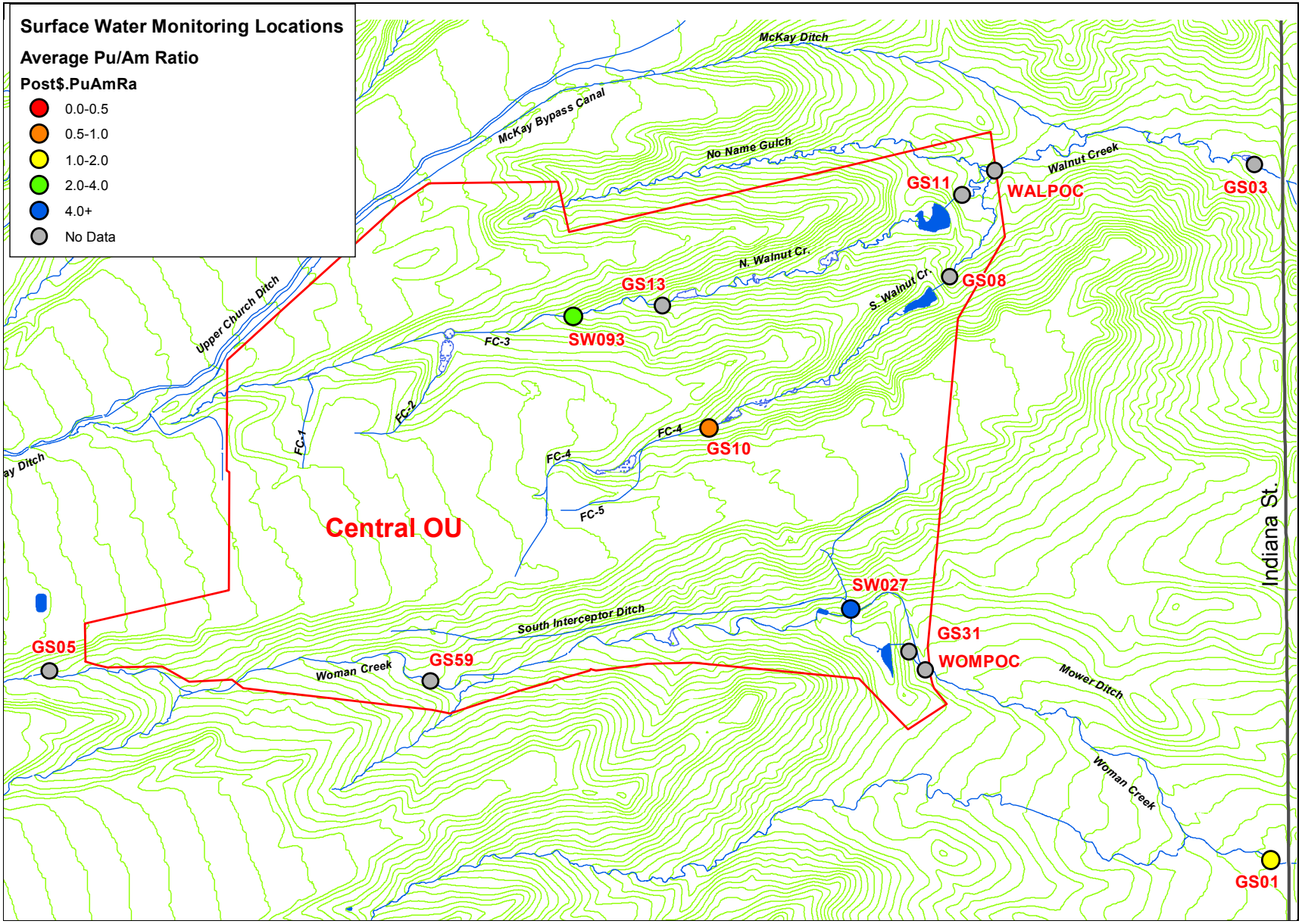
| Analyte | Samples (N) | Nondetect | Median (µg/L) | 85th Percentile (µg/L) | Maximum (µg/L) |
|---|---|---|---|---|---|
| Total Be | 263 | 32.3% | 0.12 | 0.63 | 3.40 |
| Dissolved Cd | 259 | 59.1% | 0.05 | 0.15 | 1.00 |
| Total Cr | 264 | 13.3% | 2.40 | 9.72 | 80.10 |
| Dissolved Ag | 258 | 88.8% | 0.11 | 0.18 | 1.10 |

[15] Arithmetic averaging of metal pairs is performed only when the RPD is less than 100 percent. If the RPD is greater than or equal to 100 percent, the metal results are determined to be nonrepresentative. The results are then not used for the calculation of summary statistics.




**Notes:** Only locations with four or more results are mapped.

*Figure 146. Average Pu/Am Ratios for CY 1997—October 13, 2005*




**Notes:** Only locations with four or more results are mapped.

*Figure 147. Post-Closure Average Pu/Am Ratios*

*Table 71. Post-Closure Summary Statistics for POE Metals Results from GS10 (October 13, 2005–December 31, 2013)*

| Analyte | Samples (N) | Nondetect | Median (µg/L) | 85th Percentile (µg/L) | Maximum (µg/L) |
|---|---|---|---|---|---|
| Total Be | 139 | 100.0% | 0.50 | 0.50 | 0.50 |
| Dissolved Cd | 139 | 94.2% | 0.06 | 0.06 | 0.34 |
| Total Cr | 139 | 76.3% | 0.50 | 1.56 | 8.02 |
| Dissolved Ag | 139 | 98.6% | 0.10 | 0.10 | 0.27 |

*Table 72. Pre-Closure Summary Statistics for POE Metals Results from SW027 (January 1, 1997–October 13, 2005)*

| Analyte | Samples (N) | Nondetect | Median (µg/L) | 85th Percentile (µg/L) | Maximum (µg/L) |
|---|---|---|---|---|---|
| Total Be | 70 | 45.7% | 0.09 | 0.41 | 1.30 |
| Dissolved Cd | 70 | 68.6% | 0.05 | 0.13 | 0.70 |
| Total Cr | 70 | 8.6% | 1.70 | 4.03 | 31.2 |
| Dissolved Ag | 68 | 85.3% | 0.12 | 0.24 | 0.72 |

*Table 73. Post-Closure Summary Statistics for POE Metals Results from SW027 (October 13, 2005–December 31, 2013)*

| Analyte | Samples (N) | Nondetect | Median (µg/L) | 85th Percentile (µg/L) | Maximum (µg/L) |
|---|---|---|---|---|---|
| Total Be | 11 | 100.0% | 0.50 | 0.50 | 0.50 |
| Dissolved Cd | 10 | 100.0% | 0.06 | 0.06 | 0.06 |
| Total Cr | 11 | 54.5% | 1.00 | 1.72 | 2.15 |
| Dissolved Ag | 10 | 100.0% | 0.10 | 0.10 | 0.10 |

*Table 74. Pre-Closure Summary Statistics for POE Metals Results from SW093 (January 1, 1997–October 13, 2005)*

| Analyte | Samples (N) | Nondetect | Median (µg/L) | 85th Percentile (µg/L) | Maximum (µg/L) |
|---|---|---|---|---|---|
| Total Be | 284 | 35.2% | 0.11 | 0.55 | 2.10 |
| Dissolved Cd | 284 | 68.7% | 0.05 | 0.14 | 2.20 |
| Total Cr | 283 | 16.3% | 2.00 | 7.40 | 34.90 |
| Dissolved Ag | 280 | 89.6% | 0.10 | 0.18 | 1.03 |

*Table 75. Post-Closure Summary Statistics for POE Metals Results from SW093 (October 13, 2005–December 31, 2012)*

| Analyte | Samples (N) | Nondetect | Median (µg/L) | 85th Percentile (µg/L) | Maximum (µg/L) |
|---|---|---|---|---|---|
| Total Be | 127 | 100.0% | 0.50 | 0.50 | 0.50 |
| Dissolved Cd | 127 | 92.1% | 0.06 | 0.06 | 1.06 |
| Total Cr | 127 | 69.3% | 0.50 | 1.71 | 25.7 |
| Dissolved Ag | 127 | 100.0% | 0.10 | 0.10 | 0.10 |

### *3.1.4.2 Surface-Water Loading Analysis*

This section provides a summary of radionuclide loads (Am, Pu, and total U) for RFLMA POEs and POCs. In September 2011, the two new COU boundary POCs (WALPOC and WOMPOC) became operational. At the same time, locations GS08, GS11, and GS31 were discontinued as POCs. Locations GS01 and GS03 were operated and evaluated as POCs through September 8, 2013, and September 27, 2013, respectively. All five of these locations continue to operate to provide data for the Adaptive Management Plan, and are included in this section. The locations included in this section all collect continuous flow-paced composite samples for laboratory analysis. The nature of the continuous sampling during all flow conditions allows for more accurate load estimations compared to storm-event or grab sampling.

As mentioned in previous sections, the Site experienced very high flows during the second week of September 2013. In some cases the high flows and debris caused damage to the automated sampling equipment, resulting in temporary interruptions in composite sampling. At almost all locations, the unanticipated runoff volumes caused flow-paced composite bottles to fill before personnel could safely replace them with empty bottles. Access to various areas of the Site was unsafe and restricted by local authorities during certain periods.

Due to the interruptions in automated sampling and the corresponding lack of analytical data, for comparison purposes the start of the high runoff (generally late on September 11) through September 13, 2013, is not included in the evaluation in this section. Additionally, some data are estimated for the comparisons herein; under normal RFLMA data evaluation protocols, these estimated data would not be included.

This loading analysis should not be confused with the regulatory evaluation under RFLMA for POCs and POEs. RFLMA evaluation is based on water activity or concentration (i.e., pCi/L or µg/L, respectively) in comparison to applicable surface-water standards (see Section 3.1.2.1 and Section 3.1.2.2). This loading analysis is presented to show changes in the transport of Pu, Am, and U following Site closure. These changes in load, in conjunction with the RFLMA required evaluation, can be used to support conclusions regarding the relative success and continued performance of the remedy.

To calculate load, the activity for each composite sample (pCi/L) is multiplied by the corresponding stream discharge (liters [L]) during the composite sample period, to yield the load (picocuries [pCi]). The total pCi value is then converted to micrograms (µg) using the conversion factors in Table 76.[16] A detailed description of the method for load estimation is given in Appendix B.[17]

[16] In the following tables and plots, values are rounded for presentation.
[17] Data are generally presented at varying precision for presentation. Accuracy should not be inferred; both analytical and flow measurement error have not been quantified in this report.

*Table 76. Activity to Mass Conversion Factors for Pu, Am, and U Isotopes*

| Analyte | Mass/Activity (grams/curie) |
|---|---|
| Pu-239, 240 | 14.085 |
| Am-241 | 0.292 |
| U-233,234 | 1.6 E+02 |
| U-235 | 4.63 E+05 |
| U-238 | 2.98 E+06 |

**Notes:** Starting on April 1, 2009, uranium was analyzed as total uranium in μg/L.

The Pu-239, 240 conversion factor was derived from Table 2.7.2-2 in the April 1980 *Final Environmental Impact Statement (Final Statement to ERDA 1545-D)*, Rocky Flats Plant Site. The conversion factors for Am-241, U-233,234, U-235, and U-238 were taken from Title 40 *Code of Federal Regulations* Part 302.4 (40 CFR 302.4), Appendix B, October 7, 2000.[18]

### *Overall Site and Refuge Area*

This section summarizes the calculated overall Pu, Am, and U loads for selected locations. Total U data collection began at GS01 and GS03 just prior to CY 2003; therefore, only CY 2003–2013 data are shown for uranium. POC locations WALPOC and WOMPOC were installed in September 2011. These locations will be included in this section next year when more data are available. The following points are noted:

- Figure 148, Figure 149, Figure 150, and Figure 151 show a significant reduction in average annual Pu and Am loads and activities from the COU, the terminal ponds, and Walnut Creek at Indiana Street post-closure. The load reductions are between 58 percent and 97 percent for all Walnut Creek locations affected directly by the former IA. Similarly, activity has been reduced between 20 percent and 91 percent at all locations except GS11. The post-closure Pu and Am activities at GS11 are approximately 0.002 pCi/L and 0.001 pCi/L higher, respectively, than pre-closure. Although these differences are well within the error for radionuclide analysis, these increases are attributed to higher activities observed during the extremely high flows in September 2013. The highest measured activity was 0.04 pCi/L Pu and 0.018 pCi/L Am during this period.
- For lower Woman Creek (GS01), however, post-closure loads are comparable to pre-closure loads. This is likely due to transport of diffuse, low-level contamination in the much larger flow volumes measured at GS01, especially during CY 2007, 2010, and 2013; GS01 is not significantly affected by the former IA. GS01 post-closure volume-weighted average Pu and Am activities of 0.007 and 0.003 pCi/L, respectively, are significantly below the RFLMA standard of 0.15 pCi/L and within the analytical measurement error for each analyte.
- For both Pu and Am, remedial actions, removal of impervious surfaces (reducing runoff), revegetation, and erosion control efforts have measurably improved water quality.
- Figure 152 and Figure 153 show a measurable increase in average annual total U concentration in Walnut Creek post-closure (77 percent–303 percent increase). This increase

[18] The U-234 conversion factor was used to represent U-233,234 due to the small relative abundance of U-233.

is primarily due to the reduction of runoff in streamflow and the corresponding proportional increase of groundwater seepage with relatively high concentrations of naturally occurring U. Conversely, the reduction in overall stream flows has actually resulted in decreased total U loads (21 percent–50 percent reduction) in Walnut Creek at all locations except GS10 (30 percent increase).

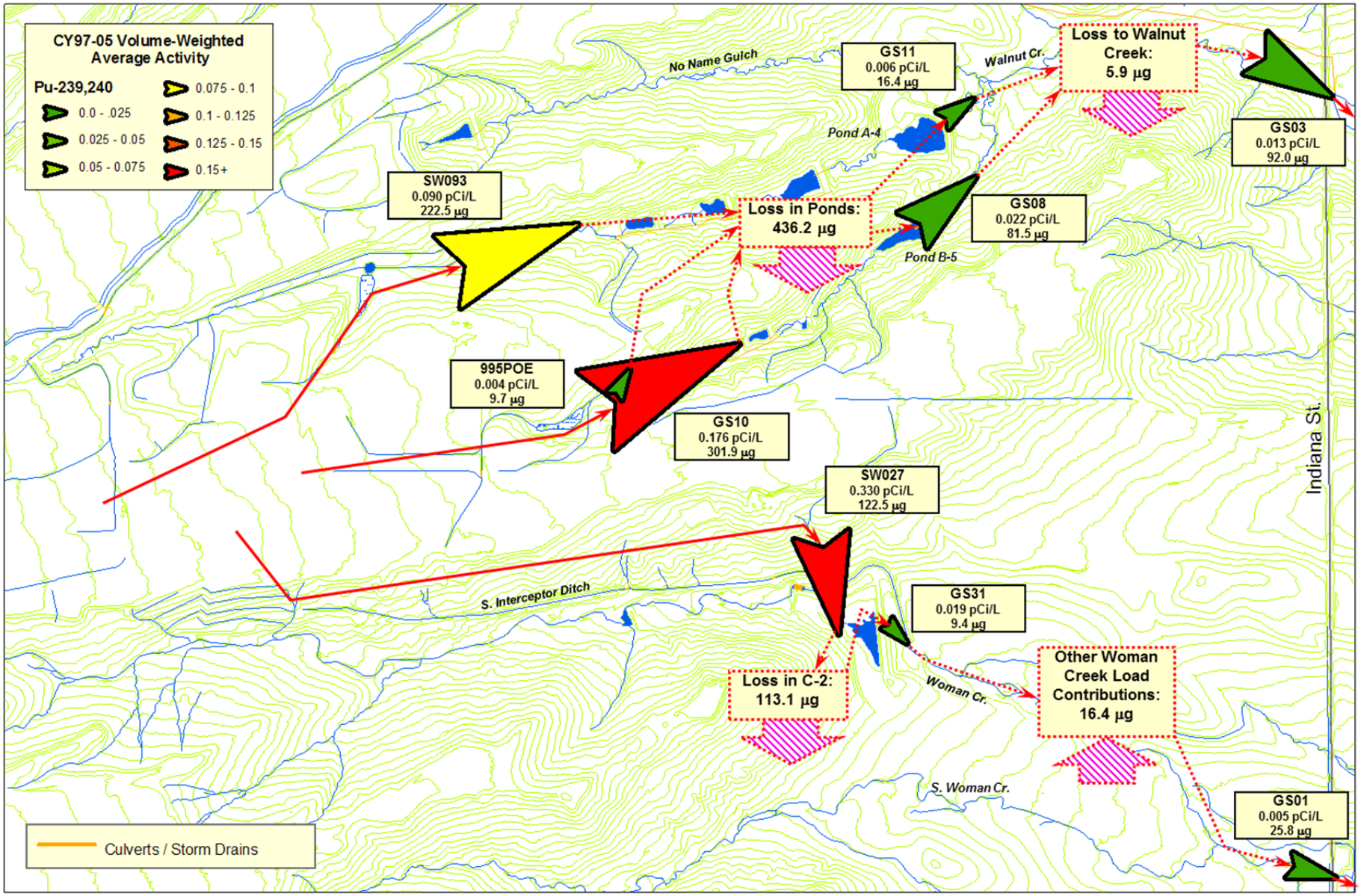
- For lower Woman Creek (GS01), U loads and concentrations have changed to a lesser extent (21 percent and 3 percent decrease, respectively). This is likely due to transport of naturally occurring U in the much larger flow volumes measured at GS01, a location not significantly affected by the former IA.

***Indiana Street POCs***

This section summarizes the calculated Pu, Am, and U loads from Walnut and Woman Creeks at Indiana Street. Total U data collection began at GS01 and GS03 just prior to CY 2003; therefore, only CY 2003–2013 data are shown for uranium. Figure 154, Figure 155, Figure 156, Figure 157, Figure 158, Figure 159, and Figure 160, as well as Table 77 and Table 78 present the load data. The following points are noted:

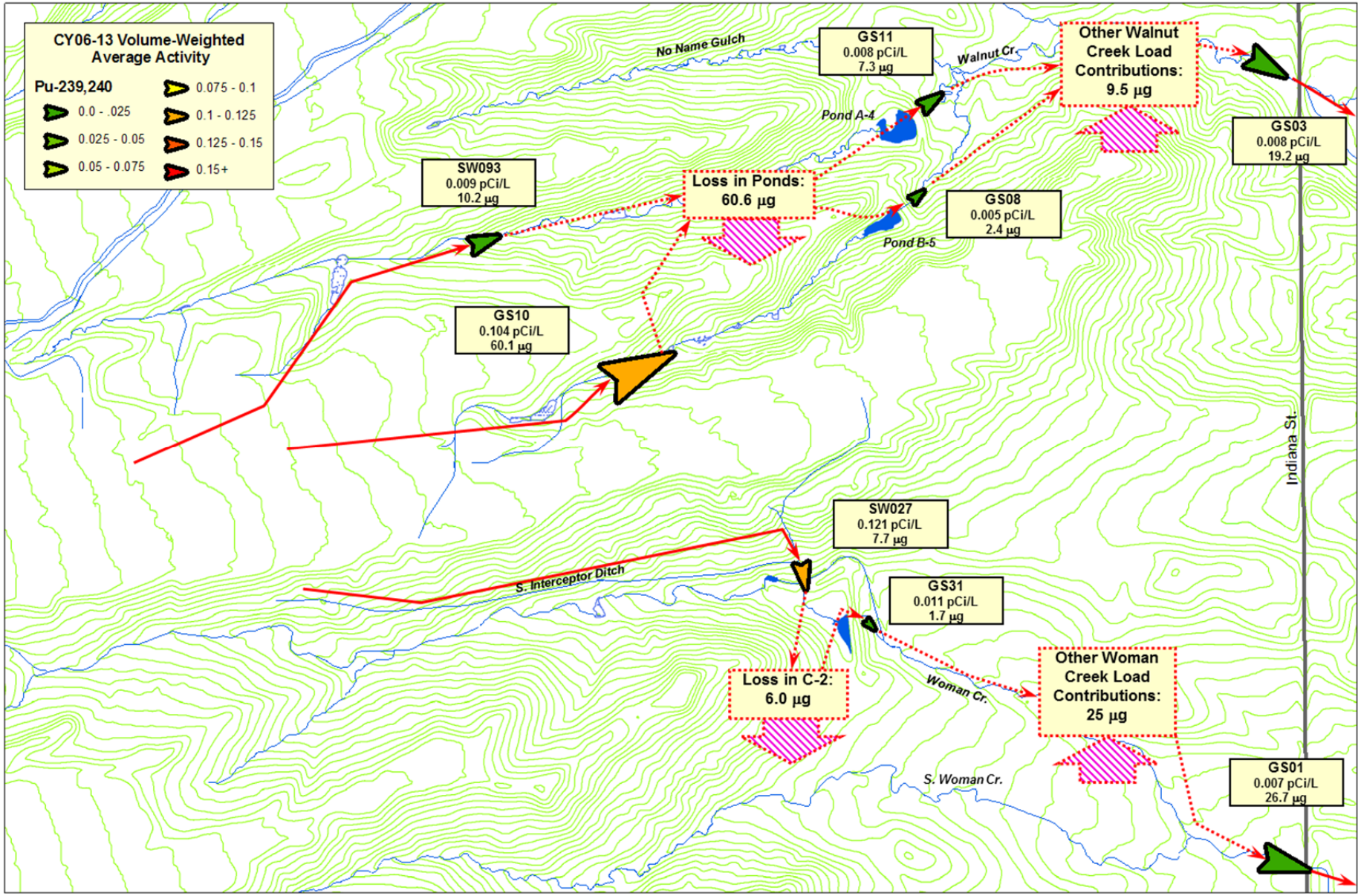
- Both Pu and Am loads have decreased in recent years as Site closure activities have reduced discharge volumes, reduced sediment transport, and eliminated source terms (Figure 154).
- The somewhat higher CY 2007 and CY 2010 Pu and Am loads in Woman Creek at Indiana Street (Figure 155 and Figure 157) can be attributed to high-flow volumes at GS01.[19] Post-closure average annual volume-weighted Pu and Am activities at GS01 are 0.007 and 0.003 pCi/L, respectively; these activities are within the analytical measurement error range.
- Similarly, the somewhat higher CY 2013 Pu and Am loads in both Woman and Walnut Creeks (Figure 155 and Figure 157) can be attributed to extremely high flow rates in September. Although measured activities did not exceed 0.15 pCi/L during this period, increases were observed as Pu and Am transport was enhanced by the high flows.
- Figure 156 and Figure 158 show a significant post-closure reduction in both Pu and Am loads in Walnut Creek at Indiana Street (79 percent and 80 percent, respectively).
- Walnut Creek accounts for nearly 80 percent of both the Pu (Figure 156) and Am (Figure 158) loads at Indiana Street pre-closure. However, post-closure Walnut Creek accounts for only 42–52 percent as a result of the reduction in runoff and transport due to the effectiveness of remedial actions, revegetation, and erosion control measures.
- Walnut Creek accounts for 61 percent of the pre-closure and 57 percent of the post-closure U loads at Indiana Street (Figure 159). Although U concentration has increased in Walnut Creek post-closure, reduced flow volumes have resulted in measurably decreased average annual loads comparable to pre-closure loads.

[19] Measured flow volumes at GS01 in CY 2007 were the highest recorded to date. These volumes are attributed to a combination of large snow events and extensive flood irrigation from Rocky Flats Lake. Volumes in CY 2010 were also well above average due to a large storm event in April 2010.



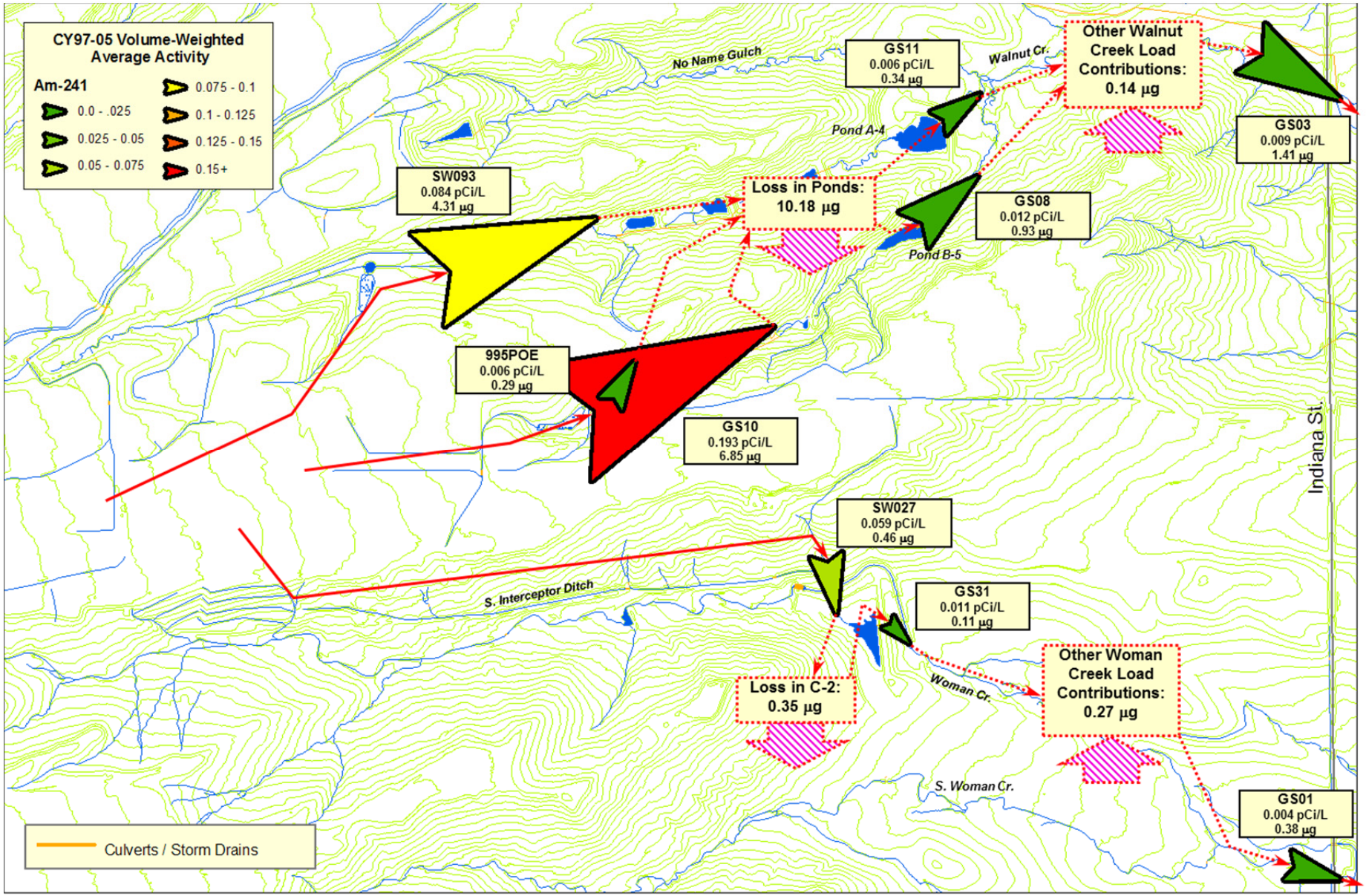

**Notes:** Location symbols are displayed proportional to calculated average annual load and colored according to activity ranges in legend.

*Figure 148. Relative Average Annual Pu Loading Schematic: CY 1997–2005*



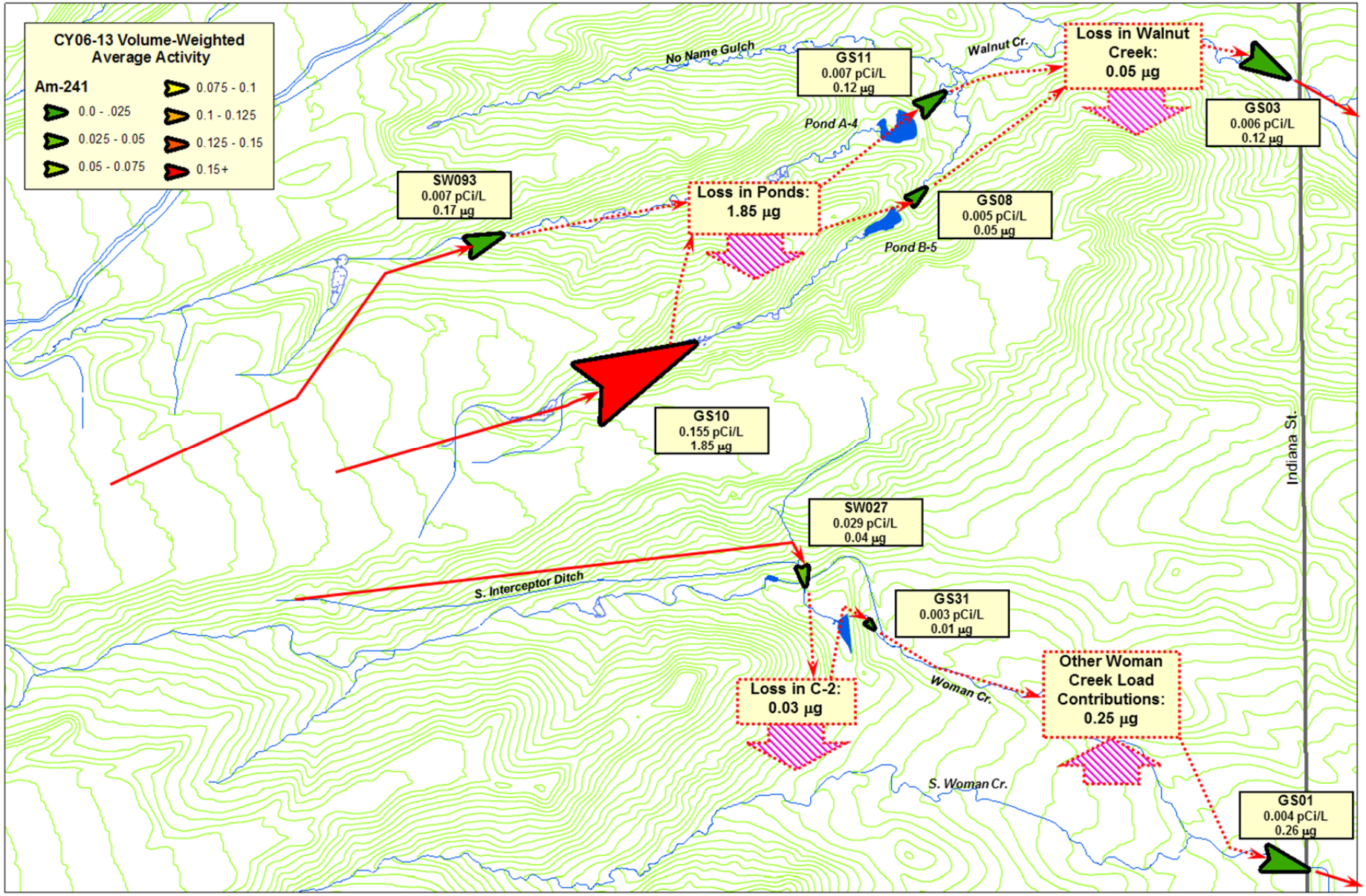

**Notes:** Location symbols are displayed proportional to calculated average annual load and colored according to activity ranges in legend.

*Figure 149. Relative Average Annual Pu Loading Schematic: CY 2006–2013*



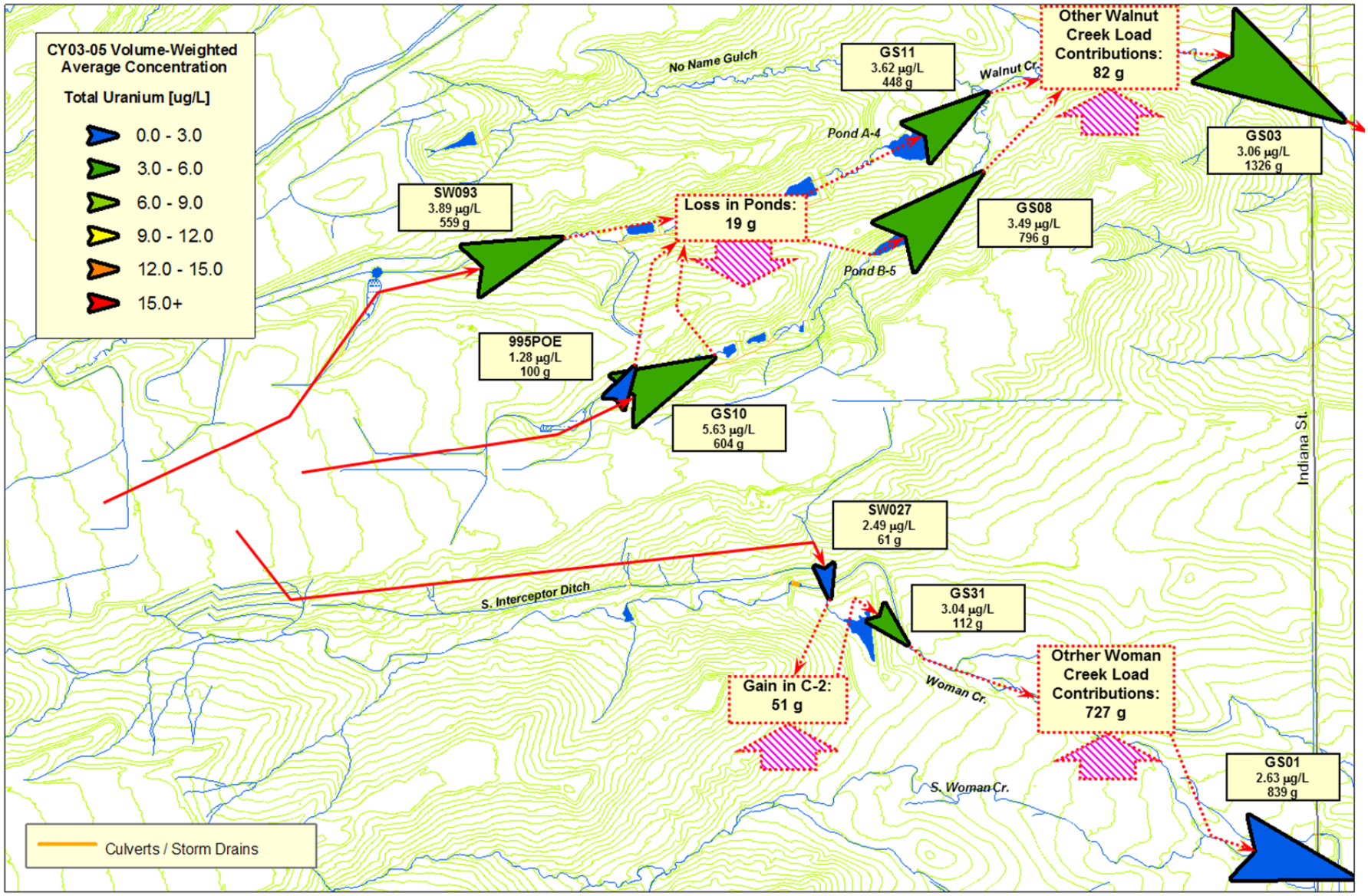

**Notes:** Location symbols are displayed proportional to calculated average annual load and colored according to activity ranges in legend.

*Figure 150. Relative Average Annual Am Loading Schematic: CY 1997–2005*



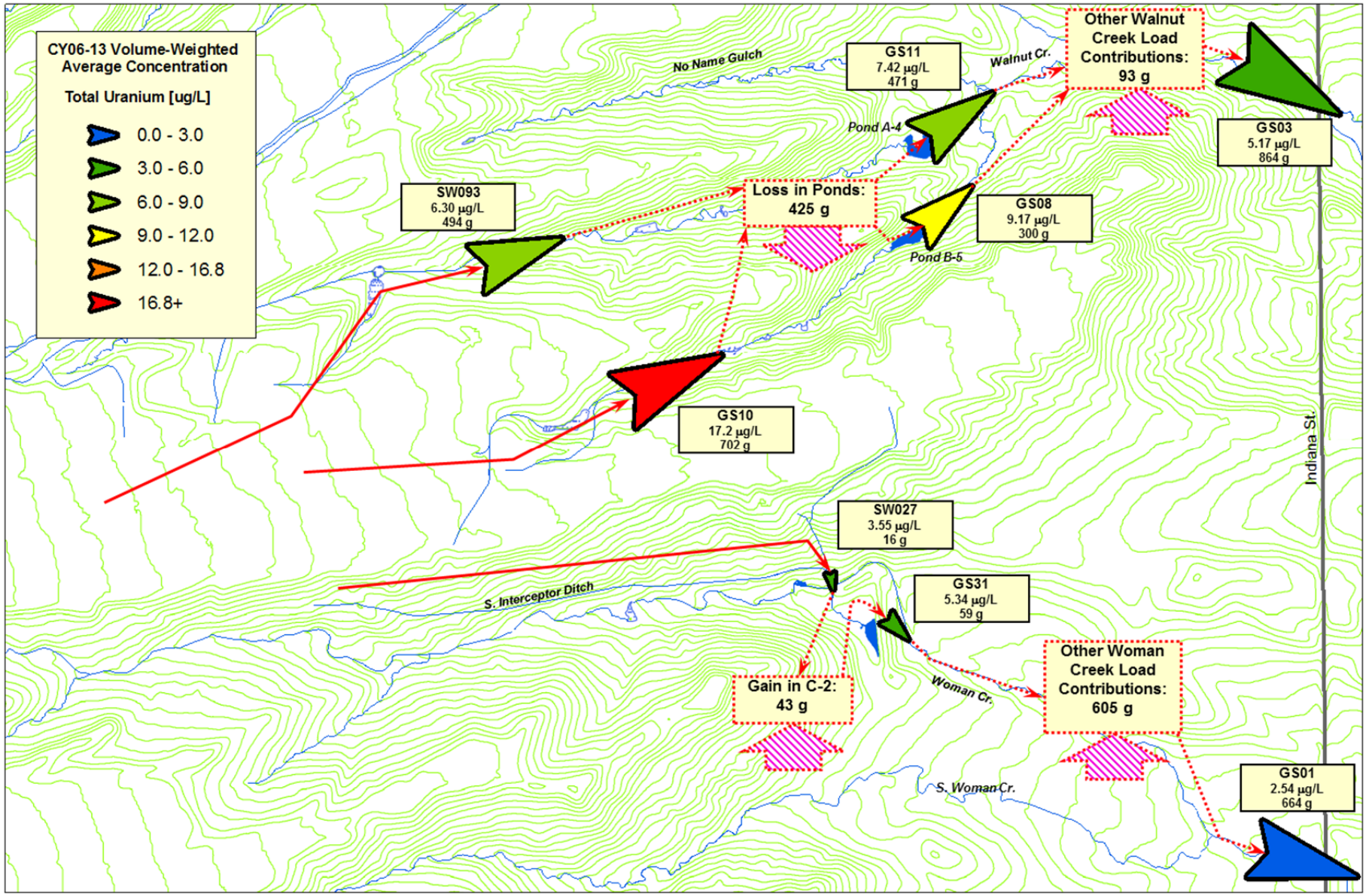

**Notes:** Location symbols are displayed proportional to calculated average annual load and colored according to activity ranges in legend.

*Figure 151. Relative Average Annual Am Loading Schematic: CY 2006–2013*




**Notes:** Location symbols are displayed proportional to calculated average annual load and colored according to concentration ranges in legend.

*Figure 152. Relative Average Annual Total U Loading Schematic: CY 2003–2005*




**Notes:** Location symbols are displayed proportional to calculated average annual load and colored according to concentration ranges in legend.

*Figure 153. Relative Average Annual Total U Loading Schematic: CY 2006–2013*

*Table 77. Pu and Am Loads from Walnut and Woman Creeks at Indiana Street: CY 1997–2013*

| Calendar Year | Pu-239, 240 (µg) | | | Am-241 (µg) | | |
|---|---|---|---|---|---|---|
| | Walnut Creek | Woman Creek | Total | Walnut Creek | Woman Creek | Total |
| 1997 | 262.4 | 47.9 | 310.3 | 2.99 | 0.40 | 3.39 |
| 1998 | 172.2 | 55.4 | 227.6 | 2.66 | 0.99 | 3.65 |
| 1999 | 150.2 | 56.7 | 206.9 | 1.83 | 0.75 | 2.57 |
| 2000 | 26.0 | 6.1 | 32.1 | 0.74 | 0.18 | 0.92 |
| 2001 | 58.6 | 22.4 | 81.0 | 0.63 | 0.30 | 0.93 |
| 2002 | 37.4 | 0.8 | 38.2 | 0.37 | 0.03 | 0.40 |
| 2003 | 57.6 | 25.9 | 83.5 | 1.07 | 0.34 | 1.41 |
| 2004 | 33.1 | 4.7 | 37.8 | 0.70 | 0.15 | 0.86 |
| 2005 | 30.3 | 12.5 | 42.8 | 1.67 | 0.30 | 1.97 |
| 2006 | 0.0; No Flow | 1.4 | 1.4 | 0.00; No Flow | 0.13 | 0.13 |
| 2007 | 17.2 | 68.0 | 85.1 | 0.12 | 0.49 | 0.60 |
| 2008 | 0.0; No Flow | 1.1 | 1.1 | 0.00; No Flow | 0.02 | 0.02 |
| 2009 | 9.5 | 26.7 | 36.2 | 0.16 | 0.23 | 0.39 |
| 2010 | 46.9 | 70.6 | 117.5 | 0.71 | 0.78 | 1.49 |
| 2011 | 3.2 | 5.2 | 8.4 | 0.08 | 0.12 | 0.20 |
| 2012 | 3.3 | 2.2 | 5.5 | 0.02 | 0.07 | 0.08 |
| 2013 | 73.5 | 38.5 | 111.9 | 1.13 | 0.26 | 1.39 |
| **Total** | 981.2 | 446.0 | 1,427.3 | 14.89 | 5.51 | 20.40 |

**Notes:** During CY 1997, flows from Woman Creek were routinely diverted to Mower Ditch for subsequent monitoring at GS02. Therefore, the load calculated for Woman Creek at Indiana Street (GS01) includes the water that was measured at GS02. The estimated load diverted to GS02 is calculated by multiplying the CY 1997 volume-weighted activities at GS01 by the streamflow volume measured at GS02, and converting for units. This diverted load is then added to the calculated load at GS01 to obtain the total CY 1997 load at GS01. For subsequent water years, the Mower diversion structure has been upgraded and configured to prevent Woman Creek flows from entering the Mower Ditch.

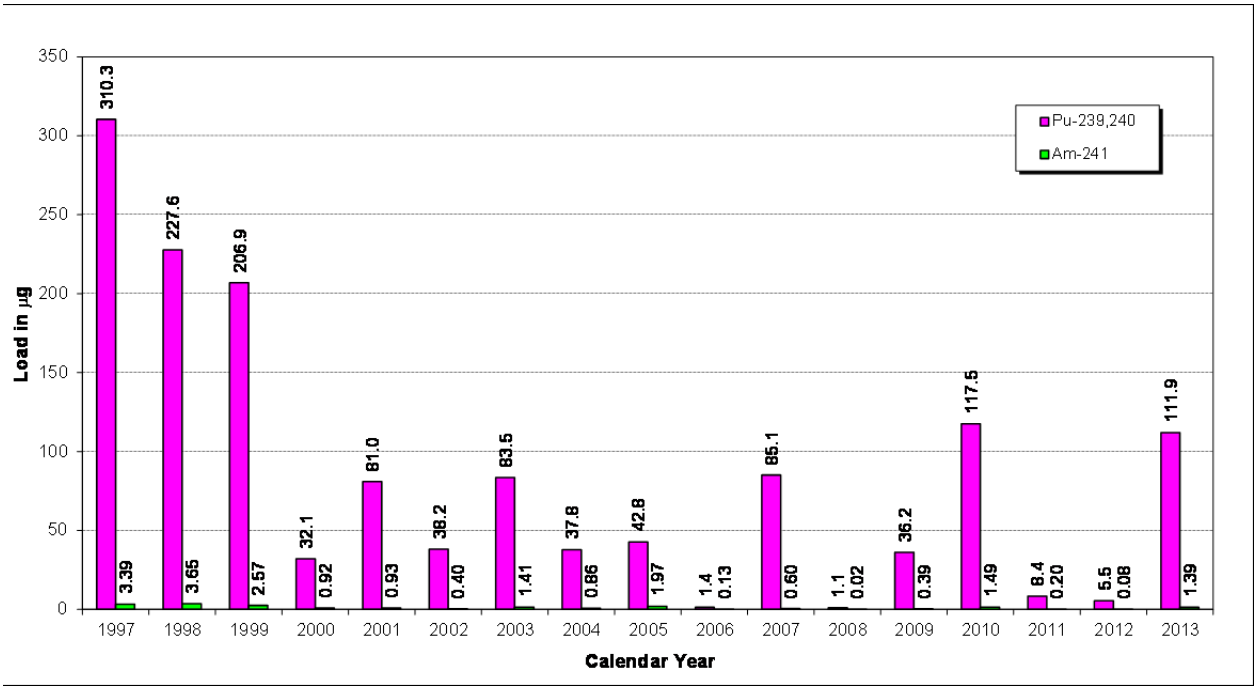



*Figure 154. Combined Annual Pu and Am Loads from Walnut and Woman Creeks at Indiana Street: CY 1997–2013*

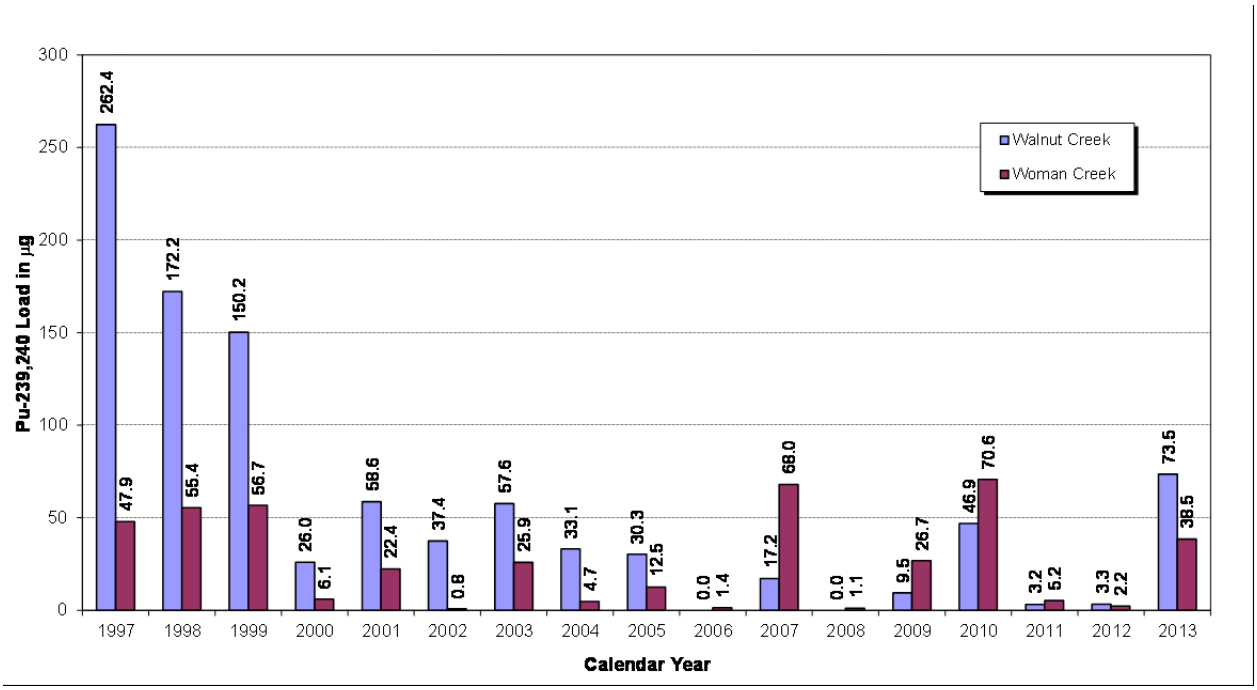
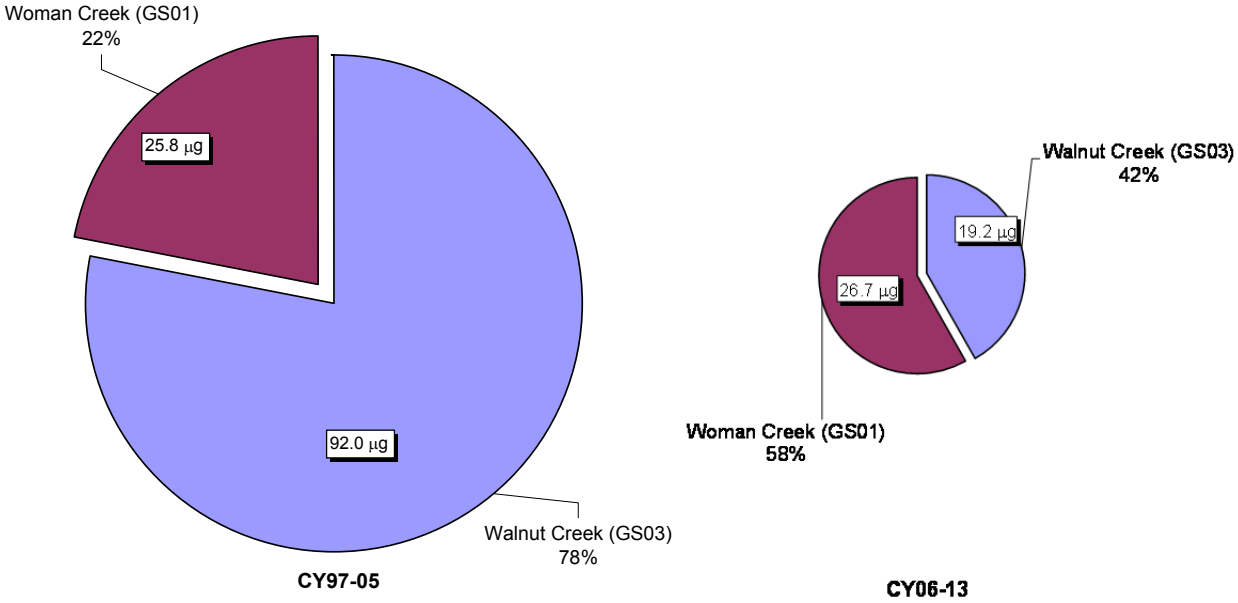



*Figure 155. Annual Pu Loads from Walnut and Woman Creeks at Indiana Street: CY 1997–2013*




**Notes:** Pie chart diameters are relative to total load.

*Figure 156. Relative Average Annual Pu Load Totals from Walnut and Woman Creeks at Indiana Street*

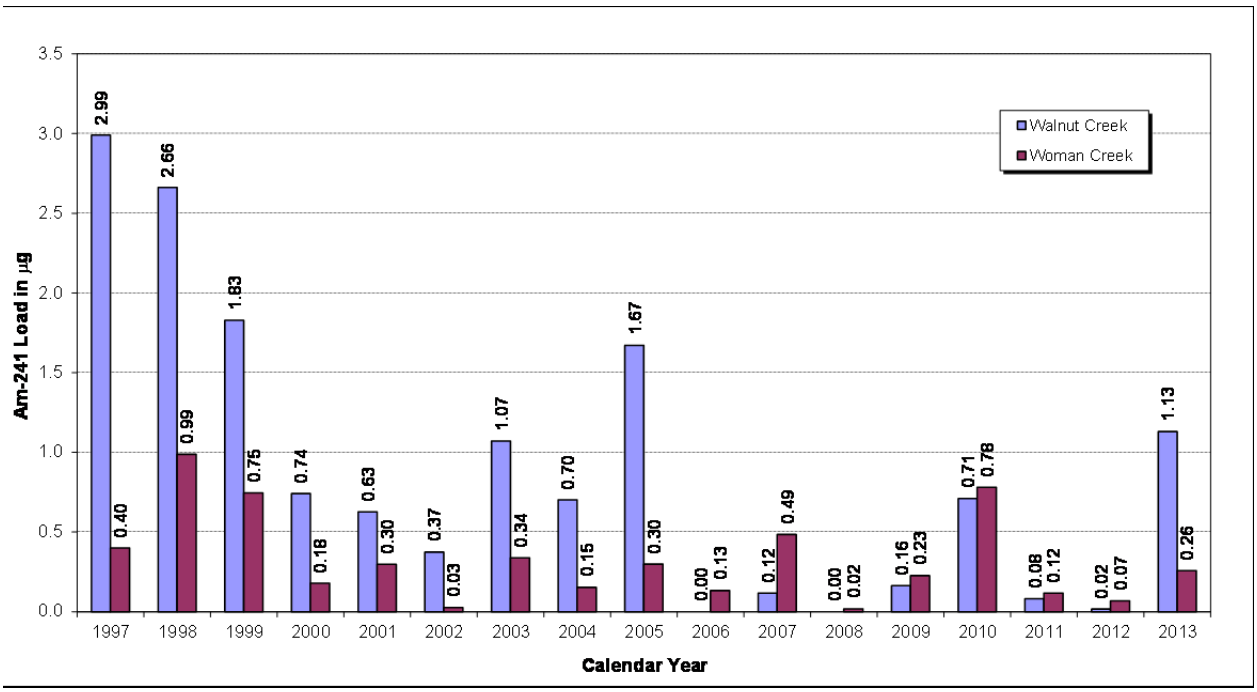
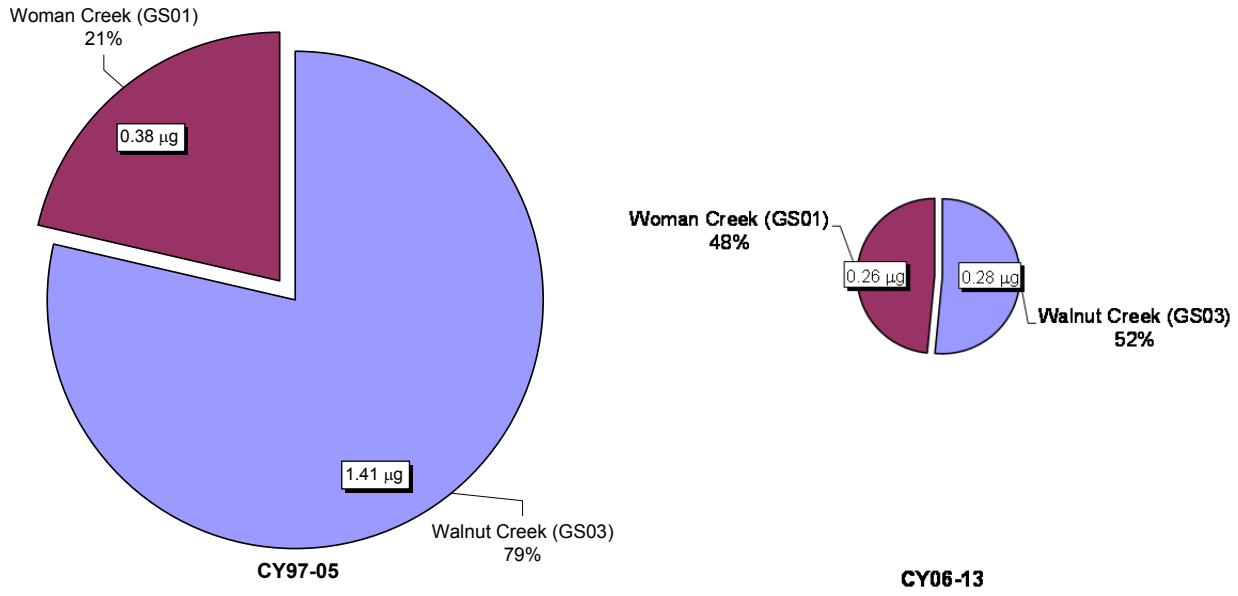



*Figure 157. Annual Am Loads from Walnut and Woman Creeks at Indiana Street: CY 1997–2013*




**Notes:** Pie chart diameters are relative to total load.

*Figure 158. Relative Average Annual Am Load Totals from Walnut and Woman Creeks at Indiana Street*

*Table 78. Total U Loads from Walnut and Woman Creeks at Indiana Street: CY 2003–2013*

| Calendar Year | Total U (g) | | |
|---|---|---|---|
| | Walnut Creek | Woman Creek | Total |
| 2003 | 1,751 | 790 | 2,541 |
| 2004 | 744 | 808 | 1,551 |
| 2005 | 1,482 | 918 | 2,400 |
| 2006 | 0; No flow | 235 | 235 |
| 2007 | 1,005 | 1,016 | 2,021 |
| 2008 | 0; No flow | 174 | 174 |
| 2009 | 725 | 761 | 1,486 |
| 2010 | 2,311 | 1,162 | 3,473 |
| 2011 | 696 | 609 | 1,305 |
| 2012 | 667 | 466 | 1,132 |
| 2013 | 1,508 | 889 | 2,397 |
| **Total** | 10,888 | 7,828 | 18,716 |

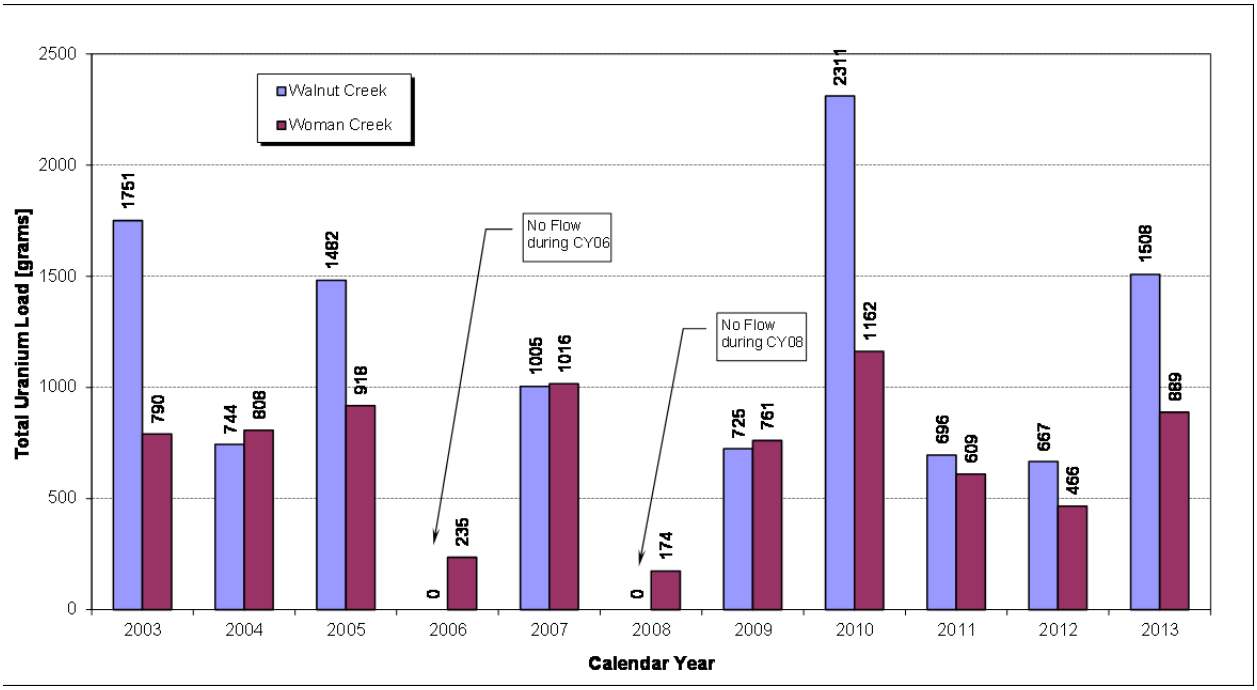
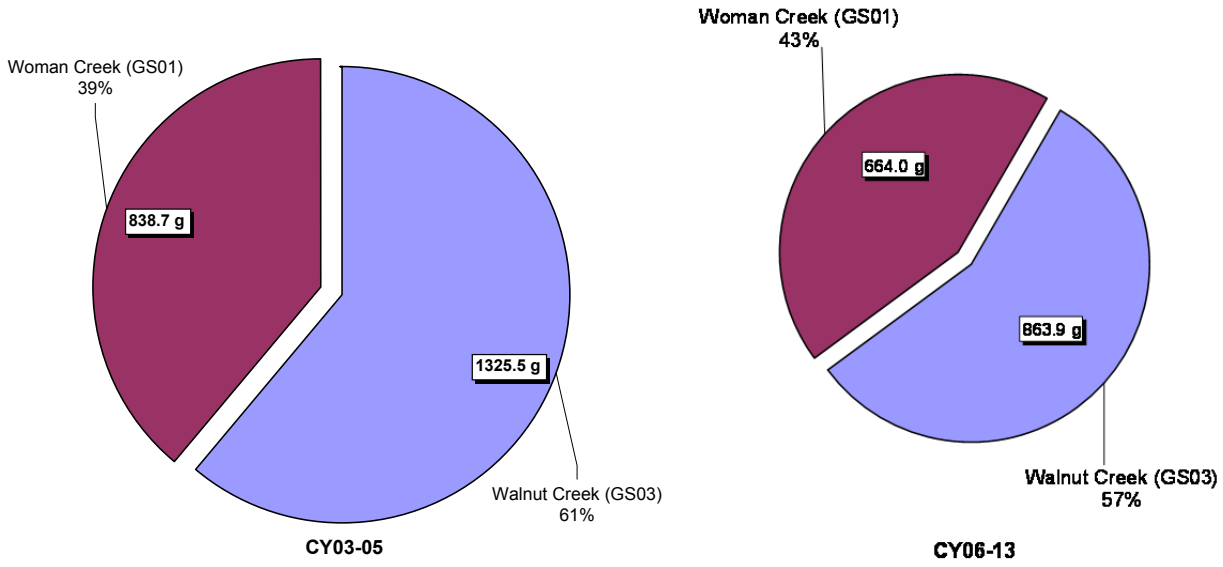



*Figure 159. Annual Total U Loads from Walnut and Woman Creeks at Indiana Street: CY 2003–2013*




**Notes:** Pie chart diameters are relative to total load.

*Figure 160. Relative Average Annual Total U Load Totals from Walnut and Woman Creeks at Indiana Street*

### *Central Operable Unit Boundary POCs (Site POCs)*

This section summarizes the calculated Pu, Am, and U loads from Walnut and Woman Creeks at the eastern COU boundary. POCs WALPOC and WOMPOC began operating in September 2011. Figure 161, Figure 162, Figure 163, and Figure 164, as well as Table 79 and Table 80 present the load data. POCs WALPOC and WOMPOC show both loads and activities/concentrations that are comparable to the downstream POCs at Indiana Street (GS03 and GS01; see next two sections).

*Table 79. Offsite Pu and Am Loads from Walnut and Woman Creeks at Site Boundary: CY 2011–2013*

| Calendar Year | Pu-239, 240 (µg) | | | Am-241 (µg) | | |
|---|---|---|---|---|---|---|
| | Walnut Creek | Woman Creek | Total | Walnut Creek | Woman Creek | Total |
| 2011 | 3.1[a] | 2.9[a] | 6.1 | 0.09[a] | 0.07[a] | 0.15 |
| 2012 | 4.6 | 4.9 | 9.4 | 0.04 | 0.04 | 0.08 |
| 2013 | 67.0 | 40.9 | 108.0 | 0.95 | 0.41 | 1.35 |
| **Total** | 74.7 | 48.7 | 123.5 | 1.07 | 0.51 | 1.59 |

**Notes:**
[a] Partial data

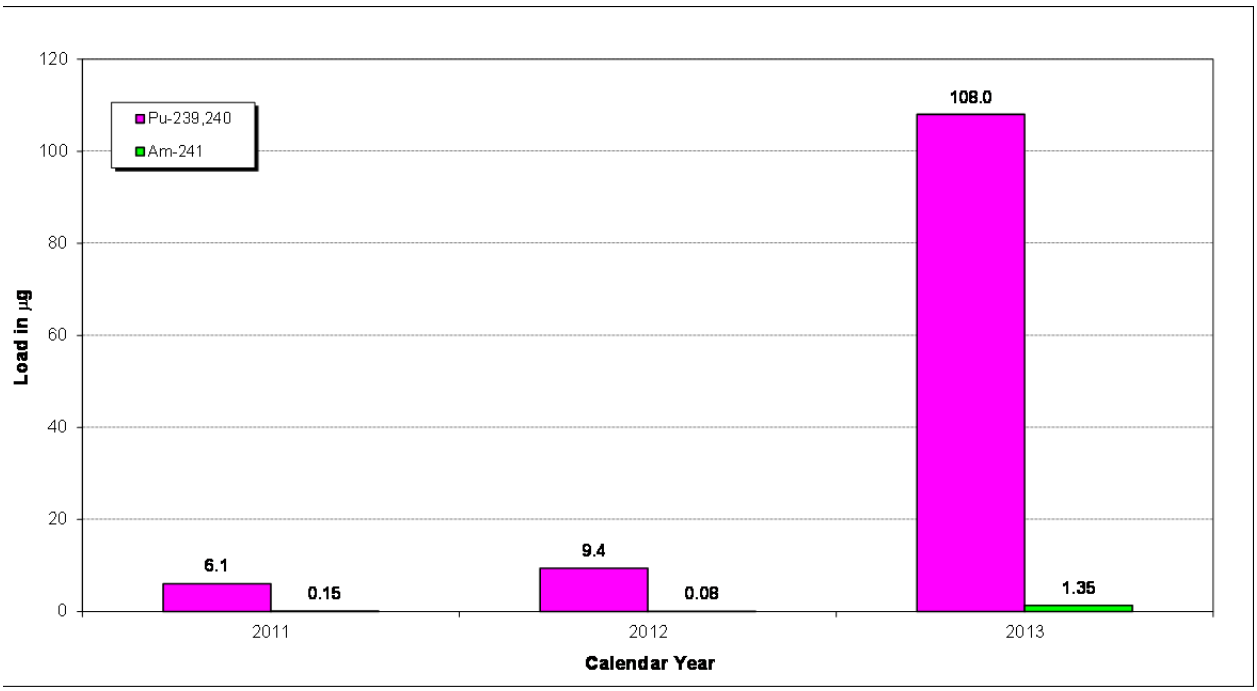



*Figure 161. Combined Annual Pu and Am Loads from Walnut and Woman Creeks at Site Boundary: CY 2011–2013*

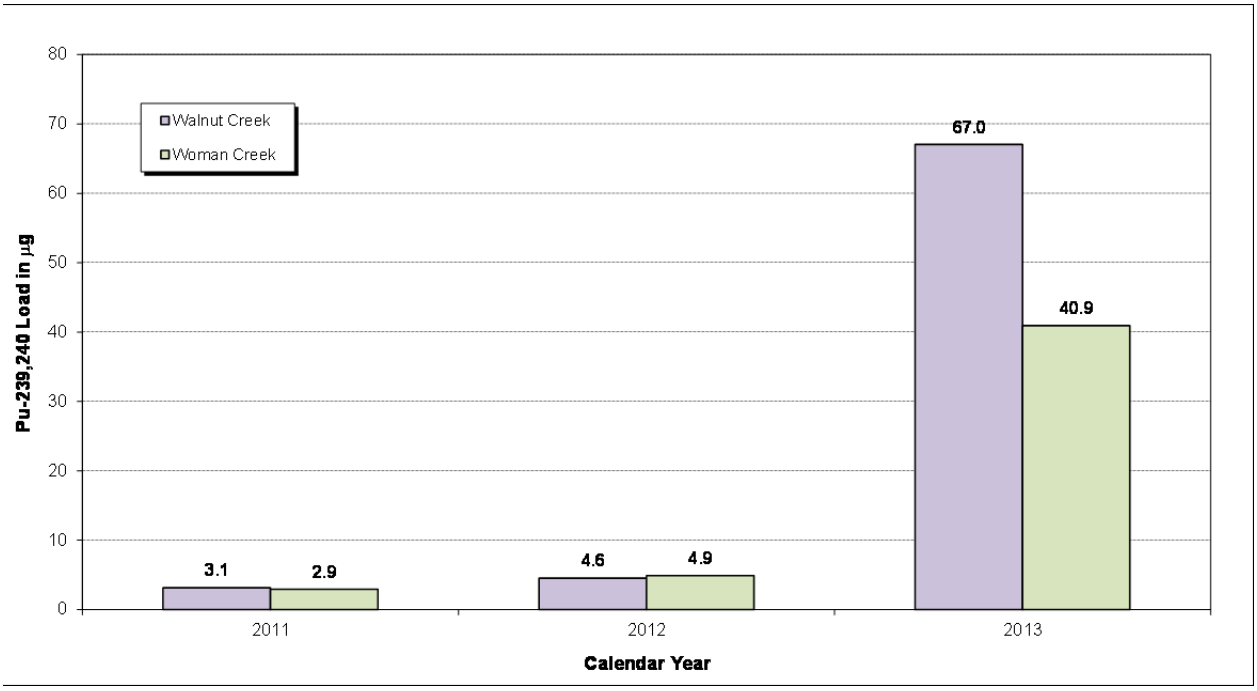



*Figure 162. Annual Pu Loads from Walnut and Woman Creeks at Site Boundary: CY 2011–2013*

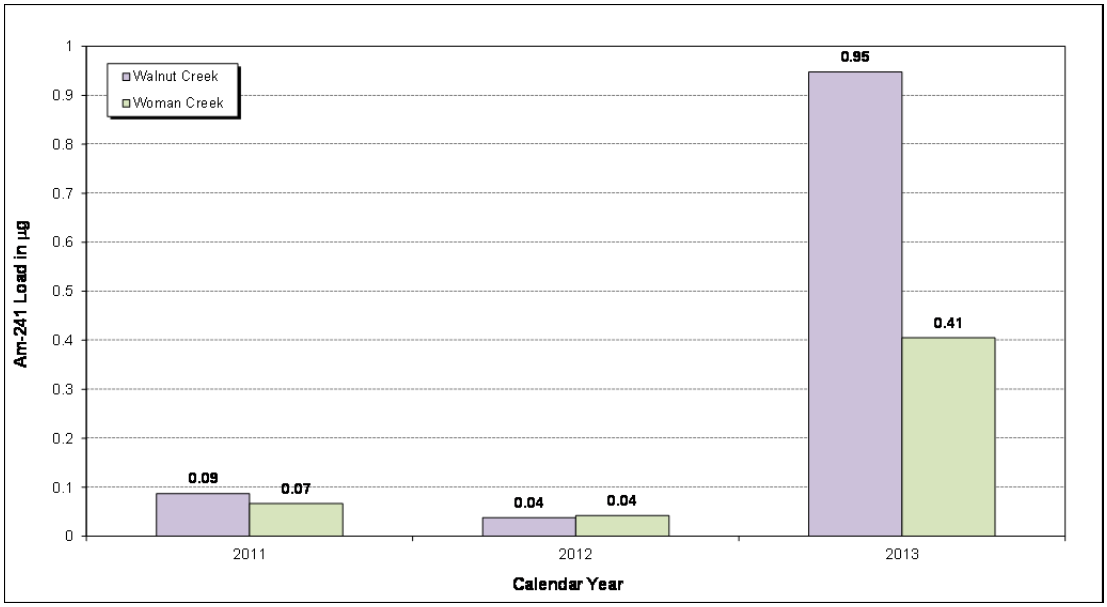



*Figure 163. Annual Am Loads from Walnut and Woman Creeks at Site Boundary: CY 2011–2013*

*Table 80. Total U Loads from Walnut and Woman Creeks at Site Boundary: CY 2011–2013*

| Calendar Year | Total U (g) | | |
|---|---|---|---|
| | **Walnut Creek** | **Woman Creek** | **Total** |
| 2011 | 601[a] | 271[a] | 871[a] |
| 2012 | 703 | 404 | 1,107 |
| 2013 | 2,015 | 744 | 2,759 |
| **Total** | 3,319 | 1,418 | 4,737 |

**Notes:**
[a] Partial data

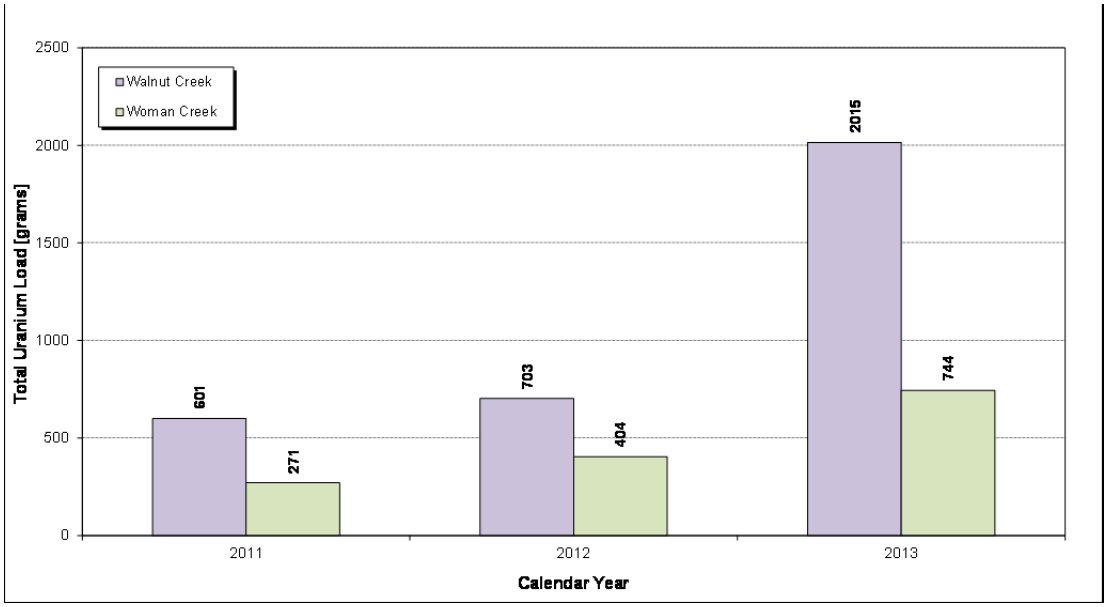



*Figure 164. Annual Total U Loads from Walnut and Woman Creeks at Site Boundary: CY 2011–2013*

### *Lower Walnut Creek*

This section summarizes the calculated Pu, Am, and U loads in Walnut Creek at GS03 (Walnut Creek at Indiana Street), WALPOC (Walnut Creek at COU Boundary), GS08 (Pond B-5 outlet), and GS11 (Pond A-4 outlet). Since WALPOC began operating on September 9, 2011, it is only included in selected tables and figures at this time. The data are presented in Table 81, Table 82, and Table 83 and are depicted on Figure 165, Figure 166, Figure 168, Figure 169, Figure 171, Figure 172, and Figure 174. Total U data collection at GS03 began on November 5, 2002; thus, only CY 2003–2013 data are shown. The following points are noted:

- Pu and Am loads are generally decreasing at GS03 (Figure 165). The slight increase in Am loads at GS03 during CY 2005 is due to increased Am contributions to the A-Series Ponds related to the decontamination and decommissioning of B771. Treatment of Pond A-4 water was successful in reducing Am levels well below the applicable standard (0.15 pCi/L), but the Am activity of the discharged water was somewhat higher than normal. Pond B-5 also showed some increased Am activity due to temporarily increased Am load associated with solids transport resulting from the construction of FC-4. These slightly higher Am activities were subsequently also measured at GS03 (Figure 169). The measurable increases in CY 2010 and 2013 loads is primarily due to large flow volumes and not significant increases in activity.
- Annual Pu and Am loads vary by up to two orders of magnitude year to year (Figure 166 and Figure 169). Pre-closure, the significant annual variability in Pu and Am loads is due mostly to variation in measured Pu and Am activities. Post-closure, load variation is due to large runoff variation and the low measured activities with the inherent analytical error at such low levels.
- Annual Pu and Am loads for all Lower Walnut Creek locations have been reduced post-closure (Figure 166 and Figure 169) due to the reduction of runoff and sediment transport resulting from the effectiveness of remedial actions, revegetation, and erosion control measures. Load reductions range between 58 percent and 97 percent.
- Pre-closure Pu and Am loads from Pond B-5 are significantly greater than loads from Pond A-4 (Table 81 and Table 82), a result of both higher activities and larger discharge volumes. However, post-closure loads from Pond A-4 are greater than from Pond B-5, mostly due to larger flow volumes and not higher activities. Post-closure load reductions for Ponds A-4 and B-5 range between 58 percent and 97 percent.
- Total Pu and Am loads from Ponds A-4 and B-5 for the entire period of 1997 through 2013 are comparable to the loads at GS03 (Table 82), suggesting no significant change in water quality between the two locations.
- Total U loads from Ponds A-4 and B-5 are slightly less than the loads at GS03 (Table 83), indicating a small net gain of load from tributaries and seeps in Walnut Creek below Ponds A-4 and B-5. Post-closure reductions in U loads from Ponds A-4 and B-5 are 31 percent and 50 percent, respectively; U load at GS03 has been reduced 35 percent.

*Table 81. Pu Loads at GS03, GS08, and GS11: CY 1997–2013*

| Calendar Year | Pu-239, 240 (µg) | | | | |
|---|---|---|---|---|---|
| | Pond A-4 (GS11) | Pond B-5 (GS08) | Walnut Creek Terminal Ponds Total | POC WALPOC | POC GS03 |
| 1997 | 59.2 | 8.8 | 68.0 | NA | 262.4 |
| 1998 | 20.0 | 22.4 | 42.4 | NA | 172.2 |
| 1999 | 23.8 | 261.4 | 285.2 | NA | 150.2 |
| 2000 | 28.4 | 244.6 | 273.0 | NA | 26.0 |
| 2001 | 4.7 | 32.3 | 37.0 | NA | 58.6 |
| 2002 | 0.1 | 7.8 | 7.9 | NA | 37.4 |
| 2003 | 7.3 | 111.5 | 118.8 | NA | 57.6 |
| 2004 | 2.2 | 27.1 | 29.3 | NA | 33.1 |
| 2005 | 2.2 | 17.9 | 20.1 | NA | 30.3 |
| 2006 | 0.0; No A-4 discharge | 0.0; No B-5 discharge | 0.0 | NA | 0.0 No flow |
| 2007 | 7.8 | 1.9 | 9.6 | NA | 17.2 |
| 2008 | 0.0; No A-4 discharge | 0.0; No B-5 discharge | 0.0 | NA | 0.0 No flow |
| 2009 | 2.3 | 3.0 | 5.3 | NA | 9.5 |
| 2010 | 6.4 | 5.4 | 11.9 | NA | 46.9 |
| 2011 | 1.0 | 1.8 | 2.8 | 3.1[a] | 3.2 |
| 2012 | 2.1 | 1.1 | 3.3 | 4.6 | 3.3 |
| 2013 | 38.7[b] | 6.3 | 41.6[b] | 67.0 | 73.5 |
| **Total** | 206.3[b] | 753.4 | 959.7[b] | 74.7 | 981.2 |

**Notes:**
[a] Partial data
[b] Estimated

*Table 82. Am Loads at GS03, GS08, and GS11: CY 1997–2013*

| Calendar Year | Am-241 (µg) | | | | |
|---|---|---|---|---|---|
| | Pond A-4 (GS11) | Pond B-5 (GS08) | Walnut Creek Terminal Ponds Total | POC WALPOC | POC GS03 |
| 1997 | 0.70 | 0.25 | 0.95 | NA | 2.99 |
| 1998 | 1.25 | 0.35 | 1.60 | NA | 2.66 |
| 1999 | 0.20 | 1.81 | 2.01 | NA | 1.83 |
| 2000 | 0.02 | 3.14 | 3.16 | NA | 0.74 |
| 2001 | 0.11 | 0.46 | 0.57 | NA | 0.63 |
| 2002 | 0.04 | 0.25 | 0.29 | NA | 0.37 |
| 2003 | 0.18 | 0.54 | 0.72 | NA | 1.07 |
| 2004 | 0.14 | 0.58 | 0.73 | NA | 0.70 |
| 2005 | 0.43 | 0.97 | 1.39 | NA | 1.67 |
| 2006 | 0.0 No A-4 discharge | 0.0; No B-5 discharge | 0.00 | NA | 0.0 No flow |
| 2007 | 0.02 | 0.03 | 0.05 | NA | 0.12 |
| 2008 | 0.0 No A-4 discharge | 0.0; No B-5 discharge | 0.00 | NA | 0.0 No flow |
| 2009 | 0.09 | 0.02 | 0.11 | NA | 0.16 |
| 2010 | 0.14 | 0.11 | 0.25 | NA | 0.71 |
| 2011 | 0.05 | 0.02 | 0.07 | 0.09[a] | 0.08 |
| 2012 | 0.06 | 0.01 | 0.07 | 0.04 | 0.02 |
| 2013 | 0.62[b] | 0.20 | 0.78[b] | 0.95 | 1.13 |
| **Total** | 4.06[b] | 8.74 | 12.80[b] | 1.07 | 14.89 |

**Notes:**
[a] Partial data
[b] Estimated

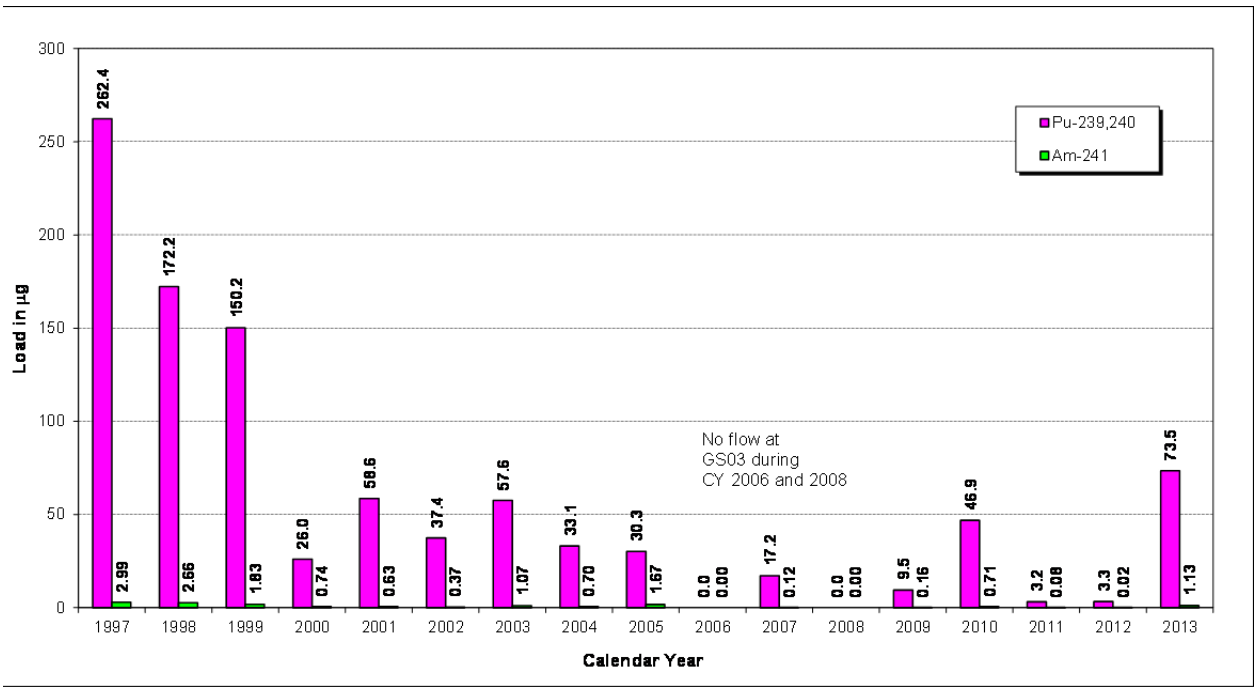



*Figure 165. Annual Pu and Am Loads at GS03: CY 1997–2013*

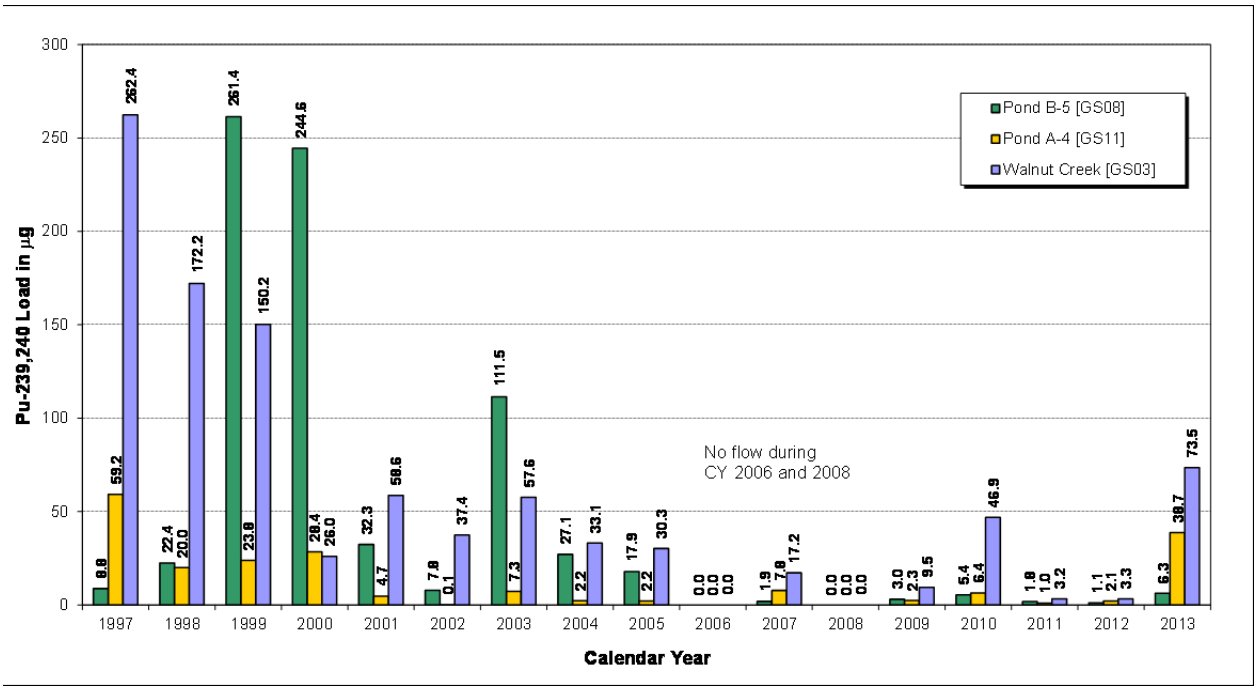



*Figure 166. Annual Pu Loads at GS03, GS08, and GS11: CY 1997–2013*

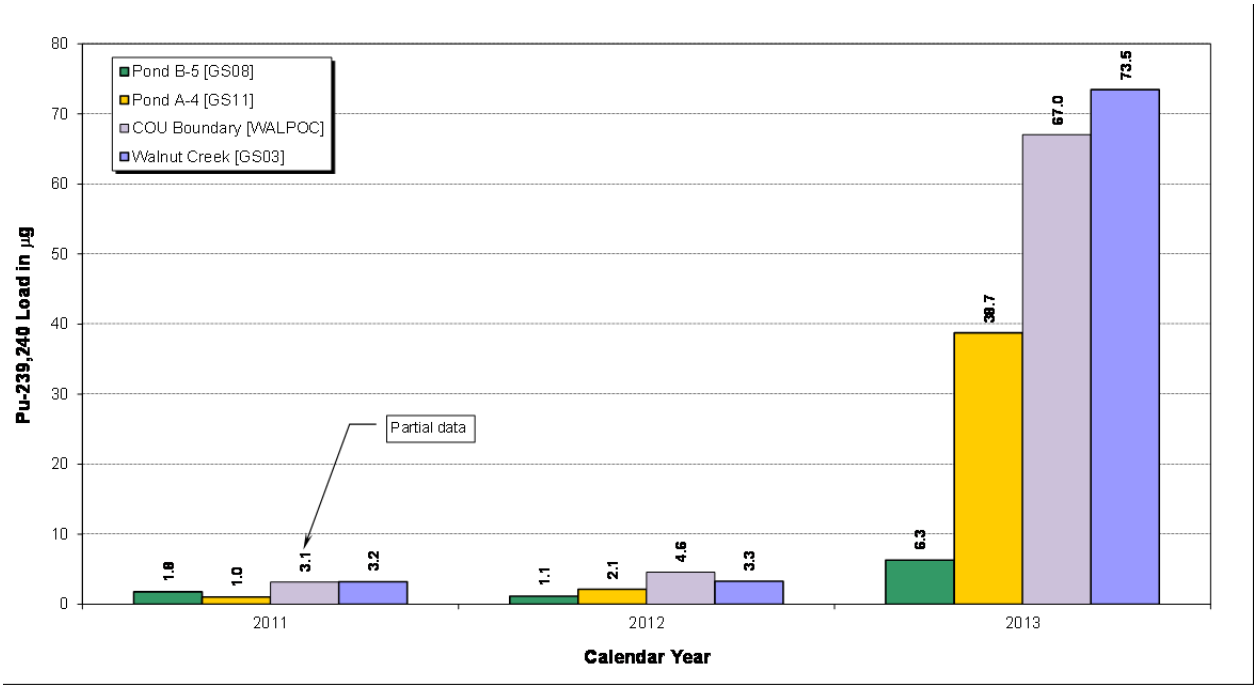
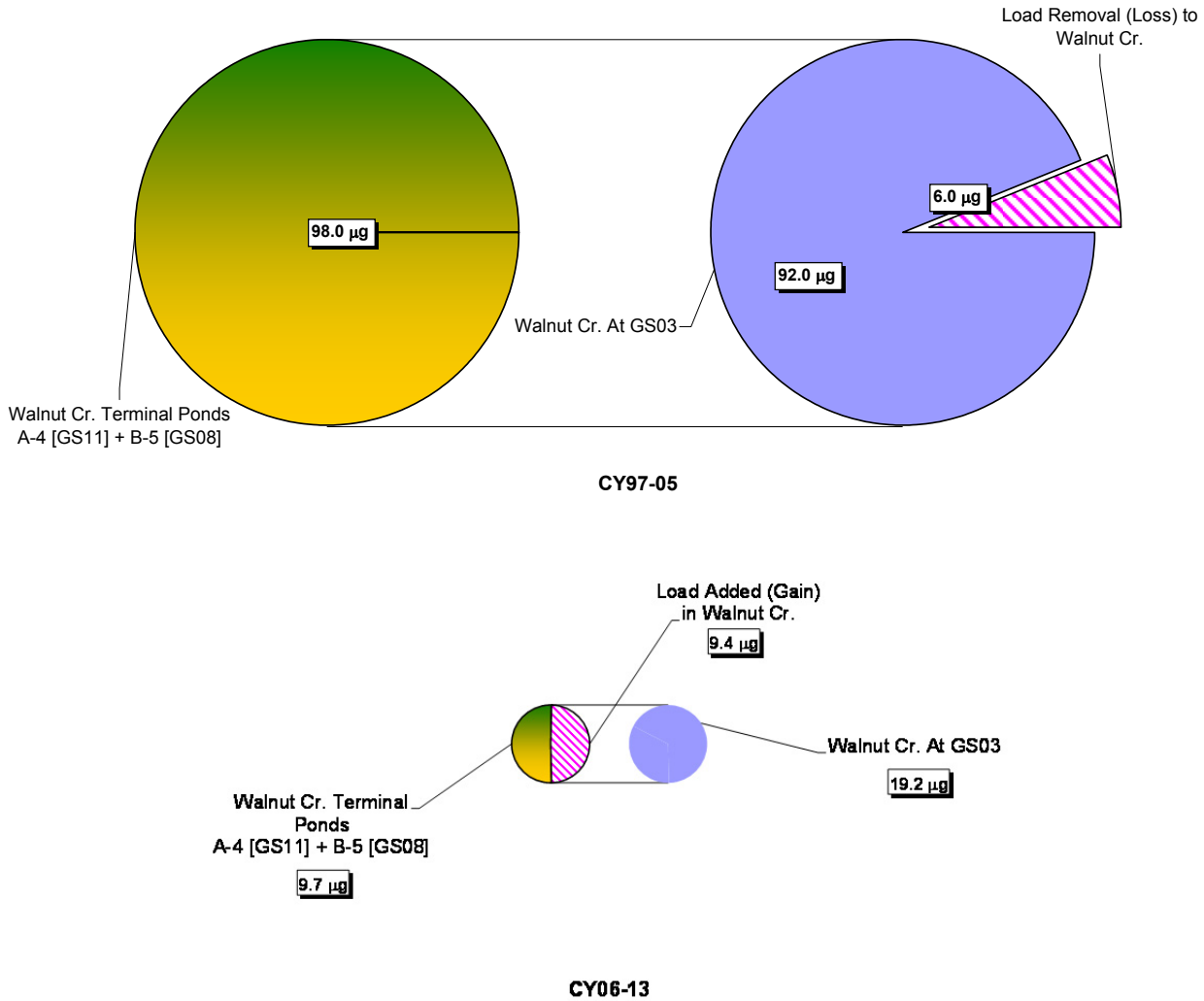



*Figure 167. Annual Pu Loads at GS03, WALPOC, GS08, and GS11: CY 2011–2013*




**Notes:** Pie chart diameters are relative to total load.

*Figure 168. Relative Average Annual Pu Load Totals at GS03, GS08, and GS11*

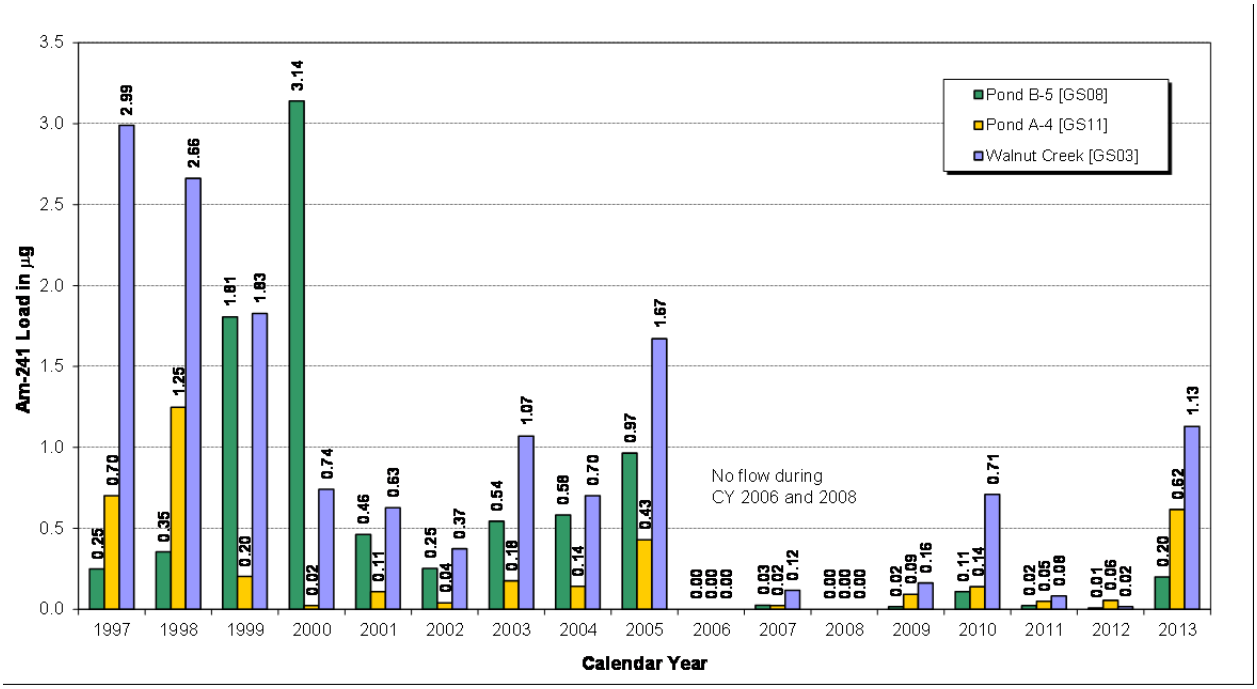



*Figure 169. Annual Am Loads at GS03, GS08, and GS11: CY 1997–2013*

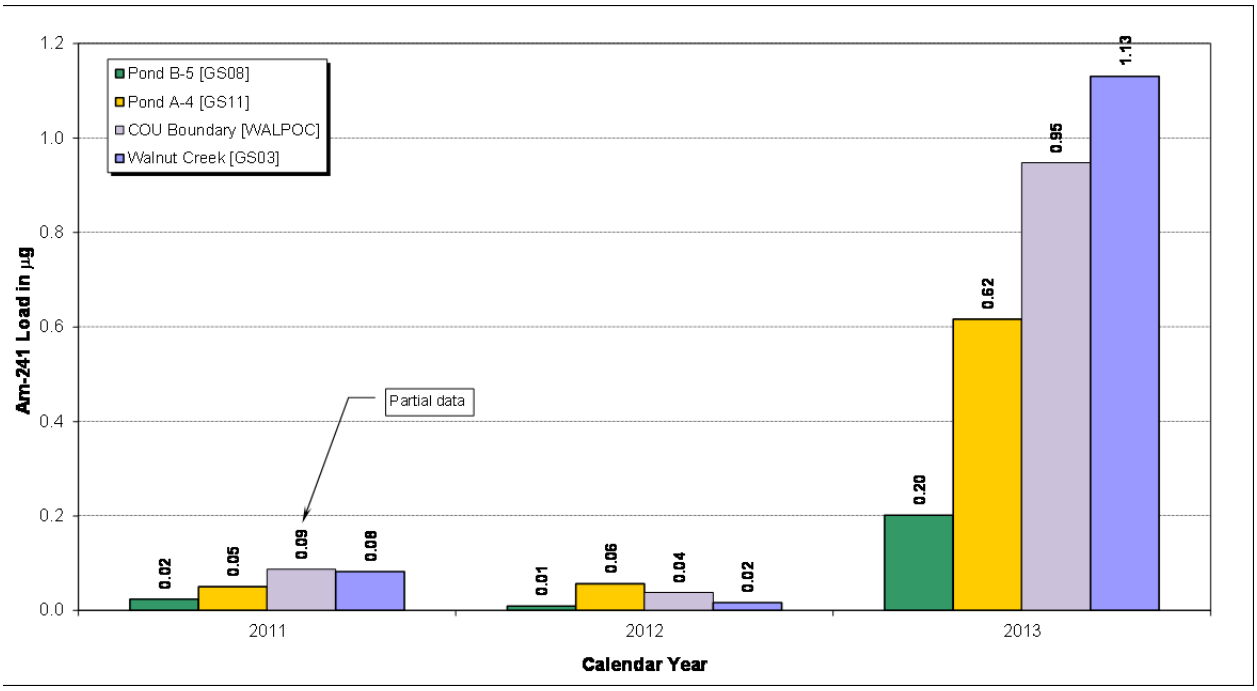
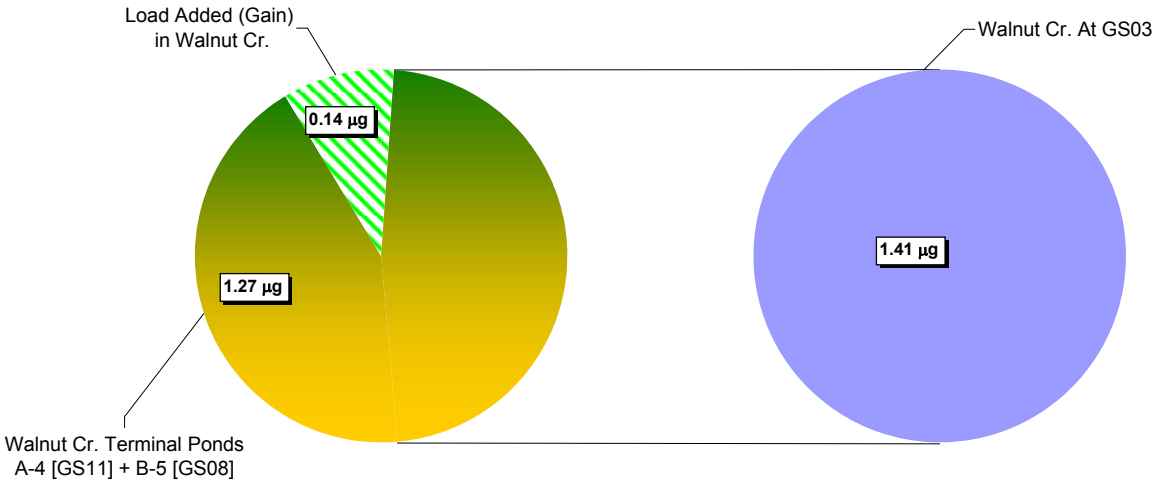
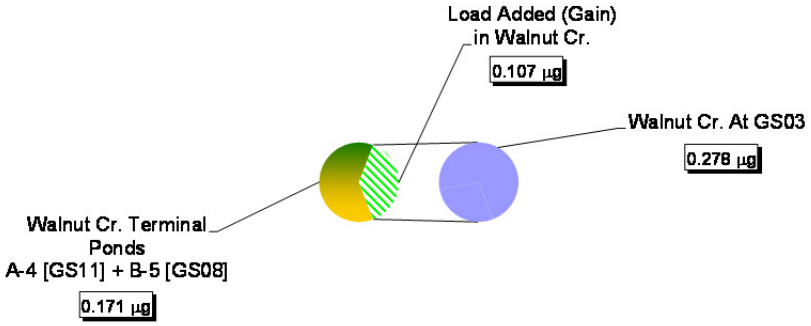



*Figure 170. Annual Am Loads at GS03, WALPOC, GS08, and GS11: CY 2011–2013*




**CY97-05**




**CY06-13**

**Notes:** Pie chart diameters are relative to total load.

*Figure 171. Relative Average Annual Am Load Totals at GS03, GS08, and GS11*

*Table 83. Total U Loads at GS03, GS08, and GS11: CY 2003–2013*

| Calendar Year | Total U (g) | | | | |
|---|---|---|---|---|---|
| | Pond A-4 (GS11) | Pond B-5 (GS08) | Walnut Creek Terminal Ponds Total | POC WALPOC | POC GS03 |
| 2003 | 865 | 610 | 1,474 | NA | 1,751 |
| 2004 | 316 | 390 | 705 | NA | 744 |
| 2005 | 165 | 1,389 | 1,554 | NA | 1,482 |
| 2006 | 0;<br>No A-4 discharge | 0;<br>No B-5 discharge | 0 | NA | 0<br>No flow |
| 2007 | 411 | 481 | 892 | NA | 1,005 |
| 2008 | 0;<br>No A-4 discharge | 0;<br>No B-5 discharge | 0 | NA | 0<br>No flow |
| 2009 | 405 | 322 | 728 | NA | 725 |
| 2010 | 1,199 | 746 | 1,945 | NA | 2,311 |
| 2011 | 430 | 315 | 745 | 601[a] | 696 |
| 2012 | 379 | 127 | 506 | 703 | 667 |
| 2013 | 944[b] | 407 | 1,352[b] | 2,015 | 1,508 |
| **Total** | 5,114[b] | 4,787 | 9,901[b] | 3,319 | 10,888 |

**Notes:**
[a] Partial data
[b] Estimated

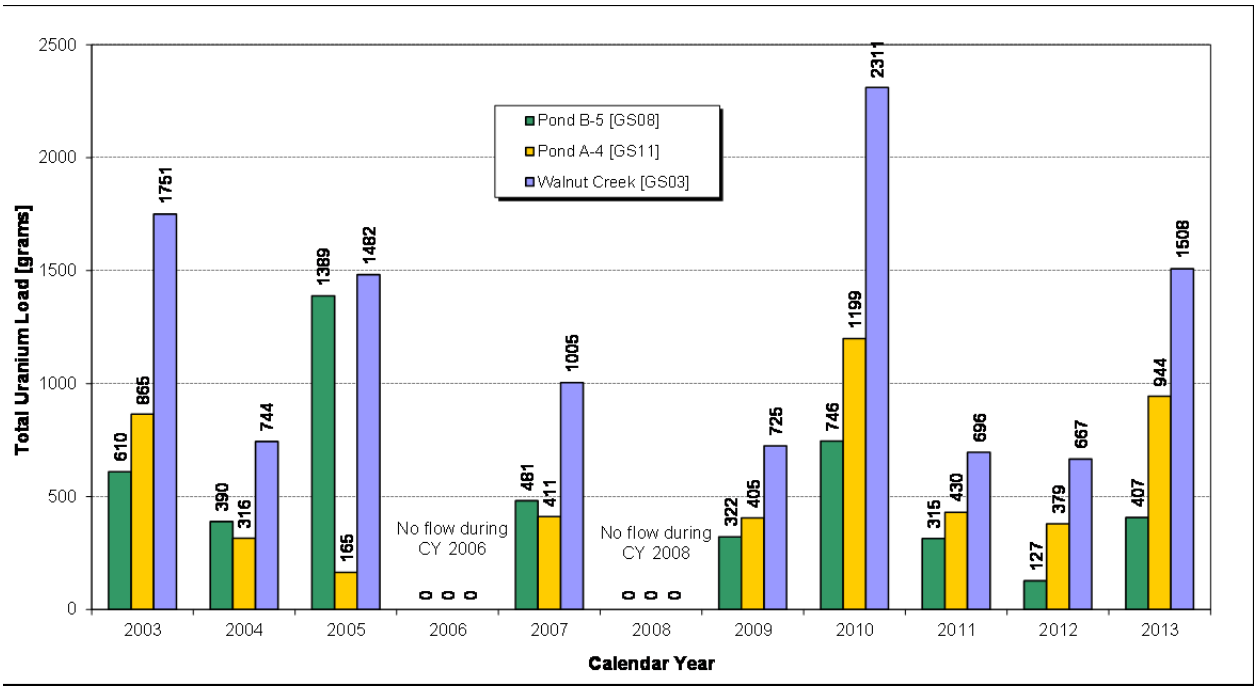



*Figure 172. Annual Total U Loads at GS03, GS08, and GS11: CY 2003–2013*

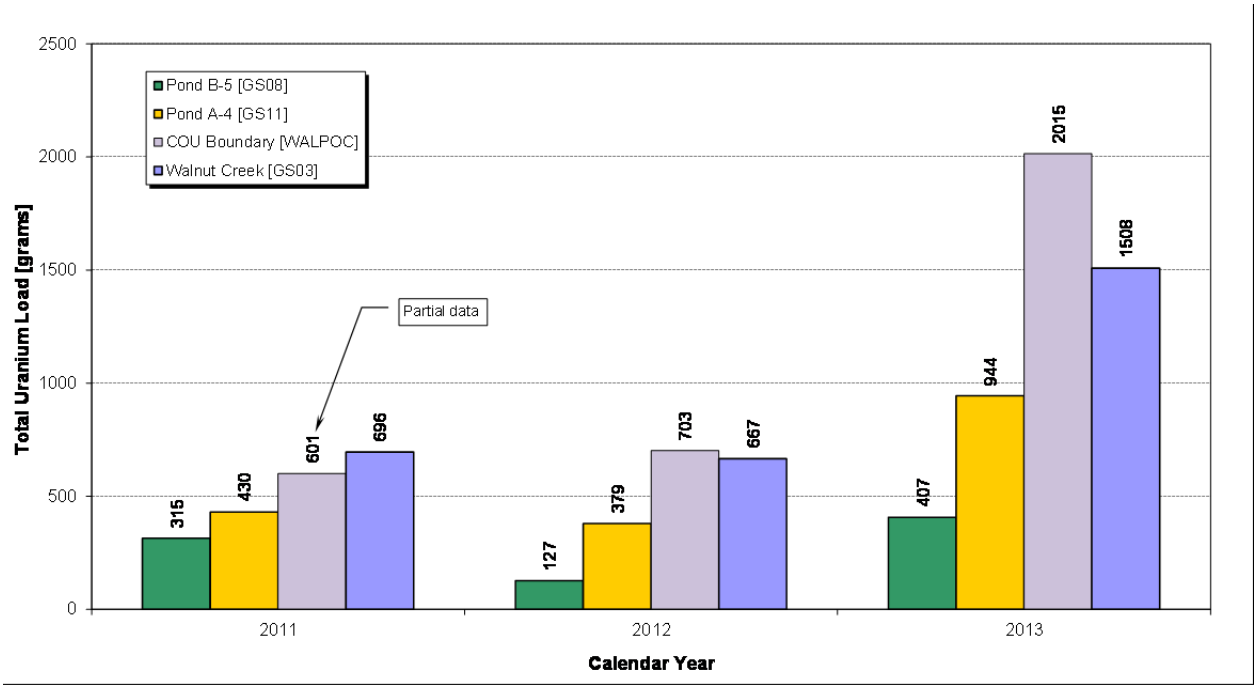
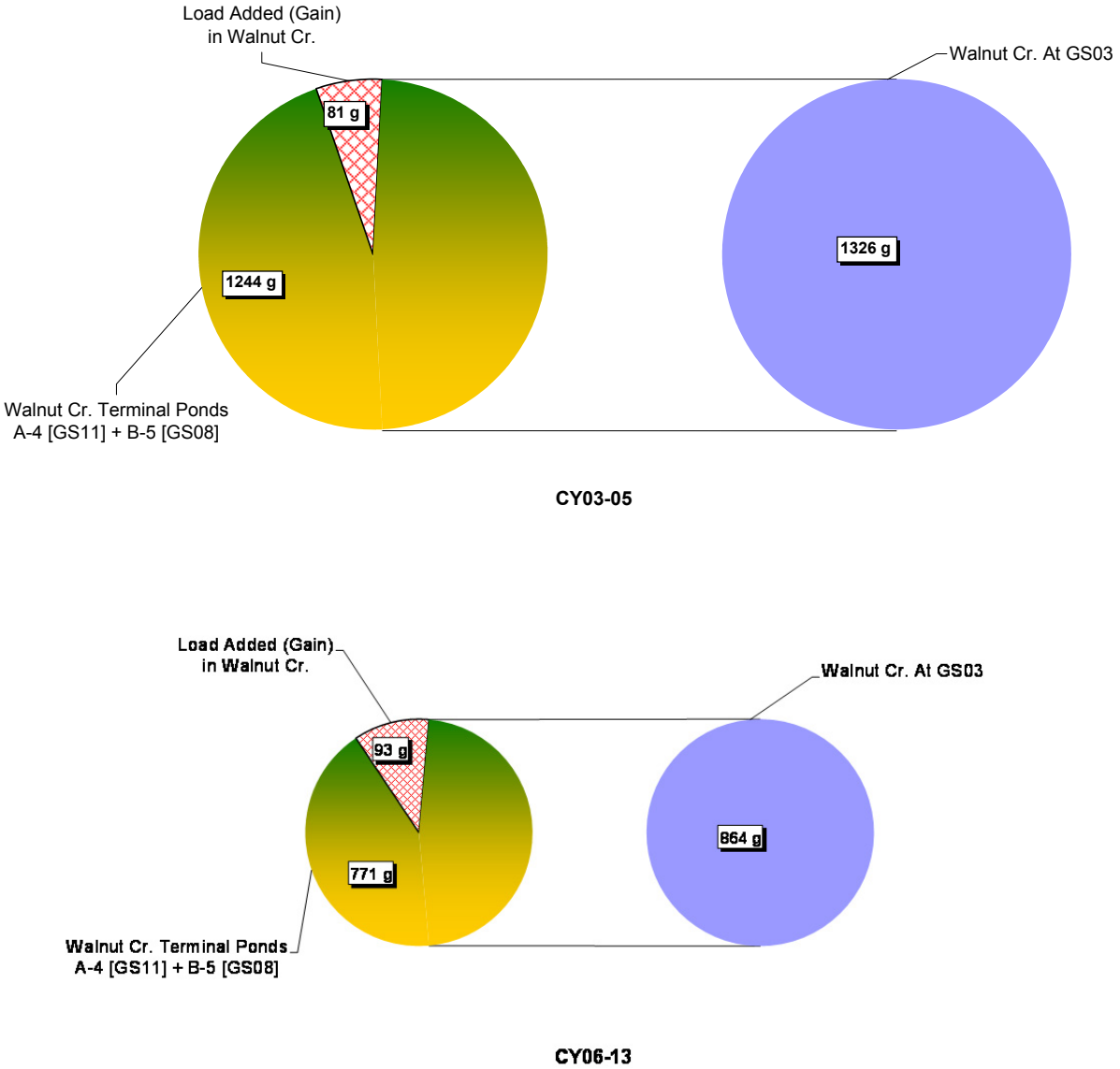



*Figure 173. Annual Total U Loads at GS03, WALPOC, GS08, and GS11: CY 2011–2013*




**Notes:** Pie chart diameters are relative to total load.

*Figure 174. Relative Average Annual Total U Load Totals at GS03, GS08, and GS11*

### *Lower Woman Creek*

This section summarizes the calculated Pu, Am, and U loads in Woman Creek at GS01 (Woman Creek at Indiana Street), WOMPOC (Woman Creek at COU Boundary), and GS31 (Pond C-2 outlet). Since WOMPOC began operating on September 28, 2011, it is only included in selected tables and figures at this time. The data are presented in Table 84, Table 85, and Table 86, and depicted on Figure 175, Figure 176, Figure 178, Figure 179, Figure 181, Figure 182, and Figure 184. Total U data collection began at GS01 on February 3, 2003; therefore, only CY 2003–2013 data are shown. The following points are noted:

- Annual Pu and Am loads generally vary by up to two orders of magnitude year to year (Figure 176 and Figure 179). The significant annual variability in Pu and Am loads is

primarily due to large variation in stream discharge volumes and the very low measured activities with inherent analytical error at such low levels.

- Total Pu and Am loads from Pond C-2 are significantly less than the loads at GS01 (Table 84, Figure 178, Table 85, and Figure 181), suggesting a contribution of load from the rest of the Woman Creek drainage. Post-closure, Pond C-2 accounts for approximately 6 percent of the Pu load and 4 percent of the Am load at GS01. However, this calculated increase in load is primarily due to large stream discharge volumes and analytical error associated with the very low measured activities at GS01; Pu and Am activities are well below the RFLMA standard of 0.15 pCi/L.
- Total U load for CY 2003–2013 from Pond C-2 is significantly less than the load at GS01 (Figure 182 and Figure 184), indicating a gain of load most likely from naturally occurring U in the rest of the Woman Creek drainage. Post-closure, Pond C-2 accounts for less than 9 percent of the U load at GS01.

*Table 84. Pu Loads at GS01, WOMPOC, and GS31: CY 1997–2013*

| Calendar Year | Pu-239, 240 (µg) | | |
|---|---|---|---|
| | **Pond C-2 (GS31)** | **POC WOMPOC** | **POC GS01** |
| 1997 | 16.7 | NA | 47.9 |
| 1998 | 2.2 | NA | 55.4 |
| 1999 | 26.9 | NA | 56.7 |
| 2000 | 0.0; No C-2 discharge | NA | 6.1 |
| 2001 | 11.0 | NA | 22.4 |
| 2002 | 0.2 | NA | 0.8 |
| 2003 | 11.0 | NA | 25.9 |
| 2004 | 11.5 | NA | 4.7 |
| 2005 | 5.0 | NA | 12.5 |
| 2006 | 0.0; No C-2 discharge | NA | 1.4 |
| 2007 | 0.0; No C-2 discharge | NA | 68.0 |
| 2008 | 0.0; No C-2 discharge | NA | 1.1 |
| 2009 | 4.1 | NA | 26.7 |
| 2010 | 0.4 | NA | 70.6 |
| 2011 | 1.0 | 2.9[a] | 5.2 |
| 2012 | 0.3 | 4.9 | 2.2 |
| 2013 | 7.6[b] | 40.9 | 38.5 |
| **Total** | 97.8[b] | 48.7 | 446.0 |

**Notes:** During CY 1997 (through September 30, 1997), flows from Woman Creek were routinely diverted to Mower Ditch for subsequent monitoring at GS02 (discontinued location). Therefore, the load calculated for Woman Creek at Indiana Street (GS01) includes the water that was measured at GS02. The estimated load diverted to GS02 is calculated by multiplying the CY 1997 volume-weighted activities at GS01 by the streamflow volume measured at GS02, and converting for units. This diverted load is then added to the calculated load at GS01 to obtain the total CY 1997 load at GS01. For subsequent water years, the Mower diversion structure has been upgraded and configured to prevent Woman Creek flows from entering the Mower Ditch.

[a] Partial data

[b] Estimated

*Table 85. Am Loads at GS01, WOMPOC, and GS31: CY 1997–2013*

| Calendar Year | Am-241 (µg) | | |
|---|---|---|---|
| | **Pond C-2 (GS31)** | **POC WOMPOC** | **POC GS01** |
| 1997 | 0.17 | NA | 0.40 |
| 1998 | 0.27 | NA | 0.99 |
| 1999 | 0.13 | NA | 0.75 |
| 2000 | 0.00;<br>No C-2 discharge | NA | 0.18 |
| 2001 | 0.14 | NA | 0.30 |
| 2002 | <0.01 | NA | 0.03 |
| 2003 | 0.09 | NA | 0.34 |
| 2004 | 0.11 | NA | 0.15 |
| 2005 | 0.04 | NA | 0.30 |
| 2006 | 0.0;<br>No C-2 discharge | NA | 0.13 |
| 2007 | 0.0;<br>No C-2 discharge | NA | 0.49 |
| 2008 | 0.0;<br>No C-2 discharge | NA | 0.02 |
| 2009 | 0.03 | NA | 0.23 |
| 2010 | 0.02 | NA | 0.78 |
| 2011 | 0.01 | 0.07[a] | 0.12 |
| 2012 | 0.00 | 0.04 | 0.07 |
| 2013 | 0.03[b] | 0.41 | 0.26 |
| **Total** | 1.04[b] | 0.51 | 5.51 |

**Notes:** During CY 1997 (through September 30, 1997), flows from Woman Creek were routinely diverted to Mower Ditch for subsequent monitoring at GS02 (discontinued location). Therefore, the load calculated for Woman Creek at Indiana Street (GS01) includes the water that was measured at GS02. The estimated load diverted to GS02 is calculated by multiplying the CY 1997 volume-weighted activities at GS01 by the streamflow volume measured at GS02, and converting for units. This diverted load is then added to the calculated load at GS01 to obtain the total CY 1997 load at GS01. For subsequent water years, the Mower diversion structure has been upgraded and configured to prevent Woman Creek flows from entering the Mower Ditch.

[a] Partial data

[b] Estimated

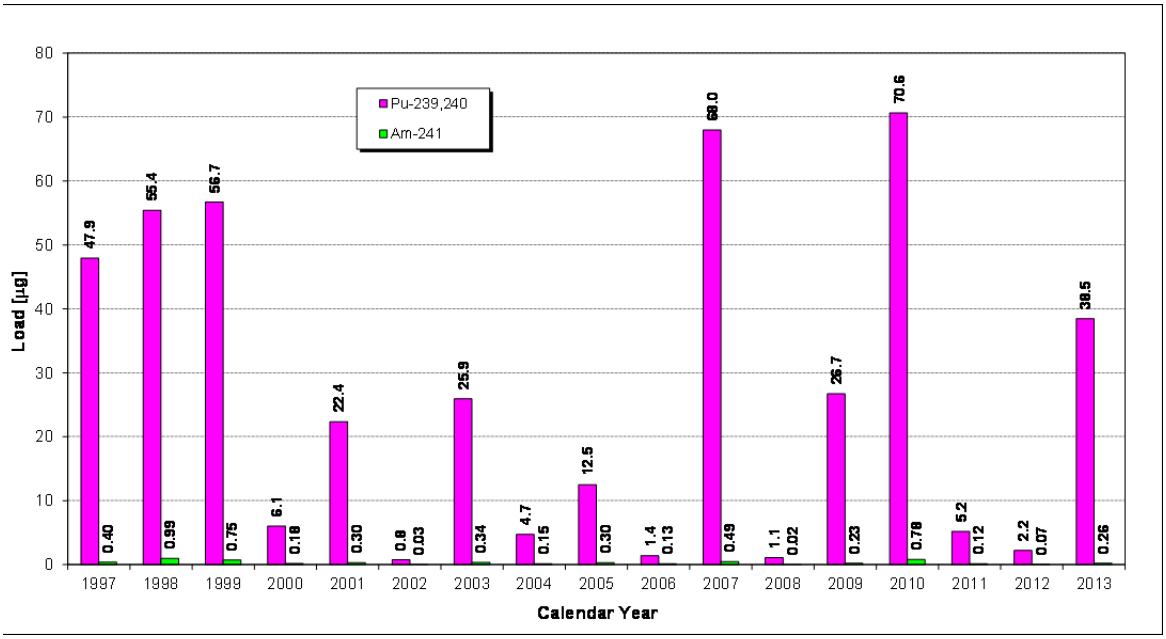



*Figure 175. Annual Pu and Am Loads at GS01: CY 1997–2013*

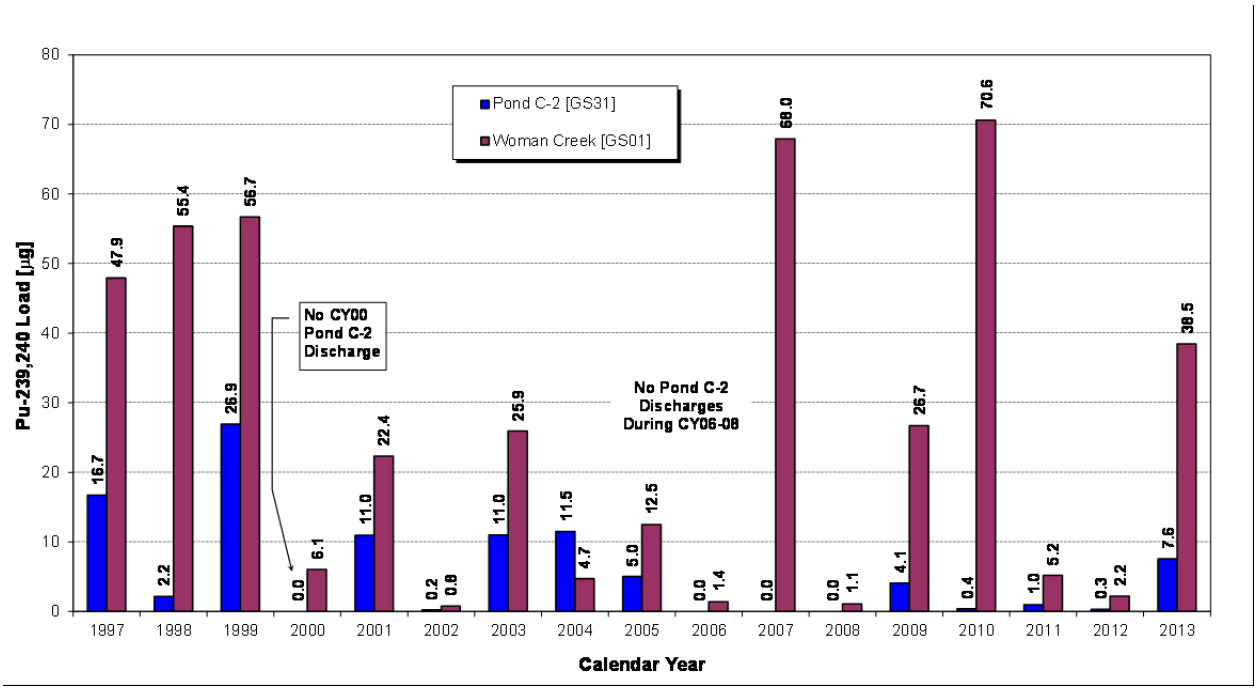



*Figure 176. Annual Pu Loads at GS01 and GS31: CY 1997–2013*

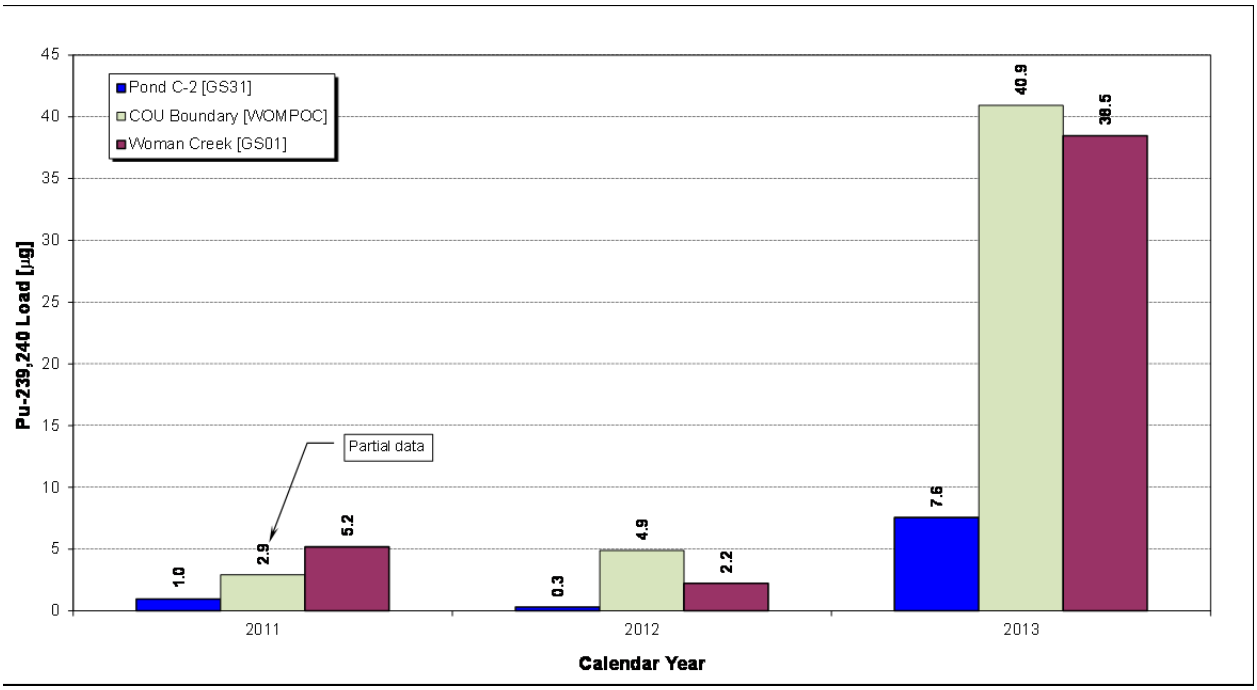
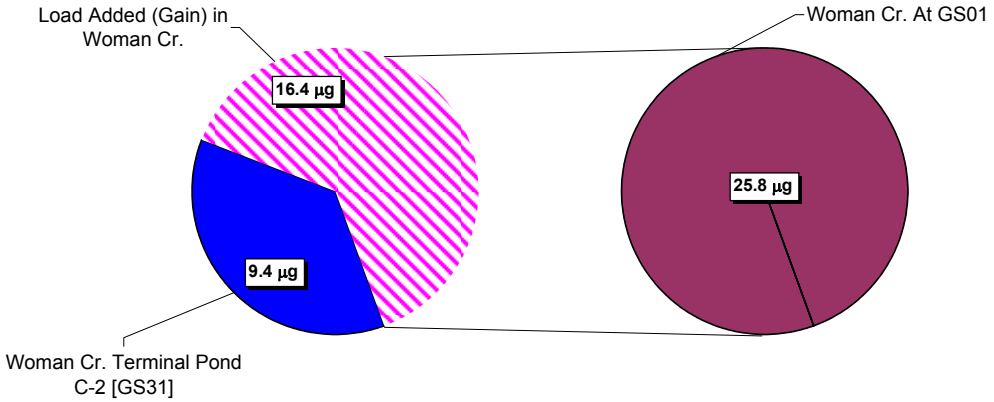
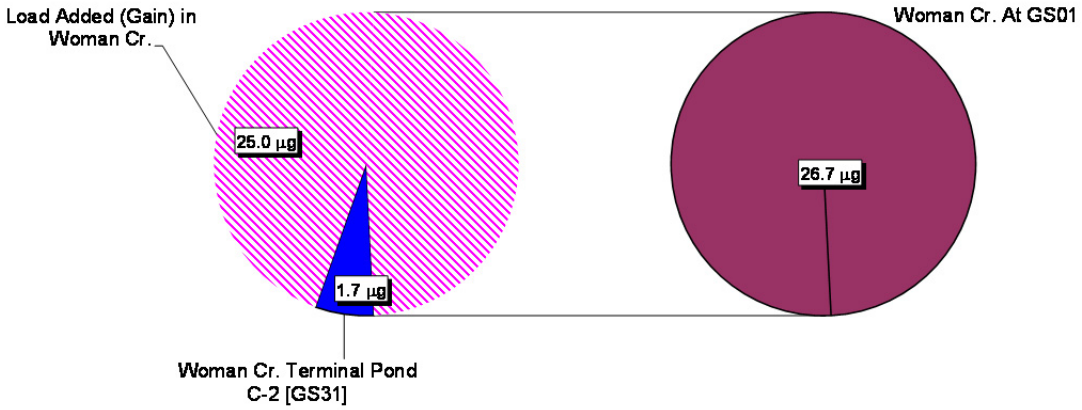



*Figure 177. Annual Pu Loads at GS01, WOMPOC, and GS31: CY 2011–2013*




**CY97-05**




**CY06-13**

**Notes:** Pie chart diameters are relative to total load.

*Figure 178. Relative Average Annual Pu Load Totals at GS01 and GS31*

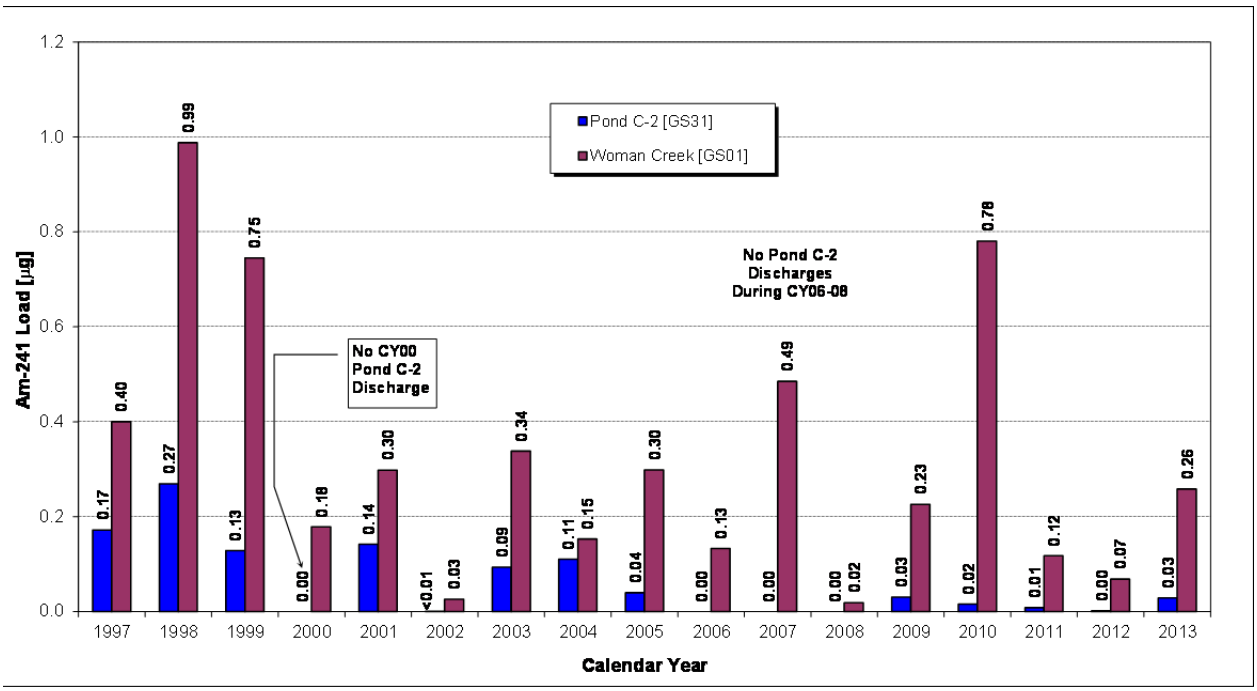



*Figure 179. Annual Am Loads at GS01 and GS31: CY 1997–2013*

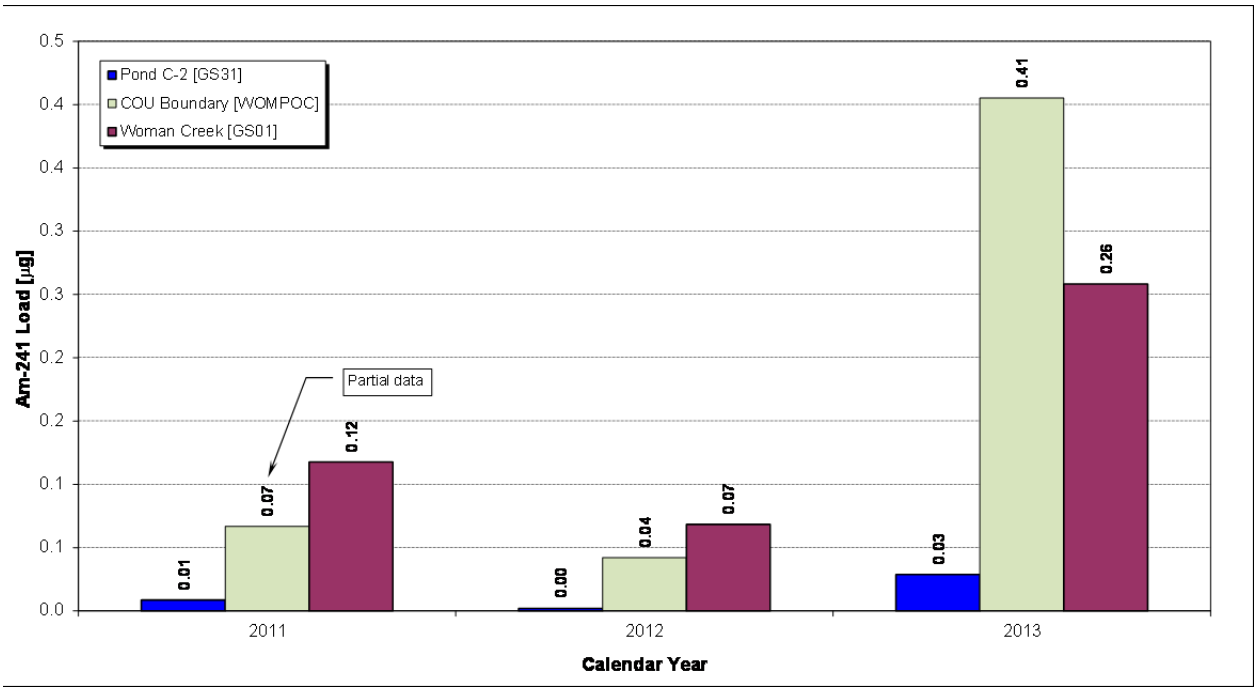
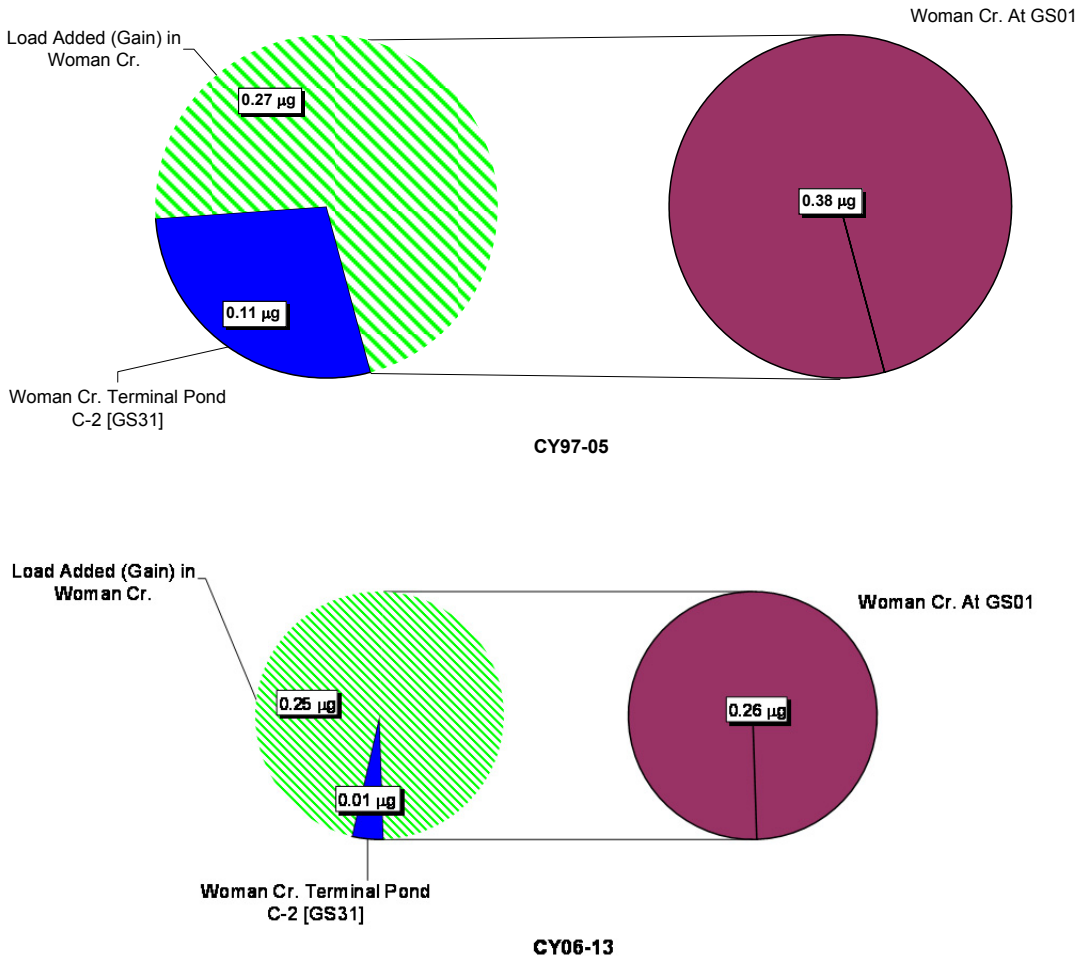



*Figure 180. Annual Am Loads at GS01, WOMPOC, and GS31: CY 2011–2013*




**Notes:** Pie chart diameters are relative to total load.

*Figure 181. Relative Average Annual Am Load Totals at GS01 and GS31*

*Table 86. Total U Loads at GS01, WOMPOC, and GS31: CY 2003–2013*

| Calendar Year | Total U (g) | | |
|---|---|---|---|
| | Pond C-2 (GS31) | POC WOMPOC | POC GS01 |
| 2003 | 129 | NA | 790 |
| 2004 | 92 | NA | 808 |
| 2005 | 115 | NA | 918 |
| 2006 | 0; No C-2 discharge | NA | 235 |
| 2007 | 0; No C-2 discharge | NA | 1,016 |
| 2008 | 0; No C-2 discharge | NA | 174 |
| 2009 | 95 | NA | 761 |
| 2010 | 61 | NA | 1,162 |
| 2011 | 102 | 271[a] | 609 |
| 2012 | 48 | 404 | 466 |
| 2013 | 164[b] | 744 | 889 |
| **Total** | 806[b] | 1,418 | 7,828 |

**Notes:**
[a] Partial data
[b] Estimated

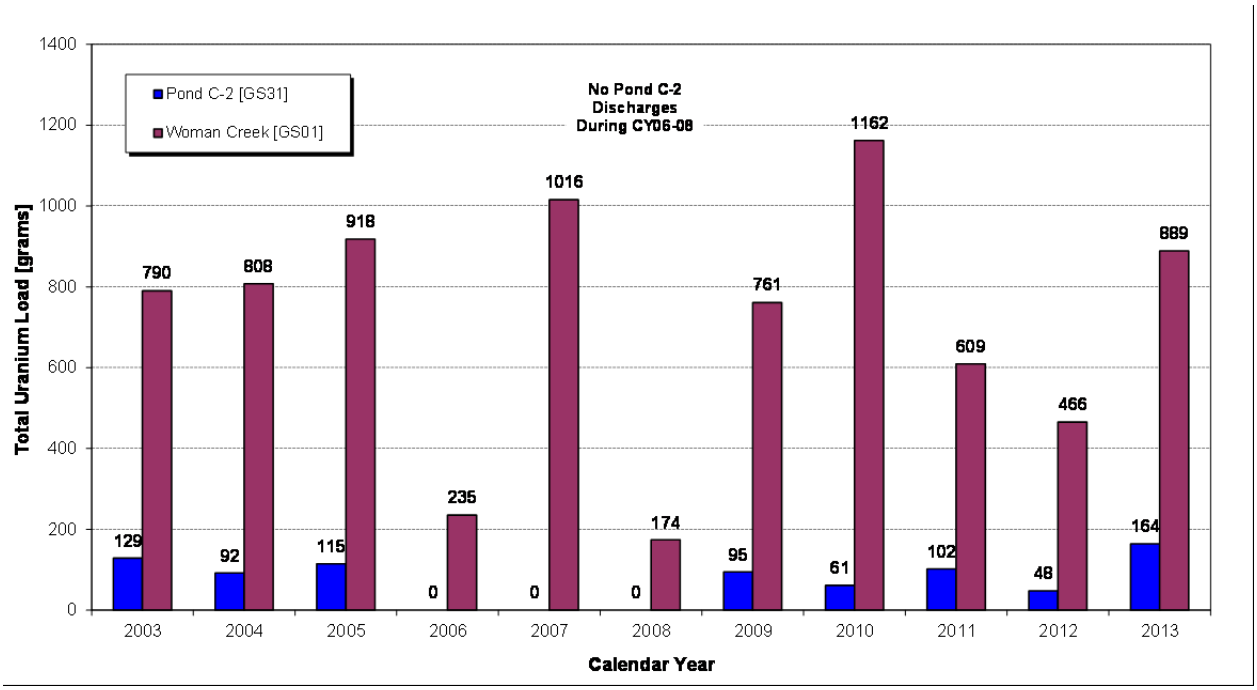



*Figure 182. Annual Total U Loads at GS01 and GS31: CY 2003–2013*

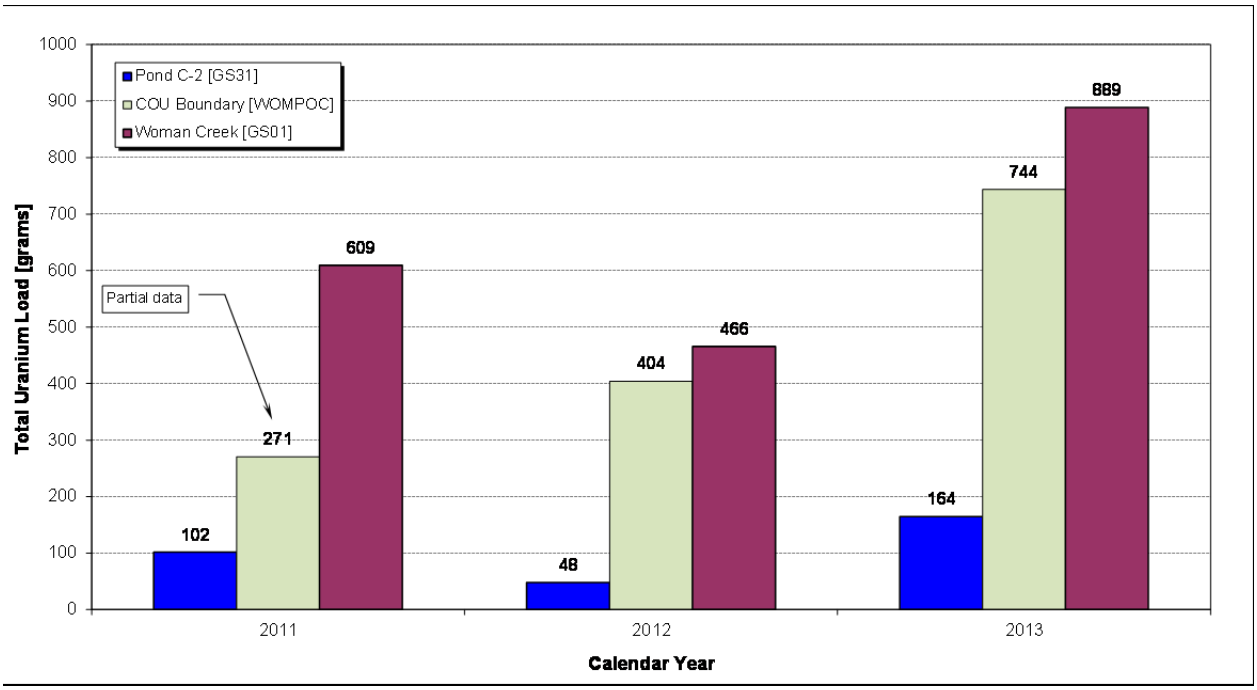
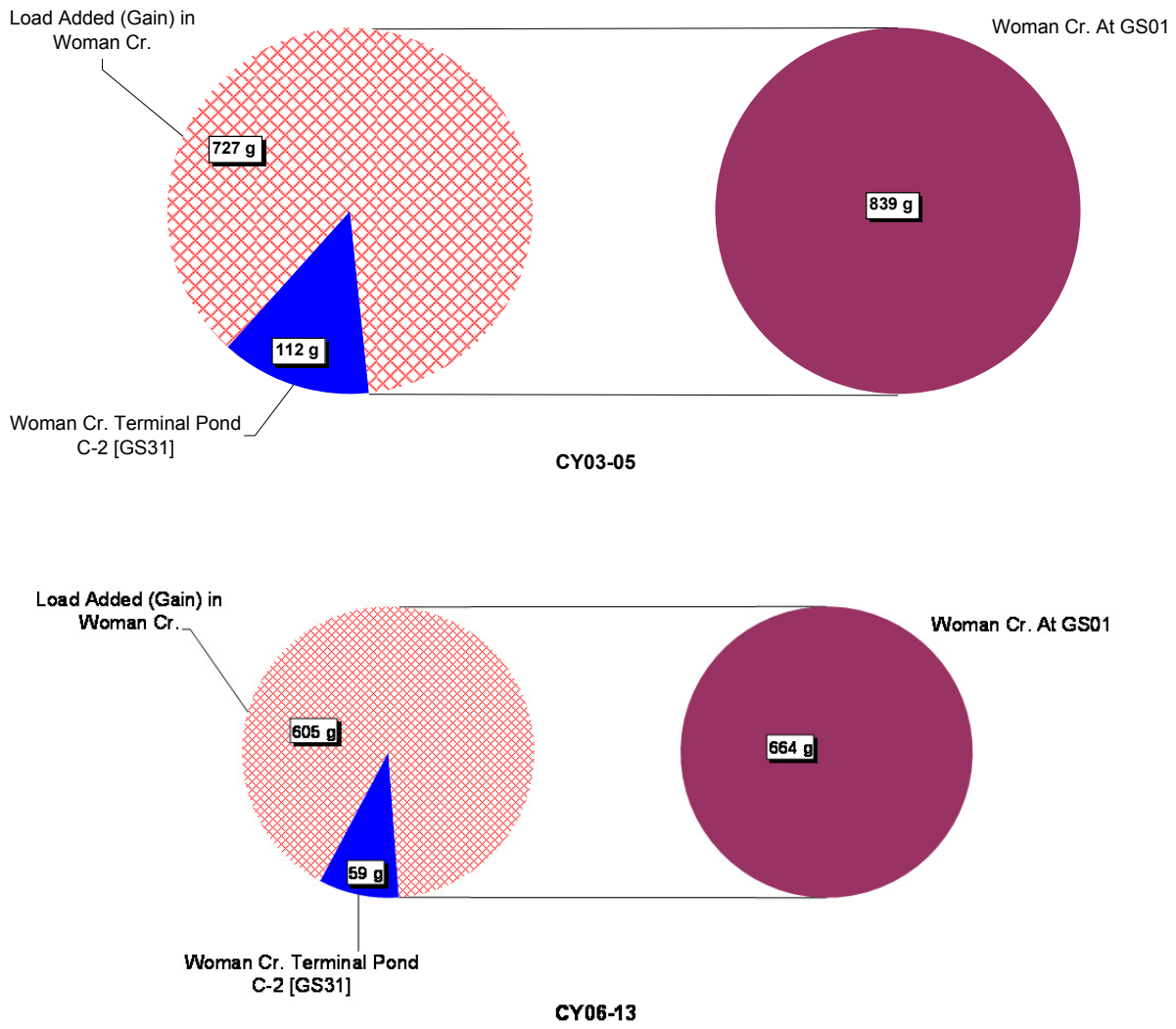



*Figure 183. Annual Total U Loads at GS01, WOMPOC, and GS31: CY 2011–2013*




**Notes:** Pie chart diameters are relative to total load.

*Figure 184. Relative Average Annual Total U Load Totals at GS01 and GS31*

### *A- and B-Series Ponds*

This section summarizes the calculated Pu, Am, and U loads for the A- and B-Series Ponds. The data are presented in Table 87, Table 88, and Table 89, and are depicted on Figure 185, Figure 186, Figure 187, Figure 188, Figure 189, Figure 190, Figure 191, and Figure 192. Since water transfers occurred between ponds pre-closure, the load analysis is performed for both pond series combined. The influent load sources are GS10 and the former WWTP (South Walnut; WWTP removed in November 2004), and SW093 (North Walnut). The effluent loads are GS08 (Pond B-5 outlet) and GS11 (Pond A-4 outlet). The following points are noted:

- Table 87 shows GS10 with the highest influent Pu load for CY 1997–2012. Although load increases associated with the recent reportable conditions are noted for 2011–2013, annual average post-closure Pu loads at GS10 have been reduced 80 percent.

- A significant increase in Pu loads to the ponds is noted during CY 2004 due to increased solids transport resulting from active building demolition and soil disturbance (Figure 185). With the implementation of remedial actions, erosion controls, revegetation, and soil stabilization, a significant reduction is noted for CY 2006–2013. However, the CY 2011–2013 loads have increased due to recent increases in Pu activity at GS10 (see Section 3.1.2.2). Post-closure influent and effluent loads have been reduced by 87 percent and 90 percent, respectively.
- Table 88 shows GS10 with the highest influent Am load for CY 1997–2013. Although load increases associated with the recent reportable conditions are noted for 2011–2013, average annual post-closure Am loads at GS10 have been reduced 73 percent.
- A measurable increase in Am loads to the ponds is noted during CY 2004. This increase was partly due to increased solids transport resulting from active building demolition and soil disturbance (Figure 187). Increased Am loads at SW093 were primarily due to contributions from B771 decontamination and decommissioning during the July 2004–November 2004 period. The pathway causing these increased loads was eliminated in December 2004. With the implementation of remedial actions, erosion controls, revegetation, and soil stabilization, a significant reduction is noted for CY 2006–2013. However, the CY 2011–2013 loads have increased due to recent increases in Am activity at GS10 (see Section 3.1.2.2). Post-closure influent and effluent loads have been reduced by 82 percent and 87 percent, respectively.
- Pre-closure (Figure 189), GS10 shows the highest average annual influent total U concentration, while SW093 shows the highest average annual influent total U load (due to larger flow volumes at SW093). Post-closure (Figure 190), GS10 shows both the highest average annual influent concentration and load. Although total influent U concentration has increased significantly, corresponding reductions in streamflow volume have actually resulted in a *decrease* in load. Post-closure influent load has been reduced by 11 percent.
- Pre-closure (Figure 189), GS11 shows the highest effluent average annual total U concentration and load. Again, although U activity has increased at both GS08 and GS11, corresponding reductions in discharge volume have resulted in a *decrease* in load. Post-closure effluent load has been reduced by 40 percent.

*Table 87. Pu Load Summary for the A- and B-Series Ponds: CY 1997–2013*

| Calendar Year | Pu-239, 240 (µg) | | | | |
|---|---|---|---|---|---|
| | Influent (WWTP) | Influent (GS10) | Influent (SW093) | Effluent (GS08) | Effluent (GS11) |
| 1997 | 11.2 | 576.0 | 164.2 | 8.8 | 59.2 |
| 1998 | 13.4 | 328.6 | 69.1 | 22.4 | 20.0 |
| 1999 | 19.4 | 307.9 | 127.8 | 261.4 | 23.8 |
| 2000 | 17.4 | 326.2 | 87.4 | 244.6 | 28.4 |
| 2001 | 11.3 | 141.4 | 44.4 | 32.3 | 4.7 |
| 2002 | 8.3 | 59.3 | 9.6 | 7.8 | 0.1 |
| 2003 | 3.8 | 207.2 | 140.1 | 111.5 | 7.3 |
| 2004 | 2.1 | 523.3 | 1,330.9 | 27.1 | 2.2 |
| 2005 | 0.0<br>WWTP removed | 247.1 | 29.2 | 17.9 | 2.2 |
| 2006 | 0.0<br>WWTP removed | 2.3 | 2.5 | 0.0;<br>No B-5 discharge | 0.0;<br>No A-4 discharge |
| 2007 | 0.0<br>WWTP removed | 14.2 | 17.0 | 1.9 | 7.8 |
| 2008 | 0.0<br>WWTP removed | 3.5 | 13.2 | 0.0;<br>No B-5 discharge | 0.0;<br>No A-4 discharge |
| 2009 | 0.0<br>WWTP removed | 15.2 | 23.0 | 3.0 | 2.3 |
| 2010 | 0.0<br>WWTP removed | 13.1 | 16.4 | 5.4 | 6.4 |
| 2011 | 0.0<br>WWTP removed | 106.7 | 4.3 | 1.8 | 1.0 |
| 2012 | 0.0<br>WWTP removed | 69.0 | 1.2 | 1.1 | 2.1[a] |
| 2013 | 0.0<br>WWTP removed | 257.0 | 4.3 | 6.3 | 38.7[a] |
| **Total** | 86.9 | 3,198 | 2,084 | 956.2 | 206.3[a] |

**Notes:**
[a] Estimated

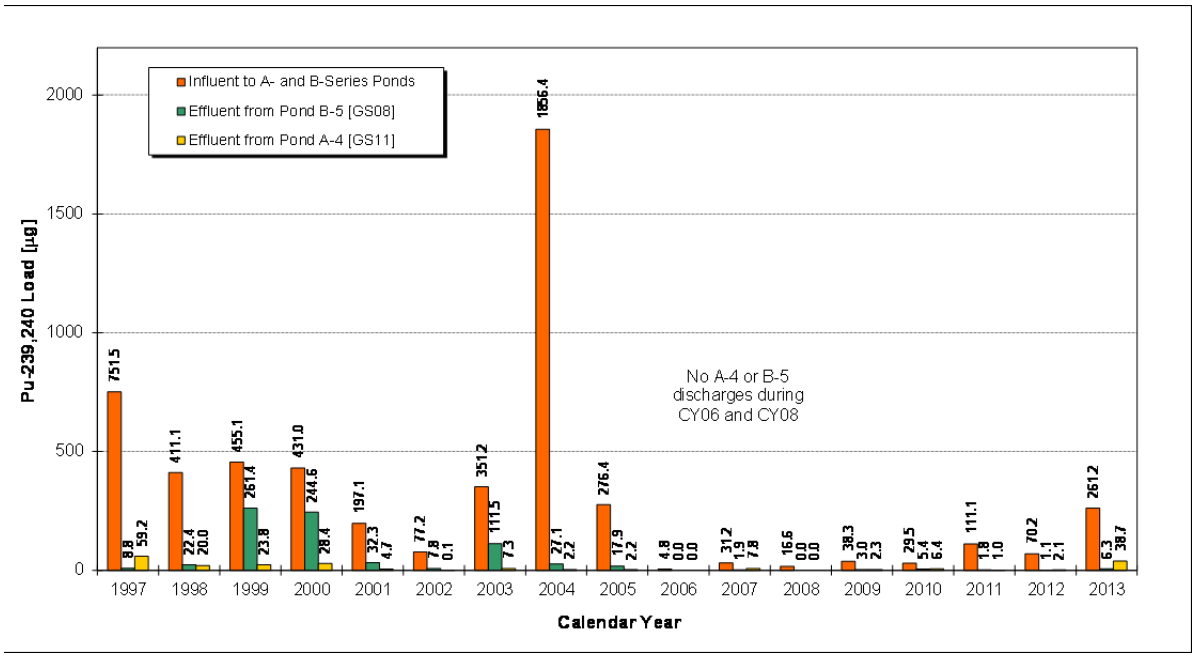
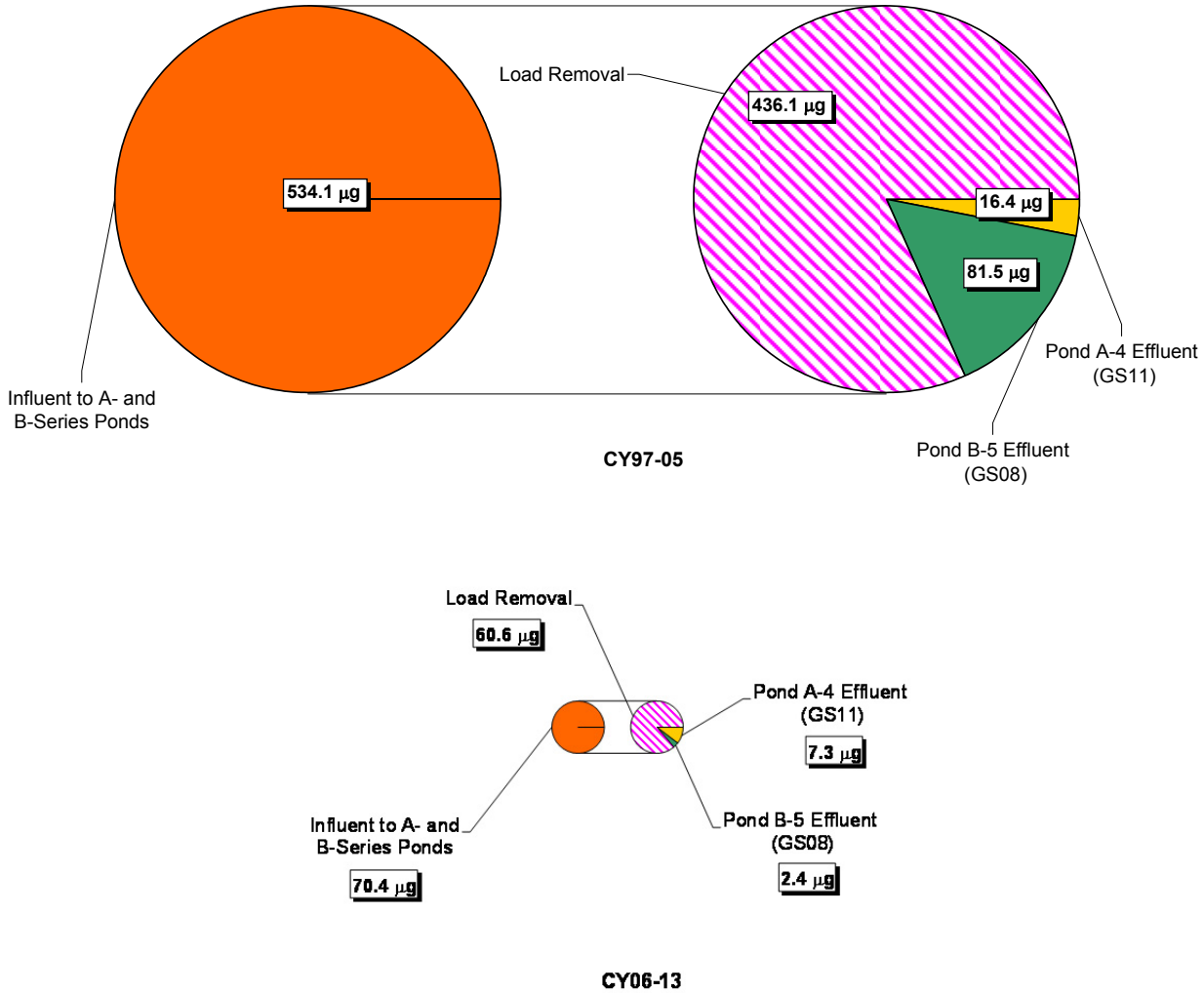



*Figure 185. Annual Pu Loads for the A- and B-Series Ponds: CY 1997–2013*




**Notes:** Pie chart diameters are relative to total load.

*Figure 186. Relative Average Annual Pu Load Totals for the A- and B-Series Ponds*

*Table 88. Am Load Summary for the A- and B-Series Ponds: CY 1997–2013*

| Calendar Year | Am-241 (µg) | | | | |
|---|---|---|---|---|---|
| | Influent (WWTP) | Influent (GS10) | Influent (SW093) | Effluent (GS08) | Effluent (GS11) |
| 1997 | 0.64 | 12.20 | 2.24 | 0.25 | 0.70 |
| 1998 | 0.32 | 4.69 | 1.30 | 0.35 | 1.25 |
| 1999 | 0.11 | 12.55 | 1.73 | 1.81 | 0.20 |
| 2000 | 0.29 | 14.57 | 0.98 | 3.14 | 0.02 |
| 2001 | 0.32 | 2.75 | 0.65 | 0.46 | 0.11 |
| 2002 | 0.20 | 1.76 | 0.52 | 0.25 | 0.04 |
| 2003 | 0.52 | 4.44 | 2.05 | 0.54 | 0.18 |
| 2004 | 0.25 | 4.68 | 28.48 | 0.58 | 0.14 |
| 2005 | 0.00 WWTP removed | 3.98 | 0.82 | 0.97 | 0.43 |
| 2006 | 0.00 WWTP removed | 0.04 | 0.02 | 0.00; No B-5 discharge | 0.00; No A-4 discharge |
| 2007 | 0.00 WWTP removed | 0.14 | 0.28 | 0.03 | 0.02 |
| 2008 | 0.00 WWTP removed | 0.09 | 0.15 | 0.00; No B-5 discharge | 0.00; No A-4 discharge |
| 2009 | 0.00 WWTP removed | 0.15 | 0.21 | 0.02 | 0.09 |
| 2010 | 0.00 WWTP removed | 0.15 | 0.35 | 0.11 | 0.14 |
| 2011 | 0.00 WWTP removed | 3.42 | 0.07 | 0.02 | 0.05 |
| 2012 | 0.00 WWTP removed | 2.13 | 0.04 | 0.01 | 0.06 |
| 2013 | 0.00 WWTP removed | 8.66 | 0.20 | 0.20 | 0.62[a] |
| **Total** | 2.65 | 76.4 | 40.1 | 8.74 | 4.06[a] |

**Notes:**
[a] Estimated

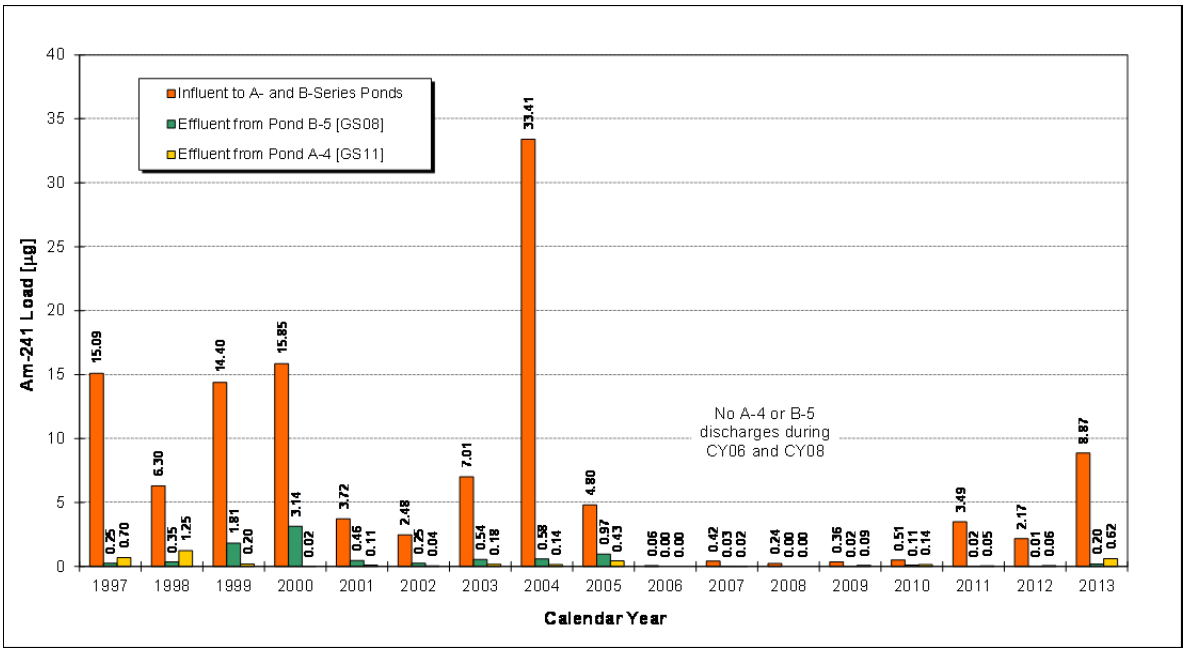
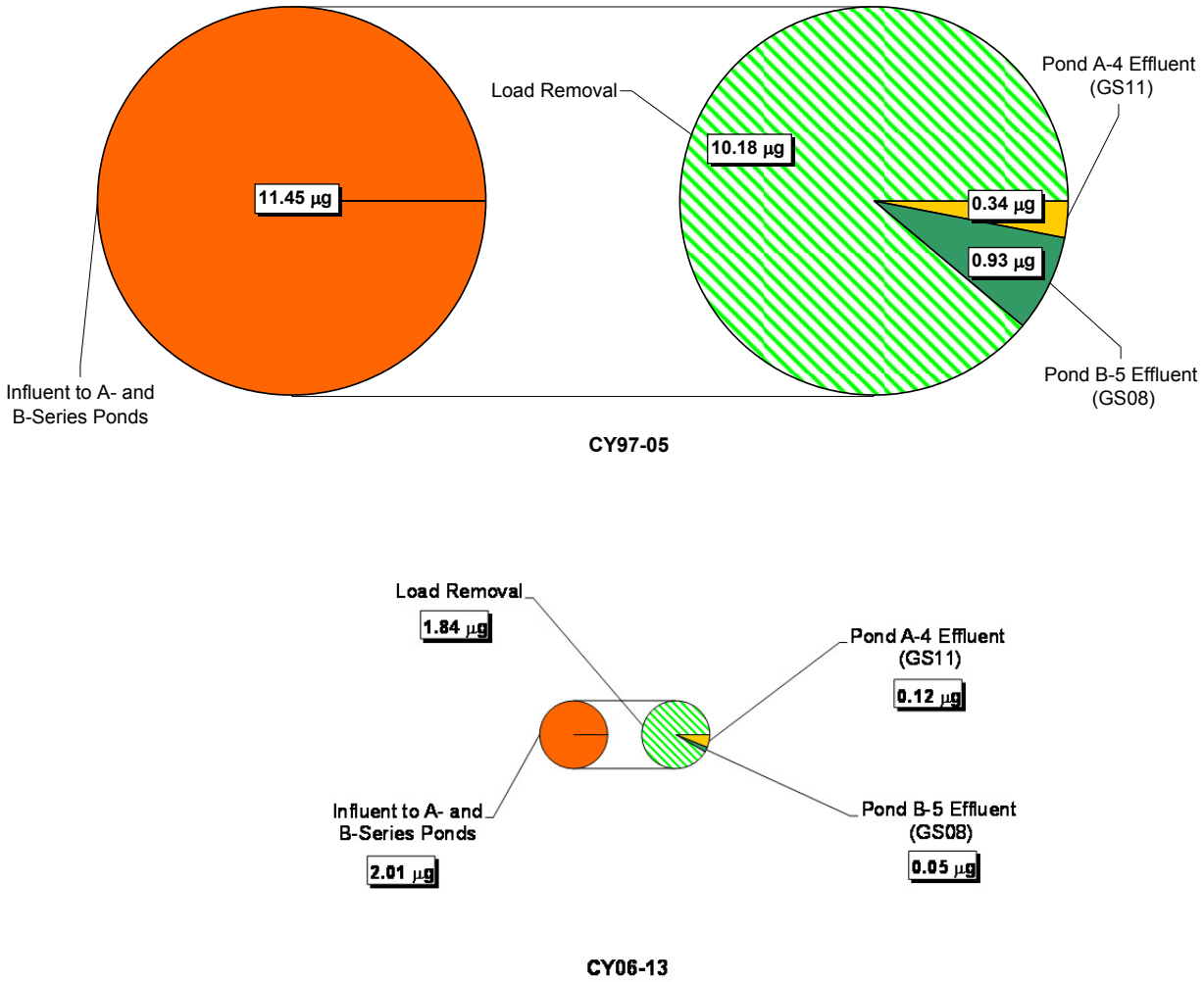
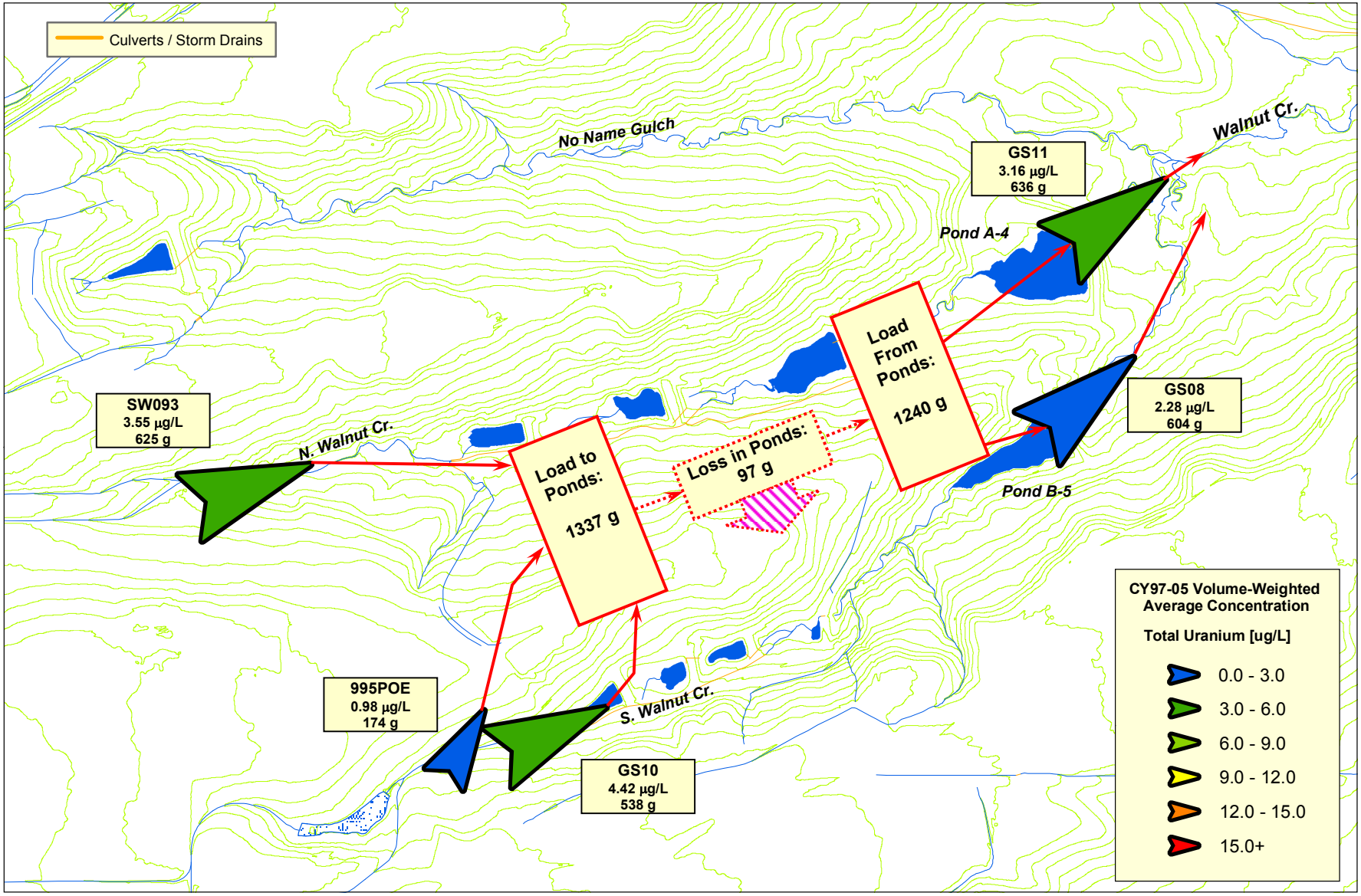



*Figure 187. Annual Am Loads for the A- and B-Series Ponds: CY 1997–2013*



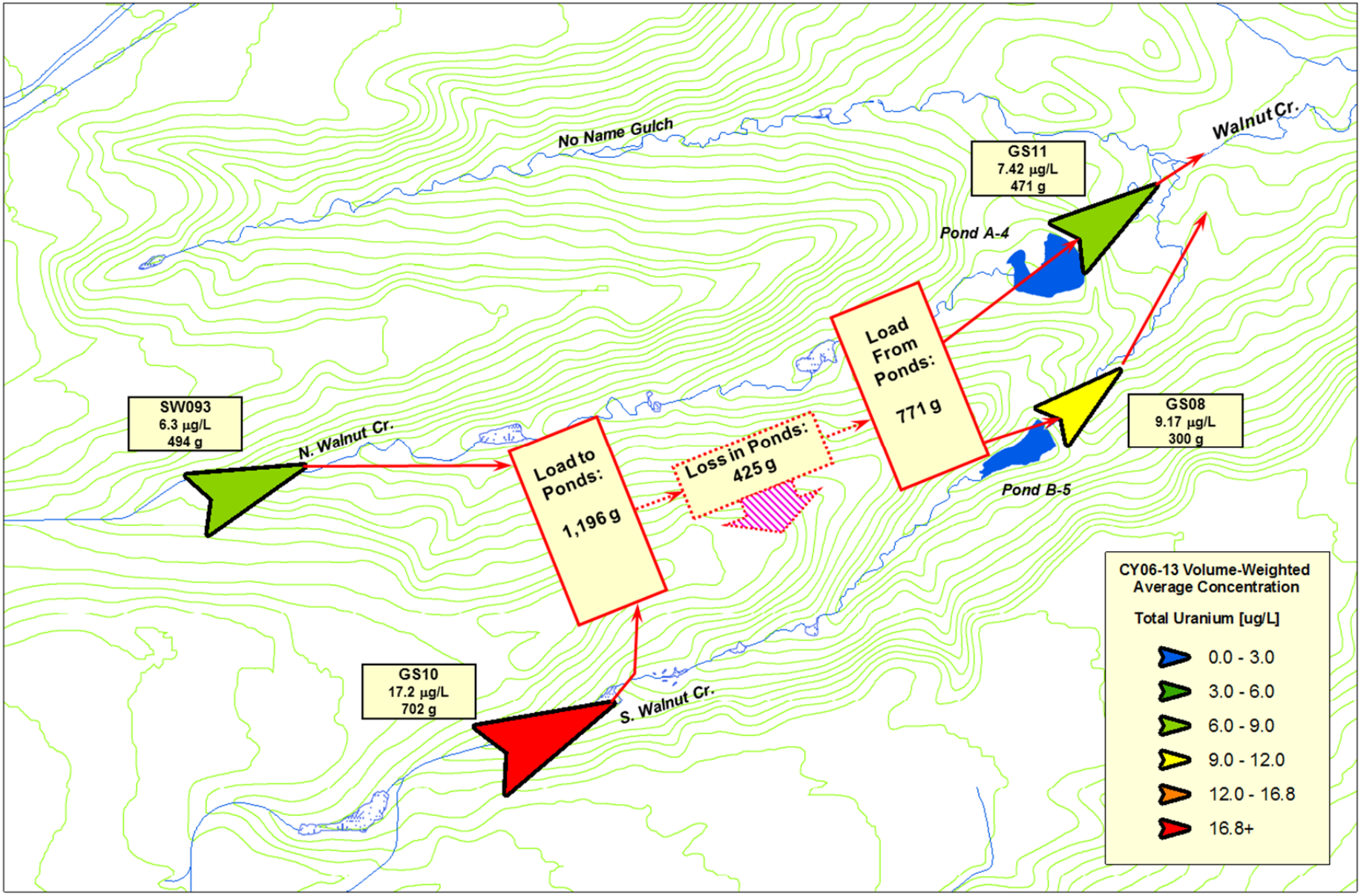

**Notes:** Pie chart diameters are relative to total load.

*Figure 188. Relative Average Annual Am Load Totals for the A- and B-Series Ponds*




**Notes:** Location symbols are displayed proportional to calculated average annual load and colored according to concentration ranges in legend.

*Figure 189. Relative Average Annual Total U Loading Schematic for the A- and B-Series Ponds: CY 1997–2005*




**Notes:** Location symbols are displayed proportional to calculated average annual load and colored according to concentration ranges in legend.

*Figure 190. Relative Average Annual Total U Loading Schematic for the A- and B-Series Ponds: CY 2006–2013*

*Table 89. Total U Load Summary for the A- and B-Series Ponds: CY 1997–2013*

| Calendar Year | Total U (grams) | | | | |
|---|---|---|---|---|---|
| | Influent (WWTP) | Influent (GS10) | Influent (SW093) | Effluent (GS08) | Effluent (GS11) |
| 1997 | 257 | 637 | 853 | 252 | 1,365 |
| 1998 | 467 | 631 | 797 | 620 | 1,301 |
| 1999 | 121 | 589 | 714 | 809 | 633 |
| 2000 | 103 | 379 | 485 | 465 | 386 |
| 2001 | 259 | 519 | 646 | 639 | 564 |
| 2002 | 61 | 279 | 450 | 258 | 132 |
| 2003 | 161 | 501 | 568 | 610 | 865 |
| 2004 | 139 | 430 | 575 | 390 | 316 |
| 2005 | 0<br>WWTP removed | 879 | 534 | 1,389 | 165 |
| 2006 | 0<br>WWTP removed | 230 | 171 | 0;<br>No B-5 discharge | 0;<br>No A-4 discharge |
| 2007 | 0<br>WWTP removed | 830 | 540 | 481 | 411 |
| 2008 | 0<br>WWTP removed | 275 | 154 | 0;<br>No B-5 discharge | 0;<br>No A-4 discharge |
| 2009 | 0<br>WWTP removed | 756 | 574 | 322 | 405 |
| 2010 | 0<br>WWTP removed | 1,158 | 1,047 | 746 | 1,199 |
| 2011 | 0<br>WWTP removed | 758 | 403 | 315 | 430 |
| 2012 | 0<br>WWTP removed | 676 | 288 | 127 | 379 |
| 2013 | 0<br>WWTP removed | 933 | 771 | 407 | 944[a] |
| **Total** | 1,569 | 10,462 | 9,570 | 7,831 | 9,496[a] |

**Notes:**
[a] Estimated

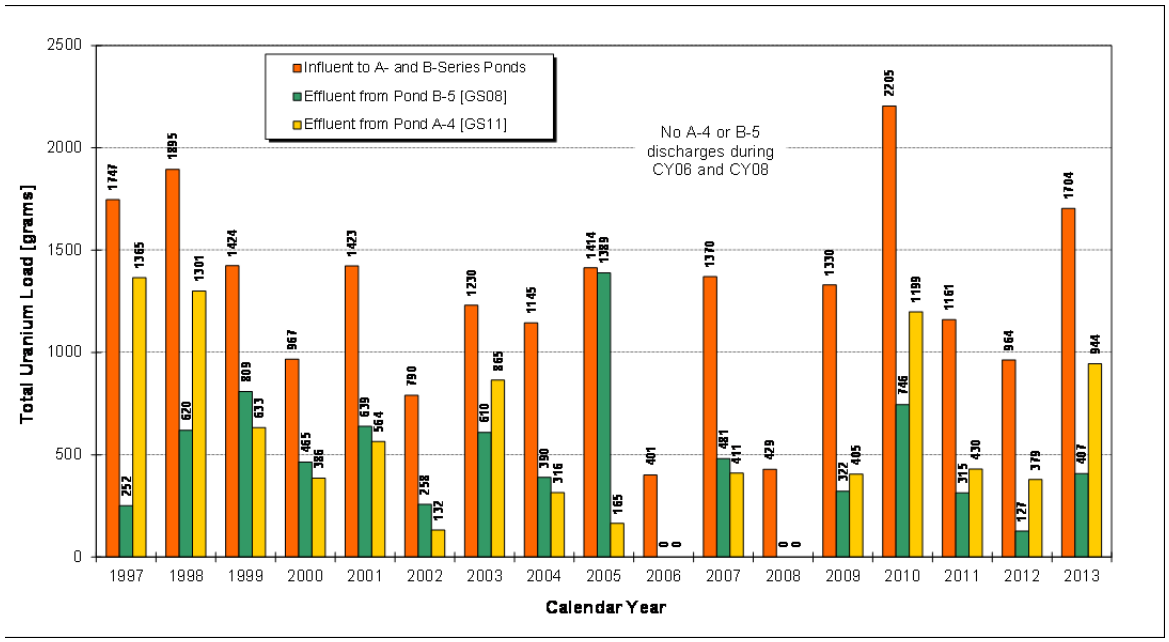
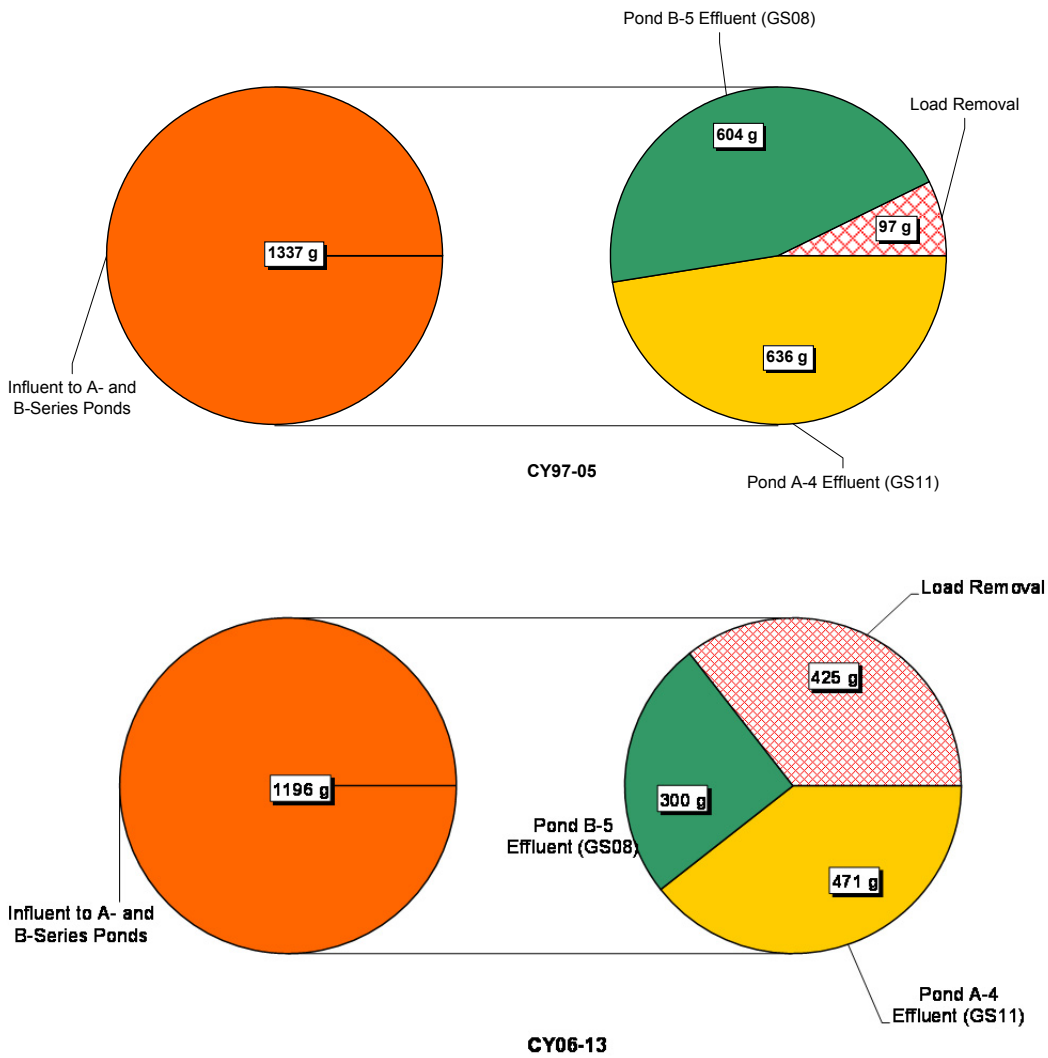



*Figure 191. Annual Total U Loads for the A- and B-Series Ponds: CY 1997–2013*




**Notes:** Pie chart diameters are relative to total load.

*Figure 192. Relative Average× Annual Total U Load Totals for the A- and B-Series Ponds*

## *Pond C-2*

This section summarizes the calculated Pu, Am, and U loads for Pond C-2. Data are presented in Table 90, Table 91, and Table 92, and depicted on Figure 193, Figure 194, Figure 195, Figure 196, Figure 197, Figure 198, Figure 199, and Figure 200. The influent load source is SW027 (SID at Pond C-2 inlet). The effluent loads are calculated at GS31 (Pond C-2 outlet). The following points are noted:

- Annual Pu and Am loads vary significantly year to year (Figure 193 and Figure 195). A significant increase in both Pu and Am loads influent to Pond C-2 is noted during CY 2004 due to increased solids transport from extensive soil disturbance in the drainage associated with the 903 Pad/Lip accelerated actions. With the completion of remedial actions, implementation of erosion controls, revegetation, and soil stabilization, a significant reduction is noted for CY 2005–2013. Post-closure influent and effluent Pu loads have been

reduced by 94 percent and 82 percent, respectively. Similarly, post-closure influent and effluent Am loads have been reduced by 92 percent and 90 percent, respectively.

- Annual total U loads also vary significantly year to year (Figure 199). Post-closure influent and effluent U loads have been reduced by 80 percent and 49 percent, respectively.
- There is a measurable average annual U load gain in Pond C-2 (Figure 197). This is likely due to seepage with naturally occurring U entering Pond C-2 from the Woman Creek Diversion Canal and therefore not being accounted for at SW027.

*Table 90. Pu Load Summary for Terminal Pond C-2: CY 1997–2013*

| Calendar Year | Pu-239, 240 (µg) | |
|---|---|---|
| | **Influent (SW027)** | **Effluent (GS31)** |
| 1997 | 17.4 | 16.7 |
| 1998 | 87.7 | 2.2 |
| 1999 | 34.3 | 26.9 |
| 2000 | 67.2 | 0.0;<br>No C-2 discharge |
| 2001 | 10.7 | 11.0 |
| 2002 | 0.3 | 0.2 |
| 2003 | 45.1 | 11.0 |
| 2004 | 820.8 | 11.5 |
| 2005 | 18.6 | 5.0 |
| 2006 | 0.0;<br>No flow | 0.0;<br>No C-2 discharge |
| 2007 | 16.5 | 0.0;<br>No C-2 discharge |
| 2008 | 0.0;<br>No flow | 0.0;<br>No C-2 discharge |
| 2009 | 6.9 | 4.1 |
| 2010 | 32.4 | 0.4 |
| 2011 | <0.01 | 1.0 |
| 2012 | 0.0;<br>No flow | 0.3 |
| 2013 | 6.0 | 7.6[a] |
| **Total** | 1,164 | 97.8[a] |

**Notes:**
[a] Estimated

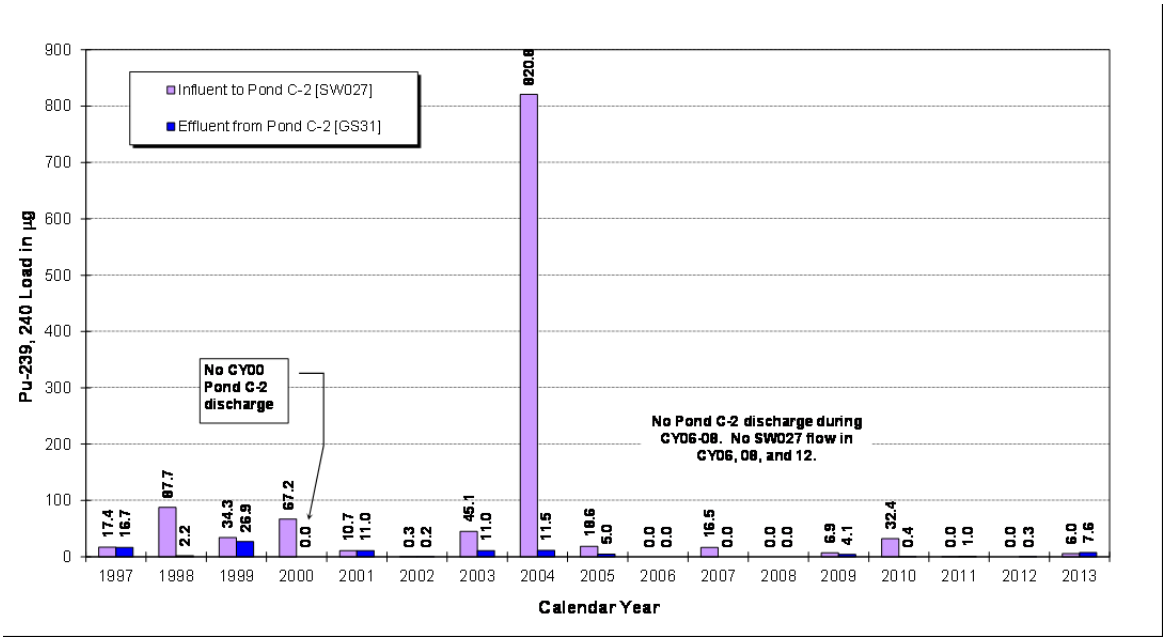
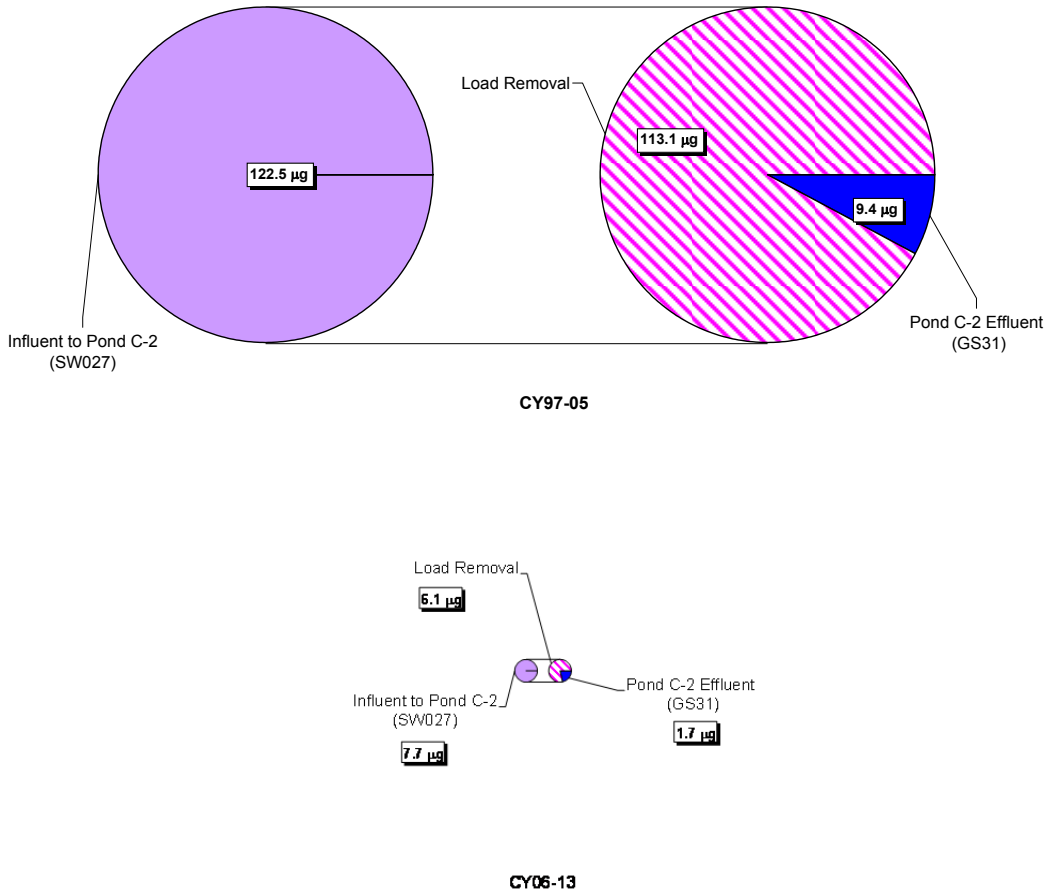



*Figure 193. Annual Pu Loads for Pond C-2: CY 1997–2013*




**Notes:** Pie chart diameters are relative to total load.

*Figure 194. Relative Average Annual Pu Load Totals for Pond C-2*

*Table 91. Am Load Summary for Terminal Pond C-2: CY 1997–2013*

| Calendar Year | Am-241 (µg) | |
|---|---|---|
| | Influent (SW027) | Effluent (GS31) |
| 1997 | 0.08 | 0.17 |
| 1998 | 0.25 | 0.27 |
| 1999 | 0.20 | 0.13 |
| 2000 | 0.24 | 0.00;<br>No C-2 discharge |
| 2001 | 0.05 | 0.14 |
| 2002 | 0.00 | <0.01 |
| 2003 | 0.12 | 0.09 |
| 2004 | 3.09 | 0.11 |
| 2005 | 0.05 | 0.04 |
| 2006 | 0.00;<br>No flow | 0.00;<br>No C-2 discharge |
| 2007 | 0.15 | 0.00;<br>No C-2 discharge |
| 2008 | 0.00;<br>No flow | 0.00;<br>No C-2 discharge |
| 2009 | 0.02 | 0.03 |
| 2010 | 0.12 | 0.02 |
| 2011 | 0.00 | 0.01 |
| 2012 | 0.00;<br>No flow | <0.005 |
| 2013 | 0.01 | 0.03[a] |
| **Total** | 4.40 | 1.04[a] |

**Notes:**
[a] Estimated

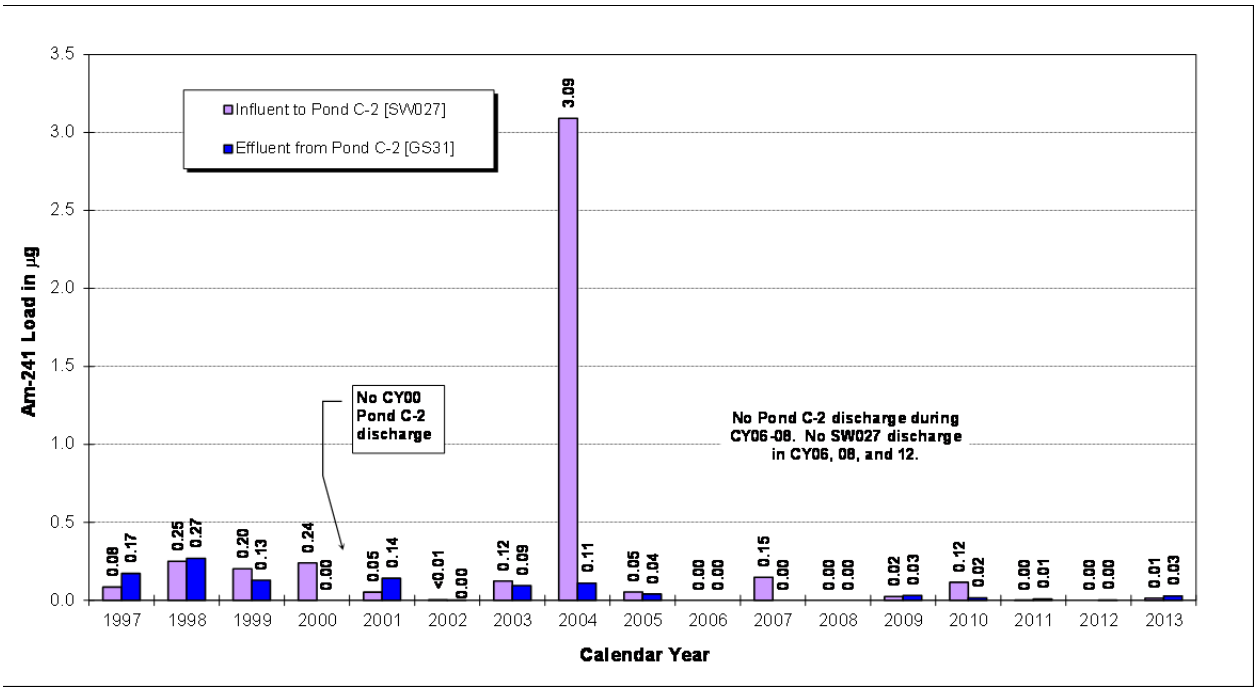
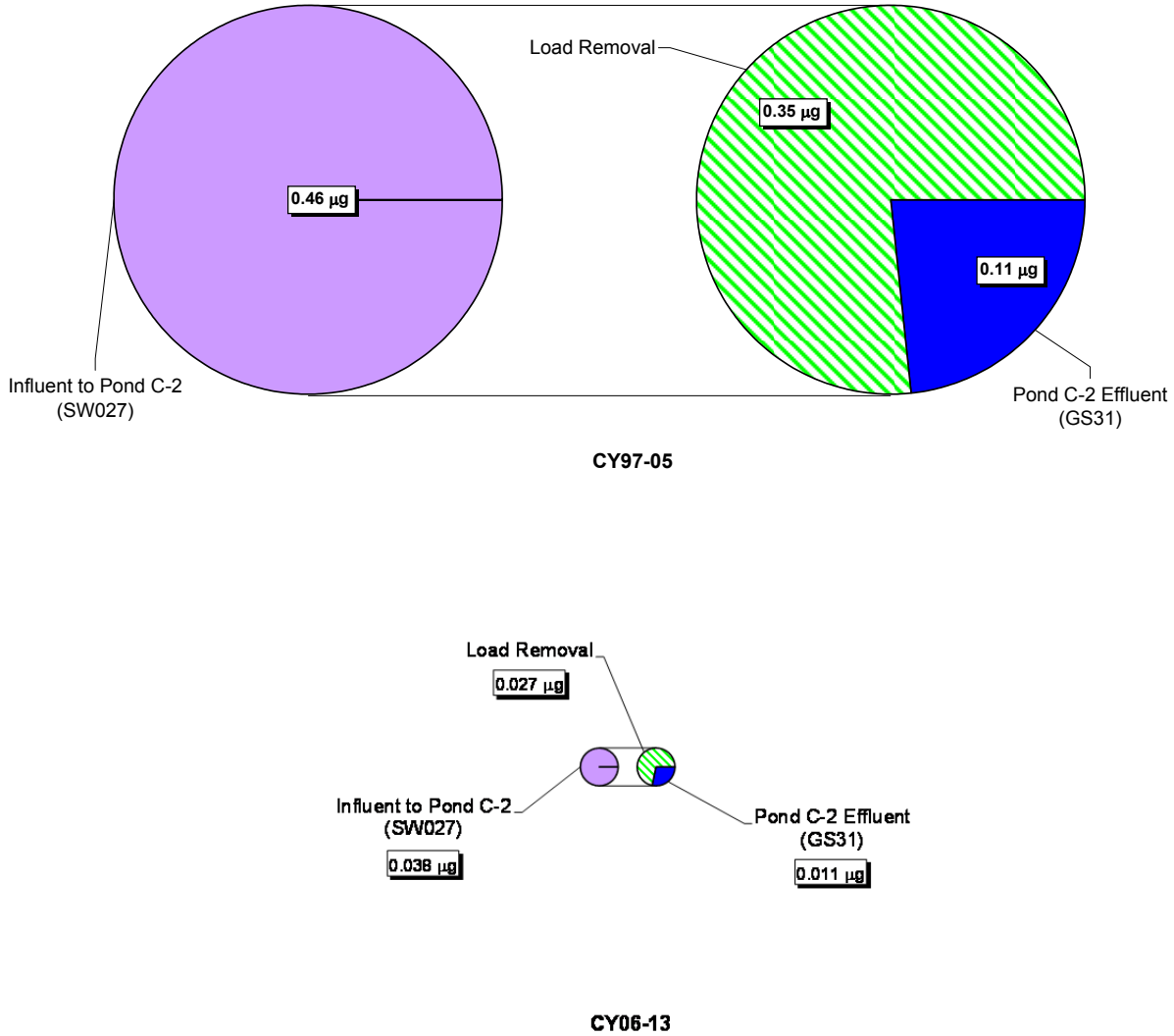



*Figure 195. Annual Am Loads for Pond C-2: CY 1997–2013*



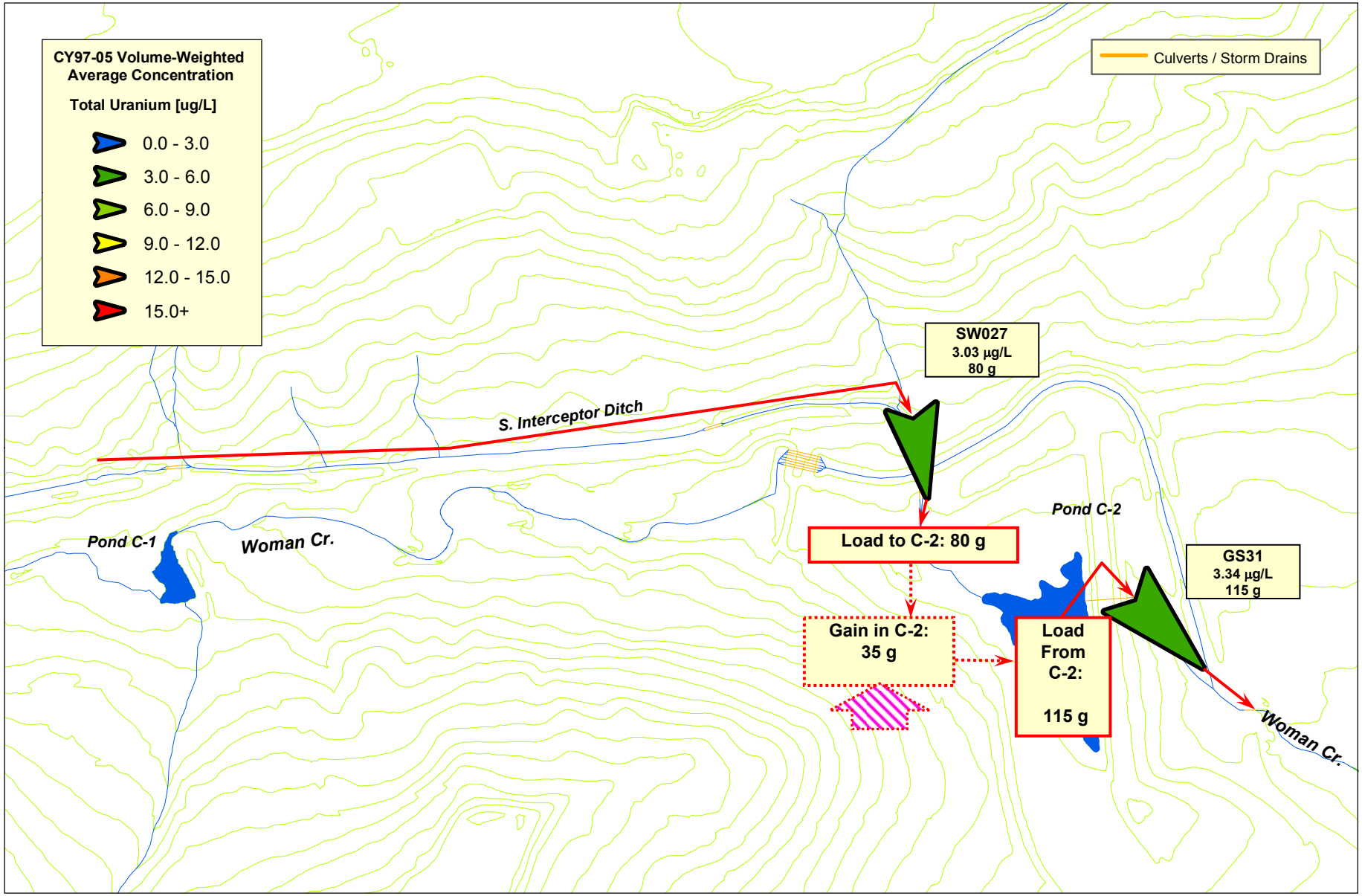

**Notes:** Pie chart diameters are relative to total load.

*Figure 196. Relative Average Annual Am Load Totals for Pond C-2*

*Table 92. Total U Load Summary for Terminal Pond C-2: CY 1997–2013*

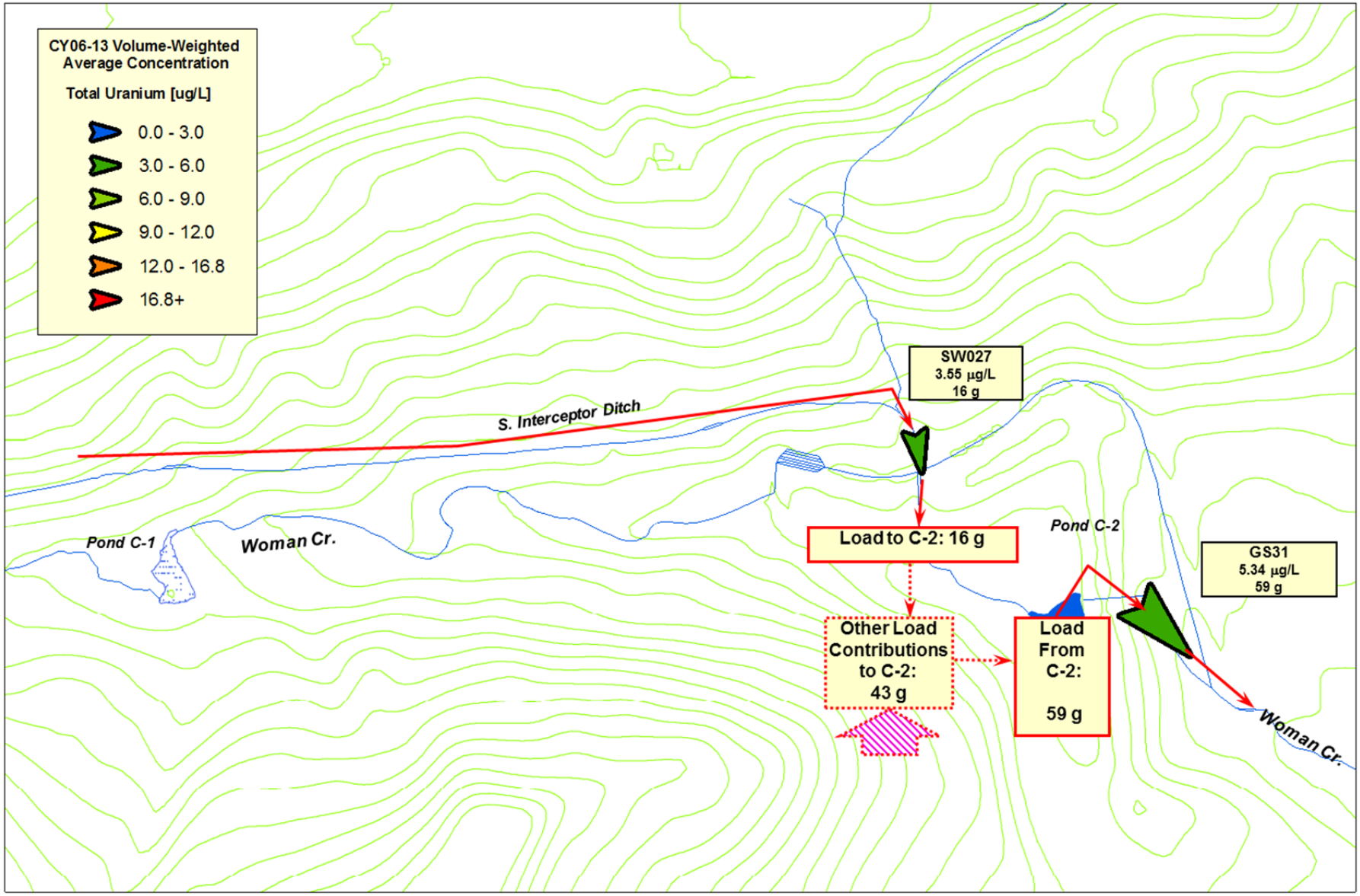
| Calendar Year | Total U (g) | |
|---|---|---|
| | Influent (SW027) | Effluent (GS31) |
| 1997 | 84 | 231 |
| 1998 | 239 | 216 |
| 1999 | 116 | 189 |
| 2000 | 22 | 0.00;<br>No C-2 discharge |
| 2001 | 66 | 67 |
| 2002 | 7 | 1 |
| 2003 | 111 | 129 |
| 2004 | 40 | 92 |
| 2005 | 33 | 115 |
| 2006 | 0;<br>No flow | 0;<br>No C-2 discharge |
| 2007 | 36 | 0;<br>No C-2 discharge |
| 2008 | 0;<br>No flow | 0;<br>No C-2 discharge |
| 2009 | 16 | 95 |
| 2010 | 70 | 61 |
| 2011 | <0.1 | 102 |
| 2012 | 0;<br>No flow | 48 |
| 2013 | 6.7 | 164[a] |
| **Total** | 847 | 1,509[a] |

**Notes:**
[a] Estimated




**Notes:** Location symbols are displayed proportional to calculated average annual load and colored according to concentration ranges in legend.

*Figure 197. Relative Average Annual U Loading Schematic for Pond C-2: CY 1997–2005*




**Notes:** Location symbols are displayed proportional to calculated average annual load and colored according to concentration ranges in legend.

*Figure 198. Relative Average Annual U Loading Schematic for Pond C-2: CY 2006–2013*

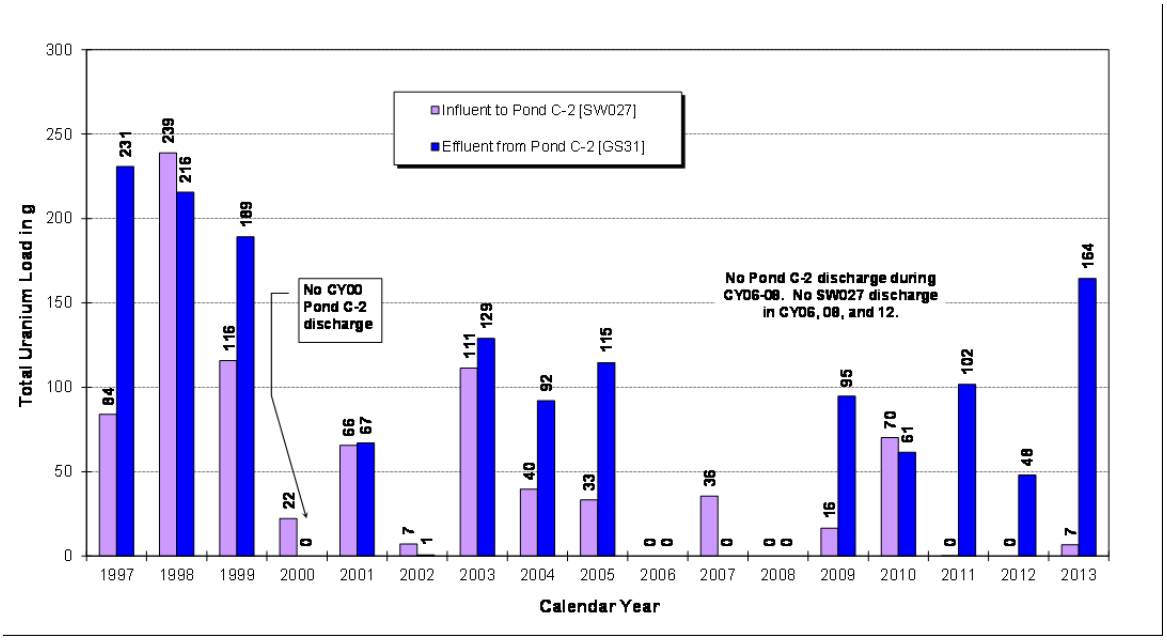
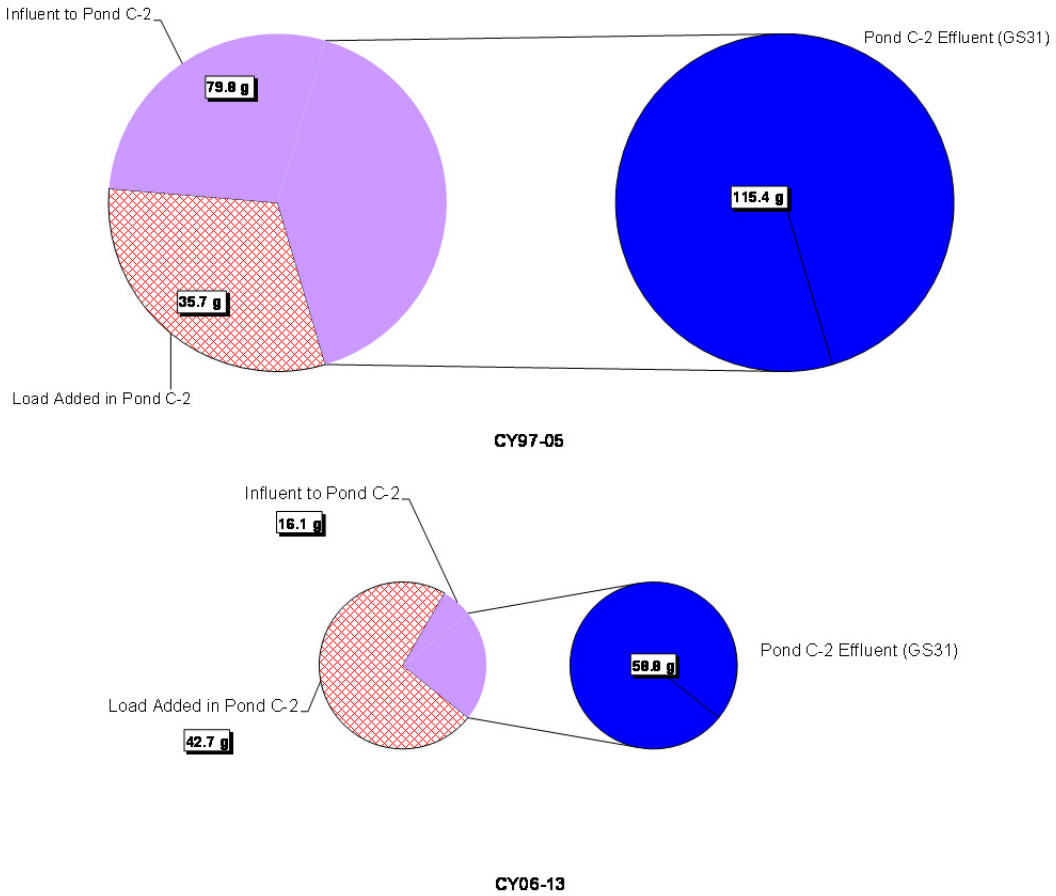



*Figure 199. Annual Total U Loads for Pond C-2: CY 1997–2013*




**Notes:** Pie chart diameters are relative to total load.

*Figure 200. Relative Average Annual Total U Load Totals for Pond C-2*

### *RFLMA Points of Evaluation*

This section summarizes the calculated Pu, Am, and U loads for the three major former IA drainages: North Walnut Creek (SW093), South Walnut Creek (GS10 and the former WWTP), and the SID (SW027). Data are presented in Table 93 and Table 94 and are depicted on Figure 201, Figure 202, Figure 203, Figure 204, Figure 205, Figure 206, Figure 207, Figure 208, Figure 209, and Figure 210. The following points are noted:

- Total Pu load varies year to year and shows a significant increase in CY 2004 mostly due to extensive soil disturbance (Figure 201). With the completion of remedial actions, erosion controls, revegetation, and soil stabilization, a significant reduction is noted for CY 2006–2013. However, the CY 2011-2013 loads have increased due to recent increases in Pu activity at GS10 (see Section 3.1.2.2). However, average annual post-closure Pu loads have still been reduced by 88 percent.
- Total Am load also varies year to year and shows a measurable increase in CY 2004 due to soil disturbance and contributions from closure actions in the B771 area (Figure 203). With the completion of remedial actions, erosion controls, revegetation, and soil stabilization, a reduction is noted for CY 2006–2013. Data from SW093 in CY 2005 (Figure 208) also clearly show that the B771 pathway elimination was successful. However, the CY 2011–2013 loads have increased due to recent increases in Am activity at GS10 (see Section 3.1.2.2). However, average annual post-closure Am loads have still been reduced by 83 percent.
- South Walnut Creek accounts for a majority (47 percent) of the Pu load from the former IA (Figure 202) pre-closure. Of the South Walnut Creek Pu load, GS10 accounted for 97 percent, and the former WWTP accounted for the remaining 3 percent. Post-closure, South Walnut Creek remains the largest contributor (77 percent) of Pu load. The CY 2011–2013 load has increased due to recent increases in Pu activity at GS10.
- South Walnut Creek accounts for a majority (60 percent) of the Am load from the former IA (Figure 204) pre-closure. Of the South Walnut Creek Am load, GS10 accounted for 96 percent, and the former WWTP accounted for the remaining 4 percent. Post-closure, South Walnut Creek remains the largest contributor (90 percent) of the Am loads. The CY 2011–2013 load has increased due to recent increases in Am activity at GS10.
- Annual total U loads are more consistent year to year (Figure 209). The load reductions in CY 2006 and 2008 are due to flow volume reduction and not a decrease in U concentration. Similarly, the load increase in CY 2010 and 2013 is due to large flow volumes and not a significant increase in U concentration. Post-closure overall U loads have been reduced by 14 percent.
- Pre-closure total U loads are fairly evenly divided (44 percent to 50 percent) between North and South Walnut creeks (Figure 210). Post-closure, there is a shift toward South Walnut Creek (58 percent of the total).

*Table 93. Former IA Drainage Pu and Am Loads: CY 1997–2013*

| Calendar Year | Pu-239, 240 (µg) | | | | Am-241 (µg) | | | |
|---|---|---|---|---|---|---|---|---|
| | North Walnut Creek (SW093) | South Walnut Creek (GS10) | South Walnut Creek (WWTP) | SID (SW027) | North Walnut Creek (SW093) | South Walnut Creek (GS10) | South Walnut Creek (WWTP) | SID (SW027) |
| 1997 | 164.2 | 576.0 | 11.2 | 17.4 | 2.24 | 12.20 | 0.64 | 0.08 |
| 1998 | 69.1 | 328.6 | 13.4 | 87.7 | 1.30 | 4.69 | 0.32 | 0.25 |
| 1999 | 127.8 | 307.9 | 19.4 | 34.3 | 1.73 | 12.55 | 0.11 | 0.20 |
| 2000 | 87.4 | 326.2 | 17.4 | 67.2 | 0.98 | 14.57 | 0.29 | 0.24 |
| 2001 | 44.4 | 141.4 | 11.3 | 10.7 | 0.65 | 2.75 | 0.32 | 0.05 |
| 2002 | 9.6 | 59.3 | 8.3 | 0.3 | 0.52 | 1.76 | 0.20 | 0.00 |
| 2003 | 140.1 | 207.2 | 3.8 | 45.1 | 2.05 | 4.44 | 0.52 | 0.12 |
| 2004 | 1,330.9 | 523.3 | 2.1 | 820.8 | 28.48 | 4.68 | 0.25 | 3.09 |
| 2005 | 29.2 | 247.1 | 0.0; WWTP removed | 18.6 | 0.82 | 3.98 | 0.00; WWTP removed | 0.05 |
| 2006 | 2.5 | 2.3 | 0.0; WWTP removed | 0.0; No flow | 0.02 | 0.04 | 0.00; WWTP removed | 0.00; No flow |
| 2007 | 17.0 | 14.2 | 0.0; WWTP removed | 16.5 | 0.28 | 0.14 | 0.00; WWTP removed | 0.15 |
| 2008 | 13.2 | 3.5 | 0.0; WWTP removed | 0.0; No flow | 0.15 | 0.09 | 0.00; WWTP removed | 0.00; No flow |
| 2009 | 23.0 | 15.2 | 0.0; WWTP removed | 6.9 | 0.21 | 0.15 | 0.00; WWTP removed | 0.02 |
| 2010 | 16.4 | 13.1 | 0.0; WWTP removed | 32.4 | 0.35 | 0.15 | 0.00; WWTP removed | 0.12 |
| 2011 | 4.3 | 106.7 | 0.0; WWTP removed | <0.01 | 0.07 | 3.42 | 0.00; WWTP removed | 0.00 |
| 2012 | 1.2 | 69.0 | 0.0; WWTP removed | 0.0; No flow | 0.04 | 2.13 | 0.00; WWTP removed | 0.0; No flow |
| 2013 | 4.3 | 257.0 | 0.0; WWTP removed | 6.0 | 0.20 | 8.66 | 0.00; WWTP removed | 0.01 |
| **Total** | 2,085 | 3,198 | 86.9 | 1,164 | 40.1 | 76.4 | 2.65 | 4.40 |

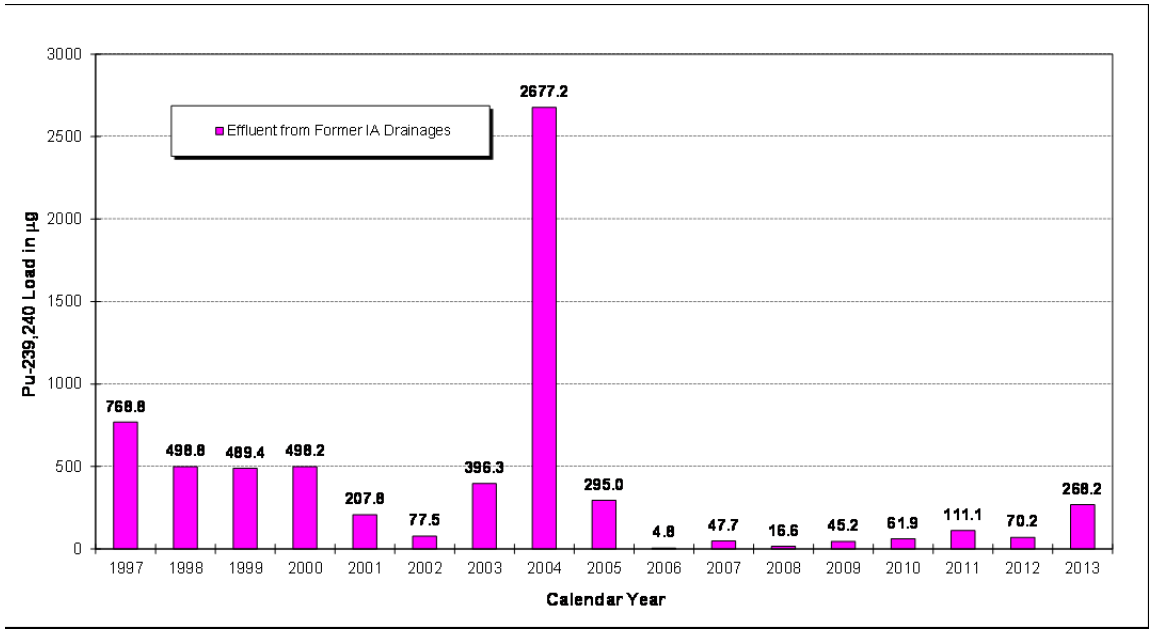
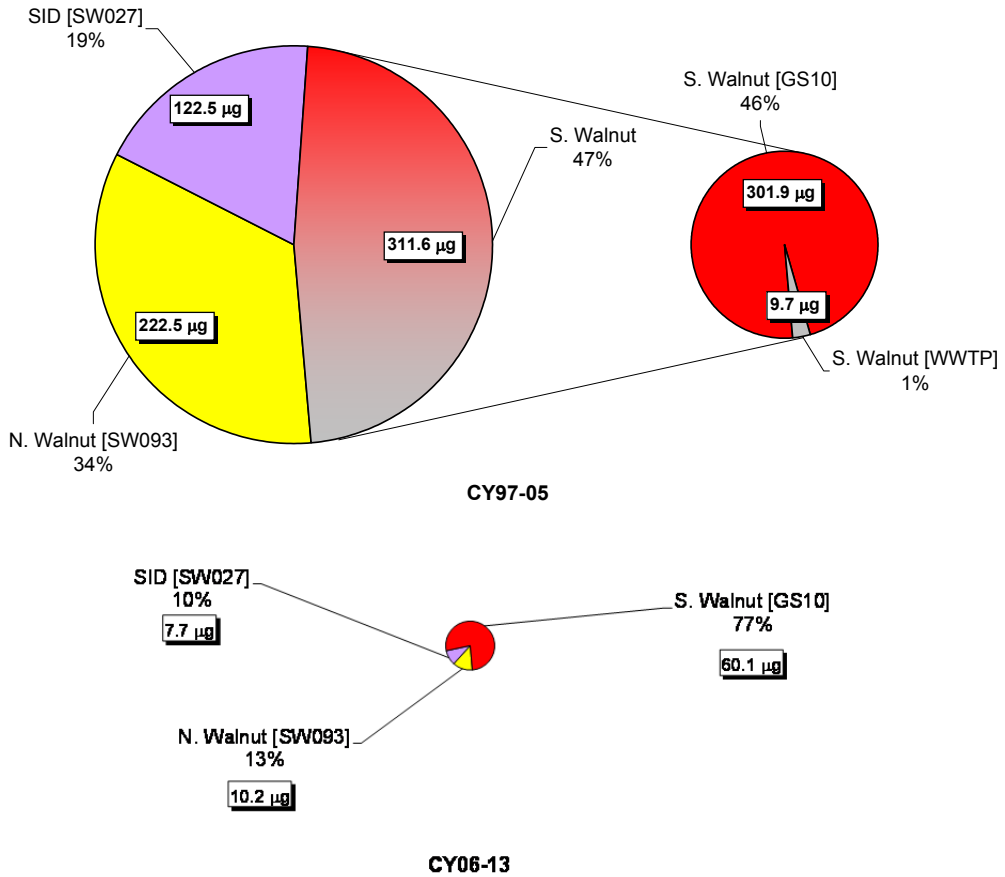



*Figure 201. Combined Annual Pu Loads from Former IA Drainages: CY 1997–2013*




**Notes:** Pie chart diameters are relative to total load.

*Figure 202. Relative Average Annual Pu Load Totals from Former IA Drainages and WWTP*

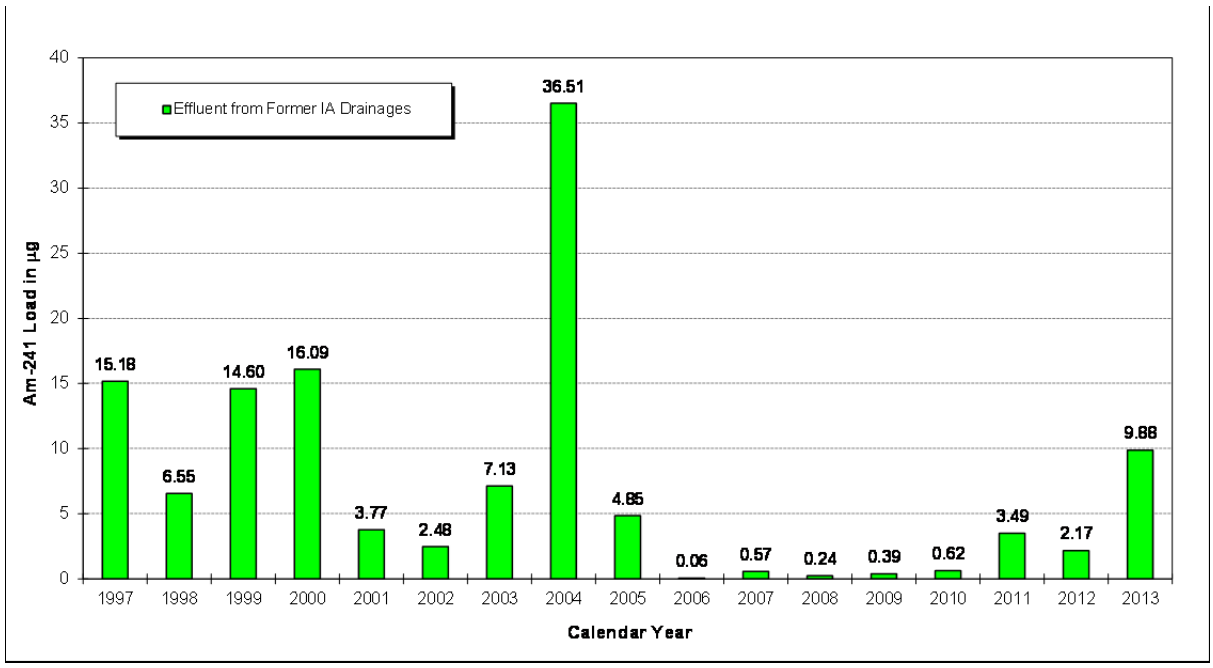
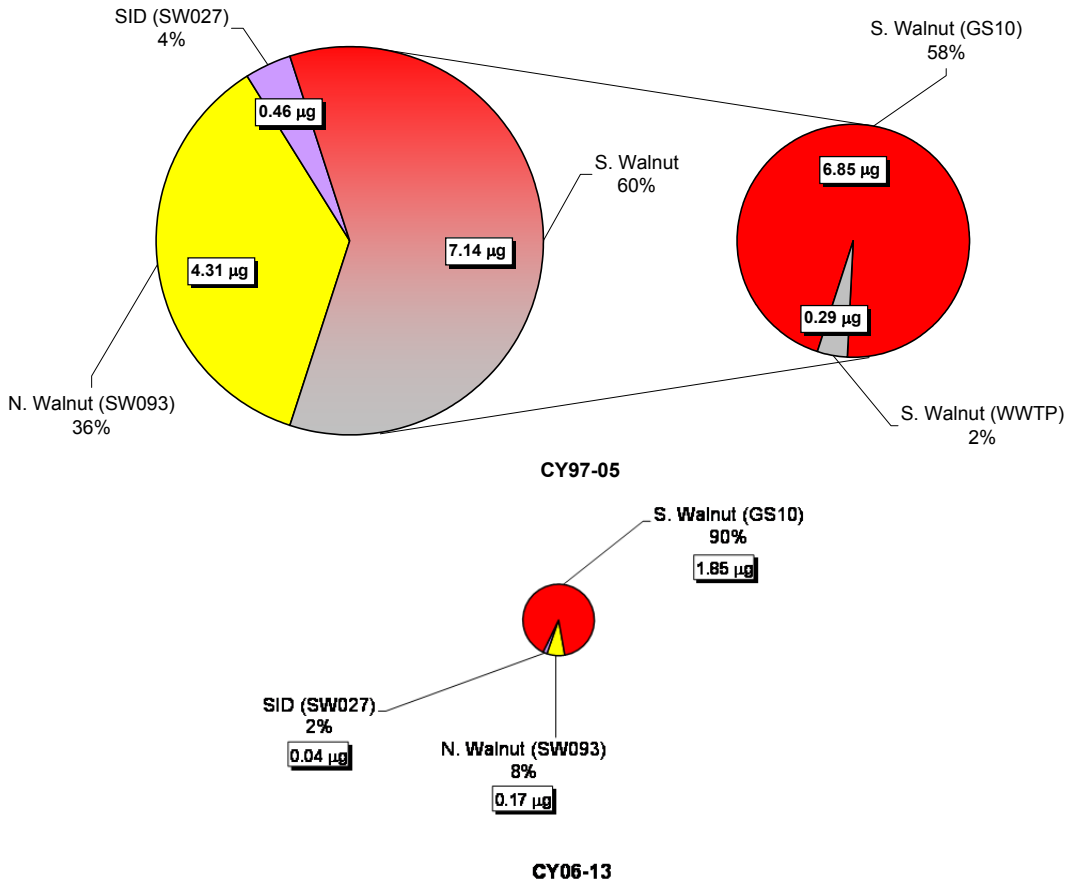



*Figure 203. Annual Am Loads from Former IA Drainages and WWTP: CY 1997–2013*




**Notes:** Pie chart diameters are relative to total load.

*Figure 204. Relative Average Annual Am Load Totals from Former IA Drainages and WWTP*

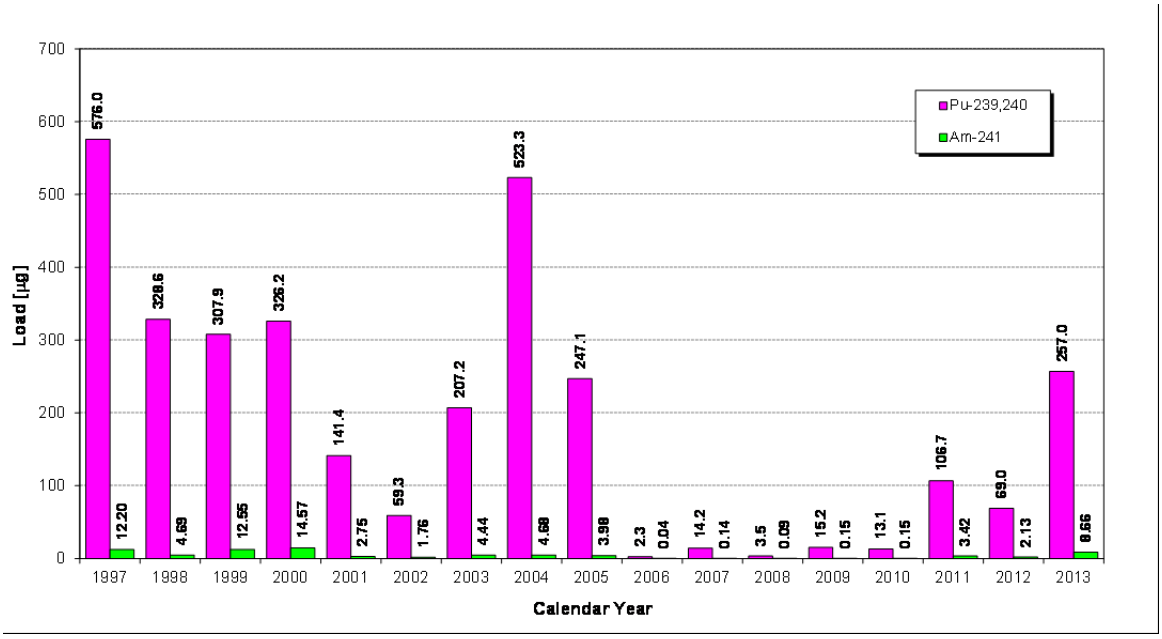



*Figure 205. Annual Pu and Am Loads at GS10: CY 1997–2013*

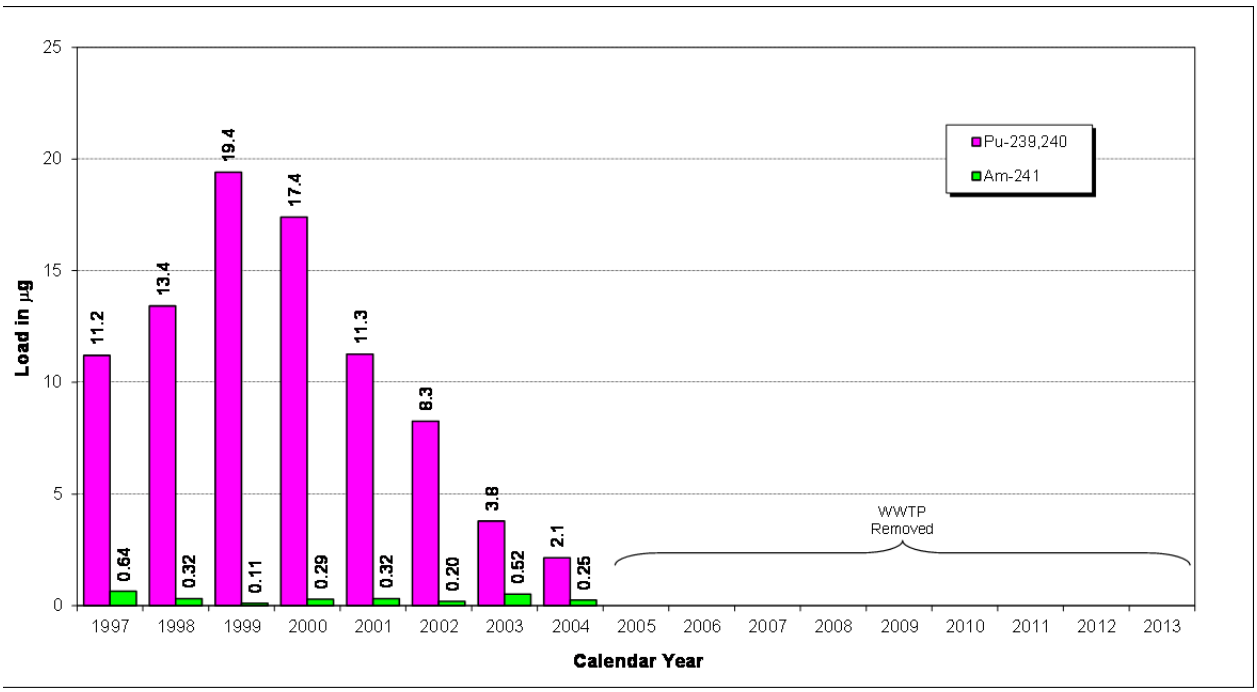



*Figure 206. Annual Pu and Am Loads at the WWTP: CY 1997–2013*

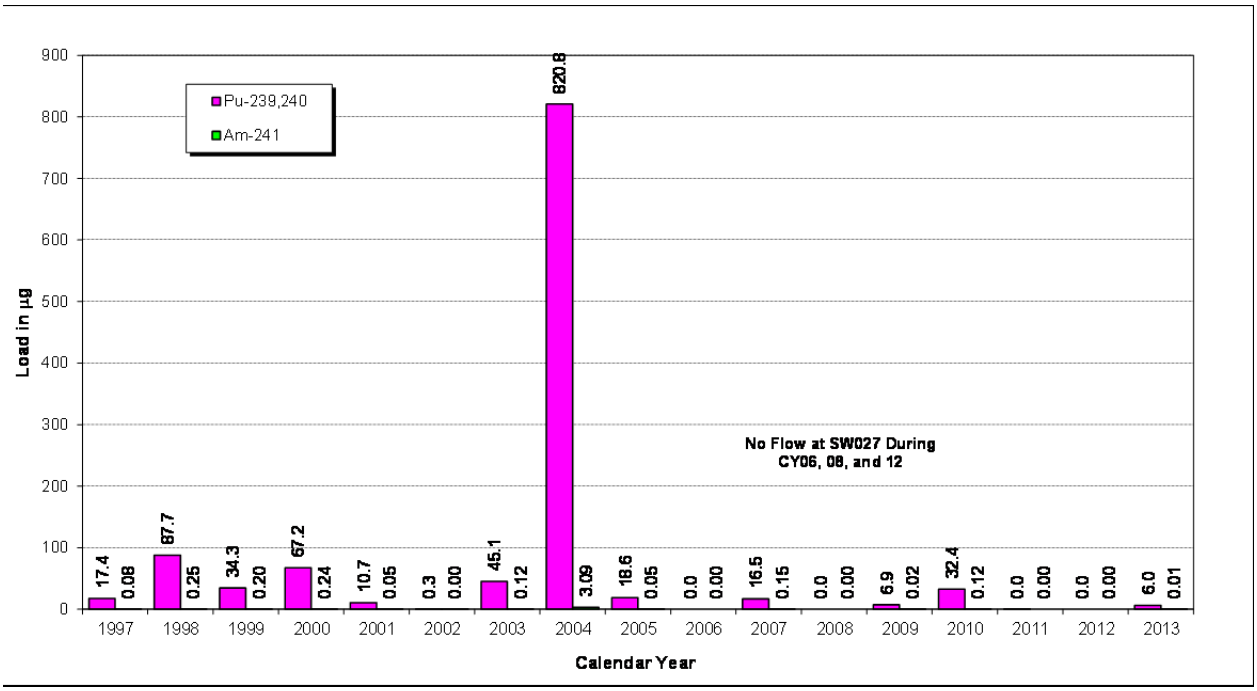



*Figure 207. Annual Pu and Am Loads at SW027: CY 1997–2013*

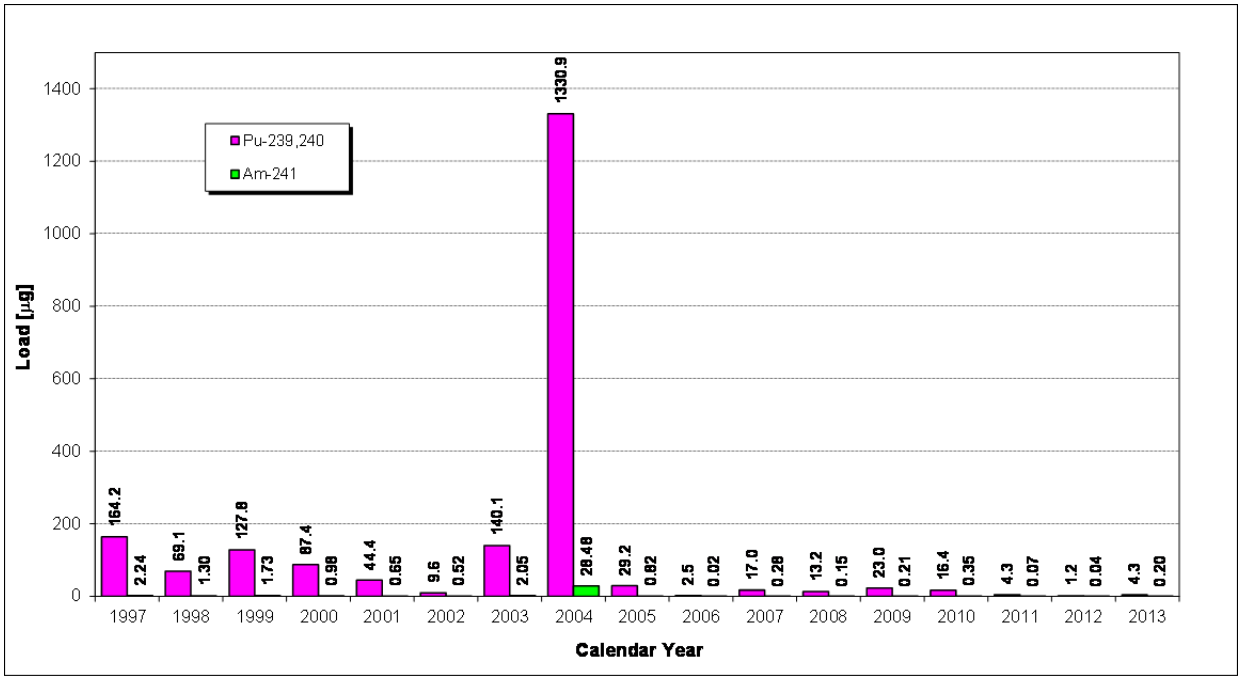



*Figure 208. Annual Pu and Am Loads at SW093: CY 1997–2013*

*Table 94. Former IA Total U Loads: CY 1997–2013*

| Calendar Year | Total U (g) | | | |
|---|---|---|---|---|
| | North Walnut Creek (SW093) | South Walnut Creek (GS10) | South Walnut Creek (WWTP) | SID (SW027) |
| 1997 | 853 | 637 | 257 | 84 |
| 1998 | 797 | 631 | 467 | 239 |
| 1999 | 714 | 589 | 121 | 116 |
| 2000 | 485 | 379 | 103 | 22 |
| 2001 | 646 | 519 | 259 | 66 |
| 2002 | 450 | 279 | 61 | 7 |
| 2003 | 568 | 501 | 161 | 111 |
| 2004 | 575 | 430 | 139 | 40 |
| 2005 | 534 | 879 | 0; WWTP removed | 33 |
| 2006 | 171 | 230 | 0; WWTP removed | 0; No flow |
| 2007 | 540 | 830 | 0; WWTP removed | 36 |
| 2008 | 154 | 275 | 0; WWTP removed | 0; No flow |
| 2009 | 574 | 756 | 0; WWTP removed | 16 |
| 2010 | 1,047 | 1,158 | 0; WWTP removed | 70 |
| 2011 | 403 | 758 | 0; WWTP removed | <0.1 |
| 2012 | 288 | 676 | 0; WWTP removed | 0; No flow |
| 2013 | 771 | 933 | 0; WWTP removed | 6.7 |
| **Total** | 9,570 | 10,462 | 1,569 | 847 |

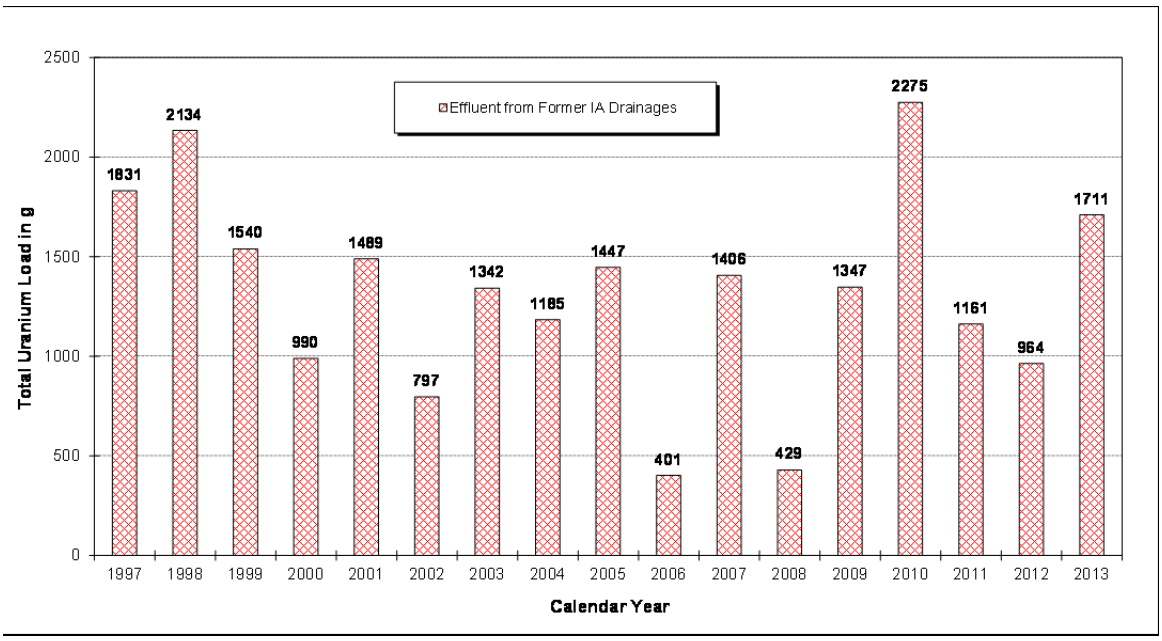
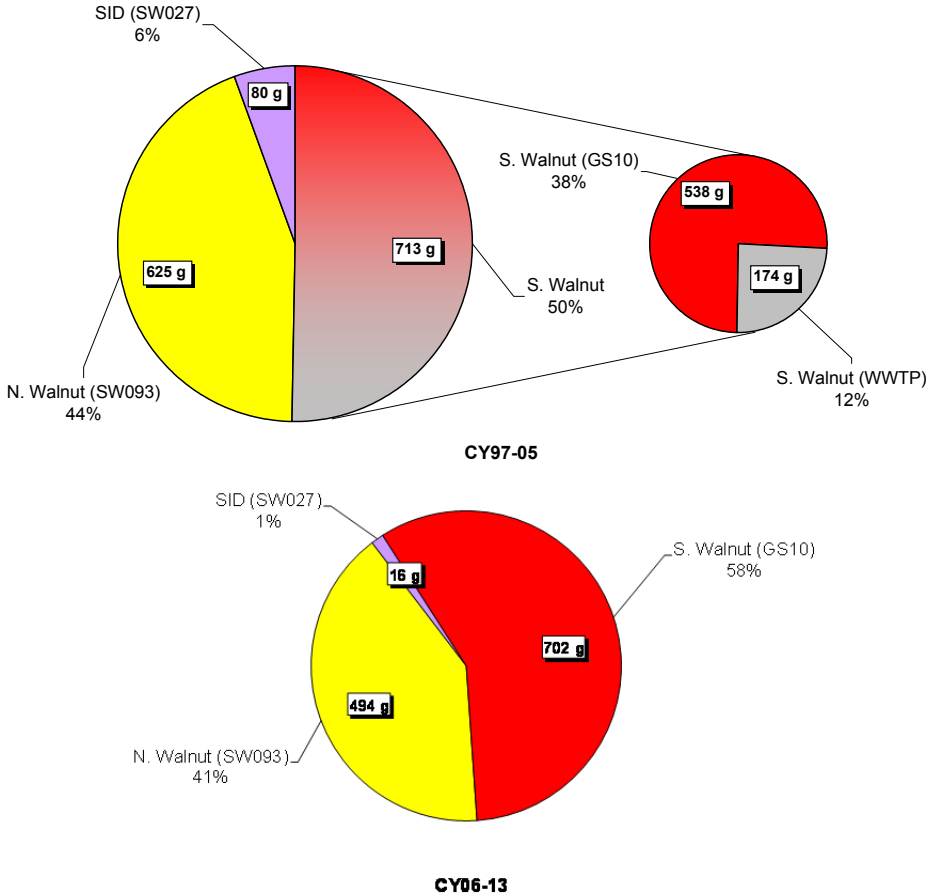



*Figure 209. Annual Total U Loads from Former IA Drainages and WWTP: CY 1997–2013*




**Notes:** Pie chart diameters are relative to total load.

*Figure 210. Relative Average Annual Total U Loads from Former IA Drainages and WWTP*

### 3.1.5 Groundwater Data Interpretation and Evaluation

This section provides a summary of groundwater monitoring performed in 2013. A discussion of groundwater conditions during 2013, focusing on the most important water-quality aspects in the areas of interest (i.e., the main contaminant plumes), is then presented.

#### *3.1.5.1 RFLMA Groundwater Monitoring Activities of 2013*

Routine activities of the groundwater monitoring program in 2013 included sample collection, water-level measurement, groundwater treatment system maintenance, and well maintenance. "Groundwater" monitoring also includes monitoring activities at several surface-water locations, as well as at some locations that may not clearly belong to either category. (Examples of the former include Surface Water Support location SW018 and treatment system-related performance monitoring locations; examples of the latter include locations monitoring effluent from a treatment system before it is discharged.) However, because all of these locations support groundwater monitoring objectives, the data collected from them in support of these objectives are included as part of the groundwater discussion.

Special, non-RFLMA monitoring was also performed in 2013 to support various objectives. This is summarized in Section 3.1.5.2. The majority of this monitoring focused on the MSPTS and SPPTS. Validated analytical data and other information generated via RFLMA (i.e., routine) and non-RFLMA (i.e., nonroutine) sampling have been reported in the corresponding quarterly reports for 2013 (DOE 2013f, 2013g, 2014) and are included in Appendix B for the fourth quarter of CY 2013. Unvalidated data are not reported but are summarized in this document.

There were no changes to the network of groundwater monitoring locations during 2013. The groundwater monitoring network set forth in RFLMA is subdivided and categorized as shown in Table 95.

*Table 95. RFLMA Monitoring Classifications for the Groundwater Monitoring Network*

| Well Classification[a] | General Objective | Number of Wells[a] | Monitoring Frequency |
|---|---|---|---|
| AOC | Monitor groundwater quality and water levels in a drainage downgradient of a contaminant plume or group of plumes | 9 | Semiannual (2x/year) |
| Sentinel | Monitor groundwater quality and water levels near contaminant plume edges and in drainages | 28 | Semiannual (2x/year) |
| Evaluation | Monitor groundwater quality and water levels in or near contaminant source areas and in the former IA | 42 | Biennial (1x/every 2 years) |
| RCRA | Monitor groundwater quality and water levels upgradient and downgradient of the PLF and the OLF | 10 | Quarterly (4x/year) |
| Treatment System[c,d] | Monitor quality of groundwater treatment system influent, effluent, and downgradient surface water | 9 | Semiannual (2x/year) |
| Surface-Water Support[c] | Monitor quality of surface water downgradient of contaminant plume | 1 | Semiannual (2x/year) |

**Notes:**
[a] Locations are referred to as "wells" for convenience even if they do not represent wells, as is the case with treatment system and surface water locations.
[b] The numbers of locations listed are current through 2013.
[c] Treatment system and surface-water support locations are not monitoring wells but are included for completeness.
[d] The PLFTS is discussed separately.

Table 96 presents the full 2013 schedule for RFLMA-required groundwater sample collection, a subset of which is summarized in Table 97 as those scheduled samples that were not successfully collected (e.g., due to dry conditions). Corresponding analytical results are published in the associated quarterly reports (DOE 2013f, 2013g, 2014) and Appendix B.

*Table 96. Summary of Scheduled RFLMA-Required Groundwater Sampling in CY 2013 (by Quarter)*

| Area | Classification or Type | Location ID | Analytes | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | VOCs | U | Nitrate | Metals | Pu/Am | SVOCs |
| Present Landfill | RCRA | 70193 | 1,2,3,4 | | | 1,2,3,4 | | |
| | RCRA | 70393 | 1,2,3,4 | | | 1,2,3,4 | | |
| | RCRA | 70693 | 1,2,3,4 | | | 1,2,3,4 | | |
| | RCRA | 73005 | 1,2,3,4 | | | 1,2,3,4 | | |
| | RCRA | 73105 | 1,2,3,4 | | | 1,2,3,4 | | |
| | RCRA | 73205 | 1,2,3,4 | | | 1,2,3,4 | | |
| | AOC | 4087 | 2,4 | 2,4 | 2,4 | | | |
| | AOC | B206989 | 2,4 | 2,4 | 2,4 | | | |
| Original Landfill | RCRA | P416589 | 1,2,3,4 | | | 1,2,3,4 | | 1,2,3,4 |
| | RCRA | 80005 | 1,2,3,4 | | | 1,2,3,4 | | 1,2,3,4 |
| | RCRA | 80105 | 1,2,3,4 | | | 1,2,3,4 | | 1,2,3,4 |
| | RCRA | 80205 | 1,2,3,4 | | | 1,2,3,4 | | 1,2,3,4 |
| | AOC | 11104 | 2,4 | 2,4 | | | | |
| MSPTS | S | 15699 | 2,4 | | | | | |
| | TS | MOUND R1-0 | 2,4 | | | | | |
| | TS | MOUND R2-E | 2,4 | | | | | |
| | TS | GS10 | 2,4 | | | | | |
| ETPTS | S | 04091 | 2,4 | | | | | |
| | S | 95099 | 2,4 | | | | | |
| | S | 95199 | 2,4 | | | | | |
| | S | 95299 | 2,4 | | | | | |
| | S | 23296 | 2,4 | 2,4 | | | | |
| | TS | ET INFLUENT | 2,4 | | | | | |
| | TS | ET EFFLUENT | 2,4 | | | | | |
| | TS | POM2 | 2,4 | | | | | |
| SPPTS | S | P210089 | 2,4 | 2,4 | 2,4 | | | |
| | S | 70099 | | 2,4 | 2,4 | | | |
| | TS | SPIN | | 2,4 | 2,4 | | | |
| | TS | SPOUT | | 2,4 | 2,4 | | | |
| | TS | GS13 | | 2,4 | 2,4 | | | |
| Drainages Below Impacted Areas | AOC | 10594 | 2,4 | 2,4 | 2,4 | | | |
| | AOC | 00997 | 2,4 | 2,4 | 2,4 | | | |
| | AOC | 00193 | 2,4 | 2,4 | | | | |
| Former Building 371/ Building 374 | S | 37405 | 2,4 | 2,4 | 2,4 | | 2,4 | |
| | S | 37505 | 2,4 | 2,4 | 2,4 | | | |
| | S | 37705 | 2,4 | 2,4 | 2,4 | | 2,4 | |
| Former Building 771/ Building 774 | S | 20205 | 2,4 | 2,4 | | | 2,4 | |
| | S | 20505 | 2,4 | 2,4 | | | 2,4 | |
| | S | 20705 | 2,4 | 2,4 | 2,4 | | 2,4 | |
| Former North-Central IA | S | 52505 | 2,4 | | | | | |
| | AOC | 42505 | 2,4 | | | | | |

*Table 96 (continued). Summary of Scheduled RFLMA-Required Groundwater Sampling in CY 2013 (by Quarter)*

| Area | Classification or Type | Location ID | Analytes | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | VOCs | U | Nitrate | Metals | Pu/Am | SVOCs |
| Former IHSS 118.1 | SS | SW018 | 2,4 | | | | | |
| Former B444 Complex | S | 11502 | 2,4 | 2,4 | | | | |
| | S | 40305 | 2,4 | 2,4 | | | | |
| Former Building 881 | S | 00797 | 2,4 | 2,4 | | | | |
| | S | 88104 | 2,4 | 2,4 | | | | |
| Former B991 | S | 99305 | 2,4 | 2,4 | 2,4 | | | |
| | S | 99405 | 2,4 | 2,4 | 2,4 | | | |
| | S | 91305 | 2,4 | 2,4 | 2,4 | | | |
| Former Oil Burn Pit No. 1 | S | 33711 | 2,4 | | | | | |
| Former Oil Burn Pit No. 2 | S | 91203 | 2,4 | | | | | |
| Former SW056 | S | 45608 | 2,4 | | | | | |
| OU 1 Plume | AOC | 89104 | 2,4 | | | | | |
| 903 Pad/Ryan's Pit Plume | S | 90299 | 2,4 | | | | | |
| | S | 90399 | 2,4 | | | | | |
| | AOC | 10304 | 2,4 | 2,4 | 2,4 | | | |
| PU&D Yard Plume | S | 30002 | 2,4 | | | | | |

**Notes:** ID = Identification (name) of well/sampling location. Location classifications: AOC = Area of Concern, S = Sentinel, RCRA = Resource Conservation and Recovery Act, and SS = Surface Water Support. Location types: TS = Treatment System, all others are groundwater monitoring wells or Surface Water Support. SVOCs = semivolatile organic compounds. 2 (or other numeral) = Analyte requested for that quarter; if blank, analyte not requested

*Table 97. Summary of RFLMA-Required Groundwater Samples Not Successfully Collected in 2013 (by Quarter)*

| Location | | Analytes | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|
| ID | Classification | VOCs | U | Nitrate | Metals | Pu/Am | SVOCs | |
| 95299 | S | 2, 4 | | | | | | Dry well |
| 90299 | S | 2, 4 | | | | | | Dry well |

**Notes:** ID = identification (name) of well/sampling location. RFLMA classifications: S = Sentinel, SVOCs = semivolatile organic compounds. 2 (or other numeral) in analyte column = corresponding analyte requested in the indicated calendar quarter of 2012; if blank, analyte not requested

### *3.1.5.2 Additional Groundwater Monitoring Activities of 2013*

Groundwater monitoring beyond that required by the RFLMA (i.e., nonroutine monitoring) was performed in 2013 in support of several data needs. This is occasionally referred to as "non-RFLMA" monitoring, and generally falls within the following two categories:

- Investigative sampling; and
- Performance sampling.

Table 98 summarizes the extra/nonroutine groundwater sample collection performed in 2013. In addition to this summary of the nonroutine sampling, additional monitoring was performed through the Sitewide measurement of water levels as discussed in Section 3.1.3.

As in recent years, much of the extra monitoring performed in 2013 was focused on the SPPTS. Most of the additional analytical data collected for the SPPTS were generated by an in-house laboratory and cannot be validated. This topic is discussed separately in Section 3.1.2.8.

A substantial amount of monitoring beyond RFLMA requirements was also performed in 2013 for the MSPTS and ETPTS air strippers. These samples were submitted to contract laboratories and validated as if they were RFLMA data. These data have been reported in previous quarterly and annual reports, but are summarized and discussed at greater length in the text focusing on those groundwater treatment systems in the next section.

Finally, several extra samples were collected from selected Evaluation wells in the second and (or) fourth quarters of 2013. Evaluation wells are scheduled for RFLMA sampling in the second quarter of every even-numbered year, and therefore this sampling was in addition to the routine, required RFLMA sampling. The last routinely-scheduled round of Evaluation well sampling was conducted in 2012. However, 2012 was a very dry year—the driest in the period of record, as discussed previously. To help assess the effects of the wetter spring in 2013, Evaluation wells in some source areas were sampled in the second quarter. This was repeated at selected Evaluation wells in the fourth quarter of 2013, after the extremely high precipitation received in September 2013. Results from these fourth-quarter samples are included in Appendix B and, together with other data collected over the year, are discussed in the context of their respective groundwater plumes; they are also included in the statistical trending calculations.

#### *3.1.5.3 Groundwater at the Rocky Flats Site: Discussion and Interpretations*

This section presents a summary evaluation of groundwater quality at the Site during 2013, and also provides descriptions of special studies and activities. Included in the discussion of water quality are descriptions of the behavior of and any notable activities at the groundwater treatment systems during 2013.

Groundwater quality data were obtained for all monitored areas in 2013. Analytical data have been published in quarterly reports issued for 2013 (DOE 2013f, 2013g, 2014), plus Appendix B, and will not be duplicated here.

Despite the relatively extreme weather event in 2013 (and the conditions in 2012), groundwater quality at the Site in 2013 was largely consistent with data reported in prior years, as can be deduced from the summary of statistical trends presented in Table 99. Generally speaking, groundwater quality within plumes that were identified and characterized through the decades of pre-closure groundwater monitoring at the Site has not changed much over the years since the Site was closed.

*Table 98. Summary of Non-RFLMA-Required Groundwater Samples Collected in CY 2013 (by Quarter)*

| Area | Location ID | Analytes[a] | | | | | | | | | | | | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | VOCs | U | Nitrate | Nitrites | Ammonia, Total as N | U isotopes | PO4 | TOC | Ca | Fe | Pu/Am | *DNBART* | |
| 903 Pad/Ryan's Pit Plume | 07391 | 4 | 4 | | | | | | | | | | | |
| Former IHSS 118.1 | 18199 | 2, 4 | | | | | | | | | | | | |
| Former North-Central IA | 20902 | 2 | | | | | | | | | | | | |
| Former Oil Burn Pit No. 1 | 33502 | 2, 4 | | | | | | | | | | | | |
| | 33604 | 2, 4 | | | | | | | | | | | | |
| Former Building 444 Complex | 40005 | 4 | 4 | | | | | | | | | | | |
| Former Oil Burn Pit No. 2 | 91105 | 2, 4 | | | | | | | | | | | | |
| SPPTS | SPIN | | 1(13), 2(13), 3(11), 4(13) | 2(6), 3(11), 4(10) | | | | | | 2 | | | | |
| | SPOUT | | 1(6), 2(6), 3(6), 4(6) | 1(6), 2(6), 3(6), 4(6) | | | | 1(2), 2(4), 3(3), 4(3) | | | | | | |
| | SPZE | | 2(2) | 1(9), 2(12), 3(13), 4(11) | 1(9), 2(12), 3(13), 4(11) | 1(9), 2(12), 3(13), 4(11) | | 1(2), 2(2) | 1(9), 2(12), 3(13), 4(11) | | | | 1(9), 2(12), 3(13), 4(11) | |
| | ITSS | | 1(3), 2 | | | | | | | | | | | |
| | SPPDISCHARGE GALLERY | | 2, 4 | 2, 4 | | | | | | | | | | |
| | 00203 | 2 | 2 | 2 | | | | | | | | | | |
| | 22205 | 2 | 2 | 2 | | | | | | | | | | |
| | 51605 | | 2 | 2 | | | | | | | | | | |
| | 79102 | 2, 4 | 2, 4 | 2, 4 | | | 2 | | | | | | | |
| | 79202 | 2 | 2 | 2 | | | | | | | | | | |
| | 79302 | | 2, 4 | 2, 4 | | | 4 | | | | | | | |
| | 79402 | | 2 | 2 | | | | | | | | | | |
| | 79502 | | 2, 4 | 2, 4 | | | 4 | | | | | | | |
| | 79605 | | 2 | 2 | | | | | | | | | | |
| | B210489 | | 2 | 2 | | | | | | | | | | |
| | P208989 | 2 | 2 | 2 | | | | | | | | | | |
| | P210189 | 2 | 2 | 2 | | | | | | | | | | |
| | GS13 | | 1(6), 2(5), 3(5), 4(5) | 1(6), 2(6), 3(5), 4(6) | | | | | | | | | | Alk-Total, TDS: 4 Hardness: 4 |
| | Lagoon Testing | | | | | | | | | | | | | |
| | SPCAE | | 2(2) | 1(9), 2(17), 3(19), 4(17) | 1(9), 2(12), 3(13), 4(11) | 1(9), 2(12), 3(17), 4(21) | | 1(2), 2(4), 3(3), 4(3) | 1(9), 2(12), 3(13), 4(11) | | | | 1(9), 2(12), 3(13), 4(11) | DOC: 1(9), 2(12), 3(13), 4(11) |
| | SPCAMID | | | 1(9), 2(12), 3(13), 4(11) | 1(9), 2(12), 3(13), 4(11) | 1(9), 2(12), 3(17), 4(21) | | | 1(9), 2(12), 3(13), 4(11) | | | | 1(9), 2(12), 3(13), 4(11) | |
| | SPCABOT | | | 1(10), 2(12), 3(13), 4(11) | 1(9), 2(12), 3(13), 4(11) | 1(9), 2(12), 3(17), 4(21) | | | 1(9), 2(12), 3(13), 4(11) | | | | 1(9), 2(12), 3(13), 4(18) | |
| | SPCBE | | 2(2) | 1(9), 2(17), 3(19), 4(17) | 1(9), 2(12), 3(13), 4(11) | 1(9), 2(12), 3(17), 4(21) | | 1(2), 2(4), 3(3), 4(3) | 1(9), 2(12), 3(13), 4(11) | | | | 1(9), 2(12), 3(13), 4(11) | DOC: 1(9), 2(12), 3(13), 4(11) |
| | SPCBMID | | | 1(9), 2(12), 3(13), 4(11) | 1(9), 2(12), 3(13), 4(11) | 1(9), 2(12), 3(17), 4(21) | | | 1(9), 2(12), 3(13), 4(11) | | | | 1(9), 2(12), 3(13), 4(11) | |

*Table 98 (continued). Summary of Non-RFLMA-Required Groundwater Samples Collected in CY 2013 (by Quarter)*

| Area | Location ID | Analytes[a] | | | | | | | | | | | | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | VOCs | U | Nitrate | Nitrites | Ammonia, Total as N | U isotopes | PO4 | TOC | Ca | Fe | Pu/Am | *DNBART* | |
| | SPCBBOT | | | 1(10), 2(12), 3(13), 4(11) | 1(9), 2(12), 3(13), 4(11) | 1(9), 2(12), 3(17), 4(21) | | | 1(9), 2(12), 3(13), 4(11) | | | | 1(9), 2(12), 3(13), 4(11) | |
| SPPTS (cont.) | ZVI Microcell Testing | | | | | | | | | | | | | |
| | MICROCELLZVIK | | 1(29) | | | | | | | | | | | |
| | MICROCELLZVIL | | 1(11) | | | | | | | | | | | |
| | MICROCELLZVIM | | 1(8) | | | | | | | | | | | |
| | MICROCELLZVIN | | 1(17) | | | | | | | | | | | |
| | MICROCELLZVIO | | 1(9) | | | | | | | | | | | |
| | MICROCELLZVIP | | 1(4), 2(11) | | | | | | | | | | | |
| | MICROCELLZVIQ | | 2(6) | | | | | | | | | | | |
| | MICROCELLZVIR | | 2(27) | | | | | | | | | | | |
| | MICROCELLZVIS | | 2(24) | | | | | | | | | | | |
| | MICROCELLZVIT | | 2(25) | | | | | | | | | | | |
| | MICROCELLZVIU | | 2(36), 3(2) | | | | | | | | | | | |
| | MICROCELLZVIV | | 3(16) | | | | | | | | | | | |
| | MICROCELLZVIX | | 3(34) | | | | | | | | | | | |
| | MICROCELLZVIY | | 3(9) | | | | | | | | | | | |
| | MICROCELLZVIZ | | 3(10) | | | | | | | | | | | |
| | MICROCELLZVI2A | | 3(22) | | | | | | | | | | | |
| | MICROCELLZVI2B | | 4(11) | | | | | | | | | | | |
| | MICROCELLZVI2C | | 4(17) | | | | | | | | | | | |
| | MICROCELLZVI2D | | 4(5) | | | | | | | | | | | |
| | MICROCELLZVI2E | | 4(2) | | | | | | | | | | | |
| | MICROCELLZVI2F | | 4(4) | | | | | | | | | | | |
| | MICROCELLZVI2G | | 4(8) | | | | | | | | | | | |
| ETPTS | ET EFFLUENT | 1 (8), 2 (8), 3 (4) | | | | | | | | 3(2) | | | | Mg: 3(2) |
| | ET INFLUENT | 1 (8), 2 (8), 3 (4) | | | | | | | | 2, 3(4) | | | | Mg: 2, 3(4) |
| | ETASEF | 1 (8), 2 (8), 3 (4), 4 (1) | | | | | | | | 2, 3(4) | | | | Mg: 2, 3(4) |
| | ETASH | 1 (2), 2 (2) | | | | | | | | | | | | |
| MSPTS | ASHINF | 1(6), 2, 3, 4(2) | | | | | | | | | | | | |
| | MOUND R1-0 | 1(6), 2, 3, 4 | | | | | | | | | | | | |
| | MOUND R2-E | 1(6), 2, 3, 4 | | | | | | | | | | | | |
| | MOUND-FD | 4 | | | | | | | | | | | | |
| | GS10 | | 1(6), 2(6), 3(7), 4(11) | 4 (3) | | | 4 (2) | | | | | 3, 4(5) | | Alk-Total, TDS: 4 Hardness: 4 |

*Table 98 (continued). Summary of Non-RFLMA-Required Groundwater Samples Collected in CY 2013 (by Quarter)*

| Area | Location ID | Analytes[a] | | | | | | | | | | | | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | VOCs | U | Nitrate | Nitrites | Ammonia, Total as N | U isotopes | PO4 | TOC | Ca | Fe | Pu/Am | *DNBART* | |
| U Geochemistry Evaluation | GEOA1 | | | | | | | | | | 4 | | | H2S, SO4: 1, 2 (2), 4 |
| | GEOA1INF | | | 2 (3), 3 (3), 4 (6) | | | | | | | 4 | | | H2S, SO4: 1, 2 (2), 3, 4 |
| | GEOA3EFF | | | | | | | | | | 4 | | | H2S, SO4: 1, 2 (2), 4 |
| | GEOA3INF | | | | | | | | | | 4 | | | H2S, SO4: 1, 2 (2), 4 |
| | GEOB1INF | | | | | | | | | | 4 | | | H2S, SO4: 1, 2(2), 3, 4 |
| | GEOB4 | | | | | | | | | | | | | H2S, SO4: 2 |
| | GEOB5INF | | | | | | | | | | 4 | | | H2S, SO4: 1, 2, 4 |
| | GEOFC3EFF | | | | | | | | | | 4 | | | H2S, SO4: 1, 2(2), 3, 4 |
| | GEOFC3INF | | | | | | | | | | 4 | | | H2S, SO4: 1, 2 (2), 4 |
| Seep Sampling | SEEP 995 | | 1(2), 2(2), 3(3), 4(7) | 3, 4(7) | | | | | | | | 1(2), 2(2), 3(3), 4(7) | | |
| | SEEP 995A | | 2(2), 3(3), 4(7) | 4(7) | | | 3, 4 | | | | | 2(2), 3(3), 4(7) | | |
| | SEEP 995B | | 2(2), 3(3), 4(7) | 4(8) | | | | | | | | 2(2), 3(3), 4(7) | | |
| | SEEP 995C | | 3(3), 4(6) | 4(4) | | | | | | | | 3(3), 4(6) | | |

**Notes:**

[a] The numeral in the "analyte" column (e.g., 2) indicates the 2013 quarter in which the analyte was requested; if blank, analyte not requested. For those locations where more than one non-RFLMA-required sample was collected in the indicated quarter(s), the total number of non-RFLMA samples collected is indicated in parentheses.

[b] The Solar Ponds Plume Discharge Gallery (SPPDischargeGallery) is sampled in accordance with the RFSOG (DOE 2013e). Locations SPIN, SPOUT, SPCAE, SPZE, SPCAMID, SPCABOT, SPCBMID, and SPCBBOT are associated with various SPPTS components and were sampled to support ongoing testing. Similarly, all locations with location IDs starting with "MICROCELL" are associated with ongoing microcell tests.

[c] The ETPTS has several associated sampling locations.

[d] Several sampling locations are associated with the Mound Site Plume Treatment System to evaluate the effectiveness of groundwater treatment.

**Abbreviations:**

alk = alkalinity
Ca = calcium
DOC = dissolved organic carbon
Fe = iron
ID = Identification (name) of well/sampling location
$NH_3$-N = ammonia (as nitrogen)
$P0_4$ = phosphate
Pu/Am = plutonium/americium
TOC = total organic carbon

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*Table 99. Summary of Statistical Trend Calculations Through 2013 by Location*

| Well | Analyte | Trend | Significant at 95%? |
|---|---|---|---|
| **Sentinel Wells** | | | |
| 00797 | Uranium | Increasing | Yes |
| 04091 | Carbon tetrachloride | Decreasing | Yes[c] |
| 11502 | PCE | Decreasing | Yes[b] |
| 15699 | 1,1-DCE | Decreasing | Yes |
| | Chloroform | Decreasing | Yes[c] |
| | PCE | Decreasing | Yes |
| | *trans*-1,2-DCE | Increasing | Yes[c] |
| | TCE | Decreasing | Yes |
| | Vinyl chloride | Increasing | Yes[c] |
| 20205 | PCE | Increasing | Yes[c] |
| | Uranium | Increasing | Yes |
| 20505 | *cis*-1,2-DCE | Decreasing | Yes |
| | TCE | Decreasing | Yes |
| | Uranium | Decreasing | Yes |
| 20705 | Am-241 | Decreasing | Yes[c,d,e] |
| | *cis*-1,2-DCE | Increasing | No |
| | Uranium | Increasing | Yes[d] |
| 23296 | 1,1-DCE | Increasing | Yes[c] |
| | Carbon tetrachloride | Decreasing | Yes[c] |
| | Chloroform | Decreasing | No |
| | *cis*-1,2-DCE | Increasing | Yes |
| | *trans*-1,2-DCE | Increasing | Yes[c] |
| | Uranium | Decreasing | Yes |
| | Vinyl chloride | Increasing | Yes[c] |
| 33711 | Chlorobenzene | Decreasing | Yes |
| | *cis*-1,2-DCE | Increasing | Yes |
| | *trans*-1,2-DCE | Increasing | Yes[c] |
| | Vinyl chloride | Increasing | Yes[c] |
| 37405 | Nitrate | Increasing | Yes |
| | Uranium | Decreasing | Yes[b] |
| 37505 | Uranium | Increasing | Yes |
| 40305 | *cis*-1,2-DCE | Decreasing | [illegible] |
| | Uranium | Increasing | No |
| 45608 | *cis*-1,2-DCE | Decreasing | No |
| | PCE | Decreasing | No |
| | *trans*-1,2-DCE | Decreasing | Yes |
| | Vinyl chloride | Decreasing | Yes[a] |
| 52505 | *cis*-1,2-DCE | Increasing | Yes[c] |
| 70099 | Nitrate | Decreasing | Yes |
| 88104 | Uranium | Increasing | No |
| 90299 | Carbon tetrachloride | Decreasing | Yes[c] |
| | Chloroform | Decreasing | Yes |
| | TCE | Decreasing | Yes |
| 90399 | 1,1-DCE | Increasing | No |
| | *cis*-1,2-DCE | Increasing | Yes |
| | PCE | Increasing | Yes[b] |
| | TCE | Increasing | Yes |
| 91203 | 1,1,1-TCA | Increasing | No |
| | 1,1-DCE | Increasing | Yes[c] |

*Table 99 (continued). Summary of Statistical Trend Calculations through 2013 by Location*

| Well | Analyte | Trend | Significant at 95%? |
|---|---|---|---|
| | *cis*-1,2-DCE | Increasing | Yes[c] |
| | PCE | Increasing | No |
| | TCE | Increasing | No |
| 91305 | *cis*-1,2-DCE | Decreasing | Yes[b] |
| | Uranium | Decreasing | Yes |
| 95199 | 1,1-DCE | Increasing | Yes[b] |
| | *cis*-1,2-DCE | Increasing | Yes |
| | PCE | Increasing | Yes |
| | TCE | Increasing | Yes[b] |
| 99305 | *cis*-1,2-DCE | Increasing | Yes |
| | Nitrate | Increasing | No |
| | PCE | Increasing | Yes[d] |
| | TCE | Increasing | Yes[d] |
| | Uranium | Increasing | No |
| 99405 | *cis*-1,2-DCE | Increasing | No |
| | TCE | Increasing | No |
| | Uranium | Decreasing | Yes |
| P210089 | Nitrate | Increasing | Yes |
| | Uranium | Increasing | Yes |
| **RCRA Wells** | | | |
| 70193 | Boron | Increasing | No |
| 70393 | 1,1,1-TCA | Decreasing | Yes |
| | 1,1-DCE | Decreasing | Yes |
| | PCE | Decreasing | Yes |
| | TCE | Decreasing | Yes |
| 70693 | 1,1,1-TCA | Decreasing | Yes |
| | 1,1-DCE | Decreasing | Yes |
| | Boron | Increasing | No |
| | Carbon tetrachloride | Decreasing | Yes[c] |
| | Chloroform | Decreasing | Yes[c] |
| | PCE | Decreasing | Yes |
| | TCE | Decreasing | Yes |
| 73005 | Boron | Increasing | Yes[b] |
| | Chromium | Increasing | Yes[c] |
| | Selenium | Increasing | Yes |
| | Uranium | Increasing | No |
| 73105 | Boron | Increasing | Yes |
| | Nickel | Increasing | Yes[c] |
| | Uranium | Decreasing | Yes |
| 73205 | Boron | Increasing | Yes |
| | Nickel | Increasing | No |
| 80005 | Boron | Decreasing | Yes |
| | Uranium | Increasing | No |
| 80105 | Uranium | Decreasing | No |
| 80205 | Boron | Increasing | Yes |
| | Nickel | Increasing | No |
| | Uranium | Decreasing | Yes |
| P416589 | Boron | Increasing | No |
| **Evaluation Wells** | | | |
| 07391 | Chloroform | Decreasing | Yes[f] |
| | *cis*-1,2-DCE | Increasing | Yes[c] |

*Table 99 (continued). Summary of Statistical Trend Calculations through 2013 by Location*

| Well | Analyte | Trend | Significant at 95%? |
|---|---|---|---|
| | Uranium | Decreasing | Yes[f] |
| 18199 | Carbon tetrachloride | Decreasing | Yes |
| | Chloroform | Decreasing | Yes[f] |
| | PCE | Decreasing | Yes |
| 22205 | Nitrate | Increasing | Yes[d] |
| | Uranium | Increasing | Yes[f] |
| 33502 | 1,2,4-TCB | Decreasing | Yes[c] |
| | Naphthalene | Decreasing | Yes[c,f] |
| 33604 | PCE | Decreasing | Yes |
| | TCE | Decreasing | Yes |
| 40005 | Uranium | Increasing | Yes[f] |
| 79202 | Carbon tetrachloride | Decreasing | Yes |
| | Chloroform | Decreasing | Yes |
| | PCE | Decreasing | Yes[f] |
| | TCE | Decreasing | Yes |
| | Uranium | Increasing | Yes[f] |
| 79302 | Nitrate | Increasing | Yes[f] |
| | Uranium | Increasing | Yes |
| 79402 | Uranium | Decreasing | Yes |
| 79502 | Nitrate | Decreasing | Yes[f] |
| | Uranium | Decreasing | Yes |
| 91105 | 1,1,1-TCA | Decreasing | Yes[f] |
| | *cis*-1,2-DCE | Decreasing | Yes[f] |
| | TCE | Increasing | Yes[f] |
| P208989 | Chloroform | Increasing | Yes[c,f] |
| | TCE | Increasing | Yes[c,f] |
| P210189 | Carbon tetrachloride | Decreasing | Yes[f] |
| | Chloroform | Decreasing | Yes[f] |
| | *cis*-1,2-DCE | Decreasing | Yes |
| | TCE | Decreasing | Yes |
| | Uranium | Increasing | Yes[f] |
| **Selected AOC Wells & Constituents*** | | | |
| 00193 | Uranium | Decreasing | No |
| 10304 | Uranium | Increasing | Yes[b] |
| 10594 | Uranium | Decreasing | Yes |
| 11104 | Uranium | Decreasing | Yes |
| B206989 | Nitrate | Decreasing | Yes |
| **Treatment System Influent*** | | | |
| **2000 through 2013** | | | |
| MSPTS | 1,1,1-TCA | Increasing | Yes |
| | 1,1-DCE | Increasing | Yes |
| | Carbon tetrachloride | Decreasing | Yes |
| | Chloroform | Increasing | Yes |
| | *cis*-1,2-DCE | Increasing | Yes |
| | PCE | Increasing | Yes[a] |
| | *trans*-1,2-DCE | Increasing | Yes[c] |
| | TCE | Increasing | Yes |
| | Vinyl chloride | Increasing | Yes[c] |
| ETPTS | 1,1-DCE | Increasing | Yes |
| | Carbon tetrachloride | Decreasing | Yes |
| | Chloroform | Increasing | Yes[a] |

*Table 99 (continued). Summary of Statistical Trend Calculations through 2013 by Location*

| Well | Analyte | Trend | Significant at 95%? |
|---|---|---|---|
| | *cis*-1,2-DCE | Increasing | Yes |
| | PCE | Decreasing | Yes[b] |
| | TCE | Increasing | Yes[a] |
| SPPTS | Nitrate | Increasing | Yes |
| | Uranium | Increasing | Yes |
| **2006 through 2013** | | | |
| MSPTS | Carbon tetrachloride | Increasing | No |
| | *cis*-1,2-DCE | Decreasing | Yes[a] |
| | PCE | Increasing | Yes[b] |
| | *trans*-1,2-DCE | Decreasing | Yes |
| | TCE | Increasing | Yes |
| | Vinyl chloride | Decreasing | Yes[b] |
| ETPTS | 1,1,1-TCA | Increasing | Yes[a] |
| | Chloroform | Increasing | Yes |
| | *cis*-1,2-DCE | Increasing | Yes[b] |
| | TCE | Increasing | Yes[b] |
| **Late 2008 through 2013** | | | |
| SPPTS | Uranium | Increasing | No |

**Notes:** Only increasing and decreasing trends are included; indeterminate and zero-slope trends are not. Trends are listed if at least 80 percent statistically significant; any decisions that may be made would be based on trends having a 95 percent significance. Only those increasing trends having a 95 percent significance were assessed for applicability of the footnotes below.

*Calculating trends is not required by RFLMA, but is provided for informational purposes.

[a] Trend was not calculated to be significant at 80% level in previous report, but with 2013 data is now 95% significant.

[b] Trend was calculated to be significant in previous report, but at less than a 95% significance; it now meets the 95% level of significance.

[c] Trend calculated at 95% significant may not be valid because 25 percent or more of the analytical data used to calculate this trend are nondetects. See Section 3.1.1.2 for discussion of how nondetects were handled in trending calculations.

[d] Although the trend is calculated to have a 95% significance, the data used to calculate this trend may be affected by well replacement. Results for this constituent in samples from the original well are markedly different from those from the replacement well. These data sets may be separated in the future, rather than continue to be pooled, as additional data are collected from the replacement well and are sufficient for trending separately.

[e] Samples collected in 2005 were affected by very high turbidity (i.e., muddy water) immediately following installation of the replacement well. Thorough redevelopment reduced the turbidity and, therefore, the Am-241 as well.

[f] Trend was not found to be 95% significant in previous report. (Applies to Evaluation wells, which are only evaluated for 95% significance, not 80% or greater significance as with wells of other classifications.)

**Abbreviations:**
DCE = dichloroethene
PCE = tetrachloroethene
TCA = trichloroethane
TCB = trichlorobenzene
TEC = trichloroethene

## *Trend Plots*

Numerous statistical calculations were completed for this report per RFLMA using analytical data collected from Sentinel and RCRA wells, and for selected AOC wells and constituents, as well as Evaluation wells that were sampled in 2013 (see Sections 3.1.2.6 and 3.1.2.7 for discussion of RCRA wells). The statistical trending performed for upgradient RCRA wells, selected AOC wells and constituents, and for influent to the three main groundwater treatment systems (MSPTS, ETPTS, and SPPTS) is not required by the RFLMA but was completed for

information purposes. Trend plots and corresponding summary tables are presented in Appendix B. In addition to these statistical trend plots, many time-series plots were prepared and are included in this report.

The Sanitas software package (version 9.4.32; Sanitas Technologies 2013) was used for statistical calculations, including ANOVA analyses and construction of statistical trend plots. (This is noted for the purpose of completeness only; this report does not make software recommendations.) For simplicity, trend calculations performed for any but RCRA wells assign the given well a downgradient position. This is appropriate because the fundamental objective of the other wells is related to detection monitoring or the exit strategy; no interwell statistics were planned for these classes of wells (only intrawell assessment of the trend of an analyte over time at each given well). Only RCRA wells were assigned either upgradient or downgradient positions to support the related statistical evaluations, as described in Section 3.1.2.6 and Section 3.1.2.7.

Analytical data are handled as described in Section 3.1.1.2. Trends for wells sampled more than once a year are calculated and plotted using the S-K statistical method. This method was identified as most appropriate for Rocky Flats groundwater data after tests of various statistical methods (K-H 2004a), and therefore is specified in the RFSOG (DOE 2013e). Trends calculated for wells that are sampled less than twice per year, removing aspects of seasonality, employ the Mann-Kendall (M-K) statistical method. S-K trends are only plotted where they are calculated to be at least 80 percent significant, and M-K trends are plotted if at least 95 percent significant.

A summary of these trends for 2013 is provided in Table 99. Only increasing and decreasing trends calculated to be at least 80 percent significant using the S-K test (or, for Evaluation wells, at least 95 percent significant using the M-K test) are included in this table. Therefore, even if 95 percent significant, trends with zero slope are not included. Monitoring well classifications that require statistical evaluation of concentration trends according to RFLMA (i.e., Sentinel, Evaluation, and downgradient RCRA wells) are included. In addition, trend calculations for upgradient RCRA wells, selected AOC wells and constituents, and influent to the MSPTS, ETPTS, and SPPTS are also included though they are not required. Refer to Appendix B for the trend plots and associated summary tables, and Figure 4 for well locations. Significant trends for selected analytes and locations are discussed later in this section in the context of their respective groundwater contaminant plumes.

Additional data will be collected in accordance with RFLMA and will further refine the concentration trends. Given that much of the analytical data used in trend calculations were collected before the Site was closed, and in many cases are from wells that were replaced as Site closure proceeded, some instances of slope change due to well replacement, rather than changes in groundwater quality, are to be expected. Replacement of a well may impact analytical and water elevation data.

Several previous annual reports have noted potential discontinuities in the data resulting from well replacement. This 2013 report makes adjustments to reduce these artificial effects. The analytical data sets used in statistical calculations for three wells were revised for the 2013 Annual Report to eliminate data from their predecessors due to discontinuities in these data. Note that the full data sets were not censored in this manner, only the data sets used for statistical calculations. In addition, those full data sets are typically used to create time-series plots included in this report. Results summarized above in Table 99 reflect statistical calculations

performed following these changes. In each of these cases, removal of the predecessor-well data will allow a better understanding of conditions and trends that apply to groundwater monitored by the existing well.

The wells for which these statistical data sets were adjusted include Sentinel wells 45608 (original well 45605) and 88104 (original well 88101), and Evaluation well 91105 (predecessor wells 91103 and 91104). Well 45608 is located very near original well 45605, within the constructed hillside south of former B991. After that hillside slumped and was regraded, well 45608 was installed to replace the now-abandoned well 45605. As will be illustrated in the discussion on groundwater in this area and has been anticipated in recent annual reports, removing the data for well 45605 from the statistical calculations is warranted. Unlike replacement well 45608, Sentinel well 88104 is over 100 feet from where original well 88101 was located. Again, the data are clearly discontinuous. Evaluation well 91105 replaces two predecessors. Both of these earlier wells were installed within the OBP #2 source area, where free product (dense nonaqueous-phase liquid [DNAPL]) was present; in fact, original PVC well 91103 was replaced with stainless-steel well 91104 to address concerns of PVC integrity. Well 91104 was then abandoned to support the OBP #2 source-removal action, in which the source area was excavated, highly-contaminated soils and DNAPL were removed, and the excavation was backfilled. The current replacement well 91105 was installed at the downgradient edge of the OBP #2 source area after this action was completed. Discontinuities in the analytical data are to be expected in such a situation; following removal of those data from the predecessor wells at OBP #2, statistical calculations are no longer affected by the extremely high pre-remediation concentrations that were the norm in samples collected from those wells.

For a cross-walk of closure-era original and replacement wells, refer to the *Rocky Flats Site 2006 Integrated Monitoring Plan Background Document,* also known as the 2006 IMP (DOE 2006c, Appendix B, Table B-4). Since 2006, the only well replacements completed have been the abandonment of wells 45605 and 33703 and their replacement with wells 45608 and 33711, respectively.

Calculations of statistical trends may also be affected by changes to detection limits (also discussed in a different context in Section 3.1.1.2 above). For example, this appears to be a significant factor in the statistical calculations for certain metals in downgradient wells at the PLF and OLF. With respect to Cr (the subject of Figure 6) and Ni, data reported before mid-2008 reflected higher detection limits than are now used. These constituents were often not detected with the higher detection limits, but may now be detected at lower concentrations. Due to data replacement of nondetects (i.e., wherein the reported value, which is equivalent to the detection limit, is replaced with a value of 0.001), the overall appearance is one in which the concentration is increasing—changing from a steady "concentration" of 0.001 to the reported detections. At some point these early data may be omitted from the calculations in order to remove this artifact; or, these earlier data may be allowed to gradually be overwhelmed by the quantity of newer data, yielding reliable calculations of trend.

***Groundwater Plumes with Treatment Systems***

This section describes the general groundwater quality in 2013 at the three main groundwater contaminant plume treatment systems (MSPTS, ETPTS, and SPPTS) and the associated plumes these systems are designed to treat.

*Mound Plume, OBP #2 Plume, and MSPTS*

The Mound Plume (also called the Mound Site Plume) is located north of the former 903 Pad. The source of the plume is a former drum storage area ("the Mound", previously referred to as IHSS 113) that was in use in the 1950s. Some of the drums leaked, resulting in a groundwater contaminant plume extending north toward South Walnut Creek (now part of the FC-4 segment). The drums were removed in 1970, and contaminated soils were removed in 1997. A groundwater treatment system was installed in 1998 to intercept and treat contaminated groundwater before it reaches the creek.

OBP #2 (previously IHSS 153) was located just west of the Mound source area, at the southeast corner of the former Protected Area fence. Characterization and groundwater monitoring of OBP #2 was not feasible due to security infrastructure until the Protected Area was decommissioned. Groundwater and soil were subsequently sampled, and elevated concentrations of VOCs were detected. This led to a source removal action in 2005 that addressed elevated concentrations in the soils. Supplemental carbon (in the form of HRC-X, an extended-release amendment similar to Hydrogen Release Compound [HRC]) was added to the backfill as electron donor material, to stimulate naturally-occurring bacteria and enhance biodegradation of residual VOCs. (This action and its corresponding effects on groundwater quality are referenced and discussed in the text below.) Because the flow path for the OBP #2 Plume is toward FC-4 to the north, generally parallel to the flow direction of the nearby Mound Plume and potentially along the preferential pathway provided by a utility corridor left by a former storm drain, a gravel drain was installed in 2005 as part of the OBP #2 remediation. This gravel drain intercepts and directs groundwater flowing northward from the OBP #2 source area to the MSPTS intercept trench. This combined flow is then directed to the MSPTS for treatment.

The following paragraphs describe these plumes and the MSPTS.

**Mound Plume and OBP #2 Plume**

Annual reports for 2006 and 2007 (DOE 2007b, 2008b) provide separate discussions of the Mound Plume and the nearby OBP #2 Plume. As described above, because groundwater flow from the Mound Plume as well as the OBP #2 Plume is captured and treated by the MSPTS, the two plumes have since been discussed as a group. Refer to previous reports for additional detail on closure-era activities in these areas and their impacts on the local groundwater.

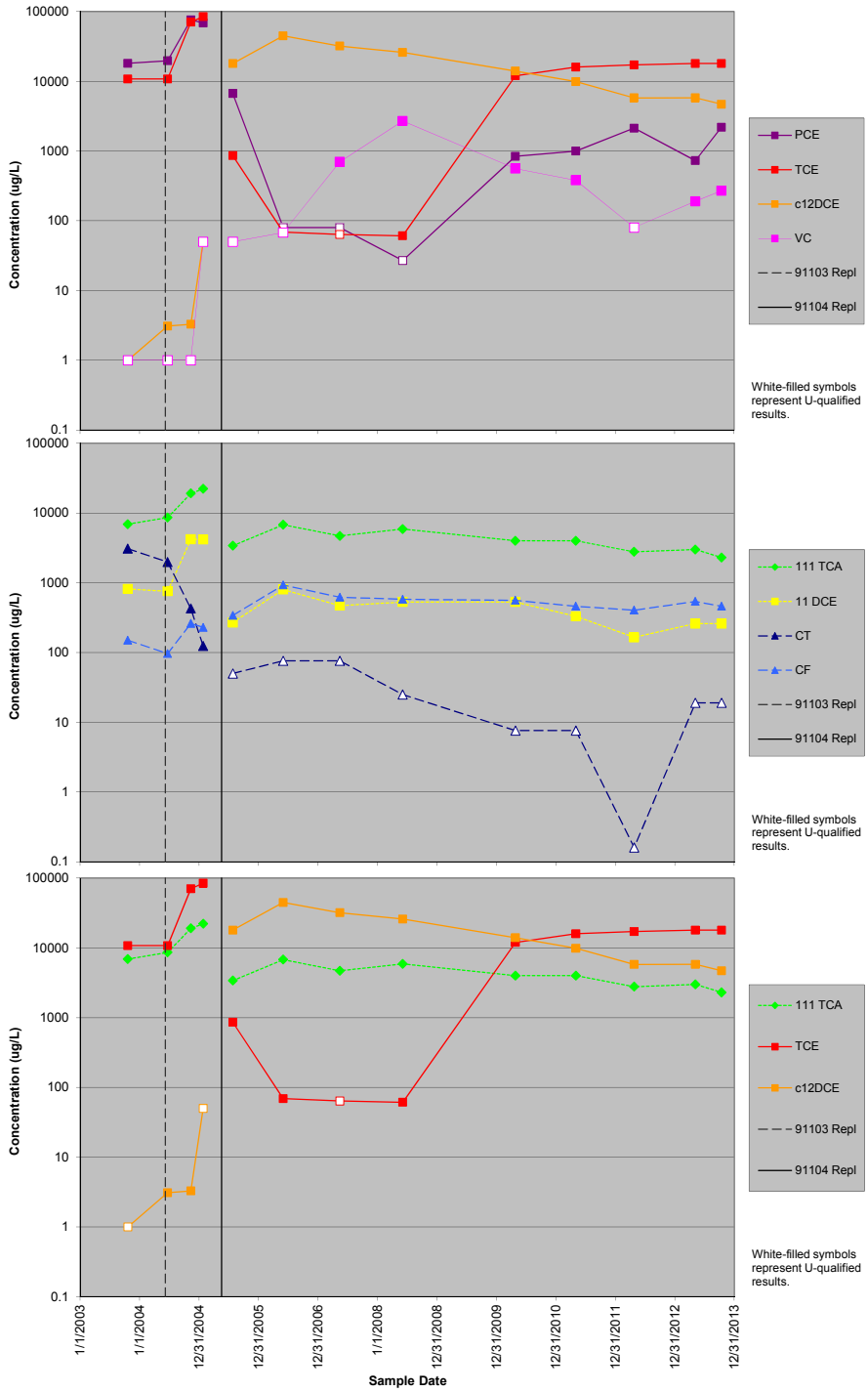
Consistent with the technical design of the groundwater monitoring network at the RFS, the two source-area wells, 00897 (Mound) and 91105 (OBP #2), are Evaluation wells that are scheduled for routine monitoring every other year, in the second quarter of even-numbered years. Neither was scheduled for routine RFLMA sampling in 2013. However, due to the wetter spring and then the heavy precipitation in September, well 91105 was sampled in both the second and fourth quarters of 2013.

At its source area, the Mound Plume is characterized by elevated concentrations of tetrachloroethene (PCE) and trichloroethene (TCE). Conversely, groundwater in the OBP #2 source area was originally characterized by elevated concentrations of 1,1,1-trichloroethane (TCA), PCE, TCE, and 1,1-dichloroethene (DCE). As described above, well 91105 is the third to

monitor the OBP #2 source area; its two predecessors (91103, 91104) were installed prior to remediation and directly within the contaminated soils, while the current well is on the downgradient edge of the backfilled source-removal excavation. The two predecessor wells therefore produced samples with substantially higher concentrations of VOCs than does the current monitoring well. Following the OBP #2 source removal and addition of electron donor material to the backfill to enhance biodegradation of residual VOCs, concentrations of some parent compounds, such as carbon tetrachloride, PCE, and TCE, decreased sharply as concentrations of some corresponding daughter products (such as *cis*-1,2-DCE and VC) increased. Concentrations of carbon tetrachloride decreased to the point that this constituent is no longer detected in samples from well 91105; its primary daughter product, chloroform, initially increased in concentration and has since leveled off. (Other areas at the Site underwent a similar source removal activity and addition of electron donor material, but the contaminant distributions often illustrate a different pattern. This is the case at IHSS 118.1, for example, discussed later in this section.)

Figure 211 provides a graphical representation of the concentrations of primary VOCs and daughter products at Evaluation well 91105 and its predecessors. The top portion of the figure presents PCE, TCE, and their dechlorination daughter products *cis*-1,2-DCE and VC; the sharp initial decrease in parent PCE and TCE concentrations in response to the source removal is evident, as is the increase in daughter product concentrations, particularly *cis*-1,2-DCE. However, as noted in previous annual reports (e.g., DOE 2011c, 2012, 2013b), more recent concentrations of these daughter products are decreasing, while those of TCE and PCE are generally increasing. Concentrations of TCE in 2013 were as high as 18,000 µg/L at well 91105, still much lower than pre-remedial concentrations that were up to 84,800 µg/L. This gradual, post-remedial increase in parent compounds and decrease in daughter products suggests the residual effects of the electron donor material added during backfilling are waning, at least for the PCE/TCE group of VOCs.

The middle portion of Figure 211 illustrates concentrations of 1,1,1-TCA and its daughter product 1,1-DCE, and carbon tetrachloride and its primary metabolic byproduct chloroform. As previously noted, carbon tetrachloride is no longer detected, even at detection limits that have been as low as 0.16 µg/L. However, concentrations of chloroform increased after the source removal activity, and since then have been relatively flat with a slight apparent decrease. Concentrations of 1,1,1-TCA and 1,1-DCE vary similarly to each other, with an initial decrease after remediation followed by a fairly flat but slowly decreasing apparent trend, much like that of chloroform.




**Notes:** CT = carbon tetrachloride (RFLMA Table 1 standard = 1 µg/L, as PQL); CF = chloroform (3.4 µg/L); c12DCE = *cis*-1,2-dichloroethene (70 µg/L); PCE = tetrachloroethene (5 µg/L); TCE = trichloroethene (2.5 µg/L) ; 111TCA = 1,1,1-trichloroethane (200 µg/L); 11DCE = 1,1-dichloroethene (7 µg/L); VC = vinyl chloride (0.2 µg/L). 91103 Repl and 91104 Repl are dates on which those wells were abandoned and replaced by the next well, ultimately the current well, 91105. Several detections are qualified, but for simplicity are not shown differently. Note logarithmic concentration scales. Constituents calculated to have concentration trends with a 95% statistical significance are in the bottom chart.

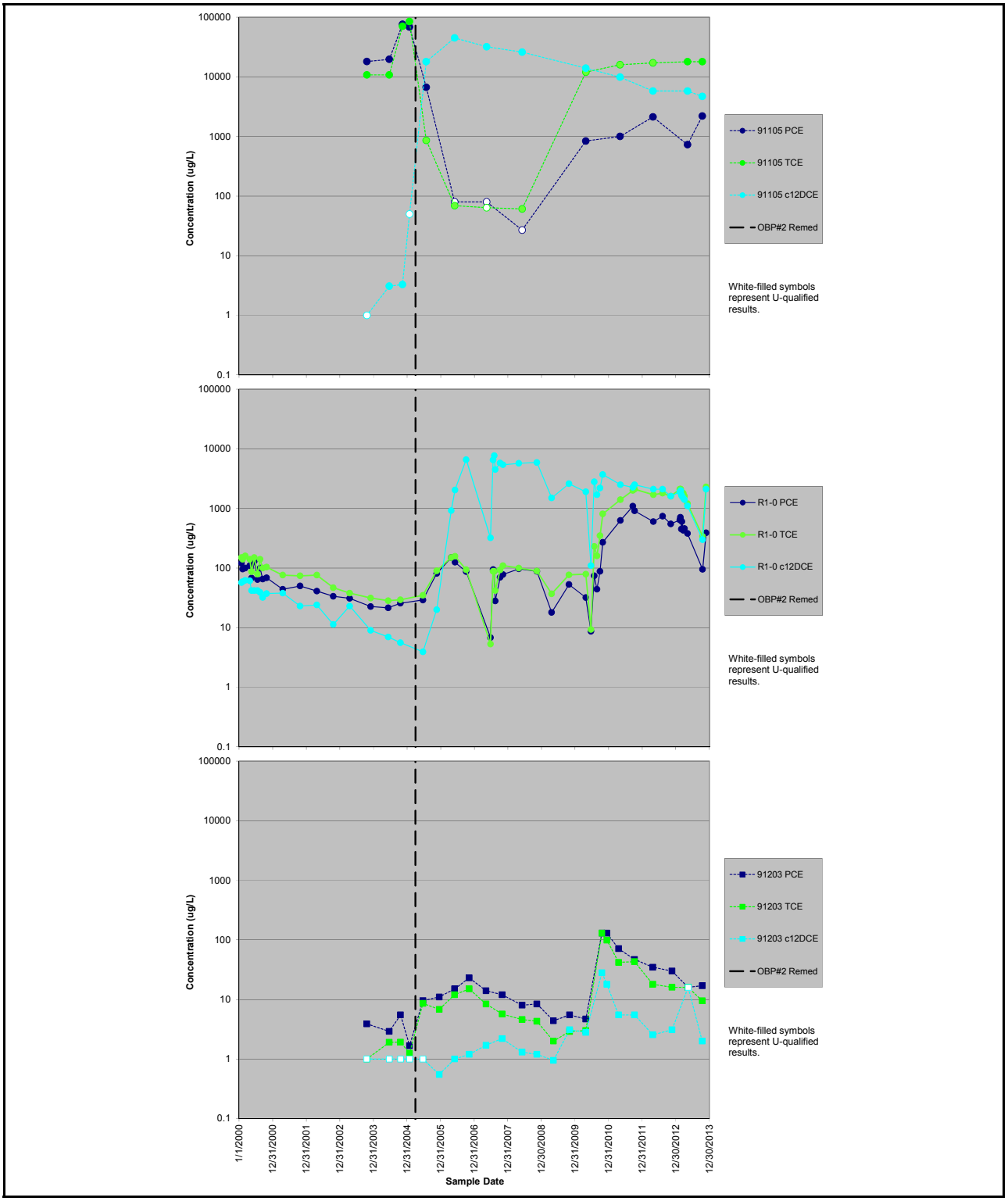
*Figure 211. Primary VOCs in OBP #2 Source Area Well 91105 (and Predecessors)*

The bottom portion of Figure 211 focuses on those constituents for which statistical trends have been calculated (using only data from replacement well 91105) to have a 95 percent significance. The effects of removing pre-remediation data from the statistical dataset are notable. For the 2012 Annual Report, statistical calculations for well 91105 included data from predecessor wells 91103 and 91104. Results of those calculations (DOE 2013b) were a decreasing trend in carbon tetrachloride; this determination was due to the fact that carbon tetrachloride was detected in samples collected from predecessor wells, but has not been detected since the current well was installed in 2005. The results of statistical calculations based solely on data from replacement well 91105 are different and are visually apparent: groundwater at well 91105 is calculated to be decreasing in 1,1,1-TCA and *cis*-1,2-DCE, while increasing in TCE (all at a 95 percent level of statistical significance).

As previously noted, Evaluation well 91105 was sampled in the spring to assess whether the more typical spring moisture levels had substantially affected contaminant behavior in this well; for the same reason, it was sampled in the fourth quarter of 2013 following the heavy September rains. As is apparent on Figure 211, these conditions did not appear to affect contaminant levels or distributions to any great extent. Minor changes are observed with some compounds in the 2013 data, for example PCE and VC, but additional data will be required before any such effects are clear.

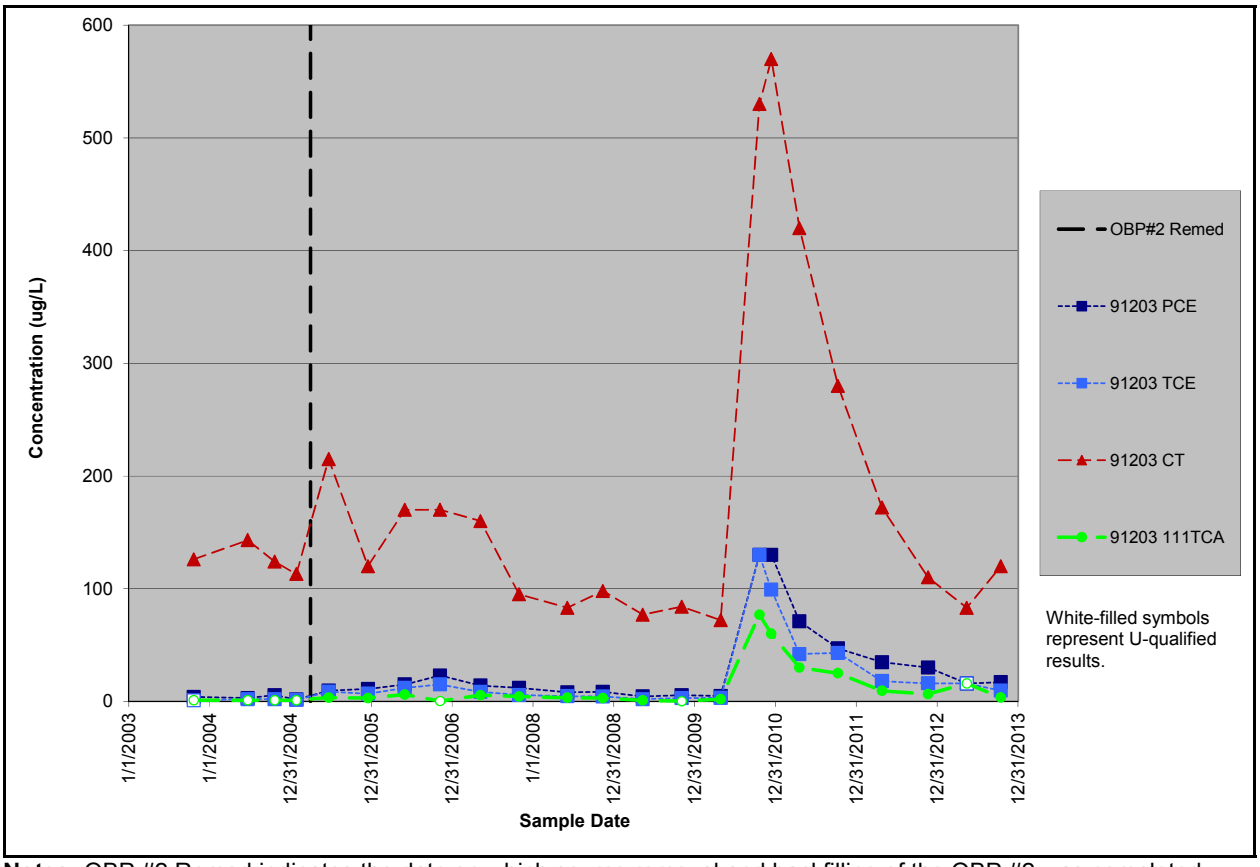
The Mound and OBP #2 Plumes are also monitored by Sentinel wells positioned along flow paths to surface water. Sentinel well 91203 is located west of the gravel drain that was installed to route OBP #2 groundwater to the MSPTS intercept trench. While this well is actually sidegradient rather than downgradient of the OBP #2 source area, samples from here contain several VOCs that are common to the Mound and OBP #2 source areas.

Figure 212 displays reported concentrations of PCE, TCE, and *cis*-1,2-DCE in samples from OBP #2 source-area Evaluation well 91105 and Sentinel well 91203. Samples from well 91203 show a distribution of contaminants that is generally unlike that at well 91105. An increase in the concentrations of some VOCs is seen in samples from well 91203 that generally follows the disruption associated with remediation of OBP #2 (completed on April 1, 2005), with concentrations slowly decreasing after about 2006 or 2007. However, other constituents do not appear to relate to activities at OBP #2 (see Figure 213; note linear, rather than logarithmic, scale). Concentrations of PCE and TCE in samples from well 91203 increased shortly after the OBP #2 remediation, but concentrations of carbon tetrachloride were unaffected (despite dropping to below detection limits at OBP #2 source-area well 91105), and VC has never been detected in samples from well 91203 even though detection limits are typically below 1 µg/L. A late-2010 increase in the concentrations of several constituents is apparent in samples from well 91203, and includes carbon tetrachloride as well as VOCs typical of OBP #2. As suggested in previous reports (DOE 2013b), climatic conditions causing the higher water levels earlier in 2010 may have flushed additional VOCs that were then detected in well 91203. If so, data collected in 2014 might demonstrate a similar pattern, triggered by the September 2013 floods. However, based on available data, constituents detected at 91203 do not appear directly related to OBP #2.




**Notes:** Top portion represents OBP #2 source-area well 91105; middle portion represents MSPTS influent (formal location ID is R1-0); bottom portion represents well 91203. OBP #2 Remed indicates the date on which source removal and backfilling of the OBP #2 was completed (April 1, 2005). PCE (RFLMA Table 1 standard = 5 µg/L); TCE (2.5 µg/L); *cis*-1,2-DCE (c12DCE in the figure above, 70 µg/L). Several detections are qualified, but for simplicity are not shown differently. Note logarithmic concentration scales.

*Figure 212. Selected VOCs at Mound/OBP #2 Area Wells 91105 and 91203 and MSPTS Influent*



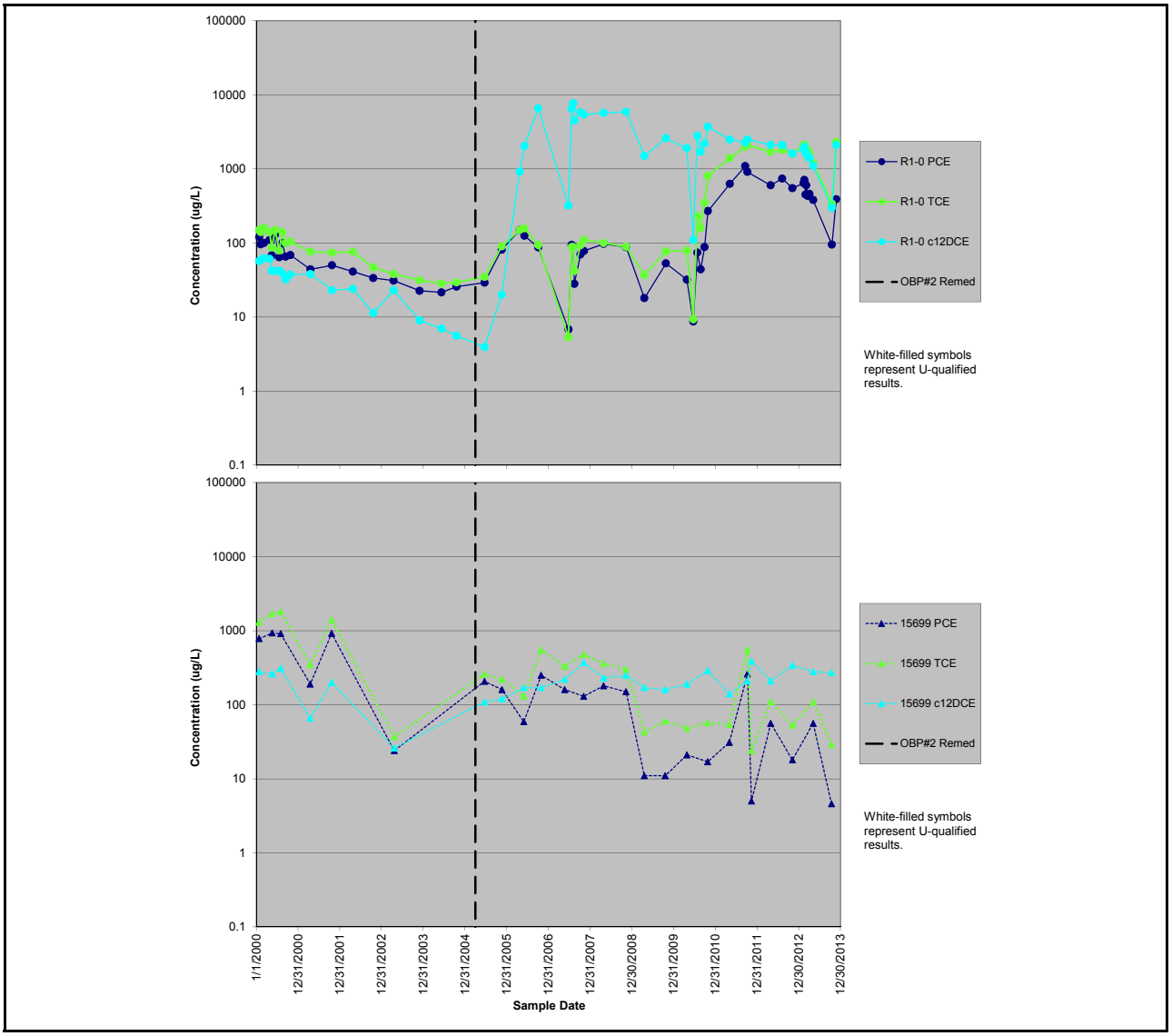

**Notes:** OBP #2 Remed indicates the date on which source removal and backfilling of the OBP #2 was completed (April 1, 2005). PCE (RFLMA Table 1 standard = 5 µg/L); TCE (2.5 µg/L); CT = carbon tetrachloride (1 µg/L); 111TCA = 1,1,1-TCA (200 µg/L). Several detections are qualified, but for simplicity are not shown differently.

*Figure 213. Selected VOCs at Sentinel Well 91203*

Figure 213 also displays a plot of PCE, TCE, and *cis*-1,2-DCE in the influent to the MSPTS (the location of which is formally denoted MOUND R1-0, or R1-0 for short). The similarity in contaminant distribution at well 91105 to that in MSPTS influent is clear, as is their relative dissimilarity with the distribution at well 91203. Because the OBP #2 source area remediation included components that were designed to direct groundwater flow to the MSPTS for treatment, the similarity in water quality from OBP #2 well 91105 and MSPTS influent is to be expected.

Similar contaminant distributions are also to be expected between MSPTS influent and samples from Sentinel well 15699 (Figure 214), located roughly 20 feet downgradient of the MSPTS groundwater intercept trench. Soon after the effects of the OBP #2 contributions to the MSPTS became evident in system influent, they were also reflected in groundwater at well 15699. This is due to the fact that the MSPTS trench is unlined: water that collects in it is able to leak out and migrate to downgradient well 15699. However, while concentrations of PCE and TCE in this well have continued to vary similarly to one another, they also have decreased compared with pre-closure levels; this is not the case in MSPTS influent (Figure 214), where PCE and TCE remain relatively elevated compared with their pre-closure concentrations. The effects of the OBP #2 groundwater are also evident on the hydrograph for well 15699 (Appendix A): prior to Site closure, this well was frequently dry, but since closure the water level has been consistently above the bottom of the well screen. Only in late 2012 (a relatively drier year) did it approach the

bottom of the screen, and it is still well above the pre-closure norm. Changes (formally implemented in late 2009) in sampling methods that lead to reduced volumes of purge water removed from the well have also affected water availability, as discussed in previous reports (e.g., DOE 2013b).




**Notes:** R1-0 = MSPTS influent. OBP #2 Remed indicates the date on which source removal and backfilling of the OBP #2 was completed (April 1, 2005). PCE (RFLMA Table 1 standard = 5 µg/L); TCE (2.5 µg/L); *cis*-1,2-DCE (c12DCE in the figure above, 70 µg/L). Several results are qualified, but for simplicity are not shown differently. Note logarithmic concentration scales.

*Figure 214. Concentrations of Selected VOCs in Samples from Sentinel Well 15699 and MSPTS Influent*

Statistical trends calculated to have a 95 percent level of significance at well 91203 include two increasing trends: 1,1-DCE and *cis*-1,2-DCE, both daughter products, and both represented by a substantial number of nondetects in the data set—i.e., the calculated trends may not be valid. In addition, increasing trends with lower statistical significance are calculated for 1,1,1-TCA, PCE, and TCE. Well 15699 is represented by four decreasing and two increasing trends having a statistical significance of 95 percent. The parent products PCE and TCE, as well as daughter

products chloroform and 1,1-DCE, are calculated to be decreasing. Concentrations of *trans*-1,2-DCE and VC are calculated to be increasing (see Table 99 and Appendix B). Again, some of these calculated trends are complicated by the presence of numerous nondetects (such as with chloroform, *trans*-1,2-DCE, and VC).

Estimated travel times (discussed in Section 3.1.3.5 and summarized in Table 60) from well 91105 to 91203 typically have been in the range of 3.5 to 4 years, but in 2013 they are estimated at slightly more than 2 years. However, as supported both by the potentiometric surface maps as well as contaminant distributions, well 91203 is not directly downgradient from well 91105. Therefore, given that this well pair does not appear to be appropriate, the resulting seepage velocity estimate should also be viewed with extra caution. As additional data are collected, this well pair may be deleted from further velocity evaluations.

Travel times were also estimated for groundwater flow from Evaluation well 91105 to Sentinel well 15699, even though this pair also is not completely viable. In this case it is because the MSPTS groundwater intercept trench is located between the two wells and would intercept this flow. In addition, a constructed drain links the OBP #2 flow to the MSPTS intercept trench, and certainly has a higher hydraulic conductivity value than was used for this calculation. Even so, for informational purposes the resulting seepage velocity (Table 60) was approximately 250 ft/yr and the total travel time is estimated at slightly less than 2 years. In comparison with the roughly one-year lag between OBP #2 closure and detection of elevated concentrations in MSPTS influent (addressed in the text below), this estimate does not seem unreasonable.

As noted in Section 3.1.3.5, these calculated travel times are estimates only and apply to pure water, not to dissolved constituents such as these chlorinated solvents, which would be retarded to some degree and would take longer to travel the same distance.

**Mound Site Plume Treatment System**

The MSPTS was the first groundwater intercept/treatment system installed at the Site to incorporate ZVI, and is actually among the first of its type in the world. This work was completed in 1998. The first media replacement activity was conducted in the summer of 2006, and the media was replaced again in 2011. As a part of this second replacement activity, a small, prototype air stripper was installed in the effluent manhole to polish the effluent (see DOE 2012, the 2011 Annual Report and especially Appendix F to that report, for additional detail on the MSPTS prototype air stripper). In 2013, this prototype was replaced with a larger, full-time air stripper. Section 2.4 discusses routine maintenance activities performed at the MSPTS in 2013, much of which focused on the new air stripper. Additional detail on the air stripper installed in 2013 is provided later in this section.

As with all years from 2005 on, flow rates through the MSPTS in 2013 were well above pre-2005 levels. This is attributed to the intentional routing of groundwater from the OBP #2 area into the MSPTS intercept trench. (For additional background, see the 2005 Annual Report, DOE 2006d.) Table 100 provides annual estimates of the volume of water treated by the MSPTS, which in 2013 was approximately 422,000 gallons. This is very close to the average post-closure volume treated by this system (Table 101). (A pre-closure volume average that omits 2005 flows is also included in the table because the volume treated in that year was abnormally high, not representative of typical pre-closure conditions.) As summarized by this table, if the anomalously

high volume of 2005 is omitted, the flow to the MSPTS more than tripled following completion of the OBP #2 connection.

*Table 100. Estimated Volumes of Water Treated by the MSPTS*

| Calendar Year | Annual Estimates of Volume Treated (gallons) | Estimated Cumulative Volume Treated (gallons) |
|---|---|---|
| 2000 | 258,000 | 660,000 |
| 2001 | 119,000 | 780,300 |
| 2002 | 53,000 | 833,000 |
| 2003 | 82,000 | 915,000 |
| 2004 | 86,000 | 1,001,000 |
| 2005 | 506,000 | 1,507,000 |
| 2006 | 430,000 | 1,937,000 |
| 2007 | 326,000 | 2,263,000 |
| 2008 | 358,000 | 2,621,000 |
| 2009 | 287,000 | 2,908,000 |
| 2010 | 420,000 | 3,328,000 |
| 2011 | 546,000 | 3,874,000 |
| 2012 | 461,000 | 4,335,000 |
| 2013 | 422,000 | 4,757,000 |

**Notes:** Estimates for years 2000 through 2004 are compiled from Kaiser-Hill Company LLC (K-H) documents (K-H 2000a, K-H 2000b, K-H 2000c, K-H 2000d, K-H 2002b, K-H 2003, K-H 2005a, K-H 2005b).

*Table 101. Average Volumes Treated by the MSPTS*

| Time Period | Average Volume Treated Per Year |
|---|---|
| Pre-closure, 2000–2005 | 184,000 |
| Pre-closure, 2000–2004 | 119,600 |
| Post-closure, 2006–2012 | 406,000 |

**Notes:** Average volumes are rounded and are based on estimates of volumes treated, as presented in Table 100. Time periods shown include complete years, and do not correspond to exact date of closure; for example, the pre-closure estimate for the 2000–2005 period spans January 1, 2000, through December 31, 2005, and the post-closure period used for this table begins January 1, 2006.

Figure 215 presents a hydrograph illustrating flows from January 1, 2000 through the end of 2013, and Figure 216 provides a hydrograph focusing on CY 2013. If several instances of zero flow are ignored (which all relate to maintenance/operation events in which the influent valves were closed), the flow in 2013 appears fairly uniform as well as somewhat elevated compared with conditions prior to mid-2010. Effects of the dry year of 2012 do not appear to have strongly affected flows in 2013. The extremely high precipitation in September 2013 is muted on Figure 216, but this is probably artificial: the influent valves were only partly open to help even the distribution to the two treatment cells. These metered flows likely resulted in better VOC treatment than would have occurred had the influent been able to flow through the system as quickly as feasible, because the water was in contact with the treatment media for longer than might otherwise have been the case.

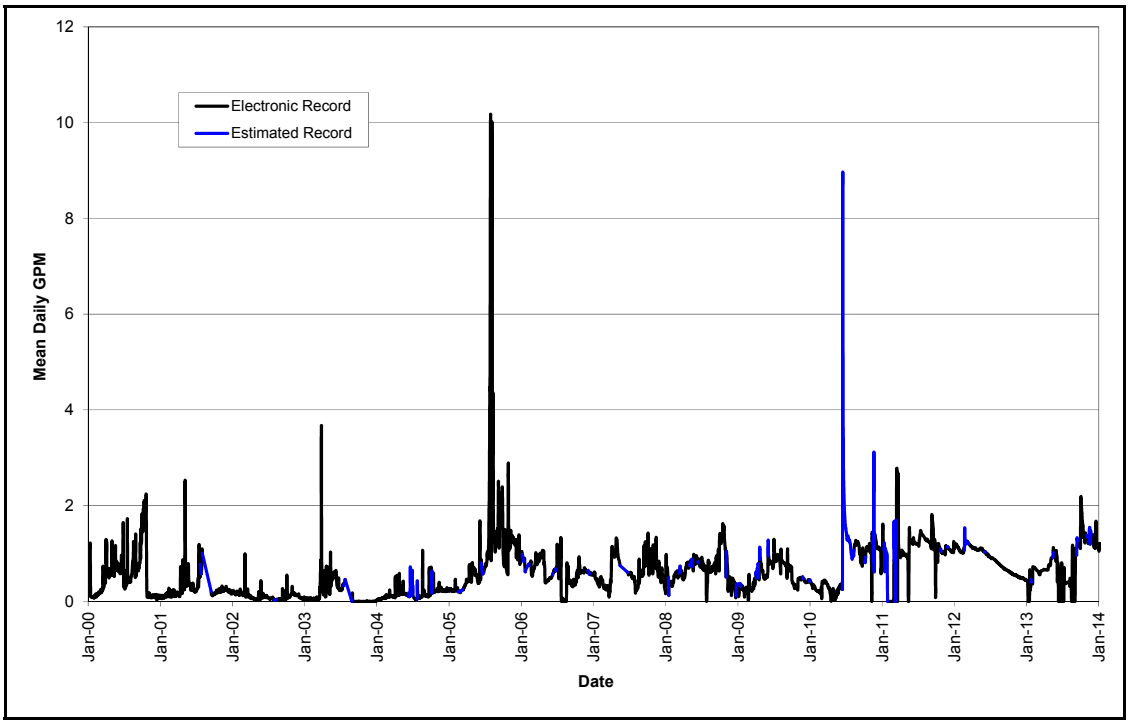



*Figure 215. Hydrograph for MSPTS from 2000 Through 2013*

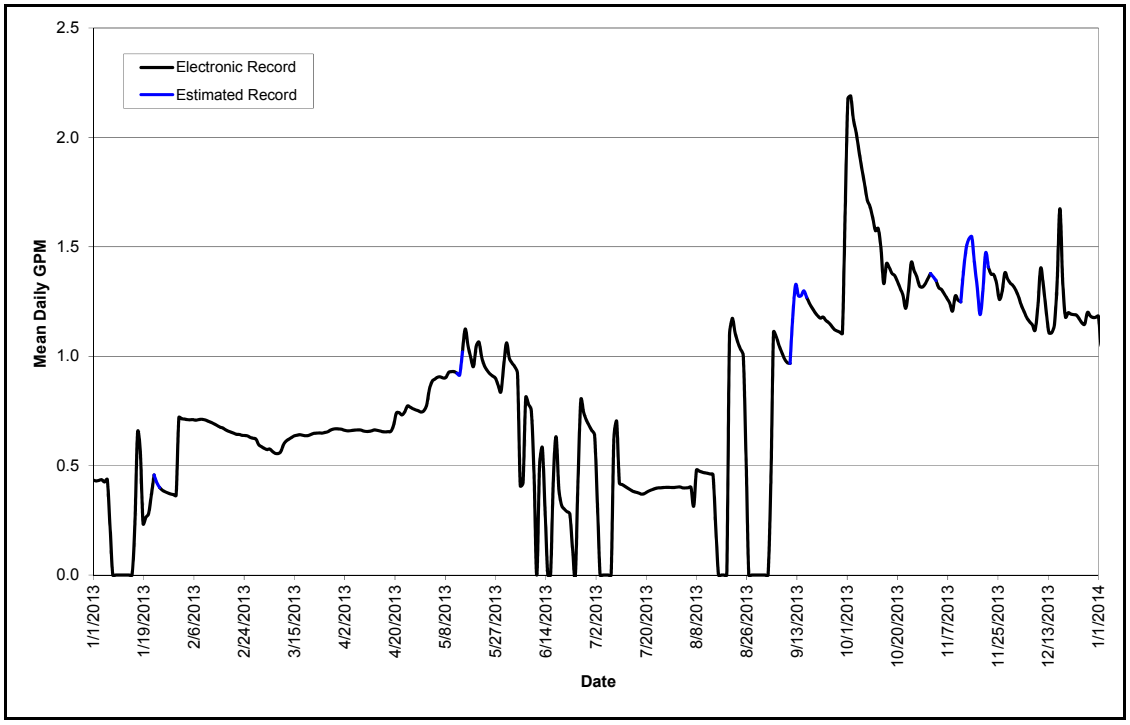
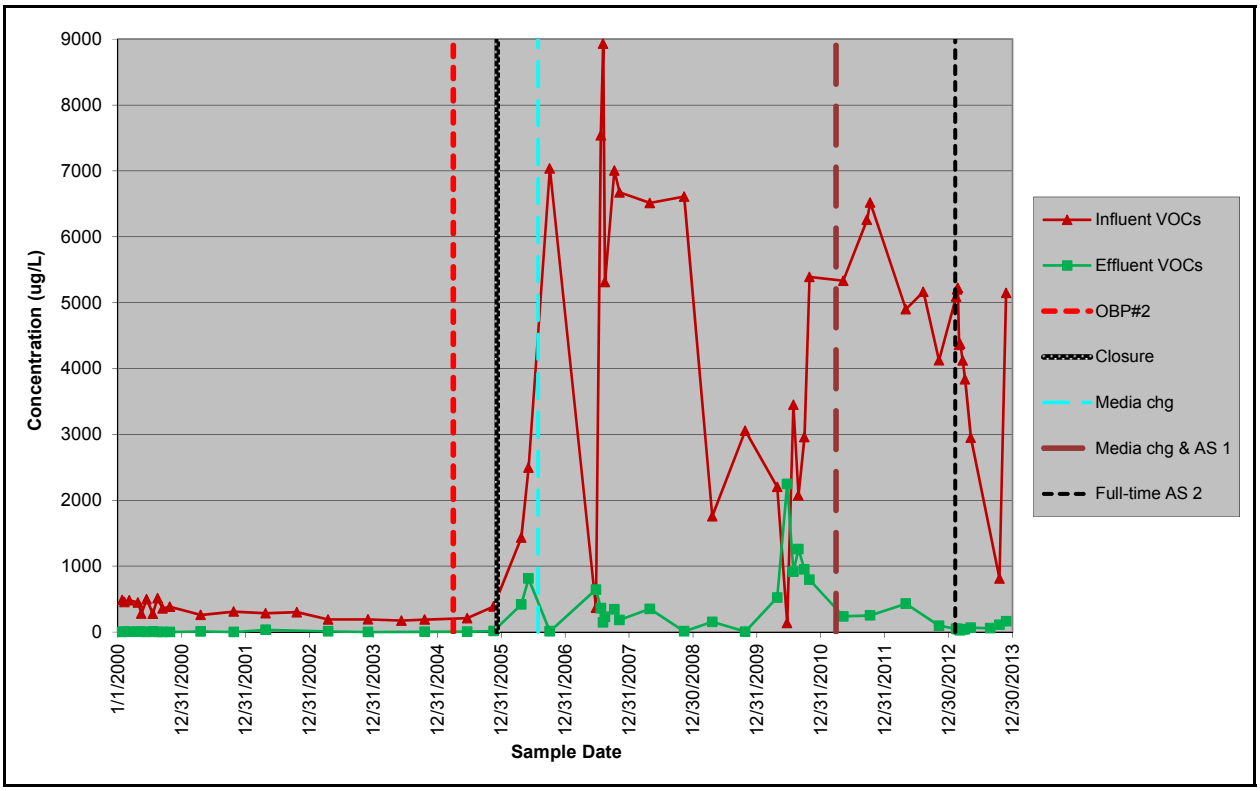



*Figure 216. Hydrograph for MSPTS for CY 2013*

The MSPTS was sampled twice in 2013 (May, October) in accordance with the RFLMA. In addition, the MSPTS was sampled many more times in order to refine the operation and performance of the air stripper installed early in the year. Including the two RFLMA events,

11 sampling events were conducted at the MSPTS in 2013: 3 in February and 3 in March, then 1 each in April, May, August, October, and November. The extra sampling events excluded sampling at the performance location, GS10, because they were conducted to support evaluation of the effectiveness of the air stripper.

Analytical data representing MSPTS influent and effluent continue to illustrate the dramatic effect the addition of OBP #2-related groundwater has on the system (Figure 217). These data also show that the treatment system continues to demonstrate its effectiveness in reducing VOC loads, and the new air stripper improves overall performance significantly.




**Notes:** VOC data shown represent all results at locations MOUND R1-0 (influent) and MOUND R2-E (effluent) that have no "U" qualifier assigned. Many results are qualified otherwise (e.g., J, B) but are incorporated at face value. OBP #2 = date on which remediation of Oil Burn Pit #2 was completed; Closure = date of site closure; Media chg = first instance in which the zero-valent iron treatment media was replaced; Media chg & AS 1 = second time the media was replaced, with a prototype air stripper that operated part-time also installed; Full-time AS 2 = date on which a larger air stripper operating full-time was installed.

*Figure 217. Total VOCs in MSPTS Influent and Effluent, 2000 through 2013*

Table 102 summarizes MSPTS influent and effluent analytical data for selected constituents. Refer to the quarterly reports (DOE 2013f, 2013g, 2014) and Appendix B for additional 2013 water-quality data for the MSPTS. Data representing MSPTS influent clearly show the impact of closure activities performed upgradient of the system, particularly the installation of the engineered preferential pathway (the backfilled storm drain corridor and associated cross-cutting gravel drain) that now routes groundwater impacted by the OBP #2 into the MSPTS groundwater intercept trench. (For more information on this feature, see K-H 2005c.)

As indicated in Table 102, the primary contaminants in MSPTS influent are TCE and *cis*-1,2-DCE. PCE is also present in significant concentrations. Concentrations of these

constituents have not changed dramatically since 2011, though there have been a few anomalous results including an unusually dilute sample collected on October 18. This sample may reflect dilution from the September rains. The last 2013 sample, collected November 25, reported the highest concentration of TCE for the period of record (since 2000; see Table 102), though other VOCs were not similarly elevated above their normal ranges.

The extra sampling location dedicated to evaluation of the air stripper is referred to as ASHINF. It monitors water downstream of the ZVI-containing treatment cells, before that water has entered the manhole in which the air stripper is installed. As noted above, this location was sampled several times in 2013. Results were used to assess the effectiveness of the unit, particularly with respect to the nozzle configuration but also regarding such aspects as maintenance needs and the pump rate. The pump and other liquid-contacting components of the air stripper at the MSPTS are subject to biofouling—development of a biological film—and accumulation of fine, iron-bearing precipitates. As a result, these components must be periodically cleaned in order to maintain good flow and spray characteristics upon which optimal air stripper effectiveness depends. Section 2.4.1.3 discusses MSPTS maintenance.

Nine VOCs were detected in 2013 in MSPTS influent at concentrations exceeding their respective RFLMA Table 1 levels (CDPHE et al. 2012): 1,1,1-TCA, 1,1-DCE, 1,2-dichloroethane, carbon tetrachloride, chloroform, *cis*-1,2-DCE, PCE, TCE, and VC. This is the same set of VOCs as was elevated in 2011, and adds carbon tetrachloride to those above the standards in 2012 influent. The presence of concentrations of 1,1,1-TCA in MSPTS influent as high as the RFLMA Table 1 standard was unknown until 2007 and represents a primary contaminant from the OBP #2 source area.

In 2013, four VOCs were detected in MSPTS treated effluent at concentrations exceeding RFLMA Table 1 values: *cis*-1,2-DCE, PCE, TCE, and VC. In 2012, the same list plus chloroform exceeded RFLMA standards in one or more samples of MSPTS effluent. It should be noted that with the upgraded, full-time air stripper, RFLMA standards for all but VC (0.2 µg/L PQL) were met in at least one sample collected in 2013. Some of the constituents remaining at elevated levels in the effluent are more recalcitrant; the reductive dechlorination of polychlorinated constituents (such as PCE, TCE, and carbon tetrachloride) occurs more readily than for mono- and dichlorinated compounds (e.g., *cis*-1,2-DCE, VC) (EPA 2000). Therefore, these partially chlorinated daughter products require a greater residence time within the ZVI media for adequate treatment to be accomplished. However, under the post-closure conditions of higher flow rates, the residence time instead decreases.

The aforementioned effects of the OBP #2 remediation on MSPTS influent are clearly evident in the time-series plots of Figure 212 and Figure 214. System influent showed a low and decreasing concentration of *cis*-1,2-DCE until shortly after that remediation activity was complete, when concentrations of this constituent began a sharp increase of up to three orders of magnitude. Concentrations of *cis*-1,2-DCE have been slowly decreasing since late 2006; more recently, those of PCE and TCE have rebounded. Although it is crowded, the chart in the upper portion of Figure 218 shows that only carbon tetrachloride is present at levels roughly equivalent to those prior to closure; other primary constituents (including 1,1,1-TCA; 1,1-DCE; *cis*-1,2-DCE; PCE, TCE, and VC) are present in MSPTS influent at concentrations that are at least one to two orders of magnitude higher than they were in 2000. This confirms that the MSPTS is capturing and treating significantly more contaminant load than was present in its influent prior to closure, a fact that is especially noticeable on the bottom portion of Figure 218.

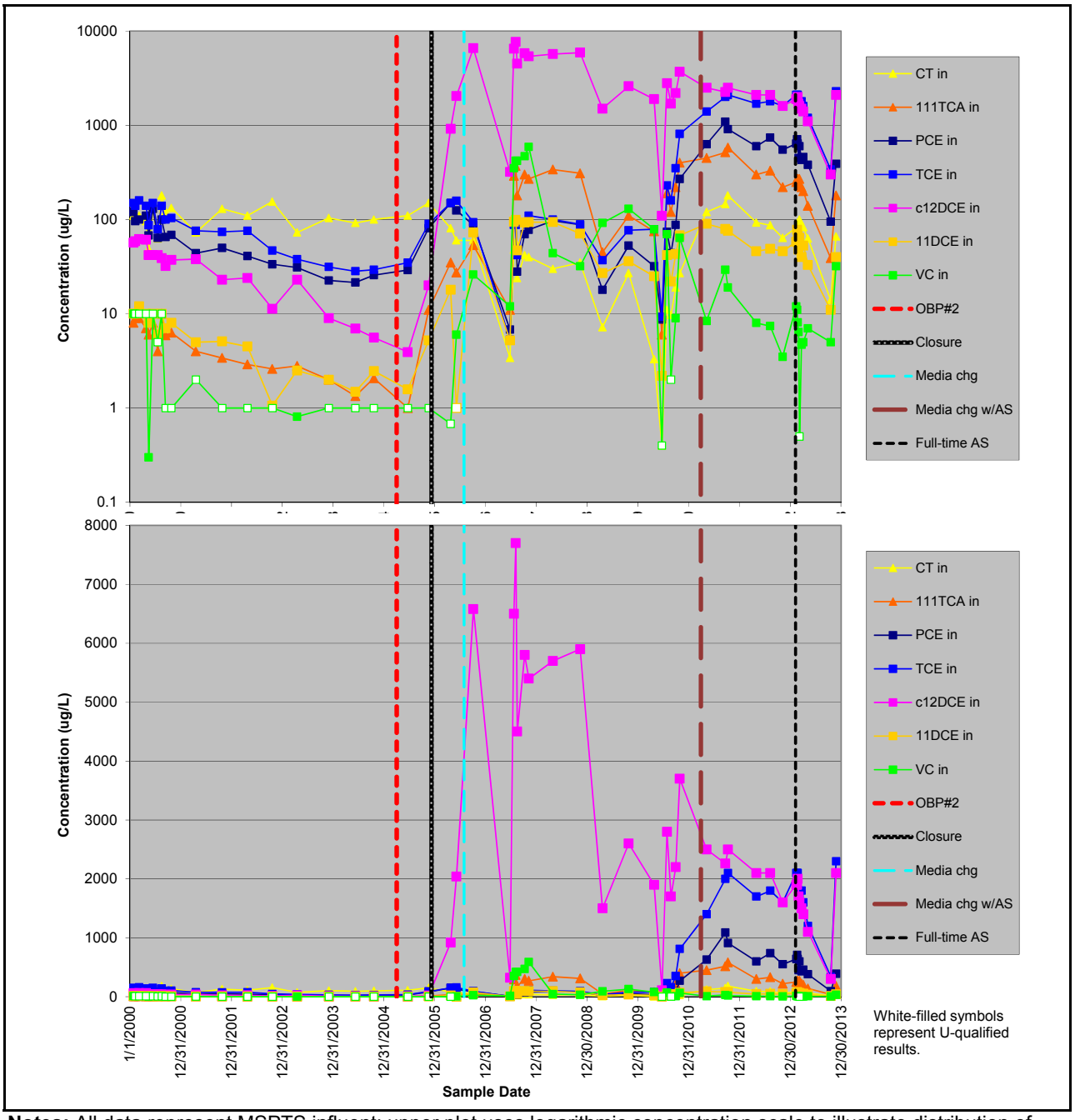
*Table 102. Summary of VOC Data (µg/L) for MSPTS Influent and Effluent*

| DATE | 1,1,1-TCA | | 1,1-DCE | | CT | | CF | | *cis*-1,2-DCE | | MCl | | PCE | | TCE | | VC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R1-0 | R2-E | R1-0 | R2-E | R1-0 | R2-E | R1-0 | R2-E | R1-0 | R2-E | R1-0 | R2-E | R1-0 | R2-E | R1-0 | R2-E | R1-0 | R2-E |
| 1/27/2000 | 8 (J) | 1 (U) | 10 | 1 (U) | 110 | 1 (U) | 25 | 1 (U) | 57 | 1 | 5 (BJ) | 1 (B) | 120 | 0.1 (J) | 150 | 1 (U) | 10 (U) | 1 (U) |
| 2/8/2000 | 9 (J) | 1 (U) | 10 | 1 (U) | 110 | 1 (U) | 25 | 1 (U) | 59 | 2 | 6 (JB) | 2 (B) | 96 | 1 (U) | 140 | 1 (U) | 10 (U) | 0.1 (J) |
| 3/7/2000 | 9 (J) | 1 (U) | 12 | 1 (U) | 110 | 1 (U) | 26 | 1 (U) | 62 | 2 | 14 (B) | 0.9 (JB) | 100 | 1 (U) | 160 | 1 (U) | 10 (U) | 1 (U) |
| 4/26/2000 | 7 (J) | 1 (U) | 10 | 1 (U) | 96 | 1 (U) | 24 | 1 (U) | 61 | 4 | 20 (B) | 0.8 (JB) | 110 | 1 (U) | 140 | 1 (U) | 10 (U) | 0.2 (J) |
| 5/15/2000 | 6 | 1 (U) | 8 | 1 (U) | 49 (D) | 1 (U) | 19 | 1 (U) | 42 (D) | 3 | 0.1 (JB) | 0.7 (BJ) | 68 (D) | 1 (U) | 87 (D) | 1 (U) | 0.3 (J) | 1 (U) |
| 6/14/2000 | 8 | 1 (U) | 10 | 1 (U) | 130 | 1 (U) | 24 | 1 (U) | 42 | 1 | 3 (BJ) | 0.2 (BJ) | 130 | 1 (U) | 150 | 1 (U) | 10 (U) | 1 (U) |
| 7/19/2000 | 4 (J) | 1 (U) | 6 | 1 (U) | 63 | 1 (U) | 12 | 1 (U) | 42 | 2 | 4 (JB) | 0.9 (JB) | 64 | 1 (U) | 79 | 1 (U) | 5 (U) | 1 (U) |
| 8/16/2000 | 10 (J) | 1 (U) | 10 (J) | 1 | 180 | 1 (U) | 31 | 1 (U) | 39 | 1 (J) | 23 (B) | 0.3 (BJ) | 100 | 1 (U) | 140 | 1 (U) | 10 (U) | 1 (U) |
| 9/13/2000 | 5.9 | 0.5 (U) | 7 | 0.5 (U) | 122 | 0.5 (U) | 25.4 | 0.5 (U) | 32.1 | 0.74 | 1 (U) | 0.57 | 65.3 | 0.5 (U) | 99.9 | 0.5 (U) | 1 (U) | 0.5 (U) |
| 10/25/2000 | 6.3 | 0.5 (U) | 8 | 0.5 (U) | 133 | 0.5 (U) | 25.6 | 0.5 (U) | 37.3 | 0.69 | 1 (U) | 0.5 (U) | 68.7 | 0.33 (J) | 104 | 0.5 (U) | 1 (U) | 0.5 (U) |
| 4/19/2001 | 4 (D) | 1 (U) | 5 (D) | 1 (U) | 73 (D) | 1 (U) | 20 (D) | 0.6 (J) | 38 (D) | 3 | 2 (U) | 6 | 44 (D) | 1 (U) | 76 (D) | 1 (U) | 2 (U) | 1 (U) |
| 10/25/2001 | 3.4 | 1 (U) | 5.1 | 1 (U) | 130 | 1 (U) | 23 | 1 (U) | 23 | 0.9 (J) | 1 (U) | 1 (U) | 50 | 1 (U) | 74 | 1 (U) | 1 (U) | 1 (U) |
| 4/25/2002 | 2.9 | 1 (U) | 4.5 | 1 (U) | 110 | 1 (U) | 26 | 1 (U) | 24 | 1.8 | 1 (U) | 1 (U) | 41 | 1 (U) | 76 | 1 (U) | 1 (U) | 1 (U) |
| 10/21/2002 | 2.6 | 1 (U) | 1.06 | 1 (U) | 155 | 1 (U) | 27.5 | 1 (U) | 11.3 | 1 (U) | 1 (U) | 1 (U) | 33.6 | 1 (U) | 46.8 | 1 (U) | 1 (U) | 1 (U) |
| 4/17/2003 | 2.8 | 1 (U) | 2.5 | 0.23 (J) | 73 | 1 (U) | 19 | 0.93 (J) | 23 | 4.4 | 1 (U) | 3.5 (B) | 31 | 0.38 (J) | 38 | 0.31 (J) | 0.81 (J) | 1 (U) |
| 12/1/2003 | 2 | 1 (U) | 2 | 1 (U) | 104 (D) | 1 (U) | 21.4 | 1 (U) | 9 | 1 | 1 (U) | 1 (U) | 22.6 | 1 (U) | 31.4 | 1 (U) | 1 (U) | 1 (U) |
| 6/9/2004 | 1.34 | 1 (U) | 1.49 | 1 (U) | 91.9 | 1 (U) | 22.4 | 1 (U) | 6.98 | 1 (U) | 1 (U) | 1 (U) | 21.5 | 1 (U) | 28.3 | 1 (U) | 1 (U) | 1 (U) |
| 10/20/2004 | 2.07 | 1 (U) | 2.47 | 1 (U) | 100 | 1 (U) | 24.6 | 1 (U) | 5.59 | 0.83 (J) | 1 (U) | 1 (U) | 25.7 | 0.72 (J) | 29.4 | 2.74 | 1 (U) | 1 (U) |
| 6/21/2005 | 1 (U) | 1 (U) | 1.58 | 1 (U) | 110 | 1 (U) | 30.4 | 0.48 (J) | 3.93 | 2.04 | 0.74 (J) | 1 (U) | 29.1 | 1.66 | 34.9 | 1.28 | 1 (U) | 1 (U) |
| 11/18/2005 | 11 (J) | 1 (U) | 5.2 | 0.67 (J) | 150 | 1 (U) | 31 | 0.42 (J) | 20 | 6.3 | 1 (U) | 1 (U) | 81 | 4.5 | 90 | 1.6 | 1 (U) | 1 (U) |
| 4/25/2006 | 35 | 0.16 (U) | 18 | 4.8 | 81 | 0.19 (U) | 56 | 0.16 (U) | 920 | 390 | 20 | 1.7 | 150 | 5.7 | 150 | 7.6 | 0.68 (U) | 5.6 |
| 6/5/2006 | 27.4 | 1 (U) | 1 (U) | 1 (U) | 60.1 | 1 (U) | 45 | 1 (U) | 2040 (D) | 793 (D) | 27.2 | 1 (U) | 125 (D) | 3 | 158 (D) | 4.6 | 6 | 8.6 |
| 10/5/2006 | 53.3 | 1 (U) | 73.1 | 1 (U) | 60.1 | 1 (U) | 45.1 | 1 (U) | 6580 (D) | 0.78 (J) | 6.9 | 7.3 | 87.2 | 1 (U) | 93.7 | 1 (U) | 26.1 | 1 (U) |
| 6/26/2007 | 11 | 0.43 (U) | 5.2 | 1.4 (J) | 3.4 (J) | 0.51 (U) | 4.1 | 0.43 (U) | 320 | 590 | 0.32 (U) | 2.6 (J) | 6.8 | 0.53 (U) | 5.3 | 0.43 (U) | 12 | 48 |
| 7/24/2007 | 290 | 0.32 (U) | 95 | 0.52 (J) | 48 (J) | 0.38 (U) | 77 | 0.32 (U) | 6500 | 330 | 21 (U) | 6.7 | 94 | 0.4 (U) | 88 | 0.32 (U) | 350 | 18 |
| 8/6/2007 | 370 | 0.16 (U) | 99 | 0.35 (J) | 58 | 0.19 (U) | 99 | 0.16 (U) | 7700 | 130 | 8.5 (U) | 3.3 | 89 | 0.2 (U) | 88 | 0.16 (U) | 420 | 8.6 |
| 8/16/2007 | 180 | 0.32 (U) | 47 | 0.4 (J) | 24 | 0.38 (U) | 67 | 0.32 (U) | 4500 | 190 | 4.1 (U) | 5.4 (U) | 28 | 0.4 (U) | 42 | 0.32 (U) | 420 | 34 |
| 10/9/2007 | 300 | 0.16 (U) | 93 | 0.44 (J) | 42 | 0.19 (U) | 88 | 0.16 (U) | 5800 | 300 | 13 (U) | 4.8 | 70 | 0.2 (U) | 93 | 0.16 (U) | 470 | 36 |
| 11/8/2007 | 270 | 0.16 (U) | 94 | 0.5 (J) | 40 | 0.19 (U) | 85 | 0.16 (U) | 5400 | 140 | 13 (U) | 4.7 | 78 | 0.2 (U) | 110 | 0.16 (U) | 590 | 36 |
| 4/29/2008 | 340 | 0.16 (U) | 94 (J) | 1.3 (J) | 30 | 0.19 (U) | 100 | 0.45 (J) | 5700 | 310 | 6.4 (J) | 6.2 (J) | 97 | 0.32 (J) | 100 | 0.56 (J) | 44 | 28 |
| 11/11/2008 | 310 | 0.16 (U) | 71 | 0.14 (U) | 35 | 0.19 (U) | 80 | 0.16 (U) | 5900 | 2.2 | 9.2 (U) | 1.3 (U) | 88 | 0.2 (U) | 89 | 0.17 (J) | 32 (J) | 4.2 (J) |
| 4/21/2009 | 45 | 0.16 (U) | 27 | 1.6 | 7.2 | 0.19 (U) | 8.6 | 0.16 (U) | 1500 | 95 | 1.6 (U) | 4.1 (B) | 18 | 0.53 (J) | 37 | 1.9 | 92 | 47 |
| 10/26/2009 | 110 | 0.16 (U) | 36 | 0.14 (U) | 27 | 0.19 (U) | 19 | 0.16 (U) | 2600 | 1.8 | 1.6 (U) | 0.46 (J) | 53 | 0.2 (U) | 77 | 0.58 (J) | 130 (J) | 1.5 (J) |
| 4/27/2010 | 75 | 0.16 (U) | 25 | 5.6 | 3.3 | 0.19 (U) | 6.3 | 0.16 (U) | 1900 | 360 | 2.1 | 0.82 (J) | 32 | 0.2 (U) | 79 | 3.5 | 79 | 150 |
| 6/22/2010 | 6 | 35 | 2.2 | 24 | 0.4 | 1.3 (U) | 0.46 | 9.9 | 110 | 1800 | 0.39 | 5.6 (U) | 8.7 | 29 | 9.3 | 77 | 0.4 | 270 |
| 7/28/2010 | 190 | 15 | 42 | 8.5 | 11 | 0.76 (U) | 22 | 3.3 (J) | 2800 | 790 | 7.7 | 6.4 | 74 | 11 | 230 | 40 | 70 | 40 |
| 8/26/2010 | 120 | 12 | 22 | 12 | 9.7 | 0.38 (U) | 15 | 3.5 | 1700 | 960 | 3.1 | 4.3 (B) | 44 | 20 | 160 | 84 | 2 | 160 |
| 9/29/2010 | 220 | 8.3 | 43 | 10 | 19 | 0.38 (U) | 27 | 3 | 2200 | 690 | 1.6 | 0.64 (U) | 88 | 11 | 350 | 93 | 9 | 130 |
| 10/28/2010 | 400 | 9.7 | 68 | 7.5 | 27 | 0.38 (U) | 49 | 3.4 | 3700 | 590 | 3.2 | 2.2 (U) | 270 | 6.5 | 810 | 100 | 64 | 75 |
| 5/9/2011 | 450 | 0.16 (U) | 90 | 1.9 | 120 | 0.19 (U) | 130 | 0.3 (J) | 2500 | 210 | 1.8 (U) | 9.7 | 630 | 5.5 | 1400 | 6.6 | 8.4 | 3.3 |
| 9/21/2011 | 516 | *NA* | 79.4 | *NA* | 146 | *NA* | 128 | *NA* | 2260 | *NA* | 0.25 (U) | *NA* | 1090 | *NA* | 2000 | *NA* | 29.4 | *NA* |
| 10/10/2011 | 580 | 0.16 (U) | 76 | 0.33 (J) | 180 | 0.19 (U) | 150 | 3.5 | 2500 | 240 | 3.2 (U) | 4.9 | 910 | 0.34 (J) | 2100 | 0.29 (J) | 19 | 2.3 |
| 5/1/2012 | 300 | 0.16 (U) | 46 | 1.8 | 93 | 0.19 (U) | 52 | 5.7 | 2100 | 410 | 3.2 (U) | 1.9 | 600 | 3.6 | 1700 | 4.7 | 8 (J) | 2.3 |

*Table 102 (continued). Summary of VOC Data (µg/L) for MSPTS Influent and Effluent*

| DATE | 1,1,1-TCA | | 1,1-DCE | | CT | | CF | | *cis*-1,2-DCE | | MCl | | PCE | | TCE | | VC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | R1-0 | R2-E | R1-0 | R2-E | R1-0 | R2-E | R1-0 | R2-E | R1-0 | R2-E | R1-0 | R2-E | R1-0 | R2-E | R1-0 | R2-E | R1-0 | R2-E |
| 8/9/2012 | **330** | *NA* | **49** | *NA* | **87** | *NA* | **47** | *NA* | **2100** | *NA* | 2.2 (U) | *NA* | **740** | *NA* | **1800** | *NA* | **7.4** | *NA* |
| 11/6/2012 | **220** | 0.16 (U) | **46** | 0.47 (J) | **64** | 0.19 (U) | **39** | 0.34 (J) | **1600** | **90** | 1.3 (U) | 0.32 (U) | **550** | 0.81 (J) | **1600** | 0.53 (J) | **3.5 (J)** | **4.5** |
| 2/12/2013 | **250** | 0.16 (U) | **58** | 0.23 (U) | **82** | 0.19 (U) | **43** | 0.16 (U) | **1900** | 46 | 1.6 (U) | 0.32 (U) | **640** | 0.48 (J) | **2100** | 0.97 (J) | **12** | **1.2** |
| 2/19/2013 | **270** | 0.16 (U) | **78** | 0.23 (U) | **87 (J)** | 0.19 (U) | **44** | 0.16 (U) | **1900** | 43 | 8 (U) | 0.32 (U) | **710** | 0.66 (J) | **2100** | 1.2 | **11 (J)** | **1.2** |
| 2/22/2013 | **270 (J)** | 0.16 (U) | **67** | 0.23 (U) | **93 (J)** | 0.19 (U) | **43** | 0.16 (U) | **2000** | 42 | 3.2 (U) | 0.32 (U) | **640** | 0.48 (J) | **2100** | 0.83 (J) | **8.1 (J)** | **1.4** |
| 3/1/2013 | **230** | 0.16 (U) | **48** | 0.23 (U) | **80** | 0.19 (U) | **40** | 0.16 (U) | **1700** | 37 | 3.2 (U) | 0.32 (U) | **450** | 0.3 (J) | **1800** | 0.66 (J) | **6.4 (J)** | **0.91 (J)** |
| 3/7/2013 | **270** | 0.16 (U) | **64 (J)** | 0.23 (U) | **100 (J)** | 0.19 (U) | **42** | 0.16 (U) | **1600** | 24 | 1.6 (U) | 0.32 (U) | **600** | 0.27 (J) | **1700** | 0.51 (J) | **0.5 (U)** | **0.85 (J)** |
| 3/22/2013 | **220 (J)** | 0.16 (U) | **40 (J)** | 0.23 (U) | **87 (J)** | 0.19 (U) | **39 (J)** | 0.16 (U) | **1500** | 37 | 3.2 (U) | 0.32 (U) | **430 (J)** | 0.25 (J) | **1800** | 0.78 (J) | **4.7 (J)** | **0.95 (J)** |
| 4/4/2013 | 200 | 0.16 (U) | **53** | 0.23 (U) | **83** | 0.19 (U) | **34** | 0.16 (U) | **1400** | 38 | 1.6 (U)\ | 0.32 (U) | **460** | 0.4 (J) | **1600** | 0.73 (J) | **5** | **1.7** |
| 5/7/2013 | 140 | 0.16 (U) | **33** | 0.37 (J) | **63 (J)** | 0.19 (U) | **28** | 0.25 (J) | **1100** | 60 | 3.2 (U) | 0.32 (U) | **380** | 0.9 (J) | **1200** | 1.6 | **7 (J)** | **2.2** |
| 8/26/2013 | *NA* | 0.16 (U) | *NA* | 0.24 (J) | *NA* | 0.19 (U) | *NA* | 0.46 (J) | *NA* | 50 | *NA* | 0.32 (U) | *NA* | 1.8 | *NA* | 2.2 | *NA* | **2.8** |
| 10/18/2013 | 39 | 0.57 (J) | **11** | 0.84 (J) | **14 (J)** | 0.19 (U) | **7.7** | 0.63 (J) | **300** | **87** | 0.32 (U) | 0.32 (U) | **95** | **5.4** | **340** | **7.9** | **5** | **6.3** |
| 11/25/2013 | 180 | 1.3 | **40** | 0.83 (J) | **66** | 0.32 (J) | **38** | 0.9 (J) | **2100** | **130** | 3.2 (U) | 0.32 (U) | **390** | **4.8** | **2300** | **18** | **32** | **5.4** |

**Notes:** Constituents and their respective RFLMA values (all in µg/L): 1,1,1-TCA = 1,1,1-trichloroethane (200); 1,1-DCE = 1,1-dichloroethene (7); CT = carbon tetrachloride (1); CF = chloroform (3.4) ; *cis*-1,2-DCE = *cis*-1,2-dichloroethene (70); MCl = methylene chloride (4.6); PCE = tetrachloroethene (5); TCE = trichloroethene (2.5); VC = vinyl chloride (0.2). R1-0 = influent, R2-E = effluent; formal sampling location names are MOUND R1-0 and MOUND R2-E. Shaded, bold value indicates detected concentration exceeds corresponding applicable level stipulated in RFLMA Attachment 2, Table 1 (CDPHE et al. 2012); if detection limit exceeded that concentration and constituent was qualified as nondetect, result is not highlighted as an exceedance. Laboratory and validation qualifiers (wherein the validation qualifier supersedes the lab qualifier if they differ): J = result is estimated below the sample quantitation limit; U = analyte not detected at the indicated concentration; B = constituent was also detected in the blank; D = analysis was performed at a dilution. NA = location not sampled on given date.




**Notes:** All data represent MSPTS influent; upper plot uses logarithmic concentration scale to illustrate distribution of VOCs, and lower plot uses linear scale to better illustrate their relative concentrations. Several events are noted but not all affect MSPTS influent; they are shown to provide context. "OBP #2" indicates date of OBP #2 source removal and backfilling; "Closure" indicates when the Site closed; "Media chg" shows the 2006 activity focusing on the first time the zero-valent iron in the treatment cells was replaced; "Media chg w/AS" indicates when a second media replacement was conducted and a prototype air stripper was installed; and "Full-time AS" shows when the prototype air stripper was replaced with a full-time unit. CT = carbon tetrachloride (RFLMA Table 1 standard [PQL = 1 µg/L]; 111TCA = 1,1,1-TCA (200 µg/L); PCE (5 µg/L); TCE (2.5 µg/L); c12DCE = *cis*-1,2-DCE (70 µg/L); 11DCE = 1,1-DCE (7 µg/L); VC = vinyl chloride (PQL = 0.2 µg/L). In addition to the nondetects, several results are qualified, but for simplicity are not shown differently.

*Figure 218. Concentrations of Primary VOCs in MSPTS Influent*

The impact on water quality related to the addition of OBP #2 flow is more concisely summarized in Table 103, which presents average MSPTS influent concentrations generally prior to and following the diversion of OBP #2 water to MSPTS influent. (Note that these averages incorporate all results at face value, regardless of qualifiers.) With the exception of carbon tetrachloride, all constituents shown in this table increased in concentration following OBP #2 remediation. The average concentrations of chloroform and methylene chloride, both daughter products of carbon tetrachloride degradation, appeared to increase relatively little, while the concentrations of the other constituents summarized here increased from one to two orders of magnitude. However, these average values for some constituents, such as methylene chloride, are based largely on nondetects (as indicated in Table 102) and for this summary simply incorporate the associated detection limits. For this reason, the average values should be compared with data provided in Table 102 before they are considered as representative of actual water quality. Comparison with the same table in the 2011 and 2012 Annual Reports (DOE 2012, 2013b) shows the post-closure average concentrations of several constituents changing markedly. In particular, the average PCE and TCE concentrations have sharply increased, from the 2011 values of 187.8 µg/L (PCE) and 375.9 µg/L (TCE) to the 2013 values of 309.0 µg/L and 868.8 µg/L, respectively. Concentrations of their daughter products, *cis*-1,2-DCE and VC, are decreasing (*cis*-1,2-DCE from 3,415 µg/L in 2011 to 2,755.1 µg/L, and VC from 130.6 µg/L to 85.3 µg/L) but remain elevated with respect to pre-closure conditions. The average post-closure concentrations of other constituents did not change as much from 2011 to 2013.

*Table 103. Average Contaminant Concentrations in MSPTS Influent, Pre- vs. Post-Closure, in µg/L*

| | 111TCA | 11DCE | CT | CF | c12DCE | MCl | PCE | TCE | VC |
|---|---|---|---|---|---|---|---|---|---|
| **Through 2005** | 5.3 | 6.1 | 110.0 | 24.1 | 31.9 | 4.4 | 65.1 | 88.7 | 3.9 |
| **Since 2005** | 223.4 | 52.4 | 58.0 | 51.4 | 2755.1 | 5.5 | 309.0 | 868.8 | 85.3 |

**Notes:** For convenience and to reflect the lag time between OBP #2 remediation and resulting changes in MSPTS influent water quality, pre-closure averages include data from January 1, 2000, through December 31, 2005; post-closure averages include data collected from January 1, 2006 through the end of 2013. To calculate these averages, all data, *including nondetects*, were taken at face value regardless of qualifier.
111TCA = 1,1,1-TCA (RFLMA Table 1 standard = 200 µg/L); 11DCE = 1,1-DCE (7 µg/L); CT = carbon tetrachloride (PQL = 1 µg/L); CF = chloroform (3.4 µg/L); c12DCE = *cis*-1,2-DCE (70 µg/L); MCl = methylene chloride (4.6 µg/L); PCE (5 µg/L); TCE (2.5 µg/L); VC = vinyl chloride (PQL = 0.2 µg/L).

A critical point is that the addition of electron donor material to the OBP #2 source area excavation, and the resulting stimulation of (incomplete) biodegradation of residual VOCs, led to concentrations of daughter products such as *cis*-1,2-DCE and VC in MSPTS influent increasing more than did those of their parent compounds. While a larger increase in daughter products relative to parent compounds is indicative of desirable dechlorination, as explained above these two daughter products represent some of the more recalcitrant constituents.

Finally, although not required by the RFLMA, S-K trend calculations were performed for MSPTS influent. The data evaluated included all influent from January 2000 through the end of 2012, and (separately) post-closure influent only (i.e., data reported beginning in 2006). The trend calculations for each of these approaches identify several represented by a statistical confidence of 95 percent (Table 99; see also the trend plots in Appendix B). The trends identified

for the entire period are obviously affected by the addition of OBP #2 flow, as previously discussed. Trends at this level of significance include some affected by a consistent record of nondetects prior to the OBP #2 work (increasing 1,1,1-TCA, VC, and both *cis*- and *trans*-1,2-DCE) but which can be accepted as generally valid given that these constituents were either not detected or present at lower levels than has been the case since closure. Others include increasing 1,1-DCE, decreasing carbon tetrachloride, increasing chloroform, increasing TCE, and (new after 2013) increasing PCE. When only post-closure (2006 through 2013) data are evaluated, trends at the 95 percent level of significance include increasing PCE and TCE, and decreasing *cis*- and *trans*-1,2-DCE and VC; these trends for *cis*-1,2-DCE, PCE, and VC are new or newly significant as of 2013. With more data, additional trends will be identified at this 95 percent level of confidence.

No VOCs other than those summarized in Table 102 were detected in 2013 in MSPTS effluent at concentrations exceeding the RFLMA standards.

Two grab samples for the analysis of VOCs were collected in 2013 at the surface-water performance location for the MSPTS, surface-water station GS10. Very low concentrations of VOCs were detected (Table 104). None exceeded the corresponding RFLMA standards.

*Table 104. Summary of VOCs Detected in 2013 at GS10*

| Date | Constituent | Result (µg/L) | Qualifier |
|---|---|---|---|
| 5/7/2013 | *cis*-1,2-Dichloroethene | 2.2 | |
| 5/7/2013 | Trichloroethene | 0.41 | J |
| 10/18/2013 | *cis*-1,2-Dichloroethene | 2.6 | |
| 10/18/2013 | Tetrachloroethene | 0.21 | J |
| 10/18/2013 | Trichloroethene | 0.65 | J |

**Notes:** RFLMA Table 1 value for *cis*-1,2-DCE is 70 µg/L, for PCE is 5 µg/L, and for TCE is 2.5 µg/L.

The detections reported in 2013 at GS10 are generally consistent with conditions reported in previous post-closure years. VOCs detected most commonly at location GS10 are *cis*-1,2-DCE and TCE.

## MSPTS Effluent Polishing Component: Air Stripper

The 2011 Annual Report (DOE 2012) provides a discussion of the decision to install an effluent polishing component at the MSPTS, and provides initial results of testing. The 2012 Annual Report (DOE 2013b) further describes and summarizes the results of the prototype unit installed in 2011.

As noted in the 2012 Annual Report (DOE 2013b), plans were underway in late 2012 to expand the prototype from 12 hours per day and relatively lower flows to 24 hours per day and higher flows. The upgraded air stripper was planned for installation in 2013 within the effluent manhole, the same location occupied by the prototype.

Design of the larger unit was completed in late 2012 and construction began in December 2012. The prototype unit's solar array and batteries were removed and the footers and battery pad

installed in 2011 for the solar array were modified to support this larger application. Other electrical components for the upgrade were also completed.

As discussed in the 2012 Annual Report (DOE 2013b), the prototype unit tested pumps rated at approximately 4 gpm; for a time, two such pumps were in operation, yielding total flow rates estimated at up to about 8 gpm. The Grundfos pump selected for the larger, full-time unit would operate at approximately 20 gpm. The new unit would therefore operate twice as long each day, and at more than twice the maximum flow rate tested by the prototype. Whereas the solar array installed to power the prototype unit generated a rated maximum of 0.88 kW, to support the power requirements of the larger unit's pump, ventilation, and miscellaneous (e.g., monitoring), the array was designed to generate a rated output of 3.42 kW. Simply adding more of the original, lower-wattage panels would have required additional structural elements to provide the necessary bracing to support the high wind load design criterion. Therefore, these 4 original solar panels were removed and replaced with 12 higher-wattage panels. The result of this change was that the footers installed for the original prototype (which anticipated expansion) would be adequate.

Construction of the upgraded air stripper was completed on February 6, 2013. See Figure 219 below for relevant photographs, including some of the previous prototype unit.

RFLMA monitoring of the MSPTS includes the following locations:

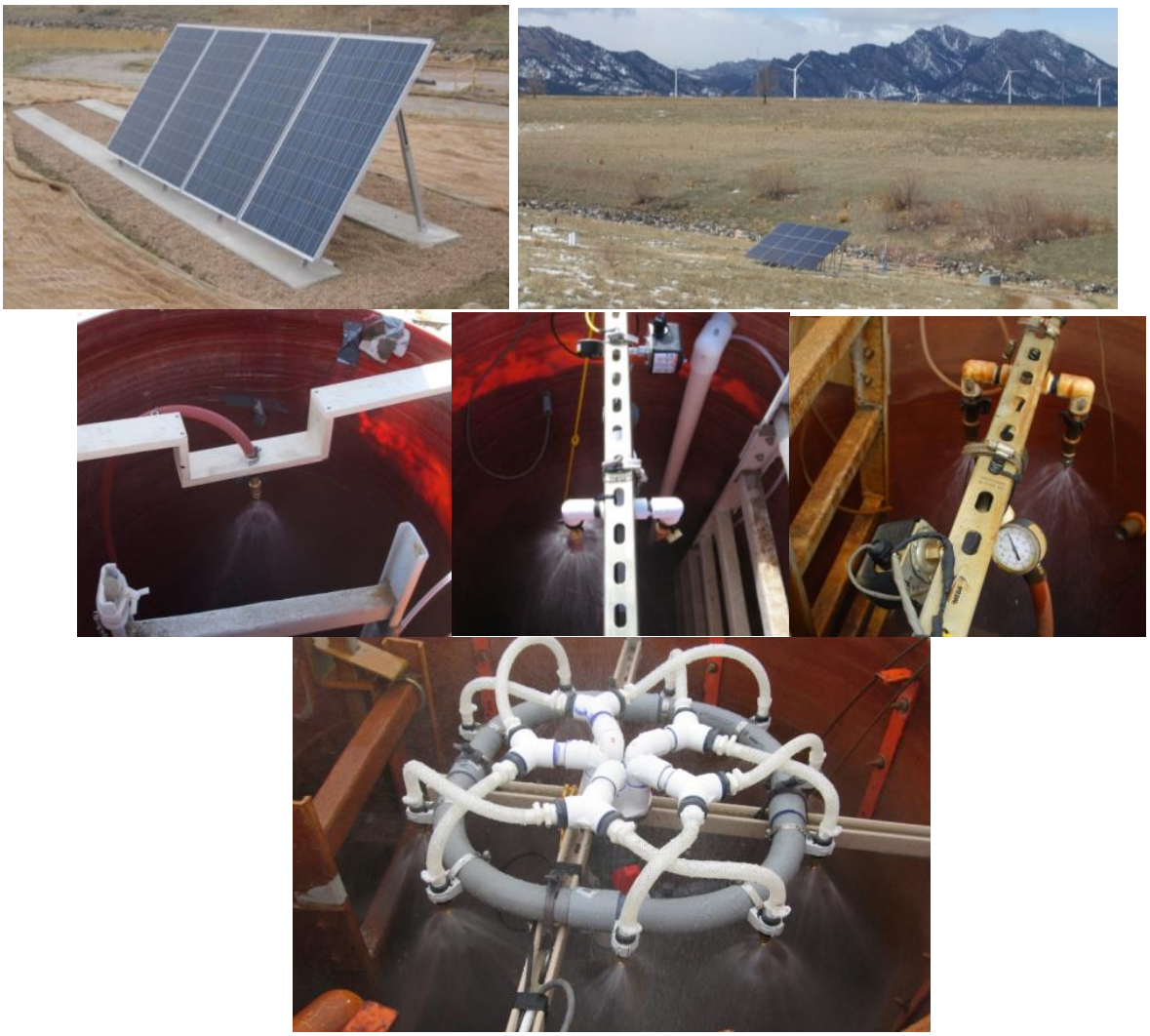
- System influent (MOUND R1-0) at the influent manhole, located where the groundwater intercept trench is deepest; water collects here and is piped to the two treatment cells for treatment;
- System effluent (MOUND R2-E), located within the effluent manhole; and
- Surface water performance location (GS10).

These RFLMA monitoring locations are inadequate for assessing the effectiveness of the air stripper. Therefore, as discussed in the 2012 Annual Report, a monitoring location (ASHINF) was added to support the prototype air stripper. This location monitors water after it has been treated in the ZVI-filled treatment cells, but before it enters the effluent manhole in which the air stripper is installed. This allows an evaluation of the degree to which the ZVI is treating groundwater, and a separate evaluation of the additional treatment provided by the air stripper. Being able to evaluate the treatment effectiveness of both treatment components separately is critical to consideration of performance improvements.

Figure 220 illustrates total VOCs (i.e., a sum of all VOCs detected) at various MSPTS monitoring locations. Included on this chart are data from just prior to the installation of the prototype air stripper to illustrate the varying effectiveness of that unit as well as the air stripper installed in 2013. (For additional detail on and discussion of the previous air stripper, refer to the 2011 and 2012 Annual Reports, DOE 2012 and DOE 2013b, respectively.)

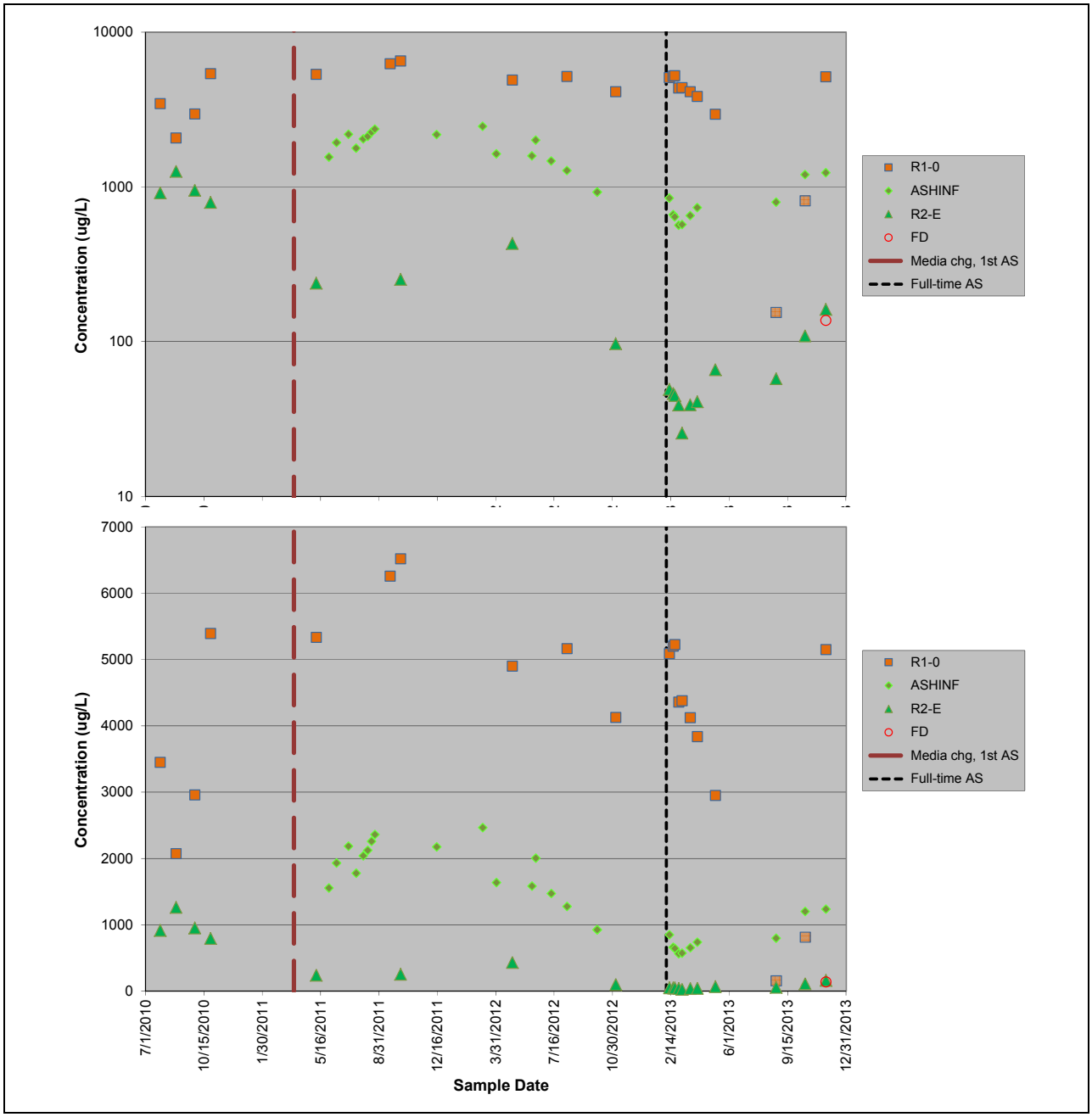
This figure clearly shows the wide variability in VOC concentrations of MSPTS influent. Ignoring two suspect datapoints in late 2013 (denoted by shading; see notes to the figure), total VOCs at MSPTS R1-0 over just this small period of time ranged from approximately 2,000 µg/L to over 6,500 µg/L. This presents a challenge to the system, which can be magnified when higher concentrations coincide with higher flow rates. (The more quickly water enters the system, the

less time it is in contact with the ZVI and the less it is processed by the air stripper, and therefore the less total treatment it receives.)



**Notes:** Top left: Solar array for prototype air stripper installed at the MSPTS in spring 2011. Note that concrete footers were designed and constructed in anticipation of eventually increasing array capacity for larger air stripper. Top right: array completed in 2013 to support larger, full-time air stripper. Areas of woody vegetation on hillside past the array include some watered by the 995 Seeps. Middle row, left: Original, proof-of-principle test air stripper nozzle used in January 2011 to develop concept of an air stripper to polish groundwater at the MSPTS. Middle row, center: One of the nozzle configurations tested by the prototype air stripper incorporated two nozzles; this unit would eventually test configurations of up to 6 nozzles (see DOE 2013b for details). Note minimal iron oxide accumulation on ladder and other components. Middle row, right: Same nozzle configuration later during prototype testing, showing accumulating iron oxides. Also visible is pressure gauge, which is monitored to give an indication of flow rates (using nozzle manufacturer's formula) and whether components are becoming clogged. Bottom: array of 10 nozzles originally used in the upgraded air stripper in 2013. The plumbing assembly for the nozzle array is referred to as the Medusa.

*Figure 219. Photographs of MSPTS Air Stripper Upgrades Completed in 2013*




**Notes:** Upper and lower portions show same data, but logarithmic concentration scale is used in upper chart, linear scale is used in lower chart. R1-0 = raw influent to treatment system (RFLMA MSPTS influent monitoring location); note that two data points in mid to late 2013 are shaded lighter, denoting that these data are suspect. ASHINF = influent to air stripper (effluent from ZVI-filled treatment cells before it enters manhole housing air stripper). R2-E = effluent from air stripper (RFLMA MSPTS effluent monitoring location, approximately where water leaves manhole housing air stripper). FD = small French drain next to manhole in which R2-E is located. Media chg, 1st AS shows when ZVI media was replaced and initial, part-time/prototype air stripper was installed; Full-time AS shows when prototype air stripper was replaced with larger, full-time unit.

*Figure 220. Concentrations of Total Detected VOCs at MSPTS Locations*

Also visible on Figure 220 is the improvement from the two air strippers. Data from location MOUND R2-E (shown on this figure as R2-E) show the improvement in effluent water quality from the prototype air stripper, and the greater improvement from the unit installed in 2013.

However, it is also evident that overall treatment of the water decreased in the latter half of the year, when flows (Figure 216) were higher as a result of the extremely heavy September precipitation.

*cis*-1,2-DCE is the VOC that is most commonly present at the highest concentrations in effluent from the ZVI-filled treatment cells (i.e., at ASHINF). This constituent is present at ASHINF at concentrations of several hundred µg/L, in 2013 ranging from 490 µg/L to 830 µg/L. The VOCs present at the next highest concentrations here are typically TCE and VC; in 2013, concentrations of TCE at ASHINF ranged from 8.3 µg/L to 270 µg/L, and VC ranged from 42 µg/L to 140 µg/L. PCE is also commonly present here at concentrations most often in the 10–20 µg/L range but was reported as high as 80 µg/L (one month after the heavy precipitation, when flow rates were elevated). Several other VOCs are inconsistently detected here in 2013 at elevated concentrations; those reported one or more times at concentrations above 5 µg/L included 1,1,1-TCA 1,1-DCE, carbon tetrachloride, and chloroform.

At system effluent location MOUND R2-E, *cis*-1,2-DCE was the only constituent that was frequently reported in 2013 at concentrations above 10 µg/L. Concentrations of *cis*-1,2-DCE at MOUND R2-E ranged from 24 µg/L to 130 µg/L (RFLMA Table 1 value: 70 µg/L). The only other constituent present at concentrations greater than 10 µg/L was TCE, in one sample, at 18 µg/L (RFLMA value: 2.5 µg/L). Constituents reported in samples from this location at concentrations exceeding 5 µg/L included PCE (one sample) and VC (two samples). As at location ASHINF, the highest VOC concentrations in system effluent were reported in samples collected in October and November, when flow rates were substantially higher than normal due to the heavy precipitation in mid-September.

Concentrations of *cis*-1,2-DCE in system effluent relate to its relatively higher concentration in both system and air stripper influent (i.e., at both MOUND R1-0 and ASHINF). While this constituent (and the others summarized above) has a Henry's Law constant that indicates it is susceptible to air stripping, these higher concentrations mean it takes more passes through the air stripper under set conditions for all of the chemical to be transferred from the dissolved to gaseous phase. If groundwater flow rates are higher, there is instead a shorter residence time in the air stripper, and it passes through that unit fewer times. Also, if air stripper components are not functioning optimally (for example, due to clogging), this phase transfer is reduced. Temperature also represents a control: the lower the temperature, the less readily a VOC moves from the liquid to gaseous phase. However, with groundwater not greatly impacted by seasonal temperature changes and having a much greater thermal capacity than the air moving through the spray, this effect is lessened.

During 2013, the MSPTS air stripper operated with ten identical nozzles (full-cone, spiral, by BETE). This will be modified in 2014 to test different arrangements. For example, the first effort will test whether using a single, larger-bore nozzle might operate more effectively, or equally effectively, but require less maintenance. (A similar test was conducted at the ETPTS, as discussed in a separate section in the context of that system.)

Maintenance related to nozzle and pump clogging can be difficult and time consuming (refer to Section 2.4.1.3 for additional information). If maintenance is not performed properly and at an appropriate frequency, the air stripper effectiveness may diminish as a result. For example, the pump, nozzles, and lines were cleaned of accumulated biomass and iron oxides in early

August 2013. The second-quarter RFLMA samples had been collected prior to this, in May, and the sum of VOCs detected in that sample was 65.9 µg/L. (Refer to Table 102 for a summary of results for specific constituents.) Following the August maintenance activity, samples were collected that contained 57.5 µg/L total VOCs. While this is a small apparent improvement, the flow rate for the April sample was about 0.8 gpm while the August sample was collected during flows of about 1.1 gpm—the air stripper was therefore performing substantially better following this maintenance.

RFLMA location MOUND R2-E is intended to monitor effluent from the MSPTS. However, this monitoring location is positioned within the effluent manhole in which air stripping is being conducted. That is, this water is still undergoing active treatment. Samples collected from this manhole, therefore, may not truly represent system effluent even though they are formally identified as such. To reduce these concerns, adjustments were made during installation of the prototype air stripper, to try to segregate water being processed by the air stripper from water exiting this manhole. The desire to limit disruption of the existing components and simplify construction led to a design that is not completely effective. Improvements were made as part of the 2013 air stripper installation project to better separate the effluent monitoring location (MOUND R2-E) from water that is still being processed by the air stripper in this manhole, but were acknowledged and accepted as incomplete.

Effluent from this effluent manhole is piped to a vertically-oriented French drain that serves as a subsurface discharge gallery. This discharge gallery is constructed of a ten-foot length of two-foot-diameter perforated pipe, and is accessed by a small manhole referred to as the "French drain manhole". (Note that this discharge gallery is not adequate for the MSPTS flows, and therefore a second, larger subsurface discharge gallery, located on the south side of FC-4 and repaired during the 2011 media replacement activity [DOE 2012], receives flow from this smaller unit.) Because effluent from the effluent manhole is piped directly to the French drain manhole, water entering this latter manhole represents true system effluent.

A sample was collected in November 2013 from the French drain manhole to evaluate whether VOCs detected at location MOUND R2-E are entirely representative of system effluent or might contain water still being processed by the system. This new sampling location is referred to as MOUND-FD, and is denoted on Figure 220 as FD. While very similar in total VOCs to water collected at the formal effluent location, concentrations at FD are clearly lower (see upper portion of Figure 220). The sum of detected VOCs reported at these two locations in this single sample was 136.83 µg/L at MOUND-FD, and 161.55 µg/L at RFLMA location MOUND R2-E. Additional sampling will be conducted in 2014 to further evaluate differences in VOC levels between locations MOUND R2-E and MOUND-FD.

*East Trenches Plume and Treatment System*

The East Trenches Plume is an area of groundwater contamination named after several buried disposal trenches. These trenches are located on the pediment south of South Walnut Creek, in former OU 2. The source of this plume is residual VOC contamination associated predominantly with Trenches T-3 and T-4, which were remediated in 1996. In addition, a portion of the 903 Pad Plume flows from its source area toward the northeast and merges with the East Trenches Plume. Following the successful installation and testing of the MSPTS in the late 1990s, a similar

treatment system (the ETPTS) was designed and installed in 1999 to intercept and treat contaminated groundwater flowing toward the B-Series Ponds and South Walnut Creek.

**East Trenches Plume**

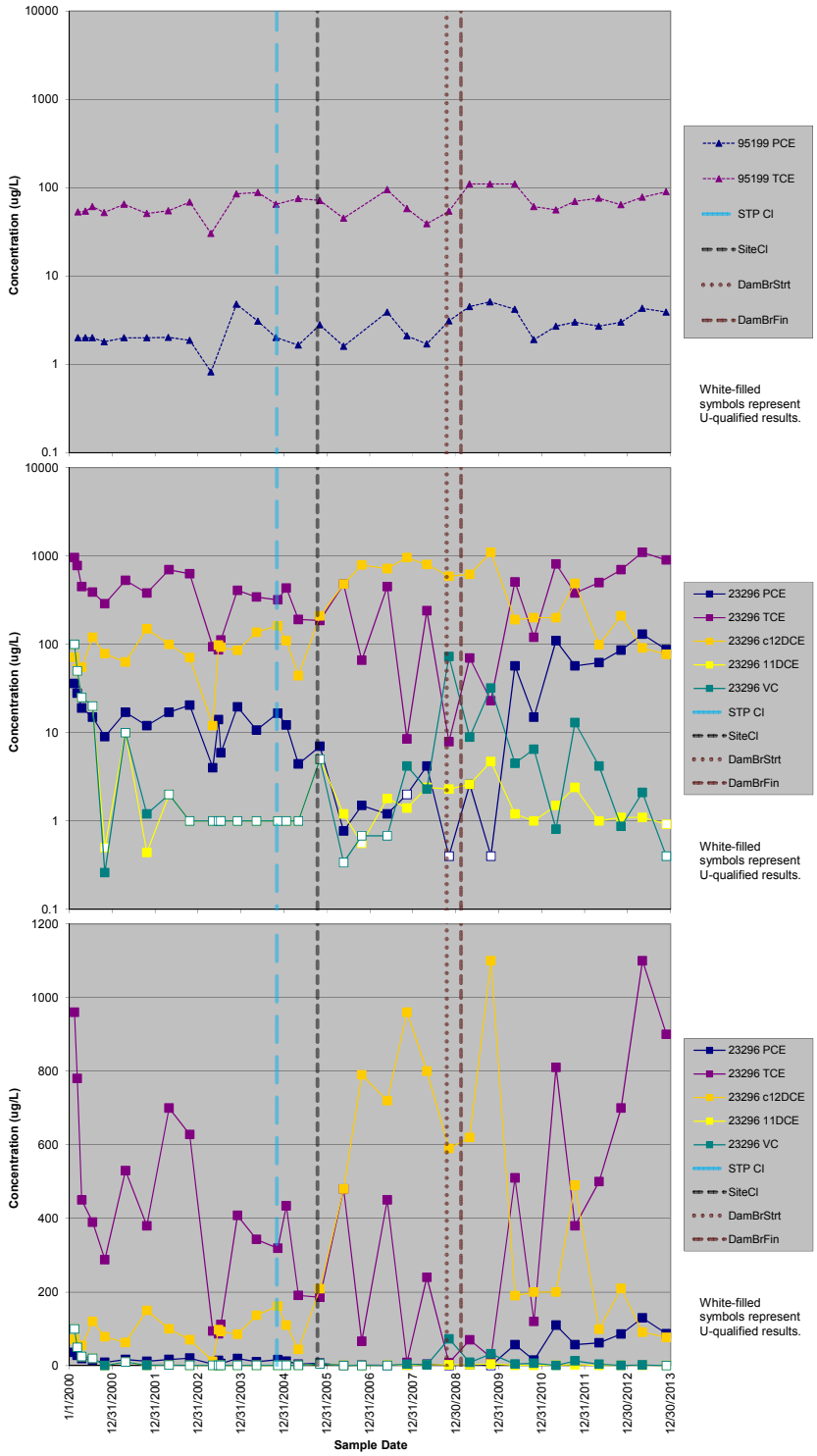
Evaluation wells 3687 and 05691 monitor the primary source areas of the East Trenches Plume, Trenches T-3 and T-4, respectively. More distal portions of the plume are monitored by Evaluation well 03991 and Sentinel well 04091 to the east-northeast. Sentinel wells 95099, 95199, 95299, and 23296 monitor the ETPTS and downgradient portions of the plume along South Walnut Creek. AOC well 00997, situated at the mouth of Pond B-5 in the South Walnut Creek drainage, also supports monitoring of this plume (as well as the Mound Plume, which is farther upgradient—west—of the East Trenches Plume). Well 00191 monitors groundwater closest to the source area of the 903 Pad Plume (a portion of which joins the East Trenches Plume) and is discussed in the context of the 903 Pad/Ryan's Pit Plume later in this section.

None of the East Trenches Plume Evaluation wells were scheduled for RFLMA sampling in 2013. However, all of the Sentinel wells were sampled twice, as was the AOC well.

Sentinel well 04091, located on the pediment surface to the east of the source area, most often reports very low (<1 µg/L) concentrations of carbon tetrachloride. This was the case in 2013 when results were nondetect in the May sample, and estimated (J-qualified) at 0.24 µg/L in November. No other VOCs were detected at this location in 2013. Until mid-2007, PCE was also detected here fairly regularly, also at very low (estimated) concentrations, but it has not been reported since May of that year.

The Sentinel wells sampled along South Walnut Creek in support of the East Trenches Plume and ETPTS showed water quality in 2013 that was consistent with previous years. Well 95299, which is located near the western end of the ETPTS groundwater intercept trench, was dry; this has been the case for the entire period of record (since January 1, 2000) except for one occasion in 2006. RFLMA Table 1 standards were exceeded in samples from wells 23296 and 95199. As in previous years, the highest concentrations of VOCs were reported at well 23296.

Concentrations of TCE and PCE at well 23296 in 2013 were the highest over the period of record (beginning in 2000). TCE was reported in the May sample at 1,100 µg/L and PCE in the same sample was at 130 µg/L. Figure 221 displays several VOCs that are commonly detected in one or both of wells 95199 and 23296 at concentrations exceeding the corresponding RFLMA Table 1 standards: PCE, TCE, *cis*-1,2-DCE, 1,1-DCE, and VC. At well 95199, only PCE and TCE are detected at elevated concentrations, and in 2013 only TCE exceeded its RFLMA value at this location (top portion of Figure 221). More VOCs were detected at well 23296 (see middle and lower portions of Figure 221). Concentrations of *cis*-1,2-DCE in samples from well 23296 show a fairly gradual increase through 2009, then a slow decrease beginning in 2010 and continuing through 2013. Generalized patterns such as this may be masked by natural data variability, but can be more apparent when plotted using a linear concentration scale, as in the lower portion of Figure 221. This lower plot shows an apparent inverse correlation among *cis*-1,2-DCE and its parent products, PCE and (especially) TCE. This contaminant behavior may relate to operation of the internal (upstream) B-Ponds from pre-closure, to post-closure/pre-dam breach, and finally to post-breach of the dams. This hypothetical scenario is described below.




**Notes:** Constituents and their respective, applicable RFLMA Table 1 values (µg/L; CDPHE et al. 2012): PCE, 5; TCE, 2.5; c12DCE = *cis*-1,2-DCE, 70; 1,1-DCE, 7; VC, 0.2. Several detections are qualified but for simplicity are not shown differently. Note logarithmic concentration scales in middle and upper portions, linear scale in bottom portion. DamBrStrt and DamBrFin = start and finish, respectively, of the project that breached the B-1, B-2, B-3, and B-4 dams on South Walnut Creek. Site Cl = closure of the Site. STP Cl = approximate closure date of former Building 995, the Sewage Treatment Plant (STP).

*Figure 221. Most Commonly Detected VOCs in Sentinel Wells Downgradient of the ETPTS*

Well 23296 is located on the southern bank of South Walnut Creek between former Ponds B-2 and B-3, and monitors shallow (<10 feet deep) groundwater. This groundwater is therefore subject to influences from surface water in the nearby ponds. Available records show pond levels in B-1 and B-2 varying erratically, suddenly and by several feet, routinely from the early 1990s until late 2004 (Figure 222). Pond B-3 was apparently not routinely measured for water levels until about 2007. However, water levels in this pond would not have varied as much as in B-1 and B-2 because treated water from the Sewage Treatment Plant (STP) was discharged to Pond B-3, keeping it at a relatively uniform water level but continually adding fresh water to the pond. Although data on the redox conditions of the water placed in the ponds were not located, it is probable that this water was oxygenated, not geochemically reducing. This would have limited biodegradation of the chlorinated solvents typically detected at well 23296. The STP was then removed and Ponds B-1, B-2, and B-3 were remediated, and the Site was closed. Water levels in the ponds then changed more slowly, as they received only precipitation and runoff from the immediate area; in general, they were predominantly dry. After the dams were breached, surface water flow through the ponds was restored, though the quantities of flow were much lower than would have been the case during site operations, given the imported water and impermeable surfaces of the pre-closure era.

It is reasonable to assume that water availability and these changes in how the ponds were operated also affected the geochemistry of shallow groundwater in the vicinity of the ponds, including that monitored by well 23296. (Groundwater monitored by well 95199 could have been less affected, as the screened interval for this well is more than twice as deep as that for 23296; groundwater monitored by well 95199 is therefore more isolated from surface-water conditions.) Under this scenario, the influxes of oxygenated water prior to closure limited natural biodegradation of TCE and PCE and the corresponding creation of *cis*-1,2-DCE. (Removing one chlorine atom from PCE yields TCE; removing another yields either *cis*- or *trans*-1,2-DCE. Therefore, partial dechlorination of PCE and TCE can result in creation of *cis*-1,2-DCE. Previous studies [e.g., as summarized in ITRC 1998; Leeson et al. 2004; K-H 2004c; USGS 2006; Lawrence 2007] have found the *cis*-1,2-DCE isomer to be favored in dechlorinating reactions.) Once these influxes ceased, any water in the ponds as well as the shallow groundwater became more reducing, thereby stimulating the dechlorination of TCE and PCE. This dechlorination may have only proceeded partway, however, stalling at *cis*-1,2-DCE at least until around 2008 when concentrations of VC began to increase (Figure 221). Then the dams were breached in late 2008-early 2009, restoring surface-water flow to the former Ponds B-1, B-2, and B-3, and bringing oxygenated water back into the shallow subsurface. This may have led to gradual slowing of the degradation of PCE and TCE; their concentrations began to rise again, and generation of *cis*-1,2-DCE and VC began to decrease.

While the scenario described above is hypothetical, it could also explain the changes observed in uranium concentrations (Figure 223). Uranium tends to be mobilized under oxidizing conditions, and immobilized under reducing conditions. Therefore, under the scenario above, higher concentrations of uranium should be evident in samples from well 23296 collected prior to closure, then lower concentrations between closure and dam breach, and a gradual increase following removal of the dams. This is evident on Figure 223, though the last part—the increase in uranium concentrations following dam breach—requires more data to confirm that it has truly begun.

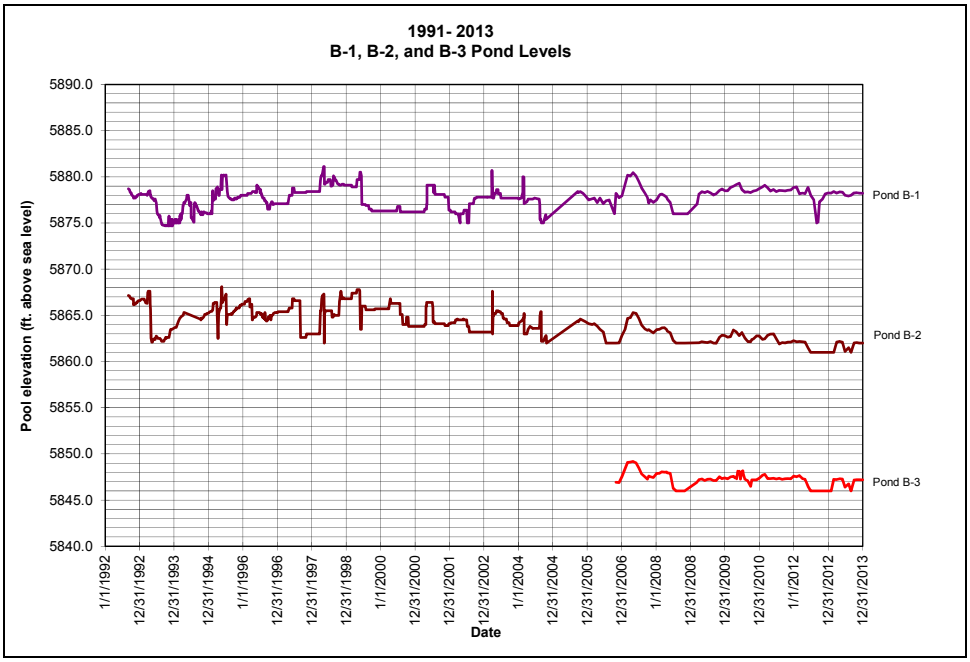
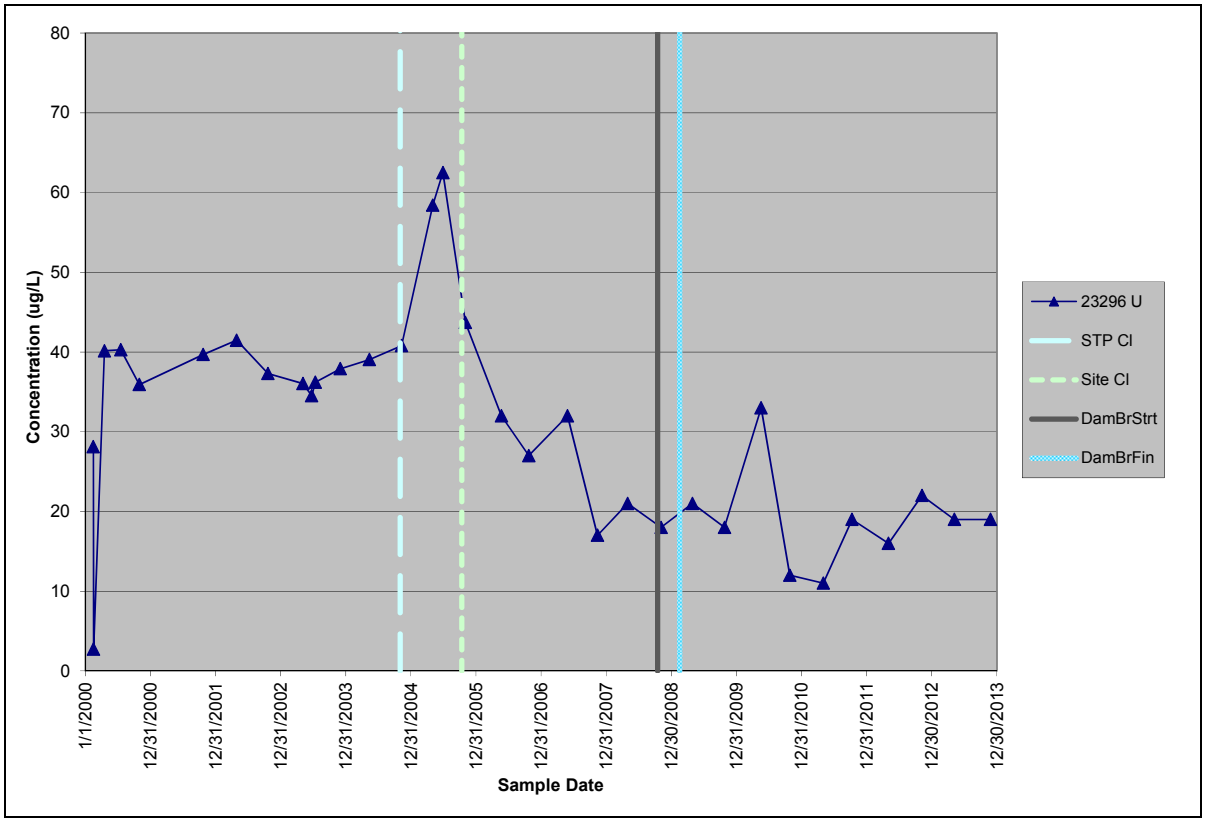



*Figure 222. Water Levels in Ponds B-1, B-2, and B-3, 1992 through 2013*




**Notes:** Applicable RFLMA value for uranium (µg/L; CDPHE et al. 2012) is the groundwater threshold of 120 µg/L. STP Cl = approximate closure date of former Building 995, the Sewage Treatment Plant (STP); Site Cl = closure of the Site; DamBrStrt and DamBrFin = start and finish, respectively, of the project that breached the B-1, B-2, B-3, and B-4 dams on South Walnut Creek.

*Figure 223. Concentrations of Uranium in Samples from Well 23296*

Statistical calculations confirm the visual appearance of some concentration trends in samples from these wells, as noted in Table 99. S-K calculations indicate 95 percent significant increasing trends are present at well 95199 for 1,1-DCE; *cis*-1,2-DCE; PCE; and TCE. However, only TCE is currently at levels above RFLMA Table 1 standards. At well 23296, trends having this level of statistical significance include increasing 1,1-DCE, both 1,2-DCE isomers, and VC; and decreasing trends in carbon tetrachloride, chloroform, and uranium. Some of these trends at well 23296 are suspect due to abundant nondetects in the data set; this is the case with 1,1-DCE; carbon tetrachloride; *trans*-1,2-DCE; and VC.

AOC well 00997 is located near the inlet to Pond B-5. This well was sampled twice in 2013 (May and November). All constituents were below the RFLMA Table 1 levels or uranium threshold. One VOC was detected in both samples: 1,3-dichlorobenzene (1,3-DCB) was estimated (J-qualified) at 0.44 µg/L and 0.16 µg/L in the second and fourth quarters, respectively. This constituent was also detected in 2012 and in 2007. The corresponding RFLMA standard is 94 µg/L. U was detected in the samples from well 00997 at concentrations of 17 µg/L in May and 14 µg/L in November, which is within the typical range at this well. The May sample also reported 2.4 mg/L nitrate, while the November sample contained 0.11 mg/L.

East Trenches Plume groundwater will continue to be monitored in accordance with RFLMA. As more data are collected, additional patterns and significant trends should become evident.

**East Trenches Plume Treatment System**

The ETPTS was installed in 1999. Its design is very similar to that of the MSPTS, but the intercept trench for the ETPTS is 1,200 feet long, compared to the 220-foot-long MSPTS trench. The longer trench is required to intercept the broader East Trenches Plume as it flows toward South Walnut Creek and the former B-Series Ponds.

The ETPTS treated approximately 604,000 gallons of water in 2013. This is the second-lowest volume treated (Table 105), and is significantly lower than the average volume treated in a post-closure year (Table 106). This comparison holds even if the wet year of 2010 is omitted from the calculation: the average post-closure volume, excluding 2010, is 695,500 gallons. As proposed in the annual report for 2012 (DOE 2013b), the dry conditions of 2012 might have had a continuing effect on system flows in 2013.

Figure 224 presents a hydrograph showing ETPTS flow estimates since January 2000. (Refer to the 2009 Annual Report [DOE 2010b] for information on correction of anomalous flows previously reported for the year 2006). The higher flows in 2010, and the return to more typical flows in mid-2011, are clearly evident on this figure. So too are the lower flows in 2012, which continued through much of 2013.

Figure 225 provides a hydrograph for CY 2013 at the ETPTS. This hydrograph clearly shows the effects of the heavy rains in September. Flows were still elevated at the end of the year.

*Table 105. Estimated Volumes of Water Treated by the ETPTS*

| Calendar Year | Annual Estimates of Volume Treated (gallons) | Estimated Cumulative Volume Treated (gallons) |
|---|---|---|
| 2000 | 1,633,000 | 2,800,000 |
| 2001 | 1,900,000 | 4,700,000 |
| 2002 | ≤1,000,000 | 5,700,000 |
| 2003 | 2,100,000 | 7,800,000 |
| 2004 | 1,500,000 | 9,300,000 |
| 2005 | 1,800,000 | 11,100,000 |
| 2006 | 675,000 | 11,775,000 |
| 2007 | 951,000 | 12,726,000 |
| 2008 | 629,000 | 13,355,000 |
| 2009 | 406,000 | 13,761,000 |
| 2010 | 1,606,000 | 15,367,000 |
| 2011 | 890,000 | 16,257,000 |
| 2012 | 622,000 | 16,879,000 |
| 2013 | 604,000 | 17,483,000 |

**Notes:** Estimates for years 2000 through 2004 are compiled from K-H (2000a, 2000b, 2000c, 2000d, 2002b, 2003, 2005a, 2005b). Volumes are rounded.

*Table 106. Average Volumes Treated by the ETPTS*

| Time Period | Average Volume Treated Per Year |
|---|---|
| Pre-closure, 2000–2005 | 1,655,500 |
| Post-closure, 2006–2013 | 798,000 |

**Notes:** Average volumes are rounded, and are based on estimates of volumes treated. Time periods shown include complete years, and do not correspond to exact date of closure: the pre-closure estimate spans January 1, 2000, through December 31, 2005, and the post-closure period begins January 1, 2006.

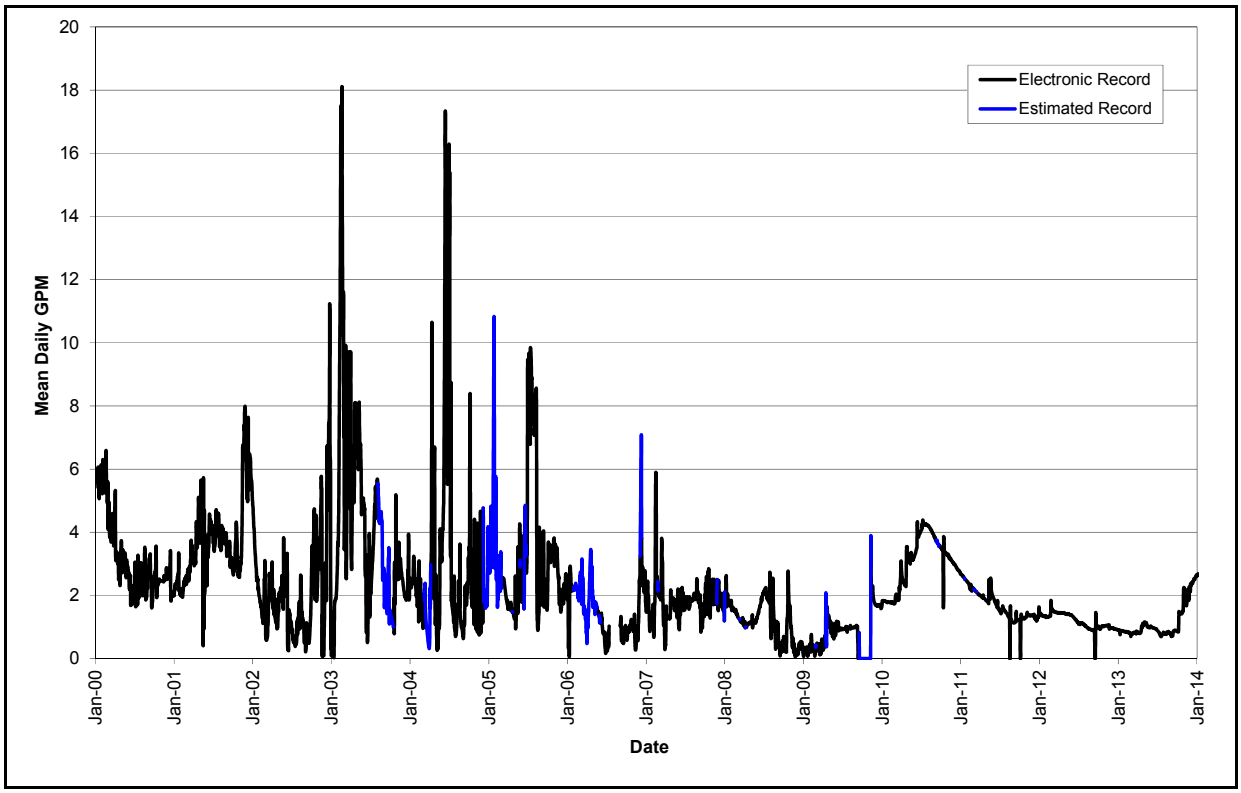



*Figure 224. Hydrograph for ETPTS from 2000 Through 2013*

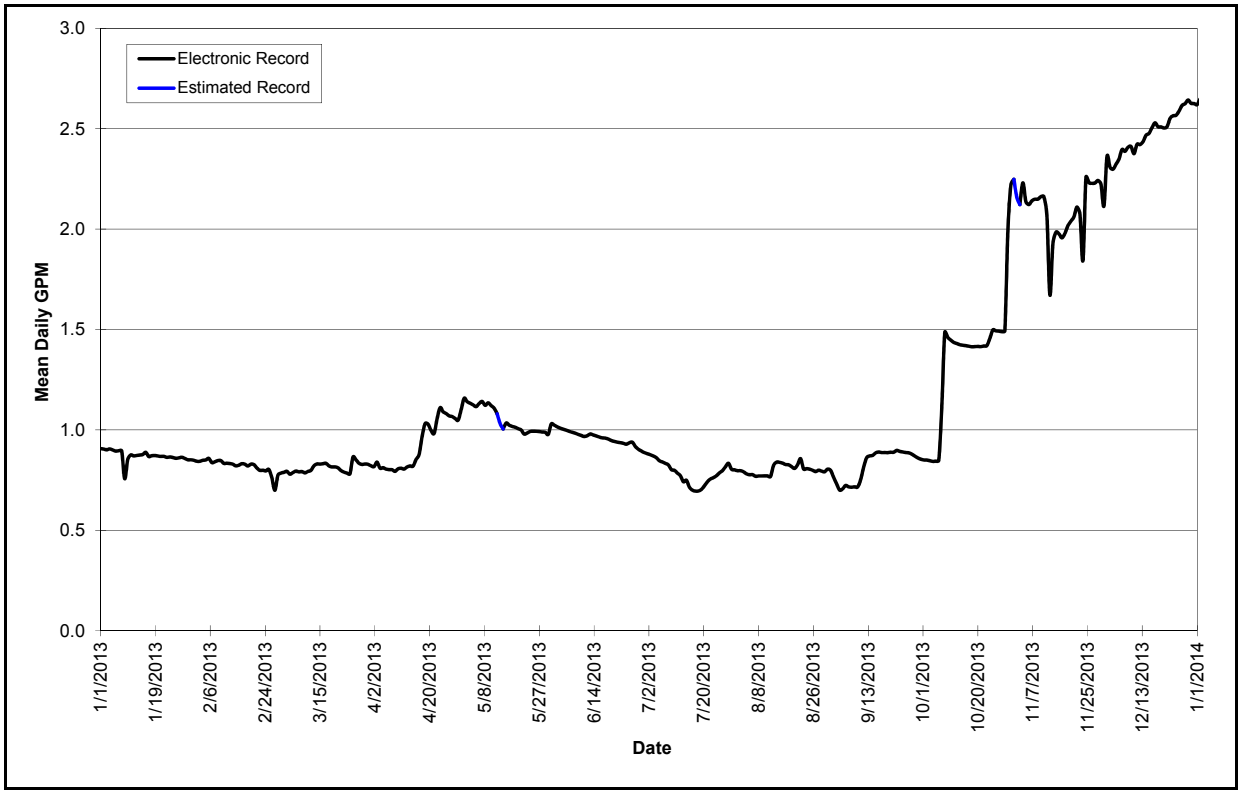



*Figure 225. Hydrograph for ETPTS for CY 2013*

The ETPTS influent and effluent locations were sampled 22 times in 2013: twice for routine RFLMA requirements (May and November), together with surface water performance location POM2, and 20 additional times to test and refine operation and effectiveness of the new air stripper.

ETPTS effluent water quality in 2013 continued to reflect a dramatic reduction in VOC load. However, certain VOCs were detected in the effluent, including some present at concentrations exceeding the respective RFLMA Table 1 values. This is consistent with the past performance of the ETPTS. VOCs have been routinely detected in ETPTS effluent since the system was installed in 1999 and have been reported and discussed as the data are issued.

A summary of the VOCs that most commonly exceed RFLMA Table 1 values in system influent, plus *cis*-1,2-DCE and VC as dechlorination-related constituents, is presented in Table 107; refer to quarterly reports (DOE 2013f, 2013g, 2014) and Appendix B.6 for additional data from 2013. As with the MSPTS, S-K trending was used to evaluate ETPTS influent data; this is not required by RFLMA, but was conducted for informational purposes. Data from the entire period of record (January 2000 through the end of 2013) were evaluated, as were the subset of data collected only during the post-closure period (2006 through 2013). Results having a 95 percent level of statistical significance (Table 99) for the entire period include increasing 1,1-DCE, *cis*-1,2-DCE, chloroform, and TCE; and decreasing carbon tetrachloride and PCE. Trends of this significance for the post-closure period include increasing 1,1,1-TCA, *cis*-1,2-DCE, chloroform, and TCE. Refer to Appendix B for additional information and the trend plots.

*Table 107. Summary of VOC Data (µg/L) for ETPTS Influent and Effluent*

| Date | CT | | CF | | MCI | | PCE | | TCE | | *cis*-1,2-DCE | | VC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ET In | ET Ef | ET In | ET Ef | ET In | ET Ef | ET In | ET Ef | ET In | ET Ef | ET In | ET Ef | ET In | ET Ef |
| 1/18/2000 | **200** | 2 (U) | **110** | **15** | **48 (JB)** | **12 (B)** | **320** | 2 (U) | **3500 (D)** | 1 (J) | 29 (J) | 32 | 100 (U) | **0.9 (J)** |
| 2/9/2000 | **240** | 1 (U) | **140** | **16** | **88 (JB)** | **19 (B)** | **360** | 0.3 (J) | **3900 (D)** | 0.9 (J) | 38 (J) | 35 (E) | 100 (U) | **1** |
| 3/16/2000 | **250** | 1 (U) | **130** | **6** | **75 (JB)** | **9 (B)** | **380** | 0.1 (J) | **3300 (D)** | 0.3 (J) | 36 (J) | 12 | 100 (U) | 1 (U) |
| 4/17/2000 | **200** | 0.3 (J) | **100** | **18** | **270 (B)** | **24 (B)** | **370** | 1 | **3000 (D)** | 2 | 27 (J) | | 100 (U) | **1** |
| 5/17/2000 | **130 (J)** | 1 (U) | **88 (J)** | **4** | **470 (B)** | **8** | **290** | 0.3 (J) | **2800** | 0.3 (J) | 24 (J) | 10 | 200 (U) | 1 (U) |
| 6/13/2000 | **230** | 1 (U) | **110** | 2 | **25 (BJ)** | **17 (B)** | **490** | 2 | **2700 (D)** | 1 (U) | 30 (J) | 17 | 100 (U) | **0.8 (J)** |
| 7/18/2000 | **180** | 1 (U) | **82** | 0.5 (J) | **6 (BJ)** | **17 (B)** | **320** | 1 | **3000 (D)** | 0.3 (J) | 23 | 11 | 20 (U) | **0.6 (J)** |
| 8/8/2000 | **190** | 1 (U) | **98 (J)** | 1 (U) | **330 (B)** | **10 (B)** | **390** | 1 | **2900 (D)** | 1 | 26 (J) | 8 | 100 (U) | **0.5 (J)** |
| 9/22/2000 | **197 (D)** | 0.5 (U) | **96.9** | 0.5 (U) | 0.5 (U) | **10.5** | **370 (D)** | 0.82 | **3230 (D)** | 1.1 | 29.3 | 5.5 | 0.5 (U) | 0.5 (U) |
| 10/25/2000 | **138 (D)** | 0.5 (U) | -N/A- | 0.5 (U) | 0.5 (U) | 3.9 | **300 (D)** | 0.77 | **911 (E)** | 1.8 | 26.6 | 5.5 | 0.5 (U) | 0.5 (U) |
| 4/18/2001 | **160 (D)** | 1 (U) | **79 (JD)** | 1 (U) | 100 (U) | **15** | **240 (D)** | 0.6 (J) | **2900 (D)** | 1 (U) | 100 (U) | 5 | 100 (U) | 1 (U) |
| 10/25/2001 | **160** | 1 (U) | **84** | 1 (U) | 10 (U) | 1 (U) | **350** | **5.3** | **2500** | 0.66 (J) | 32 | 6.6 | 10 (U) | 1 (U) |
| 4/24/2002 | **200** | 1 (U) | **88** | 1 (U) | 10 (U) | 1 (U) | **280** | **12** | **3200** | **3.9** | 35 | 20 | 10 (U) | 1 (U) |
| 10/22/2002 | **151** | 1 (U) | **61.2** | 1 (U) | 1 (U) | 1 (U) | **367 (D)** | 1.45 | **1880 (D)** | 1.02 | 20.1 | 0.34 (J) | 1 (U) | 1 (U) |
| 4/17/2003 | **120** | 1 (U) | **68** | **7.1** | 10 (U) | **6.4 (B)** | **290** | **19** | **2000** | **60** | 28 | 36 | 10 (U) | 1 (U) |
| 9/3/2003 | -N/A- | 1 (U) | -N/A- | **20** | -N/A- | **19 (B)** | -N/A- | **73** | -N/A- | **200** | -N/A- | 46 | -N/A- | 1 (U) |
| 9/22/2003 | -N/A- | 0.561 (U) | -N/A- | **7.53** | -N/A- | **11.7** | -N/A- | **57.3** | -N/A- | **77.4** | -N/A- | 32.3 | -N/A- | 1.4 (U) |
| 11/13/2003 | -N/A- | 0.561 (U) | -N/A- | 0.428 (U) | -N/A- | **15.7** | -N/A- | 1 (J) | -N/A- | **4.62** | -N/A- | 2.82 | -N/A- | 1.4 (U) |
| 11/20/2003 | **160** | 1 (U) | **73** | 1 (U) | 6.7 (U) | **17** | **380** | 1.3 | **2700** | **5.7** | 33 | 4.5 | 6.7 (U) | 1 (U) |
| 1/28/2004 | **130** | 1 (U) | **71** | 1.1 | 5 (U) | **20** | **290** | 0.93 (J) | **2300** | 1.8 | 40 | 9.5 | 5 (U) | 1 (U) |
| 2/25/2004 | **150** | 1 (U) | **71** | 1.4 | 2.7 (JB) | **19 (B)** | **270** | 1.1 | **2400** | 2.5 | 40 | 10 | 10 (U) | 1 (U) |
| 3/22/2004 | **180** | 1 (U) | **71** | 1 | 2.6 (JB) | **21** | **270** | 1.2 | **2400** | 1.8 | 39 | 9.7 | 6.7 (U) | **0.39 (J)** |
| 5/26/2004 | **216** | 1 (U) | **65.1** | 1 (U) | 1 (U) | **17** | **618 (D)** | 3.38 | **5510 (D)** | **6.36** | 28 | 11.5 | 1 (U) | 1 (U) |
| 6/22/2004 | **130** | 1 (U) | **59** | 1 (U) | **6.7 (JB)** | **14 (B)** | **240** | 1.9 | **1900** | 1.8 | 29 | 8 | 10 (U) | 1 (U) |
| 7/29/2004 | **142 (D)** | 1 (U) | **54.1** | 1 (U) | 2.3 | **14.1 (B)** | **354 (D)** | 1.8 | **1960 (D)** | 0.69 (J) | 29.4 | 7.7 | 1 (U) | 1 (U) |
| 8/19/2004 | **68.1** | 1 (U) | **26.6** | 1 (U) | 1 (U) | **13.7** | **137 (D)** | 1.2 | **774 (D)** | 0.55 (J) | 13.3 | 7.4 | 1 (U) | 1 (U) |

*Table 107 (continued). Summary of VOC Data (µg/L) for ETPTS Influent and Effluent*

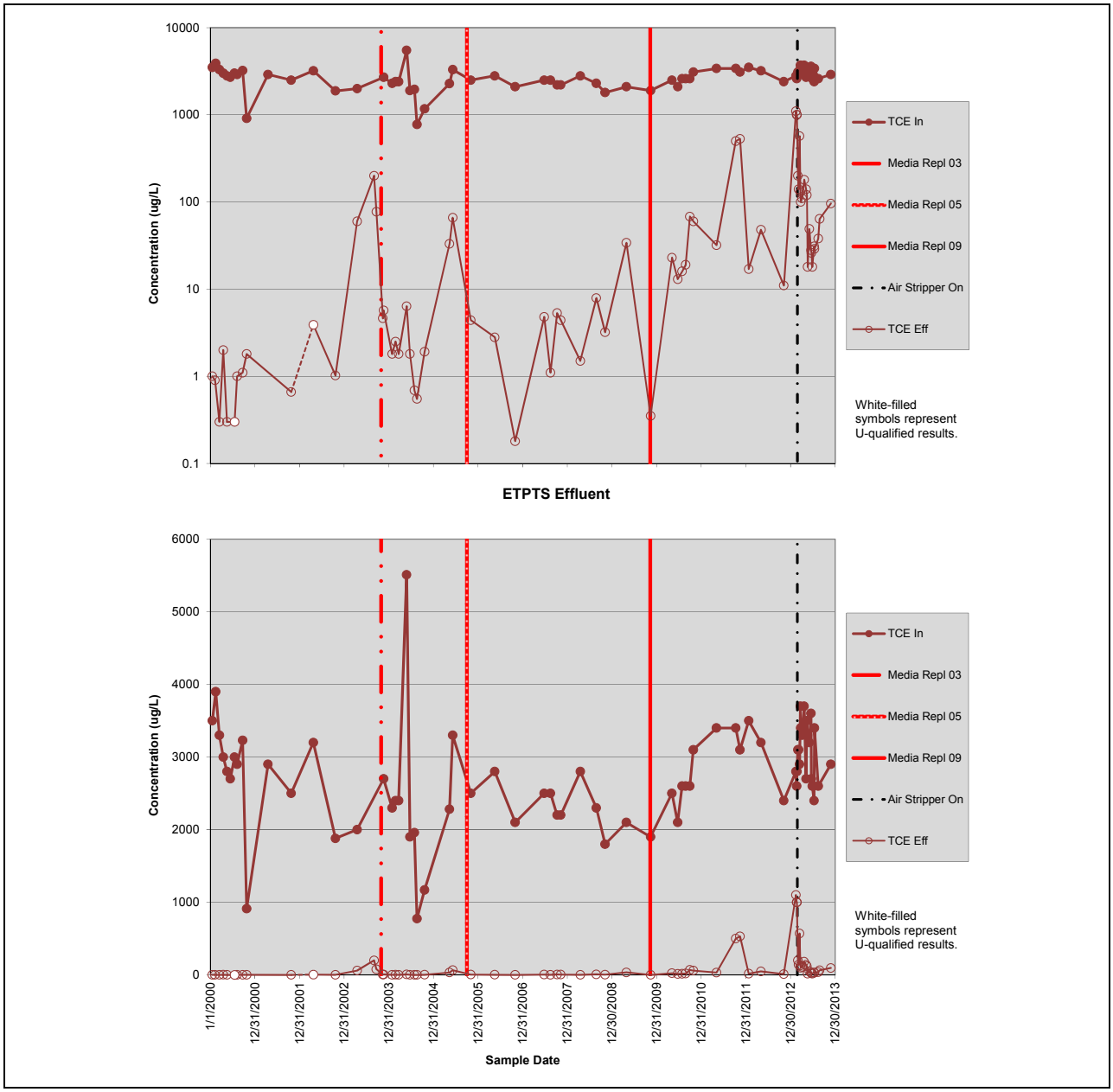
| Date | CT | | CF | | MCI | | PCE | | TCE | | *cis*-1,2-DCE | | VC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ET In | ET Ef | ET In | ET Ef | ET In | ET Ef | ET In | ET Ef | ET In | ET Ef | ET In | ET Ef | ET In | ET Ef |
| 10/20/2004 | 160 | 1 (U) | 72.9 | 2.56 | 1 (U) | 15.6 | 230 (D) | 2.13 | 1170 (D) | 1.91 | 32.6 | 11.3 | 1 (U) | 1 (U) |
| 5/12/2005 | 131 | 1 (U) | 66 | 22.2 | 1 (U) | 14.6 | 256 (D) | 21.9 | 2280 (D) | 33.1 | 30.4 | 36.4 | 1 (U) | 1 (U) |
| 6/7/2005 | 160 | 1 (U) | 81 | 30 | 10 (U) | 22 (B) | 340 | 36 | 3300 | 66 | 33 | 44 | 10 (U) | 1 (U) |
| 11/2/2005 | 151 | 1 (U) | 74.8 | 0.73 (J) | 250 (U) | 18.2 | 350 | 1 (U) | 2500 | 4.4 | 50.7 | 39.6 | 50 (U) | 1.2 |
| 5/17/2006 | 170 | 0.23 (J) | 75 (J) | 1.9 | 0.32 (U) | 32 | 280 | 4.1 | 2800 | 2.8 | 46 | 27 | 0.17 (U) | 0.77 (J) |
| 10/31/2006 | 120 | 0.19 (U) | 75 | 0.16 (U) | 6.4 (U) | 0.32 (U) | 290 | 0.85 (J) | 2100 | 0.18 (J) | 40 (J) | 4.3 (J) | 3.4 (U) | 0.17 (U) |
| 6/26/2007 | 110 | 0.19 (U) | 70 | 0.16 (U) | 1.6 (U) | 0.32 (U) | 320 | 9.7 | 2500 | 4.8 | 30 | 40 | 0.85 (U) | 1.2 |
| 8/16/2007 | 150 | 0.19 (U) | 81 | 0.16 (U) | 8 (JB) | 0.73 (JB) | 390 | 4.4 | 2500 | 1.1 | 32 | 51 | 2.7 (U) | 1.7 |
| 10/9/2007 | 130 | 0.19 (U) | 71 | 0.25 (J) | 3.2 (U) | 1.7 | 270 | 9.5 | 2200 | 5.3 | 34 | 22 | 1.7 (U) | 0.43 (J) |
| 11/8/2007 | 110 | 0.19 (U) | 64 | 0.16 (U) | 3.2 (U) | 0.32 (U) | 260 | 9.1 | 2200 | 4.4 | 32 | 21 | 1.7 (U) | 0.46 (J) |
| 4/16/2008 | 160 | 0.19 (U) | 78 | 0.16 (U) | 36 (B) | 1.5 (B) | 270 | 7.3 | 2800 | 1.5 | 43 | 30 | 7.6 (U) | 1 |
| 8/25/2008 | 150 | 0.19 (U) | 77 | 0.16 (U) | 1.6 (U) | 0.89 (J) | 260 | 17 | 2300 | 7.9 | 42 | 20 | 1.9 (U) | 0.38 (U) |
| 11/5/2008 | 110 | 0.19 (U) | 66 | 0.16 (U) | 9.7 (J) | 0.88 (J) | 210 | 10 | 1800 | 3.2 | 31 | 16 | 3.8 (U) | 0.5 (J) |
| 4/28/2009 | 120 | 0.19 (U) | 68 | 6.7 (J) | 8.9 (U) | 4.5 (U) | 230 | 11 (J) | 2100 | 34 | 30 | 45 | 3.8 (U) | 0.38 (U) |
| 11/12/2009 | 110 | 0.19 (U) | 63 (J) | 0.23 (J) | 0.32 (U) | 6.3 (J) | 320 | 0.2 (U) | 1900 | 0.35 (J) | 36 | 0.3 (J) | 0.4 (U) | 0.4 (U) |
| 5/6/2010 | 110 | 0.19 (U) | 62 | 63 | 2.3 (U) | 8.2 (B) | 260 | 10 | 2500 | 23 | 30 | 57 | 2 (U) | 0.4 (U) |
| 6/22/2010 | 130 | 0.19 (U) | 70 | 64 | 2.1 (U) | 8.4 (B) | 260 | 14 | 2100 | 13 | 34 | 55 | 2.7 (U) | 0.4 (U) |
| 7/28/2010 | 200 | 0.19 (U) | 95 | 57 | 3.7 (J) | 15 | 320 | 20 | 2600 | 16 | 43 | 55 | 4 (U) | 0.76 (J) |
| 8/26/2010 | 140 | 0.35 (J) | 78 | 39 | 5.8 (JB) | 19 (B) | 280 | 18 | 2600 | 19 | 37 | 56 | 4 (U) | 0.4 (U) |
| 9/29/2010 | 170 | 8.8 | 79 | 23 | 1.6 (U) | 14 | 280 | 27 | 2600 | 68 | 39 | 50 | 2 (U) | 0.4 (U) |
| 10/28/2010 | 190 | 2.5 | 87 | 17 | 1.3 (U) | 11 | 320 (*) | 17 | 3100 | 60 | 44 (J) | 59 | 1.6 (U) | 0.84 (J) |
| 5/5/2011 | 190 | 1.2 | 100 | 4.5 | 4.5 (JB) | 1.6 (B) | 290 | 27 | 3400 | 32 | 48 | 56 | 1 (U) | 1.2 |
| 10/10/2011 | 180 | 21 | 110 | 23 | 3.2 (U) | 3.9 | 390 | 56 | 3400 | 500 | 45 | 42 | 1 (U) | 0.46 (J) |
| 11/14/2011 | 160 | 21 | 100 | 21 | 3.2 (U) | 5.7 | 370 | 63 | 3100 | 530 | 51 | 69 | 1 (U) | 0.83 (J) |
| 1/24/2012 | 190 | 0.19 (U) | 120 | 12 | 6.7 (U) | 8.5 B) | 310 (J) | 22 (J) | 3500 | 17 | 49 | 94 | 1 (U) | 0.1 (U) |
| 5/3/2012 | 140 | 1.3 | 110 | 7 | 3.2 (U) | 2.3 | 320 | 27 | 3200 | 48 | 42 | 76 | 1 (U) | 1.1 |
| 11/6/2012 | 120 | 0.19 (U) | 100 | 22 | 3.2 (U) | 2.3 | 250 | 7.4 | 2400 | 11 | 36 | 210 | 1 (U) | 0.69 (J) |
| 2/13/2013 | 110 | 36 | 100 | 41 | 1.6 (U) | 1.8 (J) | 280 | 95 | 2800 | 1100 | 43 | 160 | 0.5 (U) | 1.6 (J) |

*Table 107 (continued). Summary of VOC Data (µg/L) for ETPTS Influent and Effluent*

| Date | CT | | CF | | MCl | | PCE | | TCE | | *cis*-1,2-DCE | | VC | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ET In | ET Ef | ET In | ET Ef | ET In | ET Ef | ET In | ET Ef | ET In | ET Ef | ET In | ET Ef | ET In | ET Ef |
| 2/19/2013 | **160 (J)** | **50 (J)** | **130** | **49** | 3.2 (U) | 2.1 (J) | **310** | **110** | **2600** | **1000** | 50 | **180** | 1 (U) | **2.2 (J)** |
| 2/22/2013 | **140 (J)** | **45 (J)** | **110** | **47** | 6.4 (U) | 2.6 (J) | **270** | **110** | **2800** | **1000** | 42 | **170** | 2 (U) | **2 (J)** |
| 3/1/2013 | **130** | **5.1** | **120** | **15** | 3.2 (U) | 2.3 | **270** | **28** | **3100** | **200** | 50 | **150** | 1 (U) | **2.3** |
| 3/7/2013 | **130** | **3** | **110** | **9.9** | 3.2 (U) | 0.65 (J) | **290** | **17** | **3100** | **140** | 49 | **85** | 1 (U) | **1.2** |
| 3/15/2013 | **150** | **23** | **120** | **24** | 1.6 (U) | 0.99 (J) | **290** | **53** | **2900** | **570** | 45 | 68 | 0.5 (U) | **1.4** |
| 3/22/2013 | **170** | **3.4** | **120** | **8.8** | 3.2 (U) | 1.2 (J) | **250 (J)** | **14 (J)** | **3700** | **130** | 49 | **85** | 1 (U) | **1.1** |
| 3/25/2013 | **130** | **2.6** | **100** | **7.4** | 3.2 (U) | 0.32 (U) | **280** | **16** | **3400** | **100** | 46 | 68 | 1 (U) | **0.92 (J)** |
| 4/4/2013 | **150** | **2.4** | **120** | **7.4** | 3.2 (U) | 0.32 (U) | **250** | **11** | **3300** | **110** | 48 | 45 | 1 (U) | 0.1 (U) |
| 4/22/2013 | **120** | **3.8** | **100** | **11** | 3.2 (U) | 0.73 (J) | **260 (J)** | **17 (J)** | **3700** | **180** | 40 | 57 | 1 (U) | **0.49 (J)** |
| 5/7/2013 | **120 (J)** | **3.5 (J)** | **100** | **9.2** | 6.4 (U) | 0.46 (J) | **270** | **15** | **2700** | **140** | 42 | 49 | 2 (U) | **0.49 (J)** |
| 5/14/2013 | **150** | **3.8** | **120** | **9.8 (J)** | 0.32 (U) | 2.3 (U) | **300** | **19 (J)** | **3500** | **120** | 48 | 69 | 0.1 (U) | **1.4** |
| 5/20/2013 | **150** | 0.26 (J) | **120** | 1.8 | 6.4 (U) | 1.6 | **310** | **7.4 (J)** | **3300** | **18 (J)** | 43 | 49 | 2 (U) | **1.4** |
| 6/3/2013 | **160** | 0.19 (U) | **120** | 0.38 (J) | 3.2 (U) | 0.32 (U) | **290** | **18** | **3200** | **49** | 44 | 43 | 1 (U) | **0.63 (J)** |
| 6/17/2013 | **150** | 0.19 (U) | **120** | 0.4 (J) | 3.2 (U) | 0.43 (J) | **300** | **16 (J)** | **3600** | **28** | 48 | 17 | 1 (U) | 0.1 (U) |
| 6/20/2013 | **95** | 0.19 (U) | **100** | 0.37 (J) | 6.4 (U) | 0.32 (U) | **200** | **15 (J)** | **2700** | **26** | 36 | 15 | 2 (U) | 0.1 (U) |
| 6/27/2013 | **110** | 0.19 (U) | **90** | 0.54 (J) | 3.2 (U) | 1.4 | **270** | **13** | **2600** | **18 (J)** | 42 | 13 | 1 (U) | 0.1 (U) |
| 7/12/2013 | **120 (J)** | 0.19 (U) | **91** | **5.6** | 6.4 (U) | **11** | **290** | **19** | **2400** | **31** | 38 | 29 | 2 (U) | **0.33 (J)** |
| 7/15/2013 | **170** | 0.19 (U) | **120** | **4.3** | 3.2 (U) | **13** | **320** | **19** | **3400** | **29 (J)** | 47 | 37 | 1 (U) | 0.1 (U) |
| 8/15/2013 | **160** | 0.78 (J) | **100** | 2.5 | 3.2 (U) | 0.32 (U) | **320** | **6.5** | **2600** | **38** | 44 | 6.1 | 1 (U) | 0.1 (U) |
| 8/26/2013 | -N/A- | **2.6** | -N/A- | **4.1** | -N/A- | 0.32 (U) | -N/A- | **12** | -N/A- | **64** | -N/A- | 5.7 | -N/A- | 0.1 (U) |
| 11/26/2013 | **140** | **2.2** | **120** | **5.9** | 3.2 (U) | 1 | **280** | **23** | **2900** | **96** | 37 | **80** | 1 (U) | **0.49 (J)** |

**Notes:** Constituents and their respective, applicable RFLMA levels (µg/L; CDPHE et al. 2012): CT = carbon tetrachloride, 1; CF = chloroform, 3.4; MCl = methylene chloride, 4.6; PCE, 5; TCE, 2.5; *cis*-1,2-DCE, 70; VC, 0.2. ET In = influent (ET INFLUENT), ET Ef = effluent (ET EFFLUENT). Shaded, bold value indicates detected concentration exceeds corresponding RFLMA standard. Lab qualifiers: J = estimated value; U = analyte not detected at the indicated concentration; B = constituent was also detected in the blank; D = analysis was performed at a dilution (a qualifier no longer used). N/A = data not available or acceptable (rejected).

Table 107 confirms that TCE is the VOC with the highest concentrations in ETPTS influent. Figure 226 focuses on this constituent, with the upper portion using a logarithmic concentration scale and the lower portion using a linear scale. The lower portion clearly shows how variable influent concentrations can be over a very short period of time: many extra samples were collected in 2013 in support of air stripper optimization, and as can be seen from the influent results for TCE, concentrations varied by roughly 1,000 µg/L. This is also evident on Table 107.




**Notes:** Top and bottom portion illustrate same data, but top uses logarithmic concentration scale, bottom uses linear scale. Applicable RFLMA Table 1 standard for TCE is 2.5 µg/L (CDPHE et al. 2012). Media Repl (year abbreviation) = year in which complete media replacement was performed. Other attempts to restore media effectiveness prior to closure are not illustrated; see previous annual reports (e.g., DOE 2011c) and treatment system reports (e.g., K-H 2005b) for related information. Several detections are qualified but are not shown differently for the sake of simplicity.

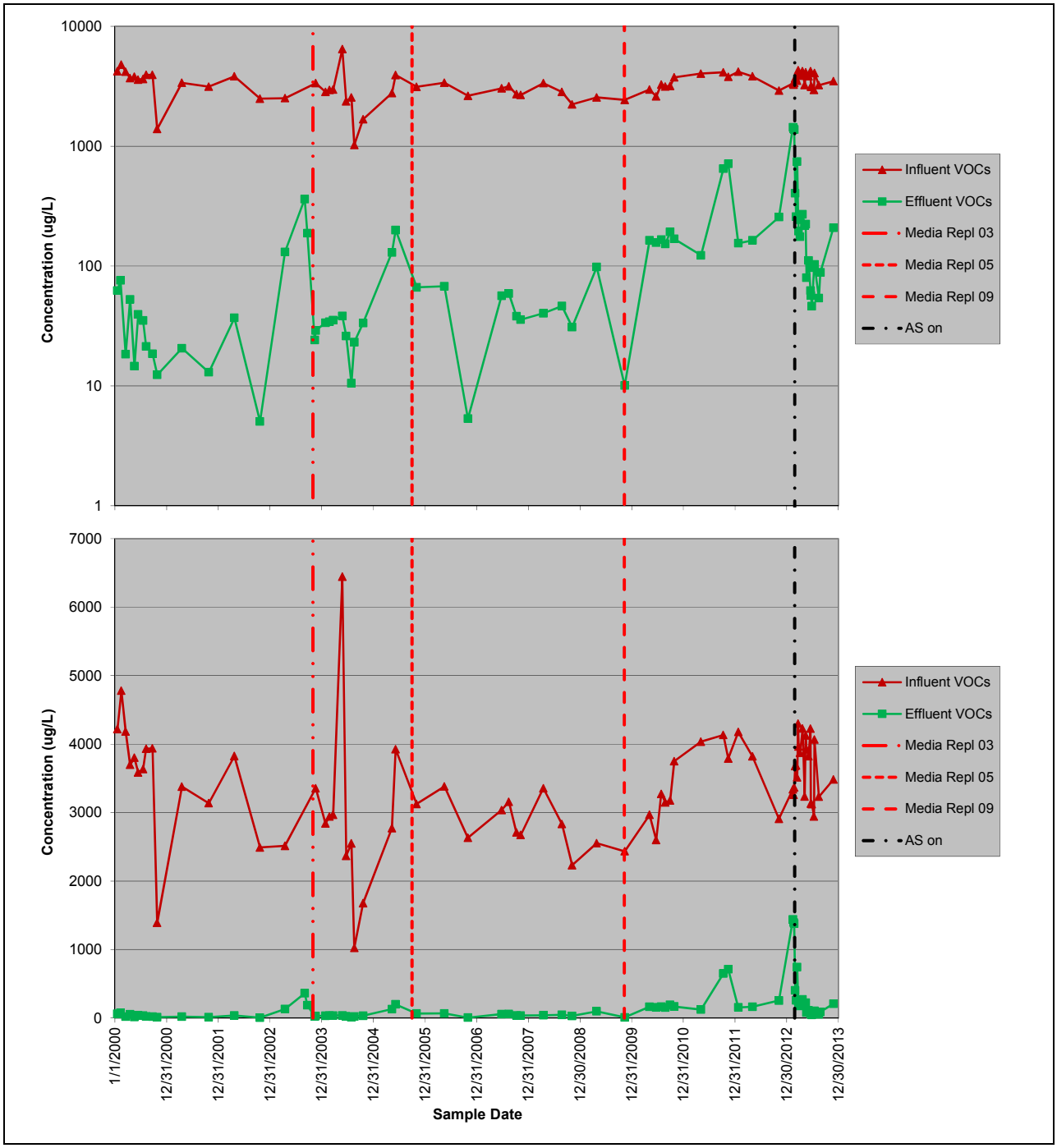
*Figure 226. TCE in ETPTS Influent and Effluent*

TCE has been used in the past as a signal to when the media needs to be replaced. Following the media replacement media replacement activity of 2009, a subsequent replacement was tentatively scheduled for the 2012–2013 timeframe. However, the successes of the air stripping approach originally used at the MSPTS postponed this; instead, a similar air stripper (discussed below) was installed in the ETPTS influent manhole. Additional air stripper plans at the ETPTS in 2014 will supersede media replacement.

Although concentrations in ETPTS effluent demonstrate that the bulk of the VOCs is consistently removed from the influent, water quality of the effluent does not always meet treatment targets. Effluent quality in 2013 was improved with the addition of the air stripper in the influent manhole, but due to high maintenance requirements of this unit the relative degree of this improvement was inconsistent.

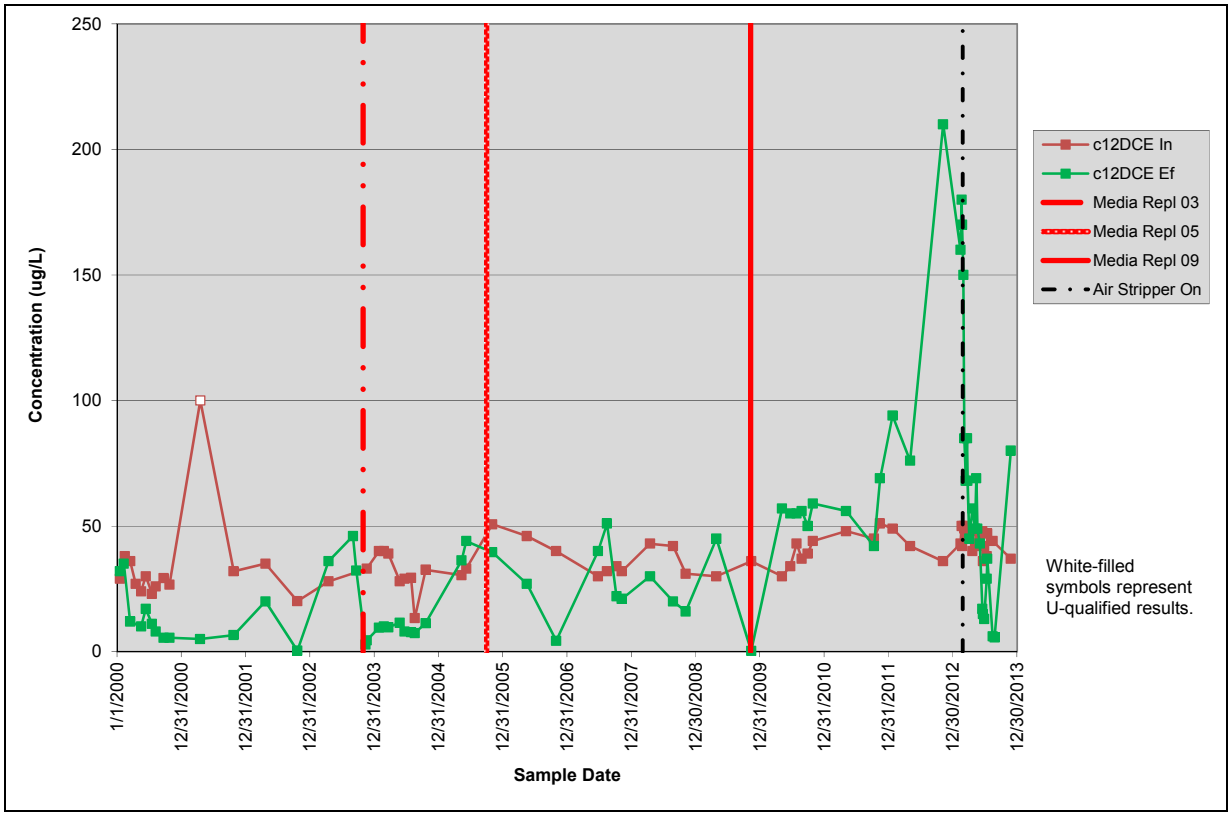
Figure 227 below compares total detected VOCs in ETPTS influent with total detected in effluent. Given that TCE represents the bulk of the contaminant load at the ETPTS, the figure has a strong resemblance to Figure 226 above. Again, the top portion incorporates a logarithmic concentration scale, while the bottom portion uses a linear concentration scale. Both show an improvement in treatment effectiveness that can be tied to the installation of the air stripper. However, both also show that effluent concentrations have been rising.

The relationship between flow condition and its effects on treatment were discussed in previous annual reports (DOE 2011c, 2012, 2013b). The higher flow rates caused by wetter climate conditions lead to lower residence times within the reactive ZVI media that forms the primary method of VOC treatment at the ETPTS (and MSPTS), and this results in reduced treatment levels. In fact, under certain circumstances the effluent can contain concentrations of daughter-product VOCs at higher levels than are measured in the influent. This can happen if the chlorinated solvents in ETPTS influent are only in contact with the ZVI long enough to be partially dechlorinated. This is easily seen, for example, in a comparison of the concentrations of *cis*-1,2-DCE in ETPTS effluent and influent (Figure 228). This contact time is largely controlled by the flow rate through the ZVI, and the degree to which the ZVI is fresh vs. coated or fouled (or contains preferential flowpaths that prevent uniform plug flow through the media). In some cases, Figure 228 shows that replacement of the media results in a sharp decrease in effluent concentrations of *cis*-1,2-DCE; this is the case after the media replacement activities in 2003 and 2009, though concentrations quickly rebounded following the latter event. The ZVI replacement in 2005 led to a gradual decline in *cis*-1,2-DCE. The flow configuration (series vs. parallel, upflow vs. downflow) and whether significant preferential pathways exist can also affect the degree of treatment. However, although flows in 2010 through most of 2012 were relatively high, that probably does not fully explain the sharp increase in effluent *cis*-1,2-DCE that began in 2012 and continued until early 2013. This is most likely a result of clogging ZVI media, wherein the amount of iron particles that are in direct contact with the water is substantially decreased compared to when the media was fresh; instead, these particles are increasingly coated with precipitates (carbonates, hydroxides, oxyhydroxides) and so are not available for treatment.




**Notes:** Top and bottom portion illustrate same data, but top uses logarithmic concentration scale, bottom uses linear scale. Data represent all results not qualified as nondetects. Many detections are qualified but are incorporated at face value. Media Repl (year abbreviation) = year in which complete media replacement was performed. Other attempts to restore media effectiveness prior to closure are not illustrated; see previous annual reports (e.g., DOE 2011c) and treatment system reports (e.g., K-H 2005b) for related information.

*Figure 227. Total VOCs in ETPTS Influent and Effluent*




**Notes:** c12DCE = *cis*-1,2-DCE; In = influent, Ef = effluent; applicable RFLMA Table 1 standard is 70 µg/L (CDPHE et al. 2012). Media Repl (year abbreviation) = year in which complete media replacement was performed. Other attempts to restore media effectiveness prior to closure are not illustrated; see previous annual reports (e.g., DOE 2011c) and treatment system reports (e.g., K-H 2005b) for related information. Several detections are qualified but are not shown differently for the sake of simplicity.

*Figure 228. Cis-1,2-DCE in ETPTS Influent and Effluent*

The performance monitoring location for the ETPTS is POM2, which is located in former Pond B-4. Sampling at this location in support of the ETPTS began in 2005. The location was visited twice in 2013 for sampling, in May and November. TCE was detected in the May sample at an estimated (J-qualified) concentration of 0.23 µg/L (RFLMA Table 1 value is 2.5 µg/L). TCE has been detected several times in past years, as have other VOCs (*cis*-1,2-DCE, chloroform). No VOCs have ever been measured at concentrations exceeding their respective RFLMA standards at POM2.

While the air stripper has had a positive effect on ETPTS effluent water quality, it is clearly not adequate (Figure 226, Figure 227, Figure 228). The ZVI media has become increasingly clogged and is due for replacement. However, replacing spent ZVI media is a difficult, time-consuming, and costly activity that generates a significant volume of waste; performing this work every three years or so represents an enormous labor and budgetary requirement. Therefore, for reasons of cost and maintenance, and to provide a more environmentally responsible, reliable, long-term improvement to effluent water quality, a plan is being developed to replace the ZVI-based water treatment with a commercial air stripper in 2014. This is briefly discussed below, along with the air stripper installed in 2013.

**East Trenches Plume Treatment System: Addition of Air Stripper**

Successful testing of a prototype air stripper at the MSPTS led to expansion of that unit in early 2013 (see text above on MSPTS). The MSPTS unit is located within the effluent manhole for that system, and acts to "polish" residual VOCs from the ZVI-treated water (i.e., water that has flowed out of the ZVI-filled treatment cells). Based on the success at the MSPTS and a desire to explore whether air stripping might be a feasible long-term alternative to ZVI-based treatment, an air stripper very similar to that at the MSPTS was also installed at the ETPTS in 2013. However, the ETPTS unit is installed within the influent manhole, before water reaches and is treated by the ZVI-filled treatment cells.

The ETPTS typically intercepts and treats more water than the MSPTS, though the margin of difference in treatment volumes was dramatically reduced when the OBP #2 source area was tied into the MSPTS. The higher flow rates at the ETPTS, as well as the desire to explore whether an air stripper might be able to perform all necessary treatment, led to the decision to design the ETPTS unit to operate at a higher capacity.

Design of this unit began in 2012. The MSPTS prototype air stripper was used as the template for the ETPTS air stripper. One of the biggest challenges, as at the MSPTS, was the need to rely upon solar power for electricity. The target flow rate through the air stripper was 20 gpm. This figure was derived based on the ETPTS flow rate generally being on the order of twice that at the MSPTS, and the fact that effluent from the MSPTS unit—then operating at up to about 8 gpm—did not quite meet RFLMA targets. The VOC load treated by the MSPTS air stripper comprises lower concentrations of parent compounds such as PCE, TCE, and carbon tetrachloride, but higher concentrations of the daughter products *cis*-1,2-DCE and VC, than an ETPTS air stripper would face. The targeted treatment effectiveness was to reduce the influent VOC load by at least an order of magnitude.

It was estimated that to achieve this 20-gpm flow, and operate continuously (24/7), would require roughly four times the solar/battery power as that in use at the MSPTS. This was determined after calculating that in 2012 the MSPTS air stripper was operating at 12 hours per day and at a maximum of about 8 gpm; therefore, operating 24 hours per day at 20 gpm would require on the order of four times the power.

Maintenance and operational issues were a consideration during the design phase. Air strippers are commonly troubled by development of chemical precipitates, particularly those incorporating bivalent metal ions such as Ca, Fe, Mg, Mn; and biofouling. Scaling related to the former has not been problematic to date at the MSPTS, though clay-sized Fe oxide and oxyhydroxide particles do lead to clogging, and the latter has been experienced. The lack of scale is attributed to the ZVI media removing these ions from the water before it reaches the air stripper. The buildup of Fe-containing particles is likely a result of relatively higher concentrations of Fe in effluent from the ZVI media. Hard-water scale development was seen as more likely at the ETPTS, and frequent assessments and maintenance to address scale buildup would be required. Therefore, the pump, tubing, and apparatus in which the nozzles are mounted were constructed and installed to be easily removable and replaceable.

Other potential problems could result from spray aeration of the water before it passes through the ZVI. For example, this might increase the already-high dissolved oxygen content of the

groundwater, thereby leading to even quicker clogging of the ZVI. However, slower clogging could also be the result: spray aeration could cause so much of the dissolved Ca, Mg, and $CO_3$ to precipitate before the water flows through the ZVI that any increase in clogging related to the added oxygen would be more than offset by reduced clogging through the decreased Ca, Mg, and $CO_3$. As replacement of the ZVI treatment component is an ultimate goal, quicker clogging might not represent a long-term problem but rather a shorter-term maintenance issue.

Installation of the air stripper in the ETPTS influent manhole faced one initial difficulty: the configuration of the manhole itself. The original manhole protruded less than a foot above ground, which posed safety concerns. Even in the best conditions, access to the manhole would require fall protection measures (additional personnel, harness, retrieval equipment, tripod). During inclement weather conditions this concern would be magnified (e.g., due to wind, slippery mud/ice), and could also be difficult to open (for example, if covered with snow). To minimize these issues, the manhole was extended. The original top and lid assembly were cut off and replaced with a reinforced fiberglass extension. This extension positions the lid approximately four feet above the ground surface, thereby eliminating the need for fall protection when working on items within this elevated manhole extension, and also addressing other concerns such as ergonomics associated with working on the near-ground unit and access during inclement weather.

With the manhole modifications identified, the pump defined, and the basic operational requirements set, potential bidders were contacted. A site tour was conducted, during which the main objectives and a general layout were discussed. At this time, it was expected that a solar array would be ground-mounted at the eastern end of the dirt road that provides access to the ETPTS. However, one bidder instead proposed an innovative, conex-mounted array, with the conex acting as the battery box and being situated next to the influent manhole. As well as being attractive from a budgetary perspective, this offered several advantages, among them minimal added cost in wiring to transfer power from the array to battery box to pump, correspondingly minimal habitat disruption and power loss due to short wire runs, portability should the power facility ever need to be relocated, and self-contained array and battery box all in one. This alternative was selected and construction began in late 2012.

A level pad was constructed of crushed gravel, and the conex was installed on this pad. The conex was anchored against the high winds, and the solar array was constructed to similarly withstand these winds. A single solar-thermal panel was added to the array to help condition air temperature within the conex and improve battery performance in worst-case weather (extreme hot or cold). The power was configured to drive the pump, active ventilation, and associated monitoring equipment. Primary monitoring equipment at the air stripper includes temperature and liquid pressure, the latter of which had been proven especially important in the prototype testing at the MSPTS.

The manhole also received additional modifications to address the needs of the air stripper itself. Groundwater that is intercepted by the ETPTS intercept trench collects in a sump, accessed by this manhole, before flowing to the ZVI-filled treatment cells farther east. An important adjustment was to install a short riser on the pipe that drains this sump, so that rather than holding water just a few inches deep, the water in the sump would form a small pool. This was necessary for the pump, which must be kept fully submerged so that it would not overheat. In addition, one objective for the air stripper design is to allow the bulk of the water to be processed

by the air stripper several times—going through more than one cycle of spray aeration and volatilizing more of the contaminants on each pass. This was also part of the consideration of pump rate: with ETPTS influent flow rates of 1–2 gpm and a pump rate of about 20 gpm, this would mean the bulk of the water would be cycled some ten times through the air stripper, each time losing more of the dissolved VOCs. By providing a small pool of water for the pump, the bulk of the water would also be accessible to the pump long enough for it to be processed repeatedly.

The influent plumbing to the manhole also had to be modified slightly to support sample collection of raw influent. Prior to the air stripper installation, samples of influent (i.e., RFLMA location ET INFLUENT) were collected by taking samples directly from the small, shallow pool in the bottom of the manhole. However, with an air stripper installed here, this pooled water would no longer represent raw influent. The pipe that routes water from the groundwater collection trench into this influent manhole sump was modified to allow sampling of the water within the pipe, just prior to it emptying into the pool and being subject to air stripping. This resulted in ET INFLUENT samples to continue to represent untreated influent.

The manhole also was adapted for active ventilation and sampling of water after it has been processed by the air stripper. This new location, which represents air stripper effluent, was designated ETASEF (for East Trenches air stripper effluent). The system effluent monitoring location, downstream of the ZVI-filled treatment cells, was not modified and remains ET EFFLUENT.

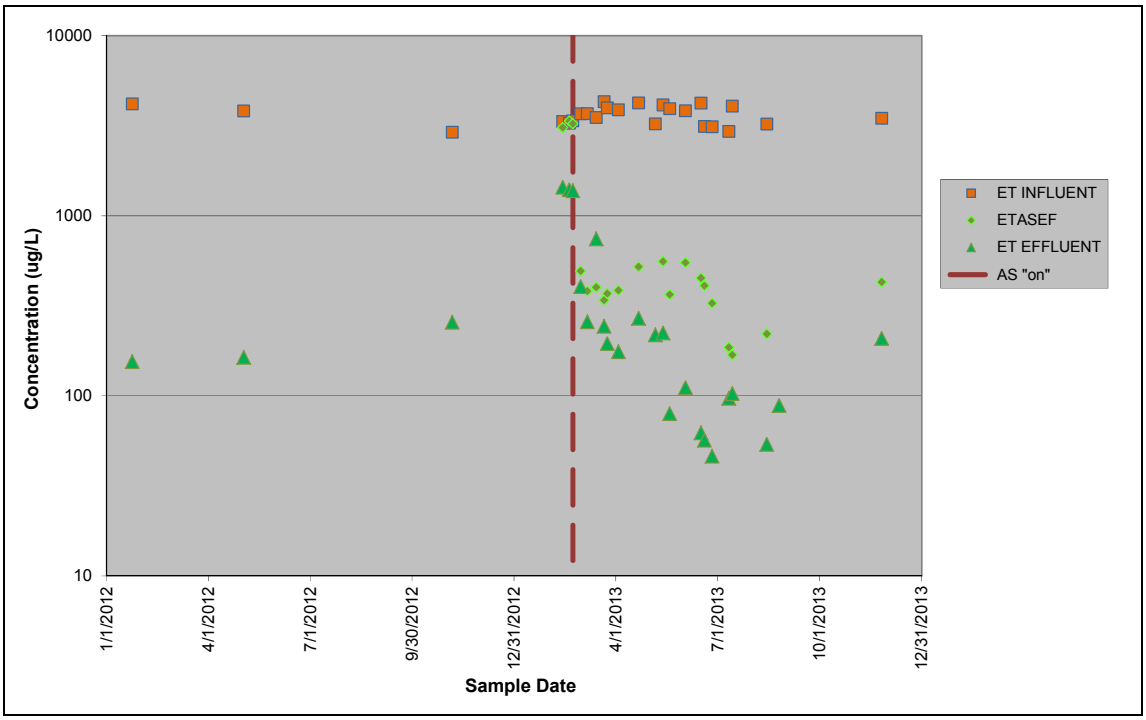
Figure 229 below provides photographs of the air stripper and related components at the ETPTS.

Several rounds of data were collected before the air stripper was energized. Anticipating that the spray-aerated influent might increase the already-high dissolved oxygen (DO) or might contribute dissolved gas content, baseline data on these parameters were also collected. (DO contributes to the formation of precipitates, and can also exsolve and form bubbles, as can the dissolved gases. Additional precipitates and bubbles would only act to increase clogging of the ZVI media downstream of the air stripper.)

Three baseline samples, each separated by several days, were collected (at ET INFLUENT, ETASEF, and ET EFFLUENT) and the data were received and checked. The ETPTS air stripper was then activated on February 25, 2013. Samples were collected from these same locations after the unit had operated continuously for a few days. Sampling was repeated at these locations frequently and minor adjustments made to enhance performance and achieve the target of confirming that the air stripper was reducing total VOCs by an order of magnitude. This was first achieved on March 22, 2013, with total VOCs at ET INFLUENT of 4,298.5 µg/L and at ETASEF of 340 µg/L. The overall effect of the air stripper installation is depicted below on Figure 230. Various optimization efforts are then described, and a more focused chart is then provided to illustrate the corresponding water quality results.

**Notes:** Top left: Original top of ETPTS influent manhole. Top right: Extended manhole, equipped with powered ventilation. Pole just past manhole hosts data logging and telemetry equipment, which is powered by the small solar panel. Middle row left: Completed solar array mounted on conex, which also serves as battery box. The small panel between the two main photovoltaic panel arrays provides solar thermal support. The extended manhole is visible on right of the facility. Middle row right: The ETPTS was initially configured with a 10-nozzle array and Medusa like that installed at the MSPTS (see preceding text). Visible just beneath this nozzle apparatus are sensors for pressure and temperature, which inform personnel of operating conditions including approximate flow rate and whether components are becoming clogged. Bottom left: View down manhole as plumbing components in the bottom were in the process of being modified, before the air stripper was first activated. Note white PVC component at about two o'clock position, which is part of the plumbing used to create and maintain an appropriate pool of water for the air stripper (see text). Bottom right: Nozzle configuration tested beginning June 19, 2013, in which the Medusa was lowered and flipped to spray upward (see text). The pinkish-beige color of the ladder, manhole, and other components is due to coatings of scale (precipitates related to hard water).

*Figure 229. Photographs of ETPTS Air Stripper Features*



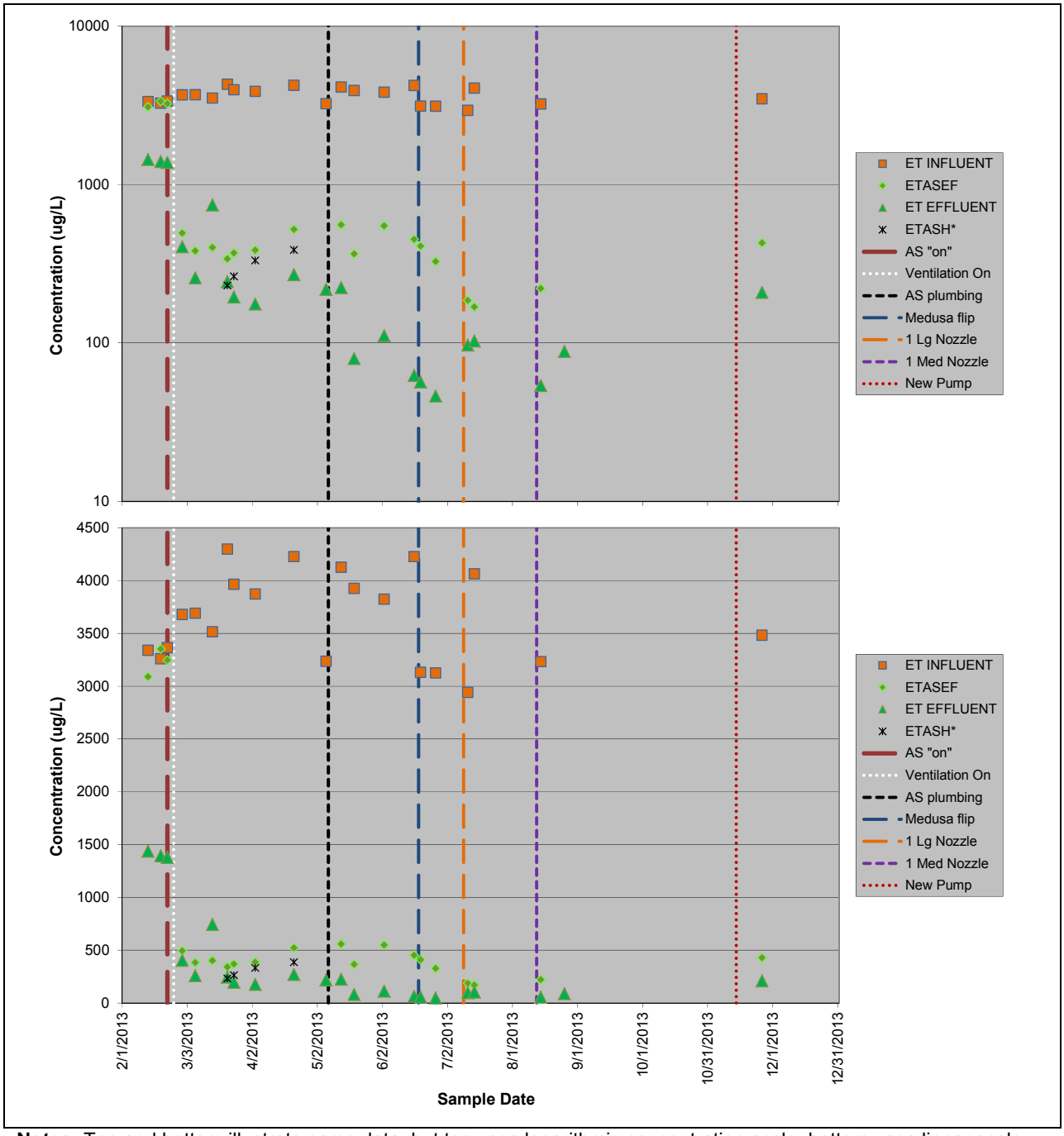

**Notes:** ET INFLUENT is formal name for raw, untreated ETPTS influent, and represents water entering the influent manhole but before it has been exposed to any air stripping. ETASEF represents effluent from the air stripper (which is then influent to the ZVI-filled treatment cells farther to the east). ET EFFLUENT is the formal name for effluent from the ETPTS, collected from the effluent manhole near the treatment cells. AS "on" indicates when the ETPTS air stripper was activated. See text for details.

*Figure 230. Effect of ETPTS Air Stripper on VOC Concentrations*

As can be seen on Figure 230, the effectiveness of the air stripper at removing VOCs varied. These variations are primarily a result of a combination of three factors: influent flow rates, air stripper optimization, and air stripper maintenance. The effectiveness of the ZVI is also evident, with VOC removal effectiveness much lower in the air stripper baseline samples collected in February than it had been prior to that time. This is not due to effects of the air stripper, as it was not yet operating. Nor does it appear related to high flow conditions, as can be seen for this time period on Figure 225. It is instead attributed to the ZVI becoming increasingly clogged and coated with precipitates, and less available for contact with the water.

Influent is collected in the trench and flows by gravity into the influent manhole in which the air stripper is installed; there is no flow control valve on this influent. Therefore, during periods of relatively higher groundwater, flow rates are higher than when conditions are drier. Just as with the other treatment systems at Rocky Flats, higher flow rates result in lower residence times and correspondingly reduced levels of treatment.

Air stripper optimization began essentially as soon as the unit was activated. Optimization activities are summarized in the following paragraphs. While their effects on VOC treatment may be evident on Figure 231, there are additional variables affecting treatment that are not illustrated, including flow, influent concentrations, degree of nozzle/pump/pipe clogging with scale, and so on.




**Notes:** Top and bottom illustrate same data, but top uses logarithmic concentration scale, bottom uses linear scale. ET INFLUENT is formal name for raw, untreated ETPTS influent, and represents water entering the influent manhole but before it has been exposed to any air stripping. ETASEF represents effluent from the air stripper (which is then influent to the ZVI-filled treatment cells farther to the east). ET EFFLUENT is the formal name for effluent from the ETPTS, collected from the effluent manhole near the treatment cells. ETASH represented pooled water on the opposite side of the pump from where the water exits the influent manhole. *Data from ETASH were used in the evaluation of whether influent plumbing should be modified (see text). AS "on" indicates when the ETPTS air stripper was activated. Ventilation On indicates when powered ventilation was added. AS plumbing shows when the plumbing modifications were made, subsequent to comparison of results from ETASH and ETASEF. Medusa flip indicates when the Medusa was lowered and flipped to spray upwards. 1 Lg Nozzle shows when the ten smaller nozzles were exchanged for a single, large nozzle; 1 Med Nozzle shows when this large nozzle was exchanged for a slightly smaller single nozzle. New Pump shows when the original pump was replaced with two different-type pumps. See text for details.

*Figure 231. Effect of ETPTS Air Stripper and Related Optimizations on VOC Concentrations*

Significant events in the optimization process included activation of powered ventilation in the influent manhole. This was completed three days after the unit was first activated. A small fan blows outside air down a pipe into the deeper portion of the manhole, while a powered attic vent equipped with four larger fans, mounted on the manhole lid, exhausts air from the manhole to the outside. This process increases air contact with the droplets being sprayed by the air stripper nozzles, thereby improving volatilization of dissolved VOCs in those droplets.

A second early optimization step was completed with plumbing improvements in the influent manhole. Initially, water entering the manhole could fairly easily bypass the pump routing water through the spray nozzles, and could exit the manhole without being processed by the air stripper. Three samples were collected (the associated location name was "ETASH") from the pooled water on the opposite side of the pump from where water exited the manhole and drained to the treatment cells farther east. Plumbing improvements were completed in early May that deposited this raw influent in the manhole at a location that is on the opposite side of the air stripper pump intake from the manhole drain, where water exits the manhole. Once this modification was completed, water had to flow across the pump in order to exit the manhole, improving the potential that this water would be processed by the air stripper before exiting the manhole. (Note that this did not affect the name of the air stripper effluent sampling location.)

Subsequent efforts to optimize the effectiveness of the ETPTS air stripper focused more on the nozzle array. In June, the Medusa (the apparatus to which the nozzles are attached; see photo in Figure 229) was lowered to just a few feet above the bottom of the manhole and flipped so the nozzles would spray upwards. Previously, the pump had been required to push water roughly 16 feet to the top of the manhole where it sprayed downward; now, the pump only had to push the water up a few feet and spray it upwards, potentially reducing strain on the pump—and potentially allowing the sprayed droplets essentially twice as much contact with the air, since the droplets would travel upward and then back down. (In actuality, much of the water lands on the manhole walls and trickles back down to the pool of water in the bottom of the sump, but this still provides more air contact than being sprayed downward into the pool.)

In July, the original set of ten nozzles was replaced with a single, larger-bore nozzle. This change was partly made to reduce maintenance required to repeatedly clean the smaller, frequently-clogged nozzles. This nozzle was also oriented to spray vertically upward, just as the ten had been prior to this change. In August, this large nozzle was replaced with a slightly smaller one, but still only one nozzle was spraying the water.

VOCs that were most prevalent in effluent from the air stripper (i.e., as reported at monitoring location ETASEF) were dominated by TCE, which was consistently present at concentrations over 100 µg/L. This is to be expected, since this constituent is the primary contaminant in ETPTS influent (Table 107). TCE at this location ranged from 140 µg/L to 470 µg/L. Other VOCs reported at this location were present at concentrations that were at least an order of magnitude lower. Those reported at levels of 10 µg/L or higher included PCE (to 38 µg/L), *cis*-1,2-DCE (to 12 µg/L), carbon tetrachloride (to 20 µg/L), and chloroform (to 31 µg/L). Concentrations varied primarily with influent flow rates, the degree to which the air stripper components were clogged, and air stripper configuration (nozzle setup, direction of spray, air flow).

As is the case at the MSPTS, all of these constituents are susceptible to air stripping, but did not receive sufficient exposure to air (via repeated cycles through the spray nozzles and contact with air) to be adequately volatilized to meet RFLMA effluent requirements. However, that was not the objective of the ETPTS air stripper: it was to assist the existing ZVI-based treatment, and to further explore the possibility of using only solar-powered air stripping to treat ETPTS influent. Table 107 summarizes and Figure 230 and Figure 231 illustrate the attainment of this first objective: prior to activation of the air stripper on February 25, 2013, effluent from the ETPTS contained substantially higher VOC concentrations than after its activation. While effluent did not meet all RFLMA targets, as shown in Table 107, the air stripper also showed that solar-powered air stripping may be a feasible alternative to the highly wasteful ZVI-based treatment. A significant challenge remains in reducing the maintenance required to keep an air stripper operating effectively.

Throughout the time from initial activation through present, the ETPTS air stripper has required a very high level of maintenance compared with other active components at Rocky Flats. This workload is almost entirely due to the very hard water being processed by the air stripper. The fact that groundwater at Rocky Flats is hard is neither related to the production work performed at the former Rocky Flats Plant, nor is it new—this is why there are several-feet-thick layers of caliche in the subsurface across the Site, a byproduct of the semiarid climate; and is also reflected in the fact that groundwater in the shallow subsurface is categorized as calcium-bicarbonate in character (EG&G 1995a, 1995b). Several samples of ETPTS influent, effluent, and air stripper effluent (i.e., collected at ET INFLUENT, ET EFFLUENT, and ETASEF, respectively) were submitted to the Environmental Sciences Laboratory (ESL) in Grand Junction, CO for analysis of calcium (Ca) and magnesium (Mg). These major ions are important to the development of scale. Samples of system influent and air stripper effluent were collected on June 21, July 16, August 15, and August 26; system effluent was sampled for these constituents on the two August dates only. Concentrations of Ca in system influent ranged from approximately 200 mg/L to 240 mg/L over these dates, and Mg ranged from about 33 mg/L to 35 mg/L. Ca at ETASEF ranged from approximately 200 mg/L to 220 mg/L, and Mg from the same 33 mg/L to 35 mg/L. These data suggest little Ca and Mg removal via the air stripping process—however, the components were very definitely becoming clogged with carbonate precipitates, as confirmed in a test with dilute acid. ET EFFLUENT values were about 150 mg/L to 160 mg/L for Ca, and 31 mg/L to 32 mg/L Mg, showing the ZVI continues to remove these constituents (and, therefore, the media continues to clog with the related precipitates).

The air stripper incorporated several design features intended to ease and simplify maintenance, as scale development related to this hard water was expected. However, despite frequent cleaning of nozzles and pipes/tubing, the ETPTS air stripper clogged fairly rapidly, as indicated by pump pressures (monitored via telemetry) and observable spray patterns from the nozzles. Eventually, this led to the original pump failing in early September 2013. Different types of pumps that would be better able to operate despite scale development were researched. A new pump type (incorporating a helical design, rather than the centrifugal design of the original pump) was selected, but was not available in a model that would deliver the same roughly 20 gpm flow rate and fit the ETPTS application; instead, these new pumps were rated at about 11 gpm. Therefore, two pumps were needed in order to achieve about the same total flow rate as the original pump. The pump mounting hardware and plumbing fittings within the influent manhole were modified to fit the new configuration, and the new pumps were installed in mid-November.

As 2013 was ending, work was underway to achieve a more suitable long-term solution for the ETPTS. The current system requires too much in the way of active maintenance: not only is hard-water scale a problem that requires frequent attention, but the ZVI media needs to be replaced periodically, neither of which are efficient for long term management. Therefore, given that the principle of using solar-powered air stripping to treat VOCs has been proven, late in 2013 commercial air stripper firms were contacted to determine whether such a unit could both achieve required levels of treatment (with minimal maintenance) and do so using only the existing solar/battery power facility (or a very slight modification of this unit).

Despite verbal expressions of interest, the initial attempt to solicit proposals from firms received no bids. However, following discussions with each potential bidder, an amended solicitation was issued and two firms expressed interest. As the year ended, design of the reconfigured ETPTS was approaching the 60 percent level of completion. The general concept is as follows: The current air stripper and the ZVI media will be removed. System influent will be processed in batches: Influent will collect in Cell 1, and will then be pumped daily to a commercial air stripper installed in a small new enclosure mounted over an existing vault; the effluent from this air stripper will drain to Cell 2. The existing solar/battery facility will nearly suffice, and will be augmented with four additional panels (from the MSPTS prototype air stripper). This project will be described and discussed in detail in the 2014 Annual Report.

*Solar Ponds Plume and Treatment System*

The SPP is an area of elevated nitrate and U concentrations in groundwater. (**Note:** The analytical data report concentrations of nitrate+nitrite as nitrogen; this is referred to in this document simply as nitrate.) Liquid wastes generated during the production era at Rocky Flats were stored in the former SEPs, which were located on the pediment in the northeastern portion of the former IA. Leakage from these ponds over the years is the source of the groundwater plume. The following paragraphs describe the plume, the treatment system installed to address this contamination, and activities conducted in 2013 at this system; see also Section 2.4 for information on operation and maintenance activities.

**Solar Ponds Plume**

Groundwater in the SEP area is contaminated with nitrate and U. Groundwater in the westernmost portion of this area, generally coinciding with the location of former Pond 207C, is also contaminated with VOCs. However, due to the more localized distribution of VOC contamination, it is not considered part of the SPP, but rather as a separate plume.

The source area of the SPP (the former SEPs) is monitored by eight Evaluation wells installed immediately downgradient of the SEPs (generally along the north, east, and south sides of the former SEPs). A ninth Evaluation well is positioned at the south edge of former Pond 207C, in the vicinity of the VOC source area. This distribution effectively monitors groundwater flowing north/northeastward, the primary contaminant flow path; it also monitors for potential eastward and southeastward migration of contaminants, which are (at most) much less significant flow paths.

Additional wells monitoring the SPP are located at greater distances from the source. This includes Evaluation wells situated both upgradient and downgradient of the SPPTS groundwater intercept trench as well as along North Walnut Creek, Sentinel wells adjacent to that trench and along South Walnut Creek near former B991, and an AOC well in North Walnut Creek near former Pond A-1. Another AOC well in South Walnut Creek supports monitoring of any southeastward contaminant migration from the SEPs; conditions at this well (well 00997) were summarized above in the text on the East Trenches Plume.

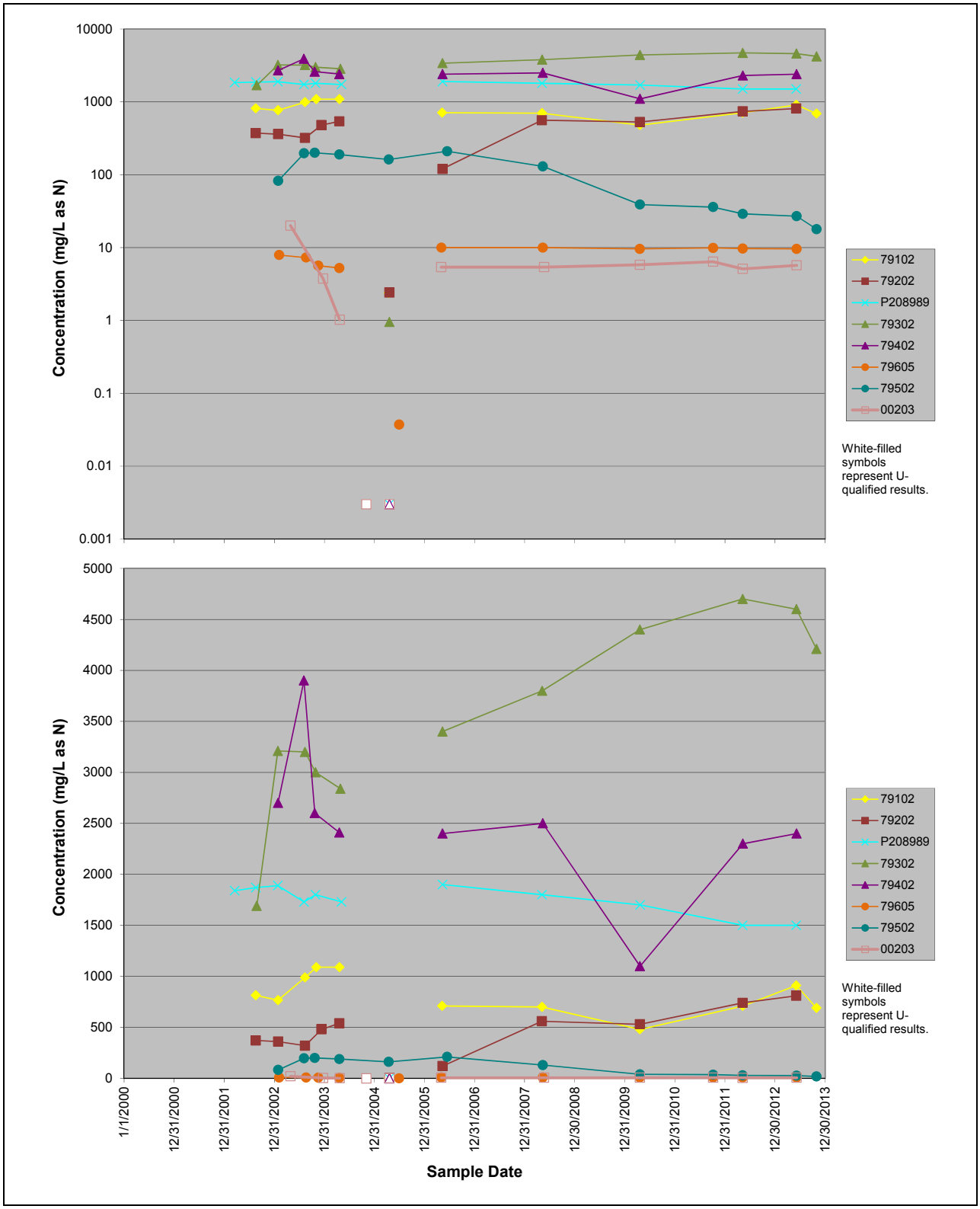
None of the Evaluation wells supporting the SPP and SPPTS were scheduled for routine RFLMA sampling in 2013. However, in response to the wetter conditions experienced in 2013, several source-area Evaluation wells (00203, 79102, 79202, 79302, 79402, 79502, 79605, P208989, and P210189) and a few more distal Evaluation wells (22205, B2104, and 51605) were sampled. The Sentinel and AOC wells were each sampled twice. Results in all cases were generally consistent with past data.

In keeping with recent years, the highest concentration of nitrate reported in the vicinity of the former SEPs was in a sample collected from Evaluation well 79302. This well reported a concentration of 4600 mg/L in the sample collected in June, and a concentration of 4,210 mg/L in late October. This and two other wells—79402 and P208989—consistently report concentrations of nitrate exceeding 1,000 mg/L, and all are situated near the northeastern corner of the former SEPs (see Figure 4 for well locations). These data are illustrated below in Figure 232, which incorporates logarithmic as well as linear concentration scales to provide perspective.

Several of these Evaluation wells were sampled in both the second and fourth quarter: the first event was planned to assess whether the wetter spring in 2013 affected concentrations substantially, compared with (dry) 2012; and the second event was planned as a check of conditions following the September 2013 floods. As seen on Figure 232, neither environmental condition appears to have forced dramatic changes in nitrate concentrations in these wells. A slightly lower concentration in the fourth-quarter sample is apparent in the data, but is not large and may be related to seasonal rather than precipitation-triggered effects.

One visually-apparent trend in nitrate concentrations is at well 79502, which is located on the southeastern corner of the former SEPs. Nitrate concentrations are decreasing here; combined with the lack of elevated concentrations of nitrate farther to the southeast, at wells monitoring former B991 (where concentrations are rarely greater than 2 mg/L), this supports the suggestion that a pathway to South Walnut Creek is not favored by the SPP.

Also evident on Figure 232 is that concentrations of nitrate at 79302 appear to be increasing. This well is located on the north-facing hillside immediately north of the former SEPs. Although concentrations in 2013 are slightly lower than in 2012 (4,700 mg/L in 2012, high of 4,600 mg/L in 2013), additional data will be required in order to confirm whether concentrations are beginning to decrease.




**Notes:** Top and bottom portion of the figure incorporate same data, but top uses logarithmic concentration scale and bottom uses linear scale. RFLMA Table 1 value for nitrate (reported by the laboratory as nitrate+nitrite as nitrogen) is 10 mg/L (CDPHE et al. 2012). Refer to the 2006 Annual Report (DOE 2007b) for discussion of the discontinuous data in 2005. Several results are qualified but are not shown differently for the sake of simplicity.

*Figure 232. Concentrations of Nitrate in SPP Source-Area Evaluation Wells*

Most of the other Evaluation wells in this area show no strong visual trend in nitrate over their entire data set, though shorter periods of increasing or decreasing concentrations are suggested. Concentrations of nitrate in wells 79605 and 00203 (eastern and southern sides of the former SEPs, respectively; see Figure 4) are consistently at or below the RFLMA value of 10 mg/L. Similar to well 79502, noted above, this further suggests a SPP pathway to South Walnut Creek is not significant.

Trends having a 95 percent statistical confidence were calculated for nitrate in some SPP source-area Evaluation wells, including 79302 (increasing) and 79502 (decreasing).

The SPP also includes elevated concentrations of uranium, as noted above. Similar to the data reported for nitrate, concentrations of uranium in the Evaluation wells nearest the source area are consistent with past results. The highest concentration of uranium in these wells in 2013 was reported at well 79102 (576 µg/L). As summarized in the discussion of high-resolution uranium analysis and the associated table (Section 3.1.6), a sample collected from this well on May 14, 2012 was reported as containing 100 percent anthropogenic uranium (essentially all depleted). This is consistent with previous uranium isotopic characterization data for this well (June 2004: 100 percent anthropogenic—again, depleted).

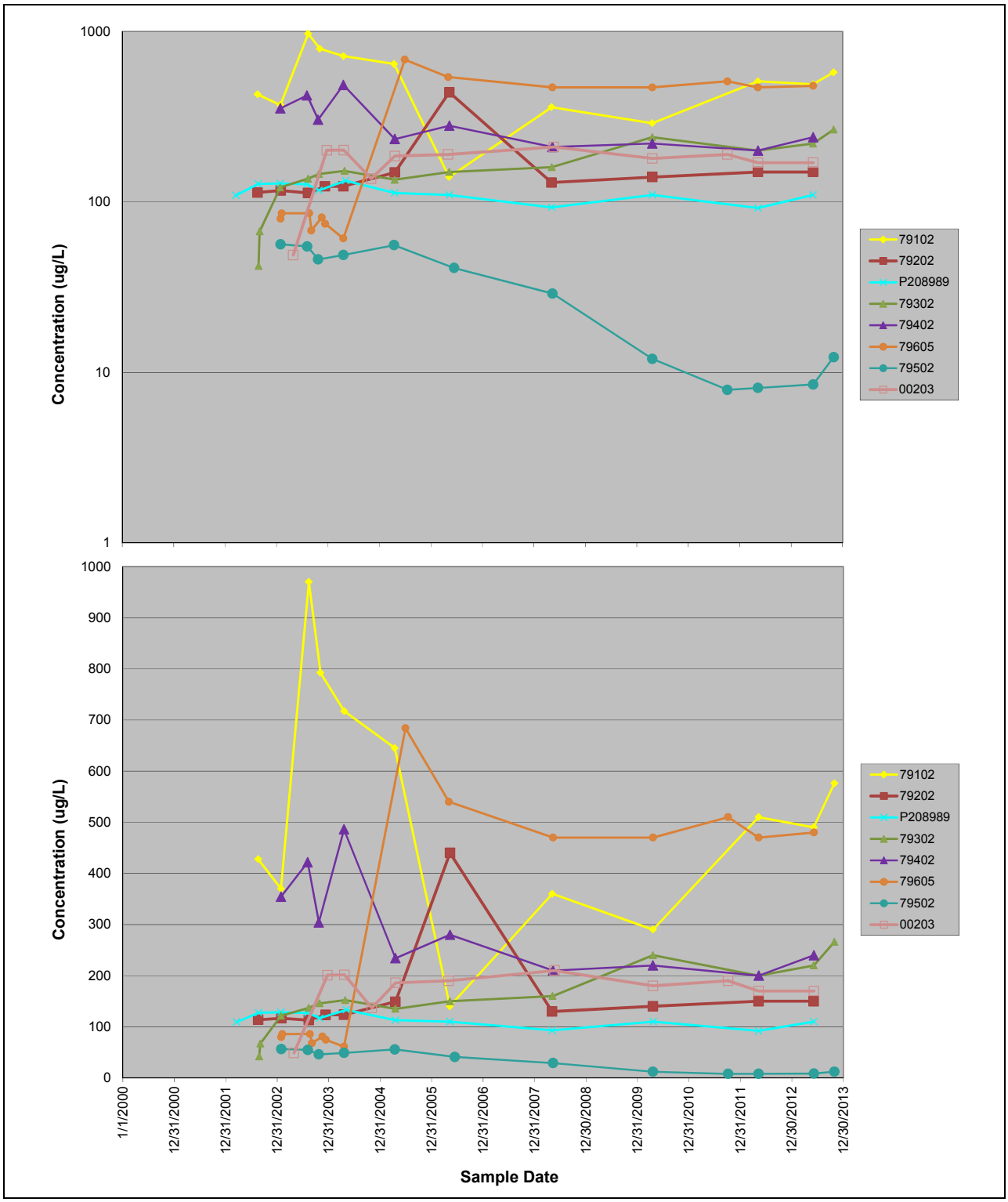
The well that most consistently produces groundwater samples with the highest uranium concentration is well 79605; in 2013, the sample from this well contained 480 µg/L uranium. The relatively higher concentrations reported for well 79102 began to be observed in 2012, and continued through 2013 (Figure 233). Well 79605 is located on the eastern edge of the former SEPs, while 79102 is on the northern edge of former Pond 207C (Figure 4). None of the samples collected from these wells since closure has approached 1,000 µg/L, as was the case at well 79102 in 2003.

The sharp increase in uranium reported at well 79605 in 2005 is attributed to well replacement. Although the replacement well is less than 5 feet from the original well, the replacement well has a longer screened interval (5.75 to 25.75 feet below ground surface, as opposed to 11 to 20.48 feet below ground surface at the original well). This replacement well, therefore, monitors additional ground water that was unavailable to the original well. Given the relatively low concentrations of nitrate reported at well 79605 (Figure 232), it is unlikely this uranium represents significant SPP-related contamination.

Samples were collected in late October 2013 from wells 79302 and 79502 for analysis of uranium isotopes by Lawrence Berkeley National Laboratory (Section 3.1.6). Neither of these locations has been previously characterized for anthropogenic vs. natural uranium. Consistent with the low nitrate and uranium observed at well 79502, which suggests a southeastern pathway for the SPP is not meaningful, the uranium at this location was characterized as approximately 97 percent natural. Although the highest nitrate concentrations are observed at well 79302 and there is no doubt the groundwater at this location is impacted by the SPP, the uranium here is also characterized as predominantly (approximately 87 percent) natural. This further confirms the presence of elevated nitrate at a location does not necessarily indicate uranium at that location is predominantly anthropogenic.

Trends are visually apparent in the concentrations of uranium from some of these wells (Figure 233), and some also support trends calculated using the Mann-Kendall approach to have

a statistical significance of at least 95 percent. Trends of this significance are calculated for uranium at wells 79202 and 79302 (both increasing), and 79402 and 79502 (both decreasing).




**Notes:** Top and bottom portion of the figure incorporate same data, but top uses logarithmic concentration scale and bottom uses linear scale. RFLMA U threshold value is 120 µg/L. Several results are qualified but are not shown differently for the sake of simplicity. Note logarithmic concentration scale.

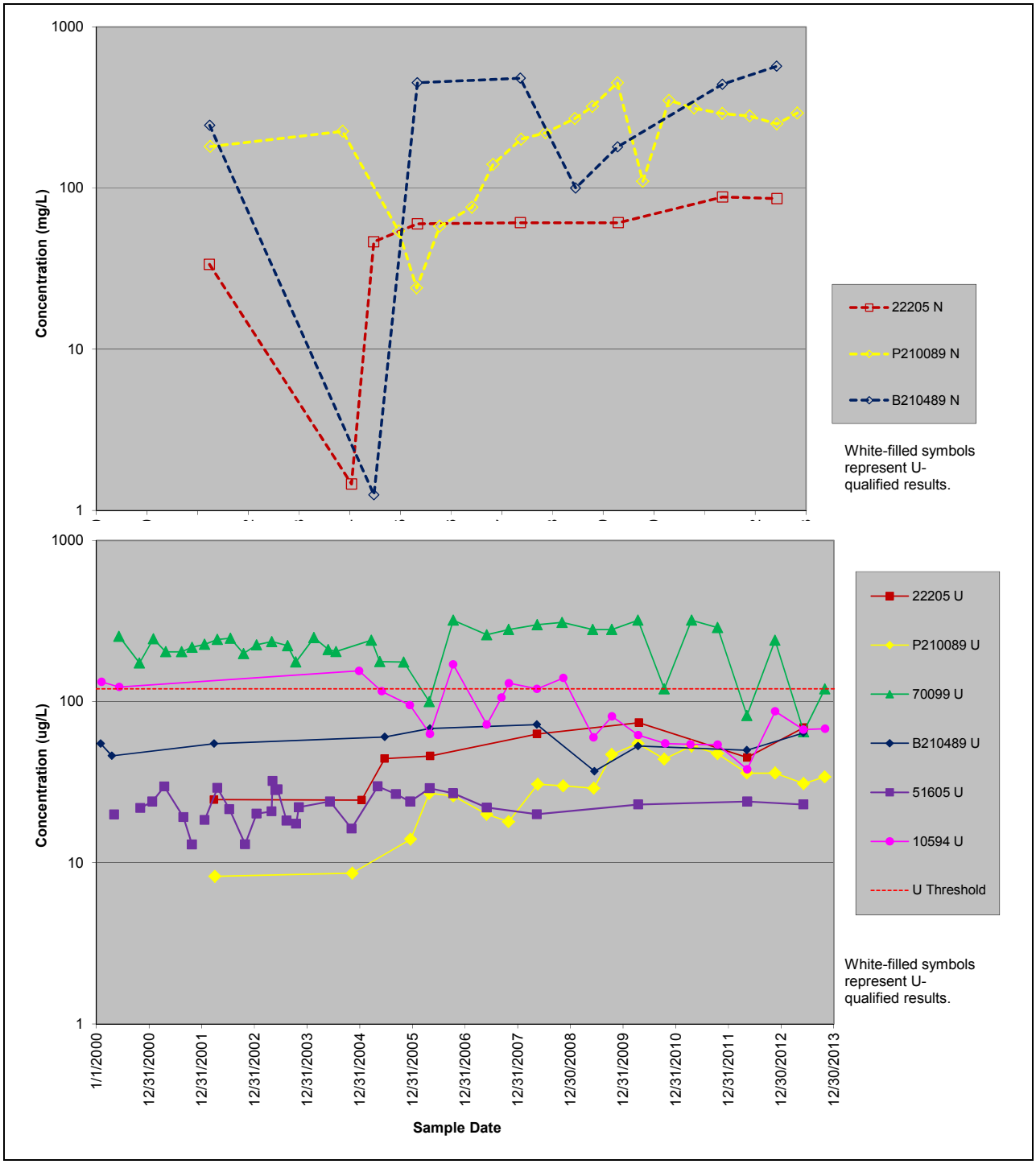
*Figure 233. Concentrations of Uranium in SPP Source-Area Evaluation Wells*

Several wells monitor for SPP-related constituents farther downgradient from the SPP source area. These include, from nearer to farther from the source area, Evaluation well 22205 on the hillside between the source area and the SPPTS; Sentinel wells P210089 adjacent to the southwestern end of the SPPTS groundwater intercept trench and 70099 just north of this trench; Evaluation well B210489 in North Walnut Creek just east of the SPPTS Discharge Gallery; Evaluation well 51605 by surface water location GS13; and AOC well 10594 between former Ponds A-1 and A-2. The upper portion of Figure 233 displays concentrations of nitrate (where it is meaningful) from these wells, and the lower portion of the figure shows U. This roughly northeastern-oriented transect represents the most meaningful flow direction for the uranium- and nitrate-contaminated groundwater of the SPP.

As shown on this figure, there appears to be little or no correlation between contaminant concentration and distance from the source. The upper portion of Figure 233 suggests an inverse correlation, at least since about 2011. Concentrations of nitrate in the wells illustrated appear to vary inversely with distance: The highest concentrations in 2013 were at location B210489, which is located the farthest from the SEPs, and the lowest was at well 22205, which is nearest that source area. However, the relationship is not that clear; nitrate is not displayed for other wells located among those illustrated, because concentrations are uniformly low or nondetect at wells 70099, 51605, and 10594. Proximity to the SPPTS may be a controlling factor, given that well B210489 is close to the Discharge Gallery (where concentrations have been increasing as alternative treatment approaches are investigated) and well P210089 is adjacent to the groundwater intercept trench. While well 70099 is also very close to the trench, it is closer to the FC-3 drainage and may be dominated by groundwater moving within the subsurface in that drainage.

Concentrations of uranium are yet more complicated, most likely due to the presence of natural uranium (as opposed to Site-related anthropogenic uranium) in groundwater in this area. This is certainly the case with well 70099, which consistently displays the highest concentrations, and AOC well 10594, which has often produced the second-highest uranium values of these wells. In both cases, uranium in samples from these wells has previously been characterized using high-resolution isotopic methods as approximately 97–100 percent natural.

The samples collected in the second quarter from wells 70099, 10594, B210489, and 22205 all are reported to contain concentrations of uranium in the 60–70 µg/L range (lower portion of Figure 234). This is most likely coincidence, as the disparate locations of these wells do not suggest a common forcing mechanism. Reasons for the recent discontinuous results in uranium at well 70099 are not known; however, the second-quarter 2013 result was the lowest in the data set for this location. Refer to the 2011 and 2012 Annual Reports (DOE 2012 and 2013b, respectively) for additional discussion of the contaminant distributions among these wells.




**Notes:** Top portion represents nitrate results, lower portion represents uranium results. N = nitrate+nitrite as nitrogen, U = total uranium. RFLMA values are 10 mg/L (nitrate standard) and 120 µg/L (uranium threshold). The wells are listed in the legend in order of increasing distance from the former SEPs (the source area). Two U nondetects at well 51605 (representing April 2000 and May 2001) are omitted due to their discontinuous nature. Note logarithmic concentration scales.

*Figure 234. Nitrate and Uranium Concentrations in Wells Downgradient of the Former SEPs*

Calculated trends having a 95 percent level of confidence are reported for several of these wells (see summary in Table 99 and trend plots and reports in Appendix B), some of which are readily apparent on Figure 234. Evaluation well 22205 and Sentinel well P210089 are calculated to have increasing trends in both nitrate and uranium. Sentinel well 70099 shows a decreasing trend in nitrate (not illustrated due to its consistently low concentrations). Of those wells located farther downgradient, only AOC well 10594 is represented by a trend at this level of statistical significance: decreasing uranium concentrations are calculated here. Data from Evaluation wells B210489 and 51605 do not support significant trends.

These wells will continue to be monitored and evaluated for trends and other patterns.

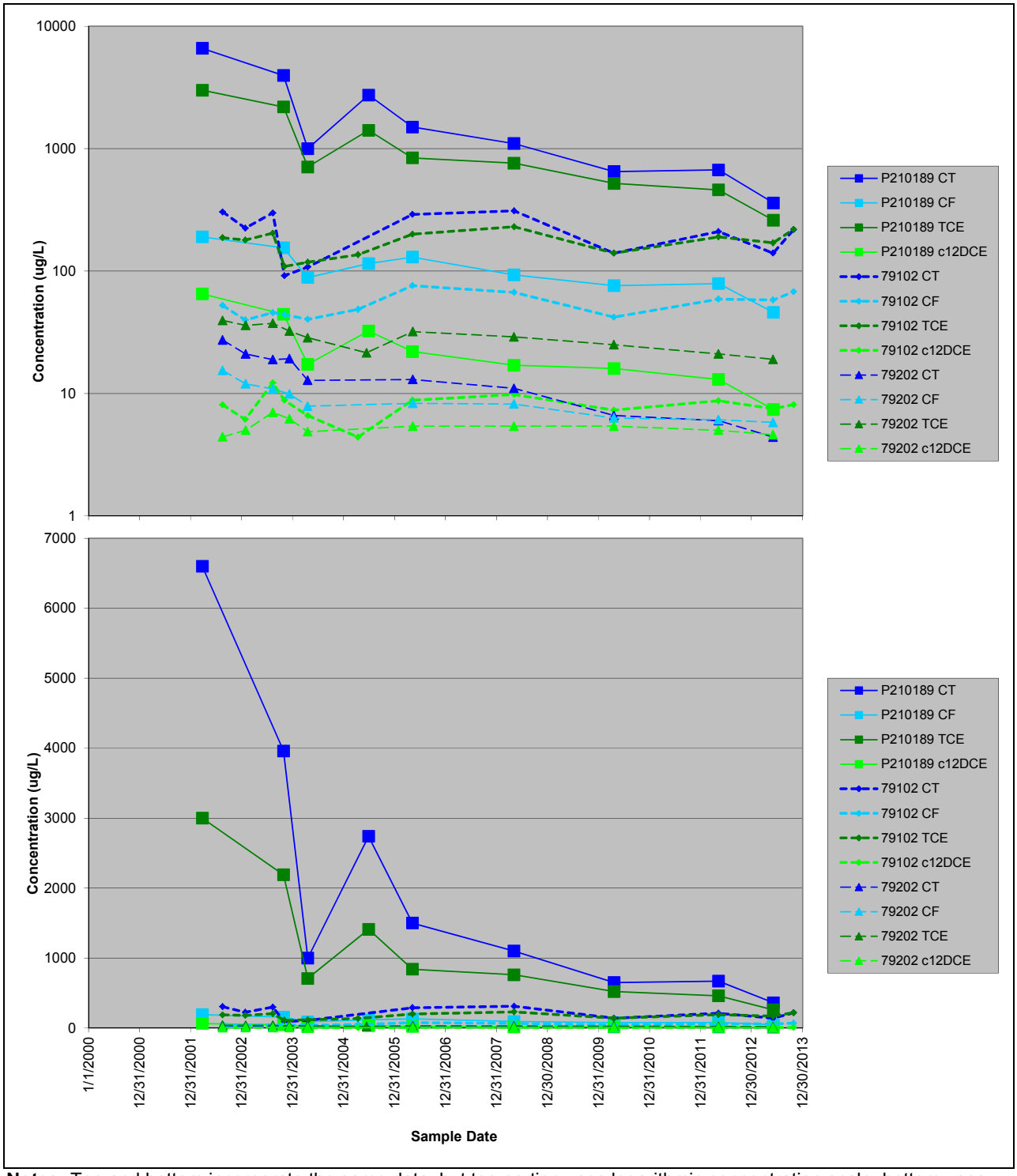
As described above, Sentinel wells 99305 and 99405, both located in the South Walnut Creek drainage adjacent to former B991, are monitored to evaluate a potential southeastern flowpath for SPP groundwater. Water quality at these wells is discussed in greater detail later in this report, but with respect to the SPP, nitrate concentrations in samples collected in 2013 were consistent with previous data and do not suggest a southern/southeasterly flowpath for the SPP is meaningful. As with previous conditions, uranium concentrations are very consistent and lower at well 99305 while they are more variable and substantially higher at nearby well 99405. Both have been characterized as producing groundwater with uranium that is 100 percent natural.

**Solar Ponds-Area VOC Plume**

None of the Evaluation wells designated to monitor the VOC plume in the western SEP area were scheduled for regular RFLMA sampling in 2013, but as noted above each was sampled due to precipitation conditions. These wells include P210189 on the southern edge of former Pond 207C and in the vicinity of the VOC source area; wells 79102, 79202, and P208989 to the north, along the pathway to the North Walnut Creek drainage; well 22205 about halfway between the source area and the drainage; and well 00203 on the southern side of the former SEPs. Of these, Evaluation wells P208989 (located just east of well 79202) and 00203 report few VOC detections, and none above RFLMA Table 1 values. In addition, Sentinel well P210089, which is located north of the SEPs at the western end of the SPPTS intercept trench, is also monitored for VOCs.

As defined by conditions at well P210189, this plume is characterized predominantly by elevated concentrations of carbon tetrachloride, lower but still elevated concentrations of TCE, and chloroform.

Data reported for samples collected from the Evaluation wells in 2013 were consistent with past results. As previously reported (e.g., DOE 2013b), decreasing trends are evident in several cases (Figure 235). These trends are especially evident for carbon tetrachloride and TCE at well P210189. The nearest downgradient well, 79102, does not show similar reductions. However, data for well 79202, also downgradient but monitoring water with lower concentrations of VOCs, indicate some constituents are decreasing. The moist spring and floods of 2013 do not appear to have strongly impacted pre-existing trends.




**Notes:** Top and bottom incorporate the same data, but top portion uses logarithmic concentration scale, bottom uses linear scale. Constituents and their respective, applicable RFLMA Table 1 standards (µg/L; CDPHE et al. 2012): CT, 1; CF, 3.4; TCE, 2.5; c12DCE, 70. Several detections are qualified but are not shown differently for the sake of simplicity.

*Figure 235. Primary VOCs in SEP VOC Plume Wells*

Farther downgradient, conditions at Evaluation well 22205 in 2013 with respect to VOCs were consistent with those in previous years. There is no strong suggestion of the VOC plume migrating toward the North Walnut Creek drainage. A single detection of 1,3-DCB, estimated (J-qualified) at 0.59 µg/L, was reported in 2013; the RFLMA Table 1 value is 94 µg/L. This is the first reported detection of this constituent here, and it does not represent a significant contaminant in this VOC plume. 1,3-DCB was also detected in 2013 in samples from wells 00203, 79102, and AOC well 10594—with all four detections J-qualified at concentrations well below 1 µg/L and occurring in the samples collected in early June. This constituent has not been reported before in the Evaluation wells around the former SEPs, but was reported at well 10594 in 2009, also in June at a very low, J-qualified concentration.

Trend calculations indicate that in well P210189, decreasing trends in carbon tetrachloride, chloroform, *cis*-1,2-DCE, and TCE now rise to the 95 percent level of significance; these trends are visually apparent on Figure 235. Decreasing trends of this significance are also calculated for carbon tetrachloride, chloroform, TCE, and PCE at well 79202. Finally, well P208989 reports increasing trends in chloroform and TCE of this statistical significance, but the data sets for both contain numerous nondetects suggesting the trends may not be viable. No trends of this level of statistical significance are calculated for VOCs at wells 79102, 22205, or 00203.

**Solar Ponds Plume Treatment System**

Like the ETPTS, the SPPTS was installed in 1999. In basic design, the system is very similar to the MSPTS and ETPTS, with an intercept trench (1,100 feet long) and two original treatment cells. However, unlike the ETPTS and MSPTS, this system is designed to treat water with elevated concentrations of nitrate and U rather than VOCs. As such, the treatment media in the original SPPTS treatment cells differs from the ZVI media in the MSPTS and ETPTS treatment cells. The treatment media in these SPPTS cells consists of organic material (sawdust) with a small fraction of ZVI in the first cell, and ZVI with pea gravel in the second cell. Also, the treatment media in the original SPPTS treatment cells is buried under approximately 10–12 feet of overburden, and is therefore not easily accessed.

In addition, unlike the gravity-flow operation of the MSPTS and ETPTS, water that is collected in the SPPTS intercept trench must be actively pumped into the treatment cells. This is accomplished using a solar-charged, battery-powered pump system. This component of the SPPTS, together with the collection well that houses the pump and is installed within the trench, was installed as the first system upgrade in 2002.

The SPPTS has been the focus of extensive study and modification over the past several years—essentially, since the site closed—to improve collection and treatment of contaminated groundwater. Several factors drove these efforts, including (1) historically, concentrations of nitrate and uranium measured at the Discharge Gallery typically exceeded those in untreated influent to the system, even though this is where effluent confirmed to be adequately treated may surface following its discharge; (2) accessing and maintaining the treatment media and plumbing within the original structure is costly and difficult; and (3) the original treatment media may not be optimal over the long term. Work was also done shortly after closure to make repairs to piping and valves. Previous annual reports have discussed various SPPTS-related activities and components of the post-closure work (DOE 2007b, 2008b, 2009d, 2010b), which have included repairs, subsurface exploration, treatability studies, and the design and construction of system

upgrades. More recent annual reports (DOE 2011c, 2012, and 2013b) have presented and discussed further efforts in optimizing the effectiveness of this system, focusing on the performance of bench-scale to pilot-scale treatability studies.

It is important to understand that a fundamental challenge to achieving consistently reliable treatment by the SPPTS is the lack of electrical power. Although it supports a number of tools and critical components, the several kilowatts of solar-based power installed in 2009 cannot substitute for full-time, on-demand line power. In addition, the capital costs associated with solar power are high; when coupled with installation of a battery bank to ensure full-time operation, costs and maintenance requirements increase.

Maintenance and optimization activities were conducted at the SPPTS throughout 2013 and are reported in Section 2.4. The text below provides a summary of the results related to water treatment, as well as a discussion of ongoing tests.

The SPPTS treated approximately 498,000 gallons of groundwater in 2013, the same (within rounding and measurement error) as in 2012 (Table 108). This is somewhat lower than volumes treated in other years following installation of the Phase I upgrades in late 2008. (The Phase I upgrades collect additional contaminated groundwater and route it through the SPPTS for treatment. These upgrades are discussed at greater length in the annual reports for 2008 and 2009, DOE 2009d and 2010b, respectively.) Despite the wetter conditions in 2013 than 2012, flows were essentially the same. Several automated system shut-downs contributed to this, as discussed further below. Figure 236 presents a hydrograph showing flow from January 2000 through the end of 2013. Clearly evident is the effect of the Phase I upgrades on the total volume treated by the SPPTS. The hydrograph for CY 2013 is presented as Figure 237.

*Table 108. Estimated Volumes of Water Treated by the SPPTS*

| Calendar Year | Annual Estimates of Volume Treated (gallons) | Estimated Cumulative Volume Treated (gallons) |
|---|---|---|
| 2000[a] | 64,000 | 64,000 |
| 2001[a] | 424,000 | 452,700 |
| 2002 | 5,600[b] | 458,000 |
| 2003 | 340,000 | 797,000 |
| 2004 | 230,000 | 1,027,000 |
| 2005 | 140,000 | 1,167,000 |
| 2006 | 251,000 | 1,418,000 |
| 2007 | 244,000 | 1,662,000 |
| 2008 | 280,000 | 1,942,000 |
| 2009 | 524,000 | 2,466,000 |
| 2010 | 738,000 | 3,204,000 |
| 2011 | 507,000 | 3,711,000 |
| 2012 | 498,000 | 4,209,000 |
| 2013 | 498,000 | 4,707,000 |

**Notes:**

[a] Annual and cumulative volume estimates for 2000 and 2001 are suspect, as a sum of the volumes presented in each of the quarterly reports for 2000 and statements regarding the volume for 2001 disagree by approximately 35,000 gallons.

[b] Most of this volume was from the former Modular Storage Tanks (K-H 2003).

Estimates for years 2000 through 2004 are compiled from K-H (2000a, 2000b, 2000c, 2000d, 2002b, 2003, 2005a, 2005b).

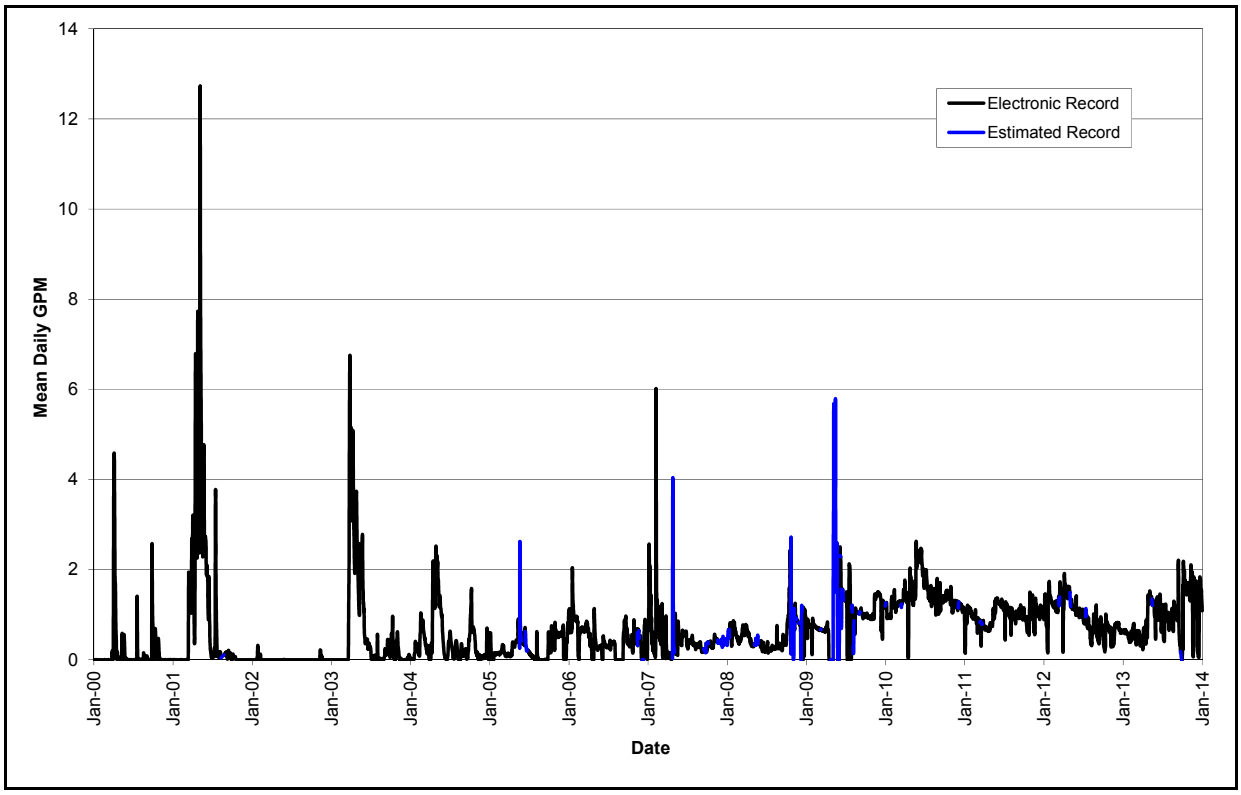



*Figure 236. Hydrograph for SPPTS from 2000 Through 2013*

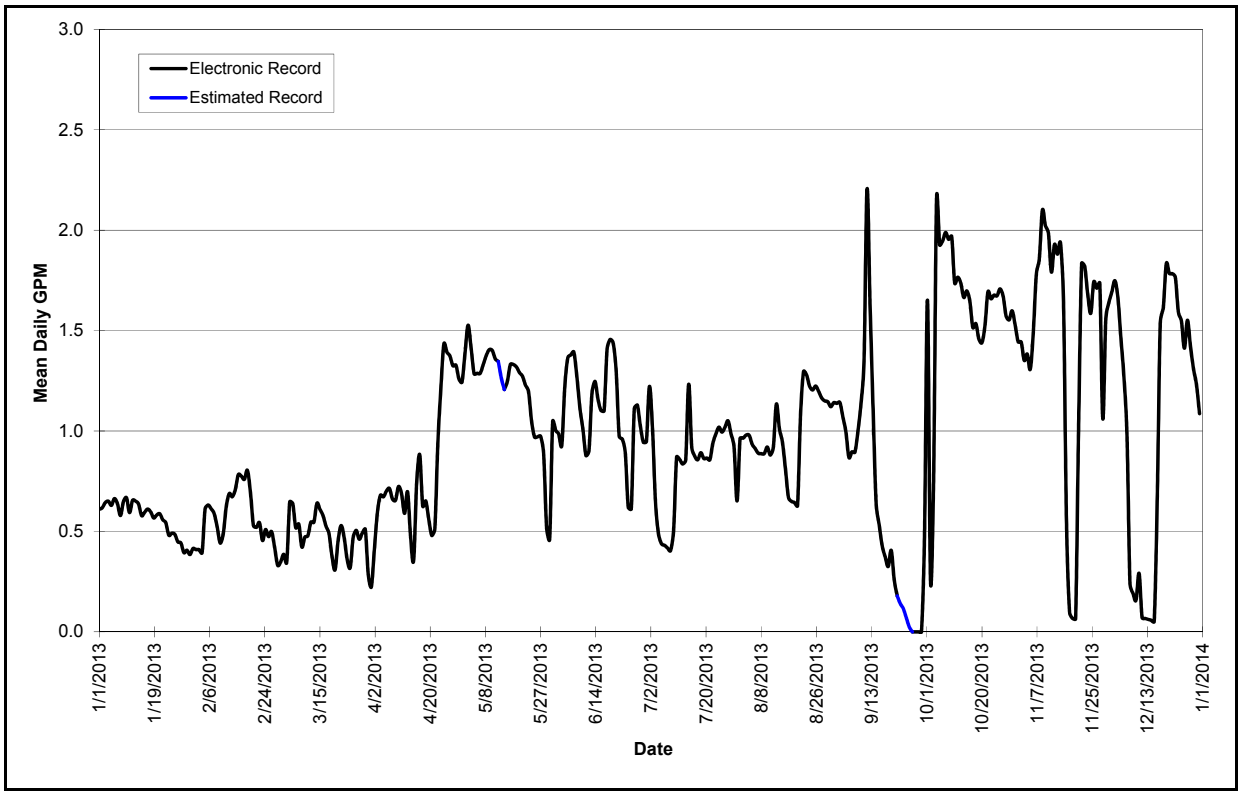



*Figure 237. Hydrograph for SPPTS for CY 2013*

On average, the SPPTS has treated about 336,000 gallons per year since January 1, 2000. However, this average flow may be misleading: from Table 108, it is evident that several significant changes have occurred. The most significant of these are a result of the 2002 installation of a pump to deliver influent from the collection trench to the treatment cells; as is visually evident on Figure 236, flow was irregular until after this pump was added. The late-2008 installation of the Phase I upgrades comprises another significant factor in the volumes of water treated by the SPPTS.

Site closure appears to have had a relatively minor effect on the volume of flow treated by the SPPTS, as suggested by the volumes for the couple of years preceding and following that event. About 195,000 gallons per year were treated from 2000 through 2005 (Table 109), assuming the volumes for 2000 through 2002 are accurate. (The year 2005 is included with the pre-closure average.) Several years after closure, however, average annual flows through the system more than doubled. This is related to, if not entirely caused by, the installation of the Phase I upgrades in late October, 2008. Averaging the volumes treated from 2000 through 2008 gives a pre-Phase I average of approximately 215,000 gallons per year, while the post-Phase I average is well over twice that, at about 553,000 gallons per year. Even so, this higher average volume only amounts to an average flow rate through the SPPTS of about 1.05 gpm.

*Table 109. Average Volumes Treated by the SPPTS*

| Time Period | Average Volume Treated Per Year |
|---|---|
| Overall since January 1, 2000 | 324,000 |
| Pre-closure, 2000–2005 | 194,500 |
| Post-closure, 2006–2013 | 442,500 |
| Pre-Phase I upgrades, 2000–2008 | 215,800 |
| Post-Phase I upgrades, 2009–2013 | 553,000 |

**Notes:** Average volumes are based on estimates of volumes treated, as presented in Table 108. Time periods shown include complete years, and do not correspond to exact dates of closure and Phase I upgrades: the pre-closure estimate for the 2000–2005 period spans January 1, 2000, through December 31, 2005; the post-closure period begins January 1, 2006; and the post-Phase I period begins January 1, 2009.

## Summary of SPPTS Upgrades

As noted above, several upgrades have been made to the SPPTS since Site closure. These upgrades have been discussed in greater detail in previous annual reports (particularly DOE 2009d, 2010b, and 2011c) and are summarized below in Table 110. Refer to Section 2.4 for information on operation and maintenance in 2013.

*Table 110. Summary of SPPTS Construction and Upgrades*

| Upgrade Phase (Year Installed) | Summary Description | Summary of Associated Features and Nomenclature |
|---|---|---|
| "Phase 0" (1999) | Original SPPTS constructed: Groundwater intercept trench bisects previously installed French drain network called the Interceptor Trench System, or ITS, and feeds collected water by gravity through two cells operated in series: Cell 1 contains sawdust plus 10% ZVI for nitrate treatment; Cell 2 contains pea gravel and 15% ZVI for U treatment. Effluent is routed into a downgradient limb of the ITS and thence to a line to the subsurface discharge gallery. | SPPMM02 = "influent" location accessed at piezometer a.k.a. 71099<br>SPPMM01 = effluent location accessed in manhole<br>SPP Discharge Gallery in valley bottom<br>GS13 = surface water performance at mouth of Pond A-1 |
| "Phase 0.1" (2002) | Collection well equipped with solar-powered pump is installed to deliver collected groundwater to cells. | SPIN (name later assigned to influent flow from this pump) |
| Phase I (2008) | Collection sump and gravel drain installed at terminal points of ITS, adjacent to location of former Interceptor Trench Pump House. | ITSS = Intercept Trench System Sump, the constructed sump that receives water collected by the upgrade<br>ITSE = east ITS line where it empties into ITSS<br>ITSW = west ITS line where it empties into ITSS |
| | Piping installed to transfer water from ITSS to SPIN, and to discharge treated system effluent from effluent manhole to Discharge Gallery; SPIN vault provides access point to flows from the former, and ITSS vault provides access to flows from the latter. | SPOUT = effluent location accessed in ITSS vault |
| Phase II (2009) | Easily accessible cell installed to treat U upstream of nitrate treatment; initially incorporates citrate dosing of influent. | SPZE = effluent from Phase II cell |
| Phase III[a] (2009) | Installed: two pilot-scale nitrate treatment cells to evaluate alternative treatment approaches; associated vault to house carbon supply (added to one of the Phase III cells); vault to allow flow configuration, control, dosing, monitoring, programming, and telemetry infrastructure; associated water storage sump to provide influent in the event of dry conditions; and solar power and plumbing infrastructure to support all of this. | Cell A = pilot-scale nitrate treatment cell using inert media dosed with liquid carbon<br>Cell B = pilot-scale nitrate treatment cell using organic (reactive) corn stover media<br>SPILCA = dosed influent to Cell A<br>SPCAE = effluent from Cell A<br>SPCBE = effluent from Cell B |
| Phase III, Part 2[a] (2012) | Reconfigured Phase III cells described above to allow testing of lagoon-style approach to nitrate treatment. See text for information. | Cell A = pilot-scale nitrate treatment cell using inert media dosed with liquid carbon; initially (through late January 2013) equipped with recirculation pump<br>Cell B = pilot-scale nitrate treatment cell using inert media dosed with liquid carbon, no recirculation pump<br>SPCAE = effluent from Cell A<br>SPCBE = effluent from Cell B |
| Phase IV (to be determined) | Install full-scale nitrate treatment component, integrated with microcell-based uranium treatment component, developed via testing and results. | To be determined |

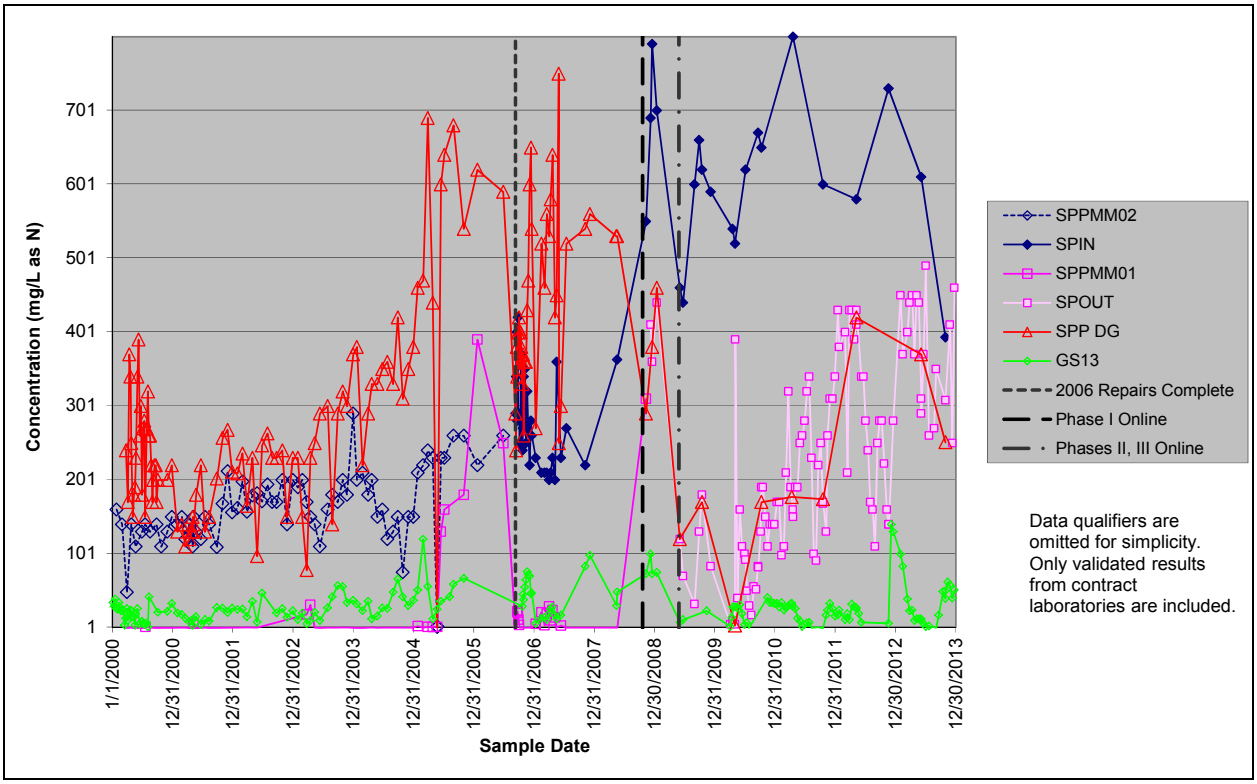
**Notes:**
[a] Phase III cells were cleaned out in 2012 and modified to support different pilot-scale testing. See DOE 2013b for details.

**Abbreviations:**
ITS = Interceptor Trench System

## Summary of SPPTS Treatment

The SPPTS through 2013 was the subject of continuing testing to identify methods by which uranium and nitrate treatment could be improved for the long term. Although simply replacing the media in the treatment cells would improve treatment substantially, that improvement would almost certainly be neither adequate nor long lasting, and the cost to complete the media replacement activity would be high. With respect to nitrate treatment, replacing the media in the original Cell 1 with similar sawdust and ZVI media would not provide adequate treatment because the system receives much higher flows and nitrate loads than when this media was performing adequately. The operation and maintenance costs associated with the system as originally and currently configured are not sustainable; a new treatment approach is needed in order to effectively manage and treat the roughly 1 gpm average flow at a reasonable cost. Therefore, because work continues to focus on identifying a more appropriate long-term system configuration, effluent conditions in 2013 were not improved over those in recent years.

Figure 238 presents concentrations of nitrate at various system locations. Effluent concentrations were substantially higher, again due to ongoing focus on developing better approaches to nitrate treatment, as discussed below. The higher concentrations of nitrate in the higher influent flows continue to challenge the SPPTS.

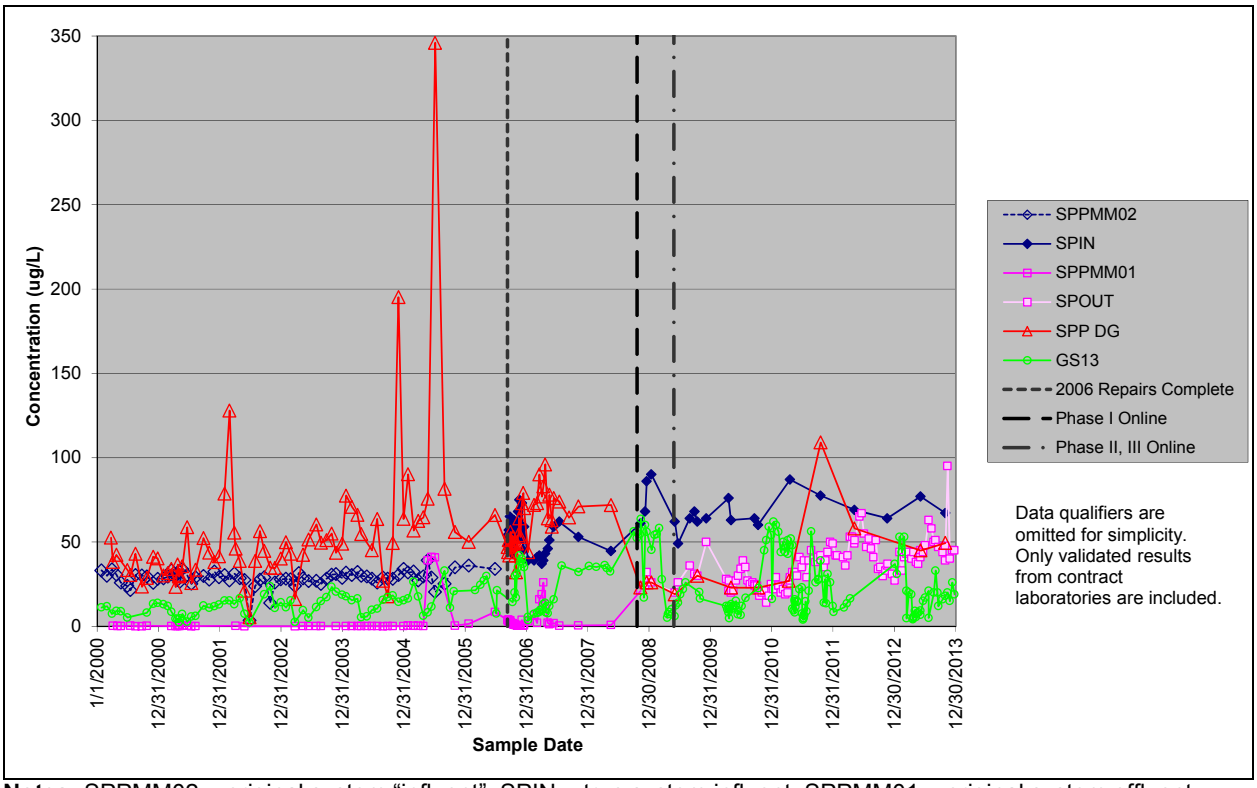



**Notes:** SPPMM02 = original system "influent"; SPIN = true system influent; SPPMM01 = original system effluent; SPOUT = system effluent; SPP DG = SPP Discharge Gallery; GS13 = surface water performance location. Refer to previous annual reports (DOE 2007b, 2008b, 2009d, 2010b, and 2011c) for more information on events related to system repairs and modifications, including Phases I, II, and III. Some data are qualified but are not displayed differently for simplicity.

*Figure 238. Concentrations of Nitrate at Selected SPPTS Monitoring Locations*

The operation of the Phase III cells (discussed in greater detail below) did provide some nitrate removal, but only a small portion of the total flow was routed through these pilot-scale cells. The highest concentration reported at surface water location GS13 was 100 mg/L, and the (arithmetic, not flow-weighted) average was about 32 mg/L.

Uranium in system influent has also increased (Figure 239). Similar to nitrate conditions, system effluent monitored at SPOUT continued through 2013 to contain elevated concentrations of uranium. While the system continues to remove some uranium, the Phase II cell is of limited benefit because its ZVI-based media has been passivated with the high concentrations of nitrate. Original Cell 2, designed to remove uranium, is also not sufficiently effective, and the small portion of flow treated via test microcells (described below) does not contribute substantially to the overall removal of uranium. Conditions at GS13 were generally consistent with previous post-closure data; the highest uranium concentration reported was 53 µg/L, and the arithmetic average was about 18 µg/L.




**Notes:** SPPMM02 = original system "influent"; SPIN = true system influent; SPPMM01 = original system effluent; SPOUT = system effluent; SPP DG = SPP Discharge Gallery; GS13 = surface water performance location. Refer to previous annual reports (DOE 2007b, 2008b, 2009d, 2010b, and 2011c) for more information on events related to system repairs and modifications, including Phases I, II, and III. Some data are qualified but are not displayed differently for simplicity.

*Figure 239. Concentrations of Uranium at Selected SPPTS Monitoring Locations*

Replacement of the original media in Cells 1 and 2 with fresh material is not planned. As noted above, the current system design would not be expected to achieve effective treatment even with fresh media. The current influent nitrate load is higher than the system can effectively treat for an extended time. In addition, media replacement in the current configuration is very costly,

particularly considering the influent of concern is present at a flow that only averages about 1 gpm. Therefore, instead of planning for media replacement, the system is being evaluated for more extensive reconfiguration to achieve more effective and efficient treatment of this influent. The reconfigured system would incorporate the results of testing currently underway, as described more fully below. Until this planned reconfiguration is complete, effluent concentrations will continue to exceed treatment targets.

S-K trend calculations were performed for SPPTS influent. This is not required by RFLMA, but can help to identify long-term trends in concentrations. The results of these calculations were affected by two primary events that have been discussed in this and previous reports. Both events impacted concentrations as reported for system influent. The first, which took place in 2006, was reassignment of the influent monitoring location from a trench piezometer (sampled as SPPMM02, but also referred to as piezometer 71099) to SPIN. The effect of this was an immediate increase in both nitrate and uranium concentrations of about 20 percent; refer to the annual report for 2006 (DOE 2007b) for more information on this change. The second event affecting influent water quality had a much greater effect: this was the completion of the Phase I upgrades in late 2008, as discussed in previous annual reports (for example, DOE 2009d and 2012). Note that while both of these changes affected influent data, only the latter truly affected influent water quality; the change in sampling location did not represent an actual change in water quality, only where it was measured. For the trend calculations, results for both locations—SPPMM02 and SPIN—were grouped and evaluated as a single data set.

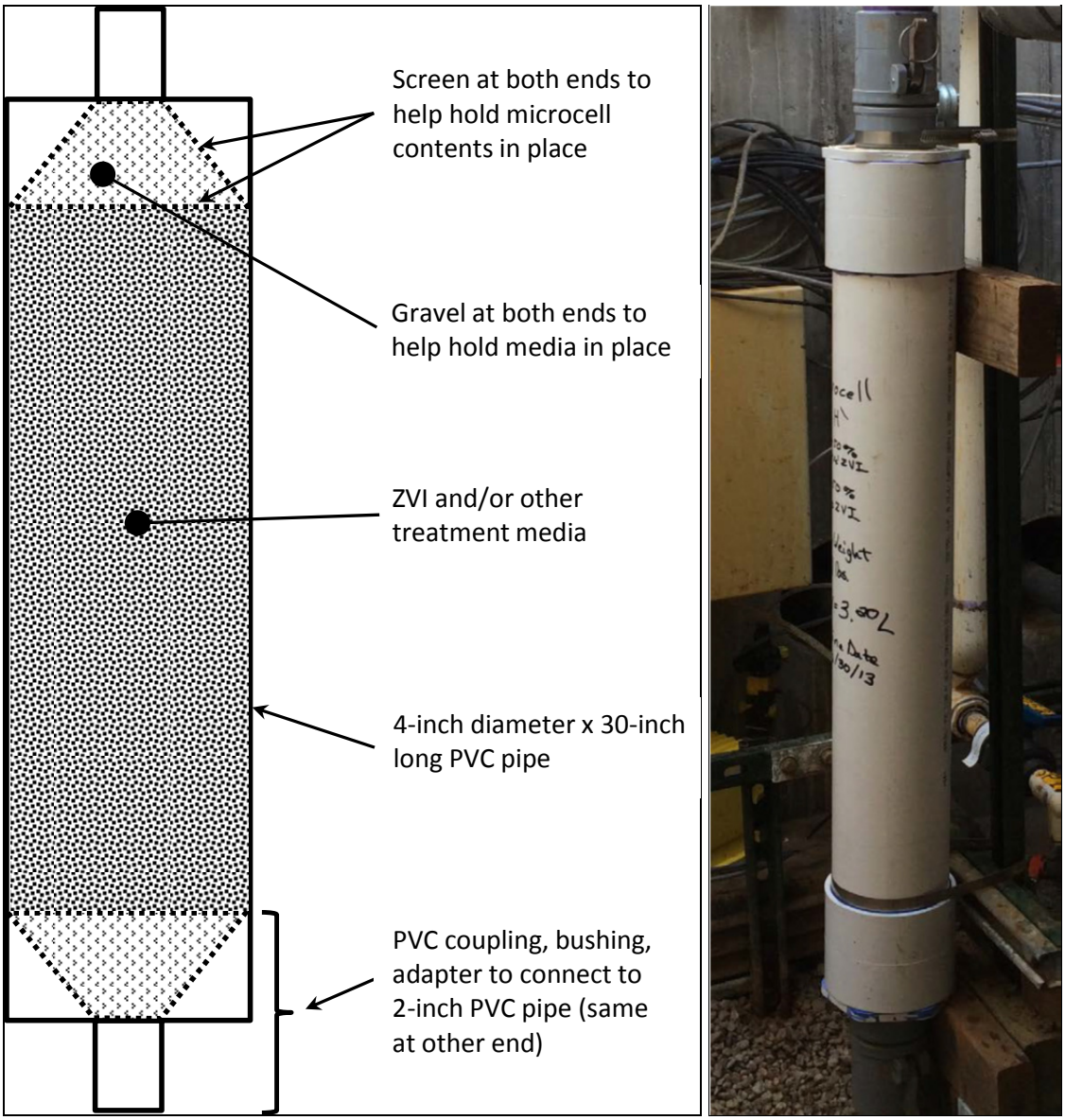
As summarized in Table 99, S-K trends calculated to have a 95 percent level of confidence over the entire period of record, January 2000 through the end of 2013, include increasing nitrate and uranium in SPPTS influent. Calculations based only on data collected after 2008, when the Phase I completions were completed, identified no trends of this level of significance, though an increasing trend in uranium is suggested at a lower statistical significance. Refer to Table 99 for summary information, and Appendix B for details and the trend plots.

**Uranium Microcell Testing and Development**

The 2012 Annual Report (DOE 2013b) introduced and described the topic of uranium treatment using microcells based on ZVI. These tests continued through 2013. The focus remained on ZVI but also included testing of steel wool as a uranium treatment media.

Tests in 2013 included ZVI of different grain size mixes and from different manufacturers. The steel wool was purchased at a local hardware store. Although steel wool-based treatment was not as effective as that using finer-grained ZVI, its ready availability and low cost represent significant advantages over the ZVI, which is not available locally and is expensive to ship.

The microcells tested in 2013 were relatively uniform in size compared to those tested in 2012 (DOE 2013b). All were generally on the order of 30 inches long by 4 inches in diameter. This size has been identified as appropriate, at least for testing and potentially in the final application. This is because when a microcell of these dimensions is filled with ZVI such as that being tested, it does not exceed 50 pounds total weight, including plumbing fittings. The 50-pound constraint is based on safety requirements limiting single-person lifts to that weight, since the desire is to enable a single person to manage microcell exchanges and maintenance. A generalized sketch and a photograph of a completed microcell are provided below in Figure 240.




**Notes:** Left portion shows general construction design, right portion is photograph of constructed microcell in installed position. In all 2013 tests, flow direction has been upward through the microcell.

*Figure 240. Overview of Microcell Design Components*

As summarized in the 2012 Annual Report (DOE 2013b), microcells incorporating a ZVI-based media have been found to be able to treat uranium adequately. As in that year, plumbing modifications needed to be implemented to address issues that occasionally interfered with uniform flow, caused clogging, interfered with automated sampling, or posed other (generally operational) difficulties. Maintaining desired flow rates through each microcell remains difficult using existing equipment because the gradual clogging of the ZVI reduces flow rates, thereby requiring operating at higher pressures in order to maintain a relatively uniform flow. Samples were submitted to the ESL for analysis. Although data from the ESL are not validated, occasional checks using split samples from locations such as SPIN and SPOUT that are sent to contract labs indicate ESL results are representative.

Microcells tested in 2013 ranged across several different, but similar, media types:

- ZVI of a single size range, such as -4/+8 mesh;
- Mixtures of ZVI and sand;
- Layers of ZVI representing different size distributions (e.g., alternating layers of coarser and finer ZVI, or half coarse and half fine ZVI);
- Straight steel wool;
- Layers of steel wool and one or two sizes of ZVI.

No ion-exchange resins were tested in 2013; based on results obtained from previous tests (DOE 2013b), further use of resins is not planned. Details on microcells tested in 2013 are summarized below in Table 111. In all cases, microcells operated in an upflow configuration.

*Table 111. Summary of Microcell Designs Tested in 2013*

| Microcell | Media and Grain Size Description | Start Date | Promising ? | Uranium Removed by Microcell (mg) |
|---|---|---|---|---|
| K | ZVI: 1:1 mix of -4/+8 and -4/ +70 | 1/9/2013 | No | 166 |
| L | ZVI: 3:1 mix of -4/+8 and -4/+70 | 2/4/2013 | No | 514 |
| M | ZVI: 1:1:1 mix of -4/+8, -4/+12, and -4/+70 | 2/15/2013 | No | 354 |
| N | ZVI: 1:1 mix of -4/+8 and -4/+70 | 3/4/2013 | No | 579 |
| O | ZVI: Bottom half -4/+8, upper half -8/+50 | 3/21/2013 | No | 572 |
| P | ZVI: 1:1 mix of -4/+8 and -4/+70 | 3/28/2013 | Yes | 1,164 |
| Q | ZVI: Alternating Layers (~3" per layer) of -4/+8 and -8/+50 | 4/11/2013 | No | 496 |
| R | ZVI: Bottom half -4/+8, upper half -8/+50 | 5/2/2013 | Yes | 1,894 |
| S | ZVI: Bottom half -4/+8, upper half -20/+60 | 5/16/2013 | Yes | 1,893 |
| T | ZVI: Bottom half -4/+8, upper half -20/+60 | 5/30/2013 | Yes | 1,421 |
| U | 1:1 mix of -20/+60 ZVI and general purpose sand | 6/12/2013 | Yes | 1,484 |
| V | 2:1 mix of -20/+60 ZVI and medium grade sand | 7/1/2013 | Uncertain | 564 |
| W | 1:1 mix of -20/+60 ZVI and medium grade commercial sand | 7/10/2013 | Uncertain | 71 |
| X | ZVI: 2:1 mix of -4/+8 and -20/+60 | 7/22/2013 | No | 443 |
| Y | 1:1 mix of -20/+60 ZVI and medium grade sand | 8/12/2013 | Yes | 618 |
| Z | 100% Grade #1 steel wool | 8/21/2013 | No | 422 |
| 2A | ZVI: -20/+60 | 9/3/2013 | Yes | 917 |
| 2B | -20/+60 ZVI and Grade #1 Steel Wool (alternating layers, 50% of each by volume) | 10/8/2013 | Uncertain | 1,169 |
| 2C | ZVI: -8/+50 | 10/21/2013 | Yes | 1,527 |
| 2D | -20/+60 ZVI and Grade #1 steel wool | 11/7/2013 | Uncertain | 325 |
| 2E | -20/+60 ZVI and Grade #1 steel wool | 11/20/2013 | Yes | 1,223 |
| 2F | -8/+50 ZVI and Grade #3 (coarse) steel wool | 12/2/2013 | Uncertain | 468 |
| 2G | Grade #3 (coarse) steel wool and -8/+50 ZVI | 12/12/2013 | Uncertain | 600 |

**Notes:** Estimates of uranium removed by each microcell are based on measured flow rates over period of operation and uranium analytical data for samples collected periodically and analyzed by the Environmental Sciences Laboratory in Grand Junction, CO. Microcells were all oriented vertically, so references to "bottom" and "top" pertain to the vertical orientation. Standard US Mesh sizes are provided; ZVI mesh sizes were not tested but are listed as reported by vendors. "Grade #1" and "Grade #3" steel wool manufactured by Rhondes American.

As stated above, the ZVI-based microcells exhibit the same passivation—fouling with mineral precipitates, including "rust" (iron oxides and oxyhydroxides) and carbonates, as well as nitrate-related oxidation—that larger-volume tanks of ZVI-based treatment media suffers. And, while using coarser ZVI reduces the potential for fouling, the coarser media also provides reduced U treatment because of its decreased surface area available for contact with the water. Testing continues to define a more optimal balance between such variables as ZVI grain size, influent flow rate, influent water pressures (as the ZVI clogs), and degree and duration of U treatment. Other aspects are also necessarily considered and are being tested, most notably identifying suitable, cost-effective, reusable plumbing components and microcell materials of construction. Therefore, the typical 4 inch by 30 inch microcell size (which constrains ZVI volume and mass) remains subject to change. The number of microcells operating to treat the full influent flow will be determined by these other aspects.

The general procedure followed in a microcell test is to build and fill the microcell, place it online, and perform a pressure test to check for leaks of the microcell. Assuming no leaks, the next step is to adjust SPIN flows and certain valves to achieve a flow rate through the microcell that is typically in the 0.4–0.8 gpm range, which is roughly equivalent to one third to one half the total flow from SPIN. (Due to diurnal variations in power that are related to the solar/battery power facility, the pump flow rates vary over the course of each 24-hour period regardless of settings. Microcell flow settings were made with this in mind, but often needed adjustment within a day or so to achieve a more appropriate flow rate for the test.) Grab samples of effluent and SPIN water (or effluent from the Phase II cell, since this forms the influent to the microcell) may be collected within a few minutes after uniform flow through the microcell was confirmed. An automated sampler is set to collect a 700 mL sample every 12 to 24 hours at a given time. As flow rates and pressures are transmitted via telemetry, these data are checked frequently from the office, and whenever staff are present at the SPPTS the microcell and other components are visually inspected. Water pressures in the line feeding the microcell increase and those flows decrease fairly rapidly; as necessary, adjustments are made by increasing SPIN flows and/or adjusting the valves. The automatically-collected samples are retrieved every few days and shipped to the ESL for analysis. The microcell test is considered complete when pressures are too high (corresponding to flows through the microcell being lower than desired) or microcell effluent concentrations indicate the unit is no longer treating acceptably. This generally occurs after about 1 to 2 weeks of operation.

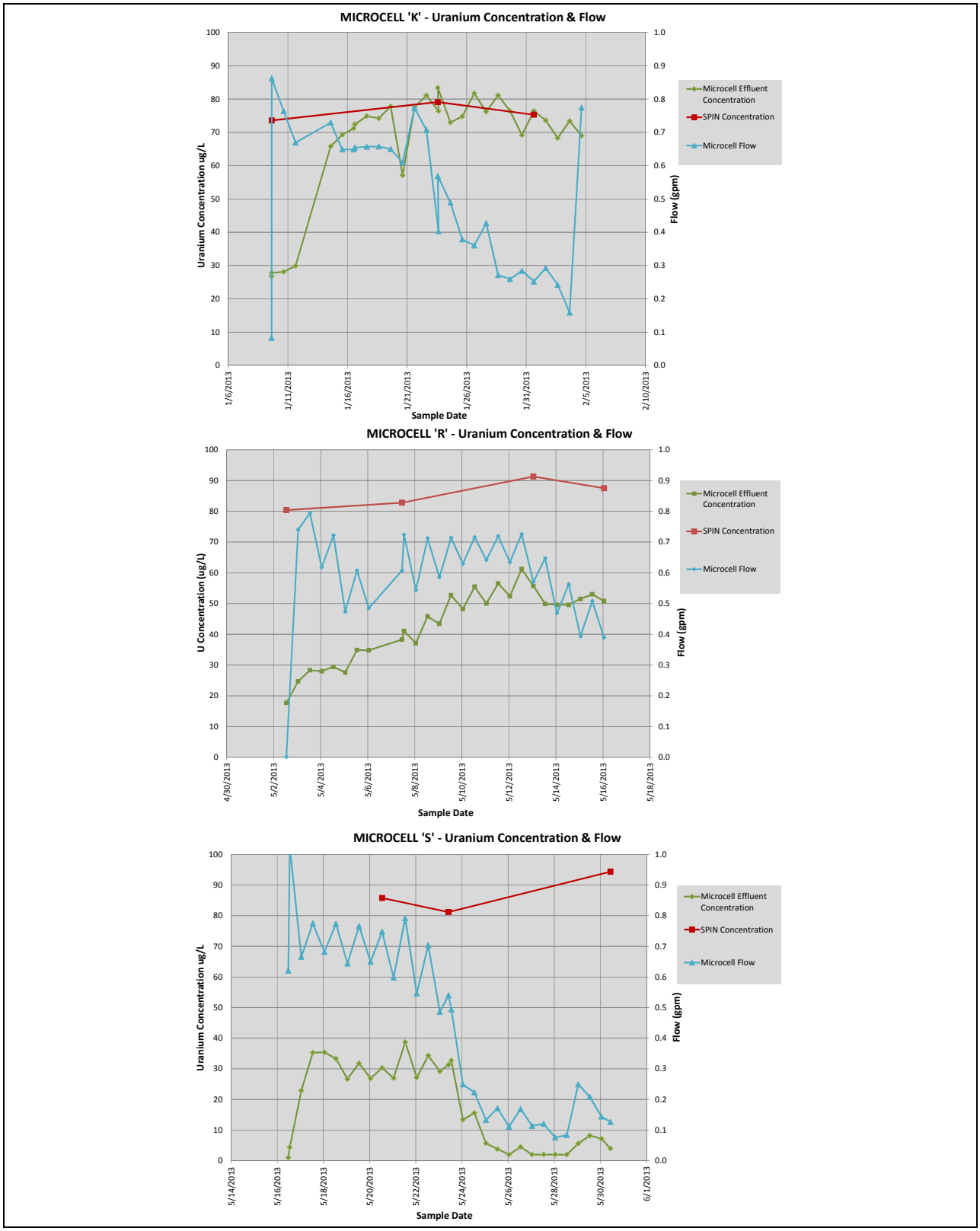
Results of these tests, together with operational considerations and observations made during construction, operation, and "autopsy" of spent microcells, were used to inform subsequent test designs. With respect to treatment performance, repeatability was elusive: When the design of a microcell that had produced favorable results was duplicated, similar uranium removal and flow conditions were generally not obtained. This was often attributable to operational issues such as different flow rates, and occasionally to unexpected difficulties such as power failures (e.g., due to rising water levels in the vaults triggering the automatic shut-off). However, some general observations are as follows. Better treatment is provided by finer-grained ZVI; however, this material clogs relatively quickly. In fact, in some cases autopsies of a clogged microcell loaded with fine-grained ZVI found relatively fresh ZVI in its upper (downstream) portion, indicating that portion of the material had not been used effectively. Sand can be mixed with the ZVI to help reduce clogging and improve flow characteristics, but also reduces media surface area and therefore overall treatment. Coarse ZVI was tested both for its effectiveness alone, and as a more porous "conditioning" material that might act to reduce dissolved ions and DO enough to allow

the downstream finer ZVI to treat uranium without becoming clogged or passivated as quickly. Tests were conducted using steel wool for the same objectives.

Every microcell tested removed some amount of U, though some performed more effectively than others. Estimates of total U removed are provided above in Table 111. Reasons for the obvious variations in treatment effectiveness can include one or, more likely, a mix of the following: overall system performance (e.g., variations in SPIN pump flow rates, valve settings, variations in electrical power from full-sun daytime to nighttime) as well ZVI packing (tight or loose), ZVI mesh size, whether the fill represents settled fines from the given mesh or a representative mix of the stated mesh sizes, degree of media clogging and oxidation (which increases with time), variations in pore volumes, variations in influent concentrations of U/nitrate/DO/major ions, impurities in the ZVI (such as dust, trace metals), and other factors. Several aspects are considered when determining if a microcell was "promising" (Table 111) and warrants further testing and development, such as amount of U removed, duration of operation, and flow rates during operation. Microcells R and S performed comparatively well, each removing almost 1,900 mg of U (based on data from the ESL). Both remained operational for almost 14 days with reasonably high flow rates. In contrast, microcell K did not perform as well, removing only about 498 mg of U over an 8-day time period.

Figure 241 provides time-series plots showing influent and effluent uranium concentrations along with corresponding influent flow rates for example microcells. These include three examples listed above: microcells K, R, and S. These latter two are of similar design (Table 111), with only the top layer (finer ZVI) varying. The mesh size in this top layer differs slightly, as does the source of the material (the vendor). Getting the same mesh size from each vendor would require special-order sieving, so the closest mesh readily available was used.

As 2013 ended, tests of microcells using a thick layer of coarser ZVI on the bottom and a second layer of finer ZVI at the top (again, with microcells operating in upflow) were being repeated. These were selected for repeated testing for three main reasons: they are easy to construct, their performance has proven promising, and repeatable microcell treatment performance is desired. Tests will continue in 2014, and further discussion and data will be provided in the 2014 Annual Report.




**Notes:** Top: Microcell K; middle: Microcell R; bottom: Microcell S. In all 2013 tests, flow direction has been upward through the microcell. Refer to text and Table 111 for details. Analytical data from ESL, flow data from meter attached to microcell influent line. Some data may be qualified but are not shown differently for simplicity.

*Figure 241. Example Microcell Uranium Treatment Performance Charts*

**Phase III Pilot Studies: New Focus on Lagoon Treatment**

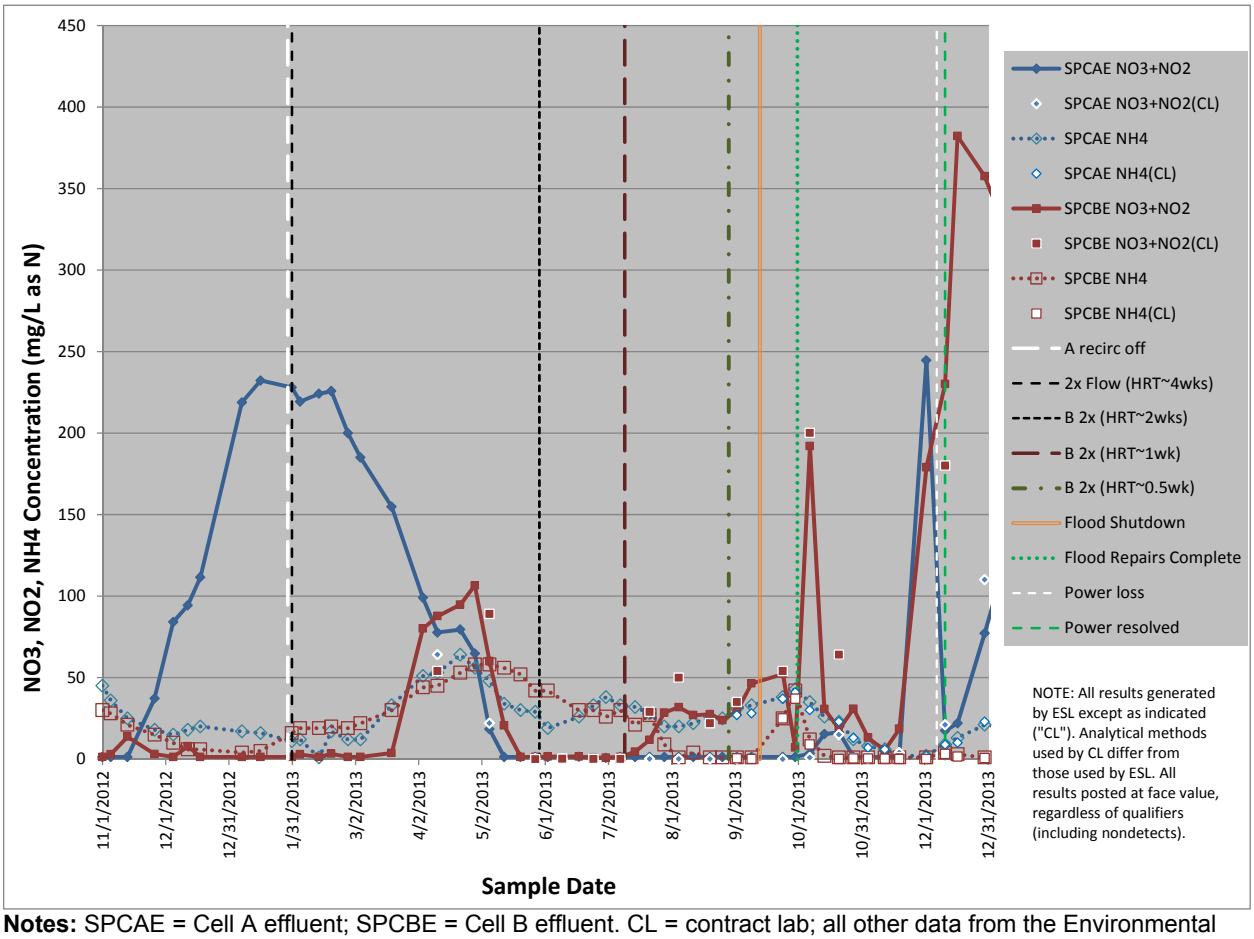
The 2012 Annual Report (DOE 2013b) summarized the design, performance, and results of bench-scale lagoon tests. These successes led to the design of pilot-scale lagoons in Phase III Cells A and B, which began operating on November 1, 2012 (DOE 2013b). (Note that although these studies could be referred to as "phase two" of the Phase III pilot studies, such nomenclature would be too confusing. Instead, the current studies are simply referred to as the Phase III tests and, where necessary, are distinguished from the previous tests by including clarifying terms such as "lagoons".)

Initially, both pilot lagoons were operating at the same flow rate. This flow rate was based on an estimated hydraulic residence time (HRT) within the original concrete structure if its entire volume—i.e., including original treatment Cells 1 and 2 and the volume currently occupied by the associated overburden—was converted to a single lagoon. These calculations and assumptions are provided in the 2012 Annual Report (DOE 2013b), and led to estimation of an average residence time within such a lagoon of about 50 days. That is, untreated water would enter this lagoon and remain for about 50 days before leaving as effluent. As noted in that report, the lagoon approach was pursued because not only does it have a successful long-term record of water treatment dating back thousands of years (Montana Water Center 2005), but it should require minimal maintenance to achieve effective and reliable treatment. In particular, the lagoon approach avoids a prime challenge of the initial Phase III pilot-scale studies: biomass-related clogging and the related, extensive maintenance requirements. It also avoids the need to excavate and replace treatment media, as would be the case using the current Cell 1 media or similar organic material.

To achieve an HRT of 50 days within the pilot-scale cells required a flow rate of about 0.017 gpm (a little over 1 gallon per hour) through each cell. Equipment to maintain such a low flow rate uniformly was not readily available, so the flow was delivered in pulses. Flow entering each cell is first dosed with the liquid carbon nutrient solution. This solution is marketed as MicroCg, but has custom-added phosphorus, the need for and concentrations of which are based on treatability studies performed in previous years (DOE 2010b, 2011c); the product is manufactured by Environmental Operating Systems. (Note that this report does not recommend any particular product, vendor, or manufacturer; the preceding information is only provided for completeness.) The dosed influent then enters the bottom of each cell and gradually moves through the cell to exit at the top.

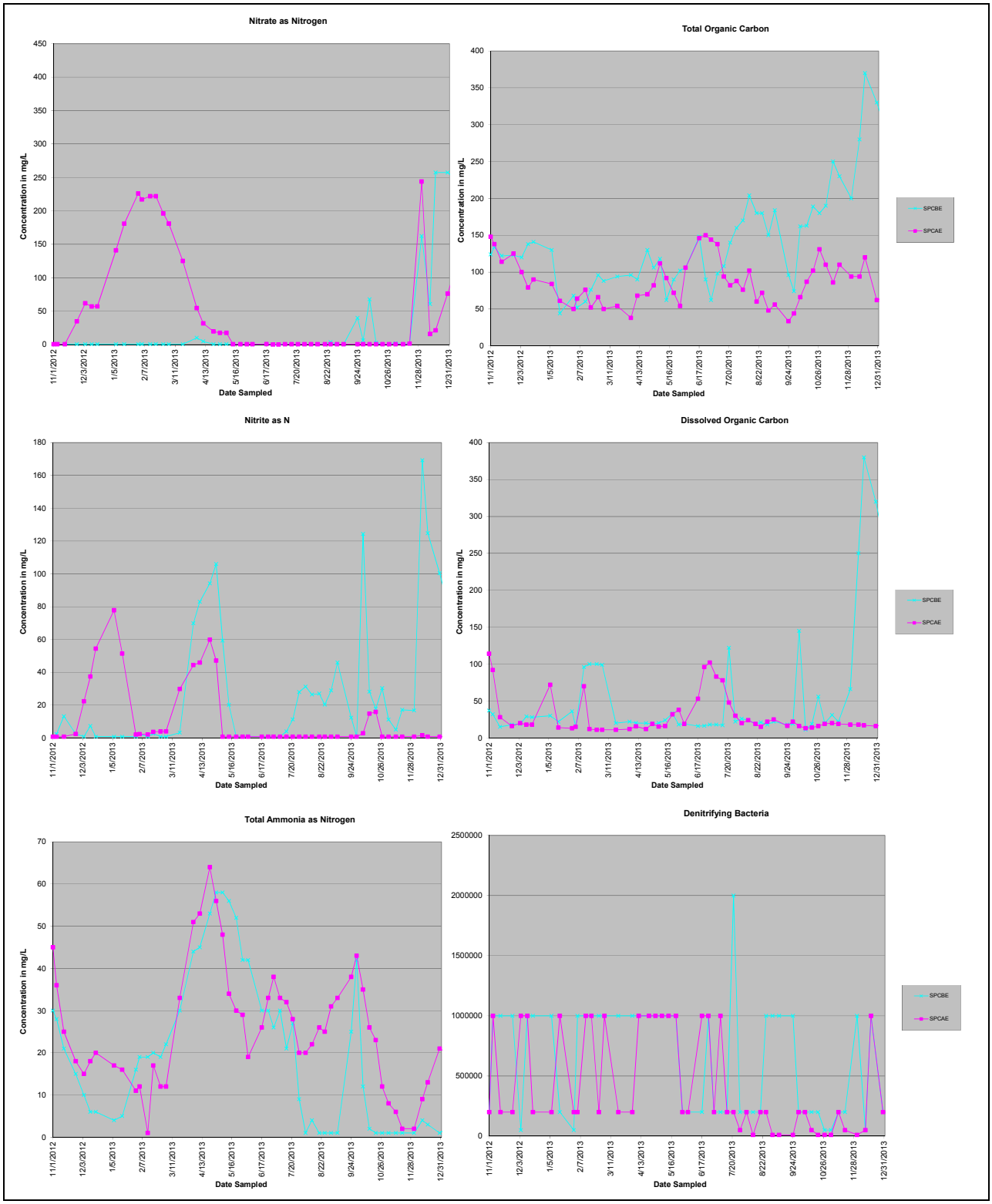
Flow rates at the start of 2013—after 2 months of operation—were still designed to result in a roughly 50-day HRT. The only difference between how the two cells were operating was Cell A incorporated a recirculation pump and Cell B did not. (Although the pump rate of this recirculation pump was not confirmed, it was rated at 3 gpm.) This pump operated continuously, taking water from near the surface of Cell A and pumping it back to the bottom of the cell. This pump malfunctioned on January 29, 2013. Based on sample data obtained over the three months from the start of the lagoon tests through that date, there was no advantage to recirculating the water; in fact, Cell A did not treat nitrate as well as the more stagnant Cell B. This is clearly visible on the combined chart of nitrogen constituents and significant events shown below as Figure 242. Therefore, after the pump malfunctioned, it was removed and not replaced.

In addition to the chart showing combined features (Figure 242), several charts are included that focus on individual nitrogen-containing constituents and other parameters of interest, including nitrate as N, nitrite as N, ammonia as N, total organic carbon (TOC), dissolved organic carbon (DOC), and a rough measure of the denitrifying bacterial population. These charts are grouped together and provided below as Figure 243. (**Note:** Most of the data presented in Figure 242 and all of that in Figure 243 are generated by the ESL in Grand Junction. This laboratory is operated for the DOE and results cannot be validated. However, instrumentation and analytical methods used are sound, and the data for nitrogen constituents are occasionally checked by submitting split samples to EPA-certified contract laboratories, as shown on Figure 242.)




**Notes:** SPCAE = Cell A effluent; SPCBE = Cell B effluent. CL = contract lab; all other data from the Environmental Sciences Laboratory (ESL) in Grand Junction, CO. Data for NO3+NO2 from ESL are plotted as arithmetic sums of the individual concentrations. Events related to Cell A are summarized in legend as "A," in Cell B are summarized as "B"; for example, "A recirc off" indicates the date on which the Cell A recirculation pump failed. HRT = hydraulic residence time; changes are shown as "2x" indicating doubling of flow, or halving of HRT, the result of which is listed in approximate number of weeks. Events related to September floods are as indicated. Power loss late in 2013 is due to snow-covered solar panels. Some data are qualified but are not displayed differently for simplicity.

*Figure 242. Overall Treatment Performance of SPPTS Phase III Pilot-Scale Lagoons*




**Notes:** SPCAE = Cell A effluent; SPCBE = Cell B effluent. All data from the Environmental Sciences Laboratory (ESL) in Grand Junction, CO. Units for denitrifying bacteria are colony-forming units per milliliter (CFU/mL). Some data are qualified—including as nondetects—but are not displayed differently for simplicity.

*Figure 243. Charts of Various Parameters in SPPTS Phase III Lagoons*

The first operational change made following failure of the recirculation pump was to double the flow rate to each cell. This change was made on January 31, 2013. Cell A, which was not treating nitrate effectively at this time (Figure 242, Figure 243), presumably due to the recirculation that had been a constant until January 29, continued to treat worse than Cell B. While Cell B continued to treat nitrate very well, Cell A struggled in the winter months of early 2013. Concentrations of nitrite (Figure 243) in Cell A improved with the end of recirculating flow, and remained low in Cell B. Concentrations of ammonia, however, increased in both cells in response to this first flow increase, and concentrations of TOC and DOC increased somewhat in effluent from Cell B. Although the analytical test used is not particularly sensitive, a drop in bacterial populations is suggested, particularly at Cell B. This could indicate that stresses on the population were leading to corresponding reductions in carbon consumption, as well as increases in nitrite and ammonia. The same TOC and DOC patterns are not as apparent in Cell A. Data on the microbial counts are erratic for this period in both cells.

As is evident on Figure 242 and Figure 243, treatment in Cell A gradually improved through the spring, and by mid-May both cells were treating nitrate and nitrite very effectively. This is attributed to the cessation of recirculation in Cell A, as well as the warmer weather. A cold spell in March/April appears to coincide with reduced treatment performance in both cells (Figure 243), though if only combined nitrate plus nitrite are considered (Figure 242) the impact appears to focus most on Cell B. Note, however, that ammonia concentrations remained high for several months despite the onset of warmer weather.

Both cells were treating nitrate and nitrite very well by mid- to late-May, and on May 30 the flow to Cell B was doubled again; the resulting flow was about 80 gallons per day (gpd). Flow to Cell A was not changed: this cell would act as a control against which the performance of Cell B could be compared. At this point, the HRT in Cell A was still about 4 weeks, while that in Cell B was about 2 weeks. Nitrate plus nitrite treatment in both cells remained excellent (Figure 242) following this adjustment; despite the shorter HRT, Cell B effluent concentrations of these constituents did not increase. TOC data (Figure 243) suggest an increase in concentrations, but again from both cells even though Cell A flows were not adjusted. Similarly, concentrations of ammonia increased slightly in Cell A, while appearing minimally affected by changes in flow rates in Cell B—instead, here ammonia treatment continued to improve despite this flow increase.

The flow rate to Cell B was again doubled on July 10, 2013; now, the flow was approximately 160 gpd (HRT about 1 week), while Cell A remained at 40 gpd (HRT about 4 weeks). As seen on Figure 243, nitrate treatment continued unaffected but this change did appear to disturb nitrite treatment in Cell B. Effluent concentrations of nitrite from Cell B increased to around 30 mg/L as N. Ammonia treatment, however, continued to improve. Performance in Cell A was not affected: this change in flow rates focused only on Cell B. Concentrations of TOC in Cell B effluent increased following this change, and concentrations of DOC also were high in a single sample in late July.

Although concentrations of nitrate and nitrite remained higher than desired, because they were stable in Cell B effluent another doubling of the flow rate was made on August 29, 2013 (Figure 242). The targeted flow rate to Cell B was now about 320 gpd, for a HRT of roughly 3.5 days. As shown on this figure and on Figure 243, Cell B treatment remained very good, with a relatively small increase in effluent concentrations of nitrite. However, before treatment

conditions could stabilize, the heavy rains of September caused groundwater levels to rise to the point that the automated shutoff switch within the main SPPTS vault cut off the power to the SPIN pump and other electrical components. (This is a safety measure intended to reduce potential environmental impacts should system components within this vault leak.)

For the next several weeks, various components of the system underwent repairs, calibrations, and cleaning in response to the flooding. The pilot-scale lagoons received flow infrequently for parts of this period. This meant that they also received reduced levels of nitrate and nutrients (the liquid carbon with added phosphorus). Treatment levels were disrupted by these conditions. In November the cold weather and power failures related to snow-covered solar panels again disrupted operations. Although operations quickly resumed, stabilized treatment effectiveness did not (Figure 242). The rough gauge of bacterial populations (Figure 243) suggests conditions in both pilot-scale lagoons were stressful, and concentrations of TOC in cell effluent, particularly from Cell B (where DOC was also increasing in the effluent), were elevated.

Following a short period around Thanksgiving 2013 in which concentrations of each of the nitrogen constituents was being removed effectively, treatment effectiveness decreased.

As the year ended, system operations were back to normal but treatment was not at its desired level. As was hypothesized for 2012, this may again be attributed to colder winter temperatures—although the groundwater temperature is minimally affected, when water is held nearly stagnant in a minimally-insulated concrete tank with a metal lid, the temperatures have been observed to drop fairly rapidly. The water in the cells does not freeze, but it does get colder than is optimal for the denitrifying bacteria.

One maintenance activity that was planned but was postponed due to competing priorities was removal of any sludge that may have accumulated in the bottom of the two lagoons. A buildup of biomass can contribute to generation of ammonia and worsening conditions within a lagoon. This activity was put on hold and will likely be conducted in 2014 to assess its effectiveness as well as its level of difficulty and appropriate methods. Periodic sludge removal is anticipated to be necessary to maintain the treatment effectiveness in a full-scale lagoon.

Operation of the pilot-scale lagoons will continue and maintenance needs will continue to be assessed. Other tests may also be identified to support conceptualization and design of a full-scale nitrate treatment lagoon facility. For example, it would be good to test whether effective treatment, at least in the warmer periods, might be accomplished at a lower nutrient dose rate.

The SPPTS continues to operate to remove U and nitrate from system influent. As 2013 came to an end, new designs of ZVI-based microcells were being developed and a better understanding of the range of flows a lagoon could accommodate was becoming clear.

The SPPTS and its role in the protection of North Walnut Creek water quality also continued to be studied through 2013, with a focused geochemistry evaluation underway to develop a better understanding of the larger scale uranium behavior and how this may be affected by various geochemical constituents and conditions. This evaluation will be documented in a report to be issued in the fall of 2014.

### *Other Plumes*

Other groundwater contaminant plumes at Rocky Flats were also monitored during 2013. In accordance with RFLMA, contaminant source areas (as represented by Evaluation wells) were not scheduled for routine monitoring in 2013, but downgradient contaminant migration pathways (represented by Sentinel and AOC wells) were monitored. As noted in previous sections, however, several Evaluation wells were sampled, in some cases more than once, to assess effects of higher precipitation in 2013.

This section presents a summary discussion of data collected in 2013 from wells monitoring several plumes and areas of interest. These include source and/or distal locations for the 903 Pad/Ryan's Pit Plume, the collection of small plumes collectively referred to as the IA Plume, the VC Plume (or OBP #1 Plume) located south of the former Building 371 (B371) complex, the IHSS 118.1 Plume (also called the Carbon Tetrachloride Plume) located between former Building 776 and B771, the PU&D Yard Plume, and other locations of special interest.

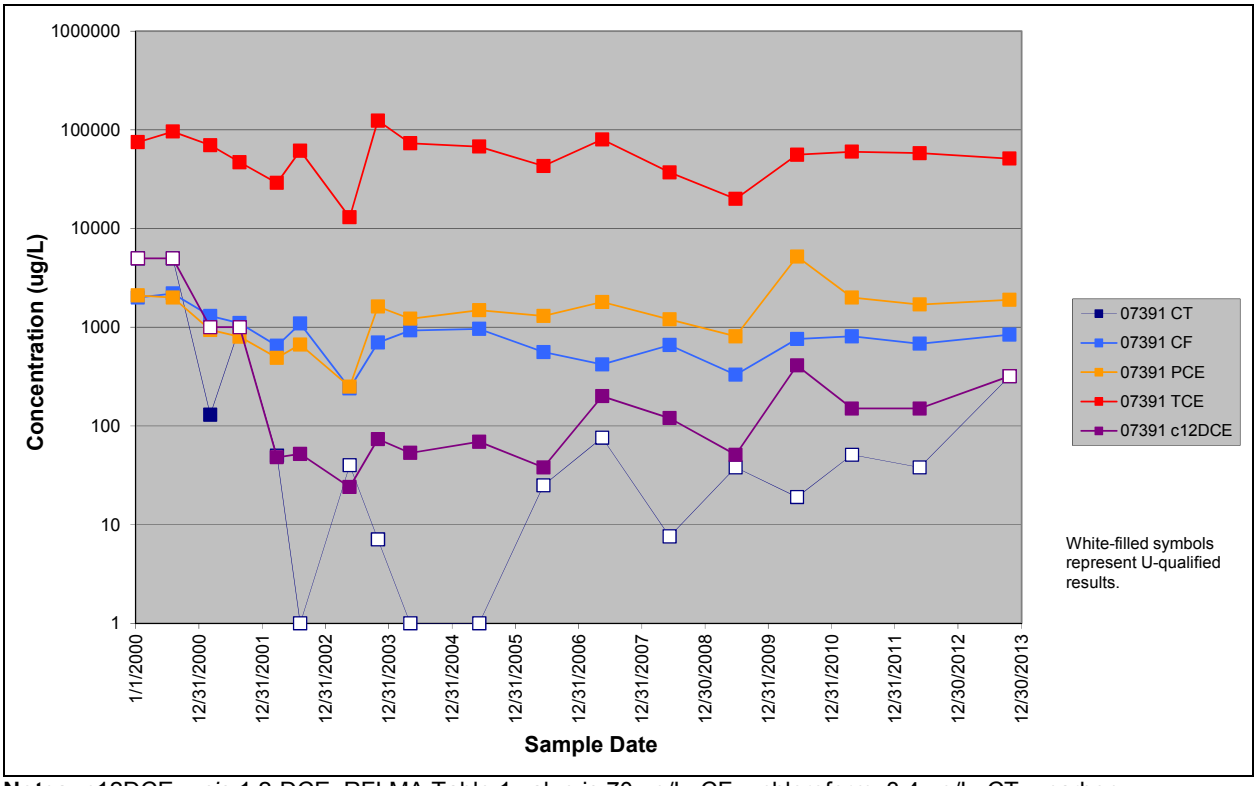
#### *903 Pad/Ryan's Pit Plume*

Of the Evaluation wells monitoring the 903 Pad/Ryan's Pit Plume, only the Ryan's Pit source-area Evaluation well was sampled in 2013. All Sentinel and AOC wells were sampled in 2013. The Sentinel and AOC wells were sampled twice, in May and October. The Evaluation well was sampled in October to observe for possible effects from the anomalously high precipitation in September. Evaluation wells that were not sampled in 2013 but which support monitoring of this plume include 903 Pad source-area well 00191 and hillside wells 50299, 00491, 90402, and 90804.

Analytical results in samples collected in 2013 from this area were generally consistent with previous data. Source-area well 07391, located just south of former Ryan's Pit, continued to produce samples with the highest overall concentrations of contaminants. Concentrations of TCE from well 07391 are consistently reported at much higher concentrations (typically 1 to 2 orders of magnitude) than any other VOCs (Figure 244). Although carbon tetrachloride is a primary constituent at the adjacent 903 Pad and is the parent compound for chloroform, it continues to be undetected in samples from Ryan's Pit well 07391 while chloroform is detected at elevated concentrations. Chloroform was also used in the production era at Rocky Flats (ChemRisk 1992), which explains why it might occur without detectable levels of carbon tetrachloride at Ryan's Pit.

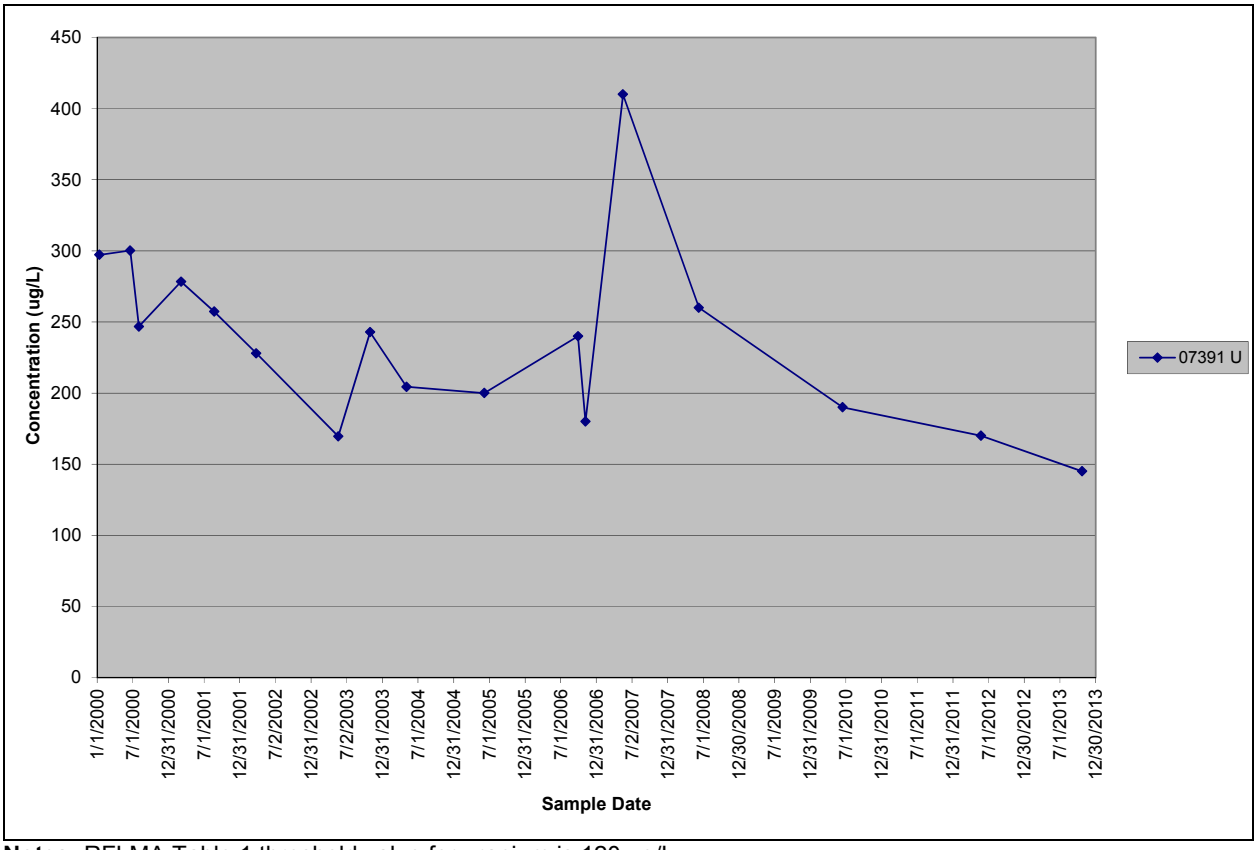
The concentrations of the constituents illustrated in Figure 244 for well 07391 all appear to follow a similar pattern of increases and decreases. While the same is true for constituents in 903 Pad source-area Evaluation well 00191 (DOE 2013b), an inverse relationship between these two wells has been previously suggested (DOE 2012): during periods when concentrations of a constituent in the 903 Pad well increase, they tend to show a decrease in the Ryan's Pit well. One factor that has been proposed relates to removal of the 903 Pad asphalt surface and some of the subsurface residual source material, combined with the effects of direct precipitation recharge and/or increased evapotranspiration that would have been a result of the asphalt removal. As all Evaluation wells will be scheduled for sampling in 2014, the corresponding annual report will revisit this topic.

Electron donor material was applied to the subsurface in both source areas shortly prior to Site closure (K-H 2005d, DOE 2006d). However, no strong decreases in parent products or corresponding increases in daughter products is evident. A mild increase in *cis*-1,2-DCE is visually apparent in Ryan's Pit source-area well 07391 since 2002 (Figure 244), and in fact an increasing trend in this constituent is confirmed to be present at the 95 percent level of statistical significance. (Note that this trend may be affected by the first four data points being nondetects at very high detection limits; these results were replaced with values of 0.001 before performing the statistical calculations.) Also calculated is a decreasing trend in chloroform, which is not as clear on this figure. One other trend of this significance is calculated for this well, a decreasing trend in the concentrations of uranium, despite results for uranium having varied substantially, as shown on Figure 245.




**Notes:** c12DCE = *cis*-1,2-DCE, RFLMA Table 1 value is 70 µg/L; CF = chloroform, 3.4 µg/L; CT = carbon tetrachloride, 1 µg/L; PCE, 5 µg/L; TCE, 2.5 µg/L. Several detections are qualified but for simplicity are not shown differently. Note logarithmic concentration scale.

*Figure 244. Primary VOCs in Ryan's Pit Plume Source Area Well 07391*



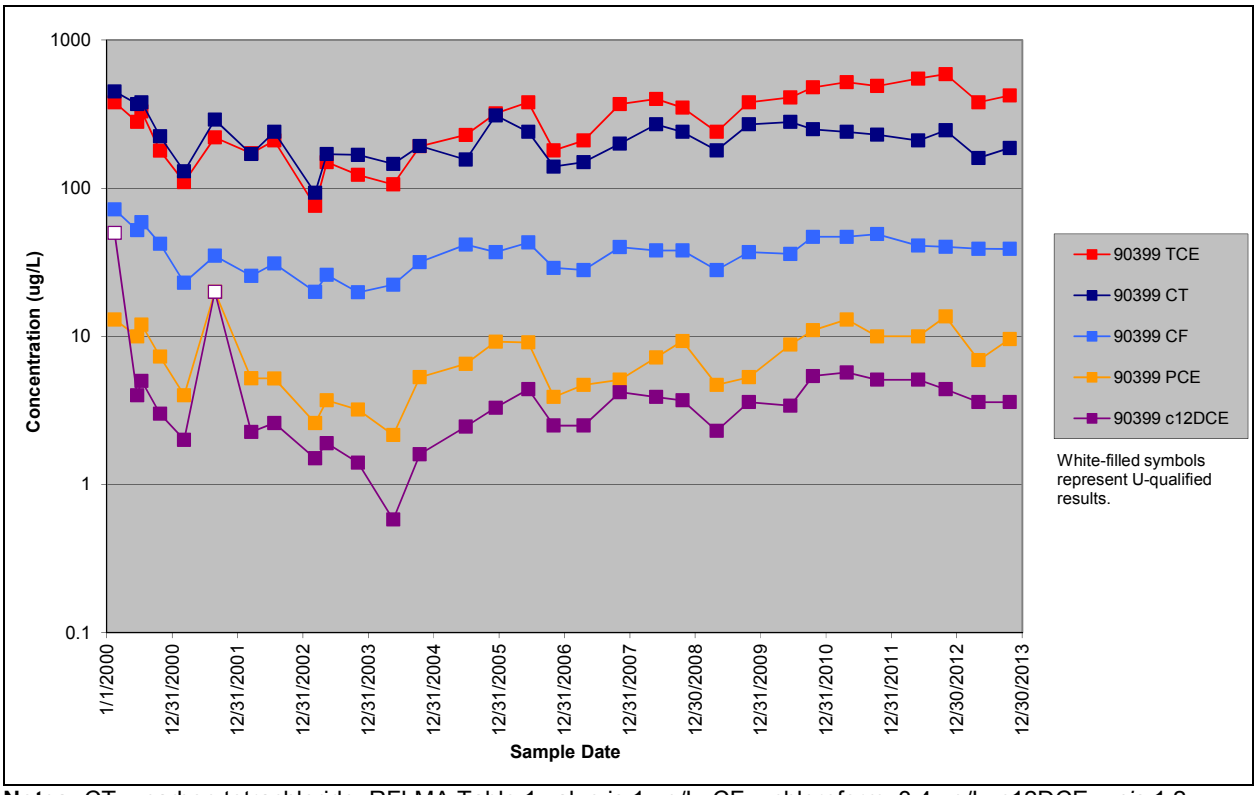

**Notes:** RFLMA Table 1 threshold value for uranium is 120 µg/L.

*Figure 245.Concentrations of Uranium at Ryan's Pit Evaluation Well 07391*

Sentinel wells that monitor this plume at locations farther downgradient from the source areas include wells 90399 and 90299, both of which are near the valley bottom, adjacent to the north side of the SID. Although near each other and similarly constructed, well 90399 produces water reliably and 90299 often is dry. Well 90299 produced samples following the relatively most spring of 2010, but was dry in both the second and fourth quarters of 2013 when it was visited for sampling.

Figure 246 provides time-series plots of several constituents in Sentinel well 90399. (Well 90299 is not included because of the lack of new data; see DOE 2013b for results through the end of 2012.) Included are the primary contaminants from the 903 Pad and Ryan's Pit source areas (carbon tetrachloride and TCE, respectively). Well 90399 continues to report concentrations of contaminants that exceed those at some wells nearer the source areas. The concentrations of TCE reported in samples from well 90399 are typically second in this area only to those reported at source-area well 07391. Concentrations of carbon tetrachloride in well 90399 have consistently been higher than in the 903 Pad source area well 00191 (which was not sampled in 2013), and concentrations of chloroform are in the same range as source-area well 07391. Concentrations of TCE and carbon tetrachloride at well 90399, once present in fairly equivalent concentrations, have continued to diverge. Concentrations of TCE are now significantly higher than those of carbon tetrachloride (Figure 246). Results reported for samples collected in 2013 show both of these constituents at concentrations that are slightly lower than they were in 2012. Whether the gradual, apparent increase in TCE and relatively flat carbon tetrachloride concentrations continue

will require additional data to confirm, but it is fairly clear that active biodegradation of these VOCs is not occurring at a meaningful level at this location.




**Notes:** CT = carbon tetrachloride, RFLMA Table 1 value is 1 µg/L; CF = chloroform, 3.4 µg/L; c12DCE = *cis*-1,2-DCE, 70 µg/L; PCE, 5 µg/L; TCE, 2.5 µg/L. Several detections are qualified but for simplicity are not shown differently. Note logarithmic concentration scale.

*Figure 246. Primary VOCs in 903 Pad/Ryan's Pit Plume Sentinel Well 90399*

Additional data will also be needed to evaluate whether the heavy rains of September will have any marked effect on contaminant behavior at this location and others on the 903 Pad hillside. Previous studies indicating the presence of a bedrock paleoridge between the 903 Pad source area and the wells farther down the hillside (EG&G 1995b) have suggested that only during periods of high water is groundwater from the 903 Pad area able to "spill over" and migrate down this south-facing hillside. The extremely heavy September 2013 rains, which resulted in significant recharge across the site, could have activated this migration pathway, in which case 903 Pad waters might flush through this hillside in the coming years. The Evaluation wells on this hillside are scheduled for sampling in 2014 and succeeding even-numbered years, and the corresponding analytical data will be evaluated for such a signal.

Several constituents are calculated to have trends of 95 percent statistical significance at well 90399. These include increasing trends in *cis*-1,2-DCE, PCE, and TCE. An increasing trend is also calculated for 1,1-DCE, but at a lower statistical significance. Refer to Appendix B for results of statistical trending and the associated trend plots.

AOC well 10304, which is located on the northern bank of and along the 903 Pad/Ryan's Pit Plume flow path to Woman Creek, directly south of Sentinel well 90399, was also sampled twice

in 2013 per the RFLMA. No VOCs were detected here in 2013. Nitrate was detected in the sample collected in May (estimated at 0.046 mg/L; RFLMA value is 10 mg/L) and was not detected in the October sample. Concentrations of U were 14 µg/L in the May sample and 22.6 µg/L in the October sample (RFLMA threshold is 120 µg/L).

AOC well 00193, located at the mouth of Pond C-2, also supports the monitoring of the 903 Pad/Ryan's Pit Plume. This well was also sampled in May and October 2013. One VOC was detected in the May sample: 1,3-dichlorobenzene was reported at an estimated concentration of 0.18 µg/L (RFLMA value is 94 µg/L). Concentrations of U were reported at 70 µg/L and 74.3 µg/L, respectively. This is consistent with previous data from this well, which has been characterized as producing samples with 99.2 percent to 100 percent natural U.

*IA Plume*

The IA Plume (named for the former Industrial Area) is actually a collection of several small VOC plumes grouped together for convenience and, in some cases, because of uncertainties regarding specific sources. This discussion addresses the IA Plume in terms of three loosely defined segments: the south, central, and north IA Plumes.

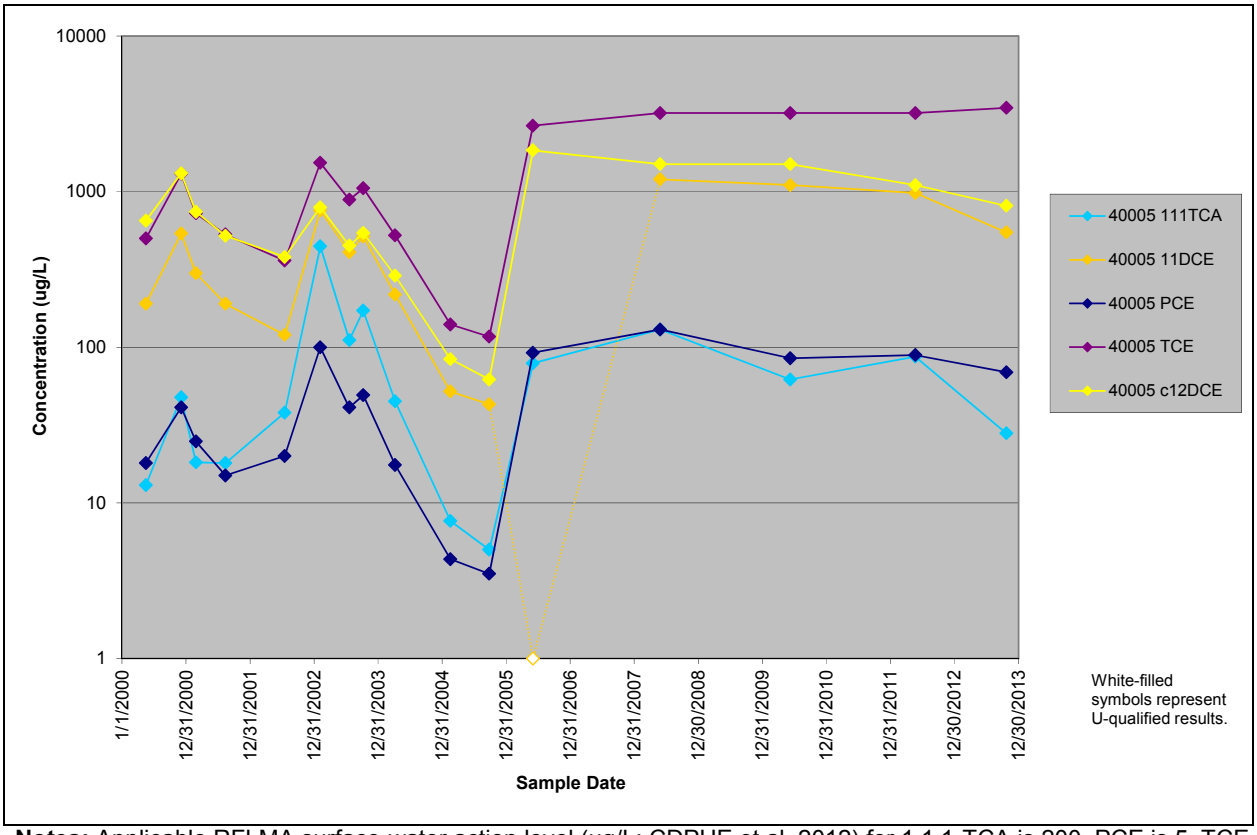
In accordance with RFLMA, none of the Evaluation wells were scheduled for routine sampling in 2013, although several were sampled to evaluate the effects of increased moisture in 2013 vs. the previous sampling event in 2012. The AOC and Sentinel wells were sampled twice.

The pathway to surface water for the southern portion of the IA Plume is monitored by AOC well 11104, which was sampled in May and November 2013. One confirmed VOC detection was reported in 2013: methylene chloride at an estimated concentration of 2.27 µg/L (RFLMA value is 4.6 µg/L). This is a common laboratory contaminant, but was not qualified as blank-contaminated. This represents the first and only confirmed detection of methylene chloride to date at this well. Concentrations of U, samples for which are collected to support monitoring of the OLF and former B444, continue to be well below the U threshold of 120 µg/L; results in 2013 were 22 µg/L and 27.7 µg/L, respectively, both of which are well within the historic range at this location.

Upgradient of AOC well 11104, wells monitoring the south IA Plume include Evaluation wells 40005, 40205, P419689, and P416889, and Sentinel wells 11502 and 40305. Of these Evaluation wells, only 40005 was sampled in 2013; this well was sampled in October to investigate for any immediate effects on VOC concentrations from the heavy rains of September.

Analytical results from the wells sampled in 2013 are consistent with past data. As in previous years, concentrations of VOCs are highest at Evaluation well 40005, located between former B444 (on the east) and B460 (on the west). Historic aspects of the area monitored by this well have been previously described (see discussion on the original well, 40099, in Safe Sites 2002) and may explain the presence of these constituents. As illustrated in Figure 247, concentrations of the primary VOCs detected at this location varied widely prior to site closure, but since then have been more uniform. In fact, concentrations of TCE at this location was reported at 3,200 µg/L in every sample collected from 2008 through 2012, but in 2013 the result was 3,450 µg/L. TCE concentrations here exceed those of PCE by well over an order of magnitude (PCE was reported at 69 µg/L in the October 2013 sample). As Figure 247 illustrates,

concentrations of several VOCs decreased (or continued a several-year pattern of decrease) in the 2013 sample, while one—TCE—increased with respect to previous results. Note that of those constituents illustrated, 1,1,1-TCA is not present at concentrations exceeding RFLMA Table 1 values (200 µg/L; result in May 2013 was 28 µg/L).




**Notes:** Applicable RFLMA surface-water action level (µg/L; CDPHE et al. 2012) for 1,1,1-TCA is 200, PCE is 5, TCE is 2.5, *cis*-1,2-DCE is 70, and 1,1-DCE is 7. Several detections were qualified but for simplicity are not shown differently. Note logarithmic concentration scale.

*Figure 247. Concentrations of VOCs in South IA Plume Evaluation Well 40005*

While VOCs are also detected in other wells monitoring the south IA Plume, concentrations are far lower than at well 40005. In addition, the contaminant distributions differ at these other locations: though they are similar to one another they do not show the same pattern as 40005. These include Sentinel well 40305, located east of well 40005; and Sentinel well 11502, located southeast of 40005 near the southern edge of the pediment. The highest detection reported in samples collected in 2013 was for PCE at well 11502, at a concentration of 5.28 µg/L in the November sample (compared with an estimated concentration of 0.85 µg/L in the May sample, and a RFLMA Table 1 value of 5 µg/L). No other detections at either of these Sentinel wells exceeded RFLMA values.

Calculated statistical trends having a 95 percent level of statistical significance at these wells include increasing uranium at Evaluation well 40005 (concentration reported in 2013: 0.861 µg/L) and decreasing PCE at Sentinel well 11502. Statistical trends are summarized in Table 99, and summary data and trend plots are provided in Appendix B.

The central portion of the IA Plume, for the purposes of this report, is monitored by Evaluation wells P115589, P114689, 70705, 33905, 55905, and 56305. None of these wells was scheduled for routine RFLMA sampling in 2013, and no extra samples were collected here in 2013. Therefore this portion of the IA Plume is not discussed further in this report.

Wells monitoring the north IA Plume include Evaluation well 21505 and Sentinel well 52505 along FC-2, and AOC well 42505 at the terminus of FC-2 at North Walnut Creek. While the Evaluation well was not sampled, the Sentinel and AOC wells were both sampled in 2013 in accordance with RFLMA. Although they also monitor the north IA Plume, wells 18199, 20902, 20705, 20505, and 20205 are discussed below in the context of the IHSS 118.1 Plume; and wells 33502, 33604, and 33703 are discussed in the section on the VC Plume.

The terminal end of the North IA Plume is monitored by Sentinel well 52505, nearby Surface Water Support location SW018, and AOC well 42505. Both of the wells and the surface-water location were sampled twice in 2013 (May and November).

Only one VOC was detected at any of these three monitoring locations in 2013. *cis*-1,2-DCE was detected at each location once, in the November sample. The concentration reported at Sentinel well 52505 was 1.17 µg/L, while that at AOC well was estimated (J-qualified) at 0.26 µg/L, and at SW018 was estimated at 0.43 µg/L. This constituent has been detected in samples collected before 2013 at each of these locations, but never at elevated (i.e., close to or above the RFLMA Table 1 value of 70 µg/L) concentrations.

*VC Plume*

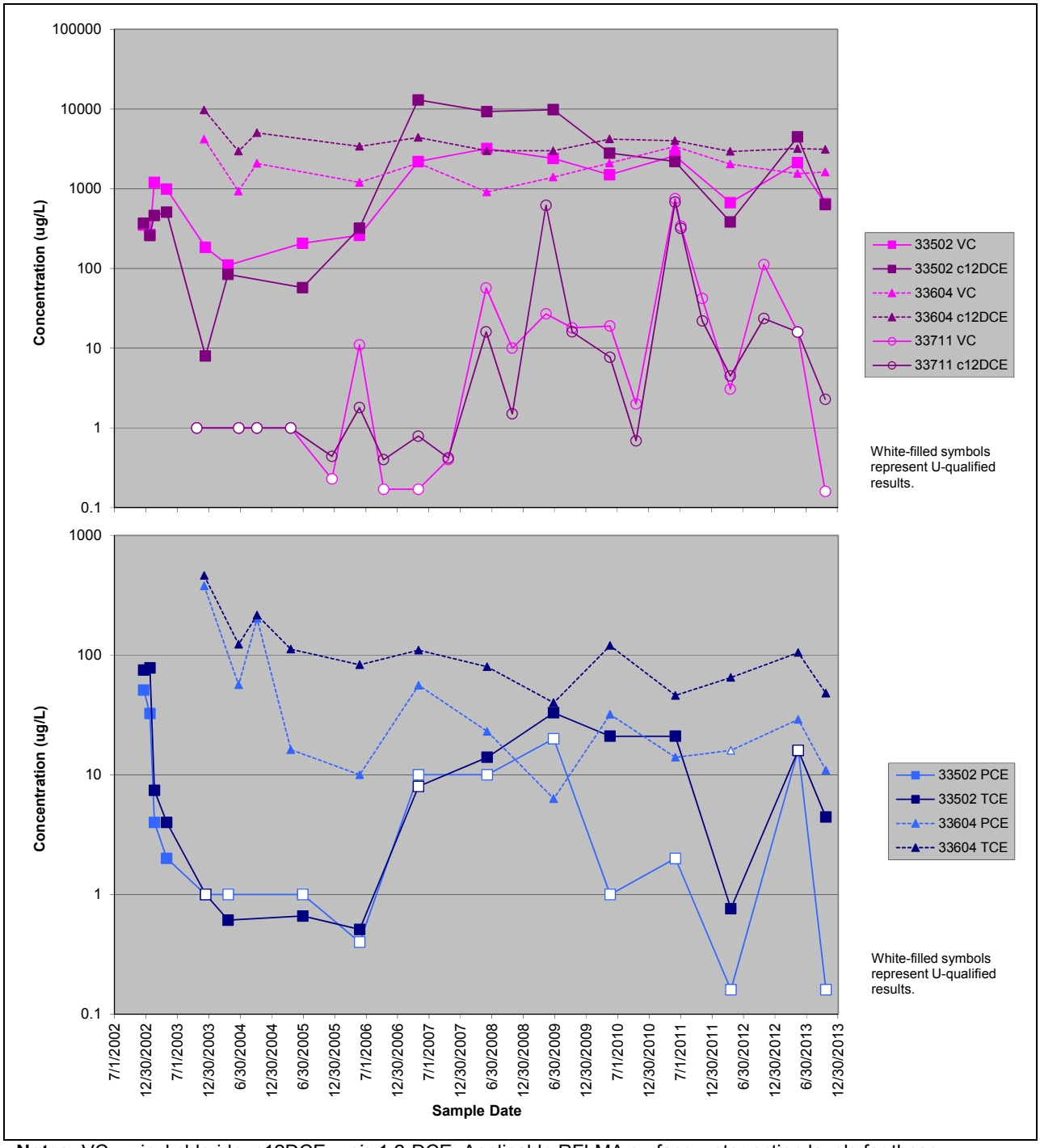
The VC Plume emanates from OBP #1 and nearby metal disposal/destruction sites. These source areas were on the margin of a valley that was filled during construction of the B371 complex and later became the site of Sage Avenue and the Portal 2 parking lots, among other facilities. The contaminated groundwater plume is present within the buried valley, and groundwater flow appears to be controlled by that feature. This is the only Rocky Flats area where VC is confirmed to be present at such elevated concentrations. These high concentrations are taken as an indication of the active biodegradation occurring here. This is also the only area where chlorobenzenes are detected at elevated levels, as discussed below.

The VC Plume is monitored by two source-area Evaluation wells and one Sentinel well. Although no Evaluation wells were scheduled for routine RFLMA sampling in 2013, each of these three wells was sampled in May and October 2013 to evaluate potential effects from the increased moisture this year. Evaluation well 33502 is located in the immediate vicinity of OBP #1. Approximately 175 feet generally downgradient is Evaluation well 33604, and Sentinel well 33711 is about 110 feet downgradient of 33604. This Sentinel well developed a kink in its casing and was replaced in 2011; see the 2011 Annual Report (DOE 2012) for additional information, including a discussion of water quality changes potentially affected by well replacement.

Well 33502 is one of only two locations where strong evidence for biodegradation has been found at the Site (K-H 2004c); the second location identified in that report is well 1986, the predecessor to well 52505, as discussed above. (If it had existed at the time of that study, well 33604 almost certainly would have provided similarly strong evidence for biodegradation,

and very likely 33711 as well.) This is taken as an explanation for both the high concentrations of VC and *cis*-1,2-DCE as well as the extremely limited aerial extent over which these concentrations have been observed. The active biodegradation here is attributed to the soil and decomposing organic remains of vegetation that once grew within the now-buried valley; these wells monitor groundwater within the filled valley. This decomposition process would consume oxygen, providing both an anaerobic environment and carbon source suitable for the naturally-occurring bacteria that perform reductive dechlorination of the solvents most commonly found at the Site. Parent compounds, including PCE and TCE, are also detected in the groundwater in this area but at much lower concentrations than those of their metabolic byproducts. While VC and *cis*-1,2-DCE are reported in groundwater samples from source-area wells 33502 and 33604 at concentrations in the hundreds to thousands of micrograms per liter, PCE and TCE are typically reported in the tens to hundreds (and PCE is frequently not detected in samples from well 33502, as has been the case since late 2003, including the sample collected in 2013). Similarly, Sentinel well 33711 in the past has reported concentrations of these daughter products at tens to hundreds of micrograms per liter, but PCE is rarely detected and TCE is typically either not detected or is reported at concentrations of less than 1 µg/L.

A time-series plot of the concentrations of primary parent and daughter compounds in source-area Evaluation wells 33502 and 33604 is presented as Figure 248; the top portion of this figure focuses on the daughter products, and includes results from Sentinel well 33711, while the lower portion is for PCE and TCE at wells 33502 and 33604 only. Prior to 2013, samples from well 33502 had suggested a general decrease in daughter-product (*cis*-1,2-DCE and VC) concentrations over the preceding 1 to 3 years, but with the data collected in 2013 this pattern is not as clear. The second-quarter concentrations are generally in line with earlier results, while the fourth-quarter data are lower again, though not as low as in 2012. Concentrations of these constituents at well 33604 are much more uniform, while those at Sentinel well 33711 are the most inconsistent of all. With respect to the parent compounds PCE and TCE (lower portion of Figure 248), a similar pattern is evident for the two Evaluation wells: concentrations appear more uniform in well 33604 than in 33502.

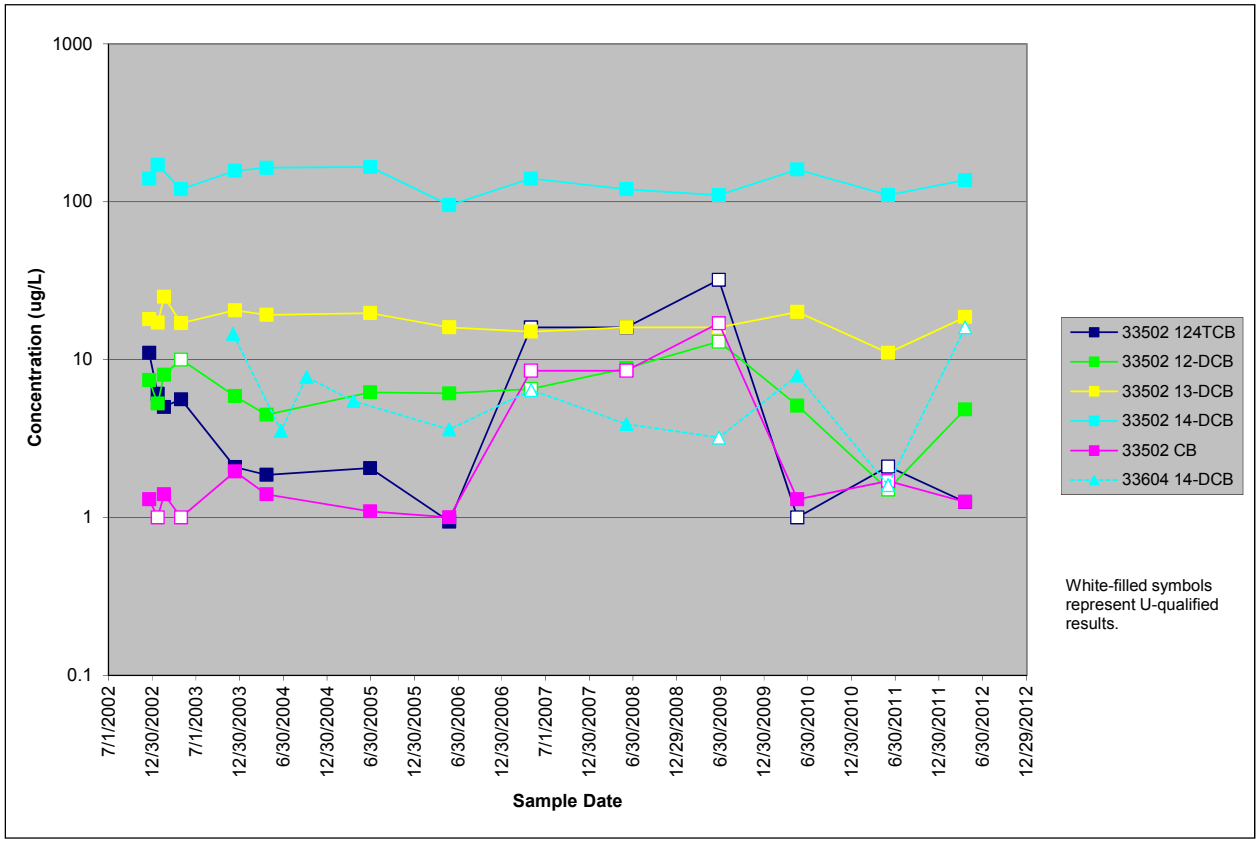



**Notes:** VC = vinyl chloride; c12DCE = *cis*-1,2-DCE. Applicable RFLMA surface water action levels for these constituents (µg/L; CDPHE et al. 2012): VC, 0.2; *cis*-1,2-DCE, 70; PCE, 5; TCE, 2.5. In addition to the nondetects (U-qualified results), several detections were qualified but for simplicity are not shown differently. Note logarithmic concentration scales.

*Figure 248. Primary VOCs in the VC Plume Evaluation and Sentinel Wells*

Concentrations of several chlorinated benzenes are also detected in samples from VC Plume wells. These most commonly include one or more of the following: 1,2,4-trichlorobenzene (TCB), 1,2-DCB, 1,3-DCB, 1,4-DCB, and chlorobenzene. These compounds are industrial and

agricultural chemicals; primary uses for several are as pesticides or insecticides, but they may also be used as solvents. 1,2,4-TCB can be degraded anaerobically to 1,2-DCB, 1,3-DCB, and (or) 1,4-DCB, which then can degrade to chlorobenzene (Adrian and Gorisch 2002; USGS 2006). Therefore, similar to the chlorinated ethenes degraded here, near-complete degradation of 1,2,4-TCB may explain its rare detection and may also be a factor in the presence of 1,2-DCB, 1,3-DCB, 1,4-DCB, and (occasionally) chlorobenzene in samples from well 33502 (Figure 249). Before 2013, nearby well 33604 had not reported any detections of chlorinated benzenes since 2010. However, in 2013 there were detections of 1,2-DCB, 1,3-DCB, 1,4-DCB, and chlorobenzene—all in the sample collected following the heavy September rains (and none in the second-quarter sample). This was the first-ever detection of 1,2-DCB at this location, and the first detection of chlorobenzene since 2003 (when it was reported in a sample from the original well, 33603). While this well has been exclusively sampled in the second quarter since 2005, and therefore seasonal effects may play a role in the appearance of these chlorinated benzenes, it may be that these constituents were mobilized following the heavy September rains. Future samples will help to confirm possible flood-related effects.

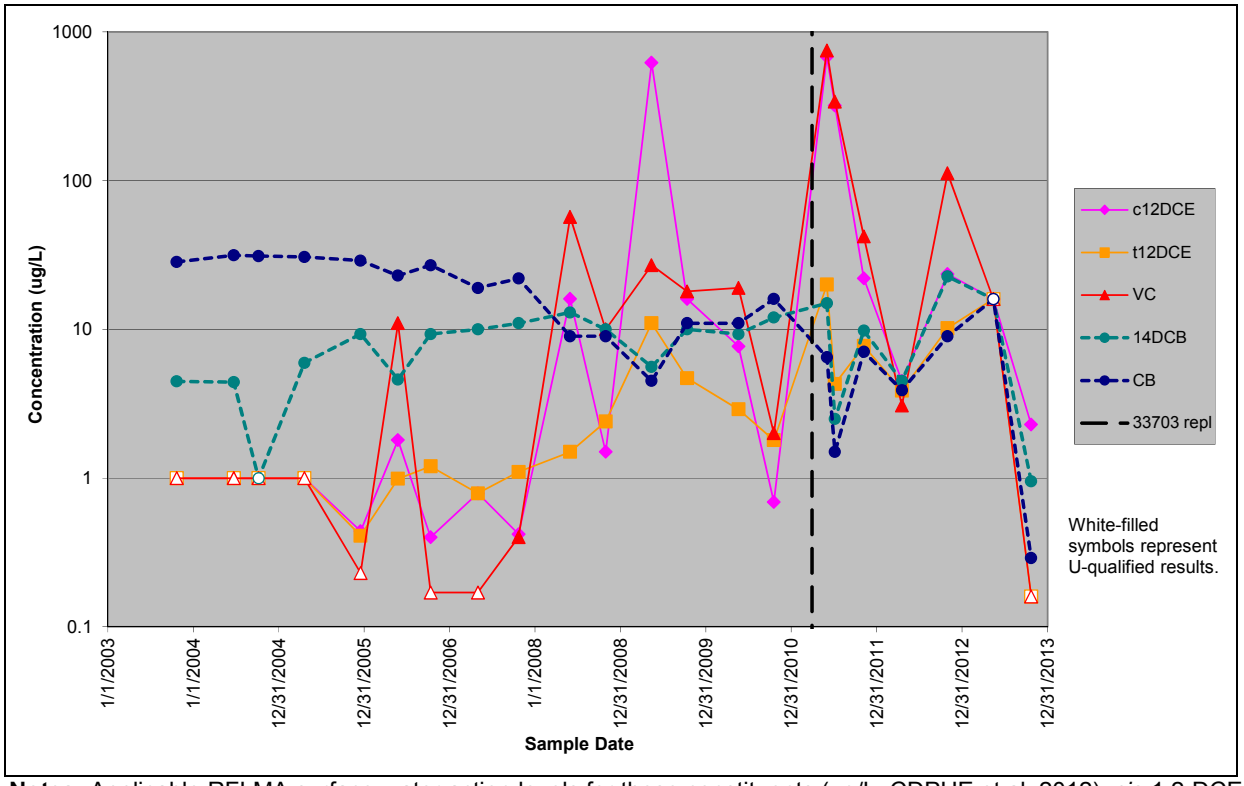



**Notes:** Applicable RFLMA surface-water action levels for these constituents (µg/L; CDPHE et al. 2012): 1,2,4 TCB (trichlorobenzene) 35; 1,2-DCB 94; 1,4-DCB 63; CB (chlorobenzene) 100. In addition to the nondetects (U-qualified results), several other results were qualified but for simplicity are not shown differently. Note logarithmic concentration scale.

*Figure 249. Chlorinated Benzene Compounds in Samples from VC Plume Evaluation Wells*

Several chlorinated solvents and chlorinated benzenes have also been detected in Sentinel well 33711. As discussed in the 2011 Annual Report (DOE 2012), this well was replaced that year; when it finally produced sufficient water for sampling, the concentration of VC in

particular was unusually elevated. While results in 2012 suggested seasonal effects may play an increasingly important role at this location, samples collected from well 33711 in 2013 were affected by laboratory data quality issues. The analytical laboratory used an overly high detection limit (16 µg/L) for the spring sample, and reported internal hold-time problems potentially affecting the October sample (see analytical data for these samples in DOE 2013g and Appendix B to this report, respectively). Only cursory conclusions can be made from the corresponding results, but in general the indication is that concentrations of the primary VOCs at this well—*cis*-1,2-DCE and VC—are decreasing (Figure 250; see also upper portion of Figure 248).




**Notes:** Applicable RFLMA surface-water action levels for these constituents (µg/L; CDPHE et al. 2012): *cis*-1,2-DCE 70; *trans*-1,2-DCE 100; vinyl chloride 0.2; 1,2,4 TCB (trichlorobenzene) 35; 1,2-DCB 94; 1,4-DCB 63; CB (chlorobenzene) 100. In addition to the nondetects (U-qualified results), several other results were qualified but for simplicity are not shown differently. Note logarithmic concentration scale.

*Figure 250. Chlorinated Compounds in Samples from VC Plume Sentinel Well 33711*

1,4-DCB and chlorobenzene are also typically detected at well 33711. Both are illustrated in time-series plots on Figure 250. Until the fourth quarter of 2013, these constituents have maintained relatively uniform concentrations compared to *cis*-1,2-DCE, VC, and to a lesser extent *trans*-1,2-DCE. However, as noted above these fourth-quarter 2013 data may be affected by laboratory difficulties. More data will help to confirm long-term trends.

Calculated trends having a 95 percent level of confidence are identified for several constituents in wells monitoring the VC Plume. In the source-area Evaluation wells, decreasing trends are calculated (Appendix B; Table 99) at the 95 percent level of significance for 1,2,4-TCB and naphthalene at well 33502, and PCE and TCE at well 33604. Both of these trends at well 33502 are based on a dataset that contains numerous nondetects, and may not be valid. The decreasing

trends in PCE and TCE at well 33502 in previous reports (DOE 2013b) were not confirmed using data from 2013; instead, PCE was found to be on a zero slope, and TCE was calculated to be decreasing but at a level of significance less than 95 percent. Several trends are calculated to have a 95 percent level of statistical significance at downgradient Sentinel well 33711, but fewer than in the 2012 Annual Report. The only decreasing trend calculated at this level of significance is for chlorobenzene, while increasing trends are calculated for *cis*-1,2-DCE, *trans*-1,2-DCE, and VC (no longer for 1,4-DCB or toluene). Some of these are potentially affected by well replacement or nondetects (see Table 99 and Appendix B).

*IHSS 118.1 (Carbon Tetrachloride) Plume*

Former IHSS 118.1 is the source of a plume of groundwater contaminated with carbon tetrachloride. In late 2004, dense, nonaqueous phase liquid source material was removed along with an adjacent subsurface tank group referred to as B730. Electron donor material was added to the backfill material to enhance biodegradation of residual contamination.

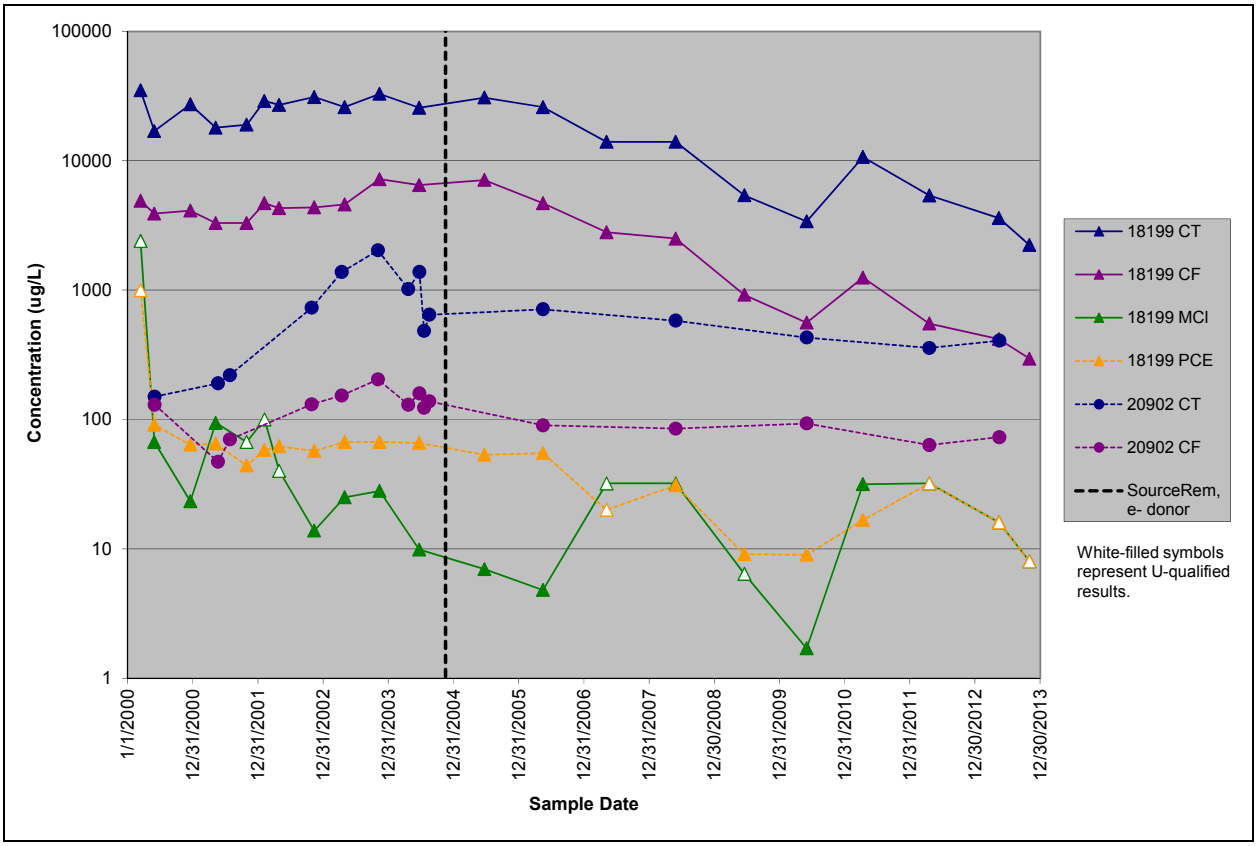
Evaluation well 18199 is one of several installed in 1999 to support characterization of the source area. This well is located immediately north of the former IHSS, roughly 80 to 90 feet north-northwest of the area in which free-phase carbon tetrachloride was present and perhaps 30 feet north of the source-removal excavation boundaries. The plume has been mapped to extend to Evaluation well 20902, located approximately 350 feet to the northwest. Although neither Evaluation well was scheduled for routine RFLMA monitoring in 2013, both were sampled in May in response to the wetter spring, and well 18199 was again sampled in November after the heavy rains.

Several Sentinel wells also support evaluation of this plume. Three Sentinel wells—20705, 20505, and 20205—are located generally north of the source area, along the northern side of the former B771 complex, and support the evaluation of whether a more northerly groundwater flow path from the IHSS 118.1 source area is indicated. (With the closure of B771 and abandonment of the associated foundation drain system, the anticipated flow path for this plume was more northerly than it had been prior to closure). In addition, Sentinel well 52505, Surface Water Support location SW018, and AOC well 42505 support the evaluation of this plume. These three locations are discussed above in the context of the North IA Plume and will not be addressed here, except to summarize that neither produced samples suggesting impacts from former IHSS 118.1.

Data from 2013 collected at source-area Evaluation well 18199 continued to show decreasing concentrations of the primary contaminants (Figure 251). The cause of the interruption of this apparent decreasing trend in 2011 is not certain; if related to the higher moisture in 2010, it may be that samples collected in 2014 will illustrate a similar reversal as a result of the fall moisture in 2013. Concentrations of carbon tetrachloride and its primary daughter product, chloroform, in 2013 were reported at the lowest concentrations from this well yet (2,230 µg/L and 295 µg/L, respectively). Both methylene chloride and PCE were reported as nondetects. Although the corresponding detection limits were elevated (16 µg/L and 8 µg/L for second and fourth quarter samples, respectively), even so these concentrations are reduced compared to pre-closure data. Decreasing trends in carbon tetrachloride, chloroform, and PCE are calculated at the 95 percent level of significance (Table 99 and Appendix B) at well 18199. As previously suggested (e.g., DOE 2013b) and in contrast to the behavior evident in the OBP #2-impacted groundwater

discussed above, these decreasing trends may be related more to the source-removal action than the subsequent application of electron donor material.

Concentrations of carbon tetrachloride and chloroform in samples from well 20902 were consistent with previous results (Figure 251). No trends were calculated to have a 95 percent level of significance at this well.




**Notes:** CT = carbon tetrachloride; CF = chloroform; MCI = methylene chloride; Source Rem, HRC = date on which source removal and backfilling with soil and HRC was completed. Applicable RFLMA surface-water action levels for these constituents (µg/L; CDPHE et al. 2012): CT, 1; CF, 3.4; MCI, 4.6; PCE, 5. Several results were qualified but are not shown differently for simplicity. Note logarithmic concentration scale.

*Figure 251. Concentrations of VOCs in the IHSS 118.1 Plume*

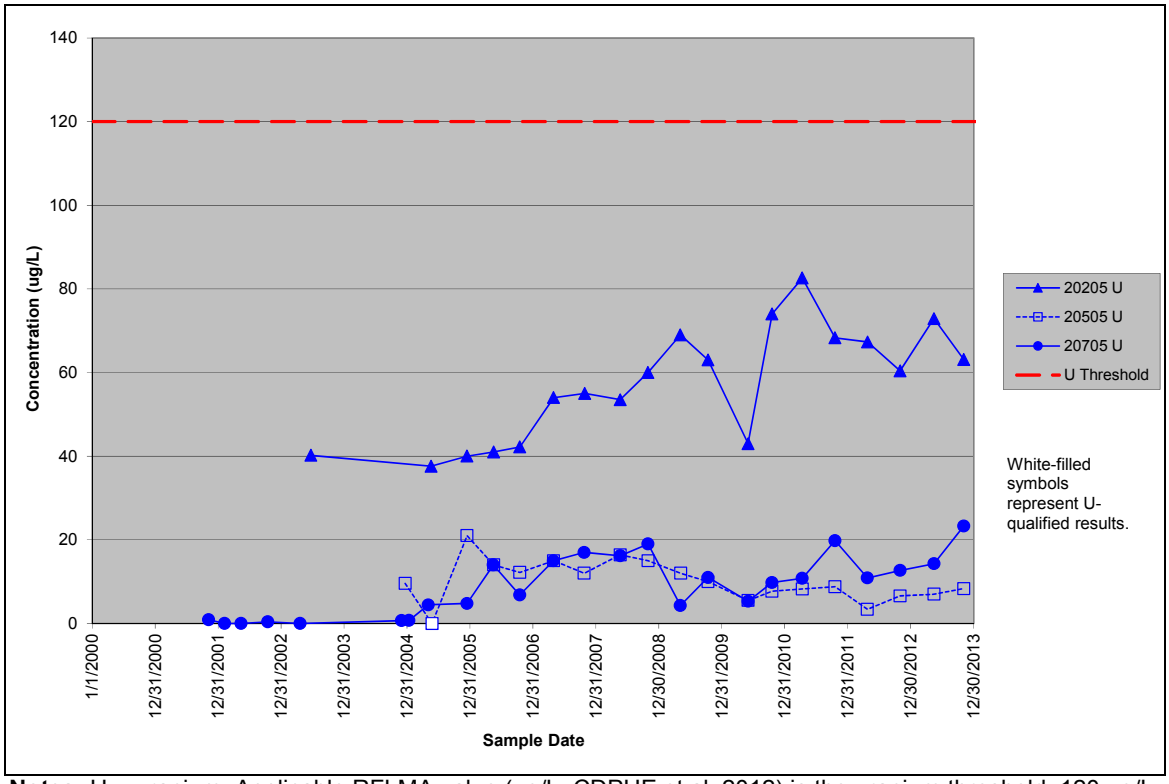
Sentinel wells 20205, 20505, and 20705, all of which are located generally north of IHSS 118.1 and the former B771 complex, are monitored to evaluate the effects on groundwater of the closure of B771 and to determine whether a more northerly groundwater flow path from the IHSS 118.1 source area is indicated. These wells were sampled in May and November, 2013. Detections of carbon tetrachloride as well as chloroform were reported at well 20205 in the sample collected in the fourth quarter (i.e., following the heavy September rains). This well is located at the eastern end of this line of three wells, just north (downgradient) of former Bowman's Pond and Building 774, the eastern member of the B771 complex. Both constituents have been previously detected here, and chloroform (as well as methylene chloride and chloromethane, also daughter products from the dechlorination of carbon tetrachloride) have also been detected at well 20705. Other than these two constituents in the sample from well 20205, no other detections of carbon tetrachloride or its daughter products were reported in 2013 in this

area. Other VOCs detected in this area in 2013 included PCE, 1,1-DCE, *cis*-1,2-DCE, PCE, TCE, and VC. Only the detections of VC exceed respective RFLMA values: though estimated at 0.45 µg/L at well 20505 and 0.25 µg/L at well 20705 (both in the fourth quarter sample), the RFLMA Table 1 value is 0.2 µg/L (the PQL for VC).

AOC well 42505, which is located north/northwest of former B771 and adjacent to the eastern edge of FC-2 near its confluence with North Walnut Creek/FC-3, reported one VOC detection in 2013: *cis*-1,2-DCE at an estimated (J-qualified) concentration of 0.26 µg/L in the November sample. None of these results—whether from Sentinel or AOC wells—suggest a strong northerly flow component to the IHSS 118.1 Plume.

Seepage velocities summarized in Table 60 are similar to those calculated in previous years and suggest that contaminants in the groundwater migrating from source area well 18199 to downgradient well 20505 could have been detected in this downgradient well as early as 2006. The velocities calculated using 2013 water level data are again slightly more than one year. (As previously explained, this estimated velocity applies to pure water, not necessarily to dissolved contaminants.) Based on the analytical data collected through 2013, elevated levels of IHSS 118.1 contaminants have still not reached this particular downgradient well (20505), or others in its vicinity (20205, 20705). While it would take some time for groundwater to saturate the backfill of the former B771 area, observations of seeps on this hillside in previous years (see DOE 2011c and 2012) suggest that has been completed. Wells monitoring former IHSS 118.1 will continue to be monitored and the data assessed to evaluate the potential for contaminant migration from that source area as well as the IA Plume and former B771.

Each of these Sentinel wells is also monitored for uranium, plutonium, and americium, and well 20705 is sampled for nitrate. (Discussion of the plutonium and americium is provided in a separate section below.) Time-series plots of U concentrations in samples from all three of these wells are provided below in Figure 252. From this figure, it can be seen that concentrations of U in samples from wells 20505 and 20705 are similar, while those from well 20205 are higher. Uranium at all three of these locations remains well below the U threshold of 120 µg/L.




**Notes:** U = uranium. Applicable RFLMA value (µg/L; CDPHE et al. 2012) is the uranium threshold, 120 µg/L. Several results were qualified but are not shown differently for simplicity.

*Figure 252. U in Groundwater Along North Side of Former B771*

Nitrate was detected in both samples collected in 2013 at well 20705, but at very low concentrations; the highest was reported as 0.057 mg/L (RFLMA Table 1 value: 10 mg/L).

Several trends were calculated for the three Sentinel wells monitoring B771 (Table 99; Appendix B). Those that are at least 95 percent statistically significant include PCE (increasing at well 20205, but the data set contains numerous nondetects), U (increasing at both 20205 and 20705, and decreasing at 20505), *cis*-1,2-DCE (decreasing at well 20505), TCE (decreasing at well 20505), and americium (decreasing at well 20705, but the dataset includes numerous nondetects, is potentially affected by well replacement, and reflects now-resolved borehole artifacts). An increasing trend in *cis*-1,2-DCE at well 20705 is suggested, and although calculated to have a 95 percent level of statistical significance in 2012 (DOE 2013b), with the 2013 data this trend no longer meets that level of significance.

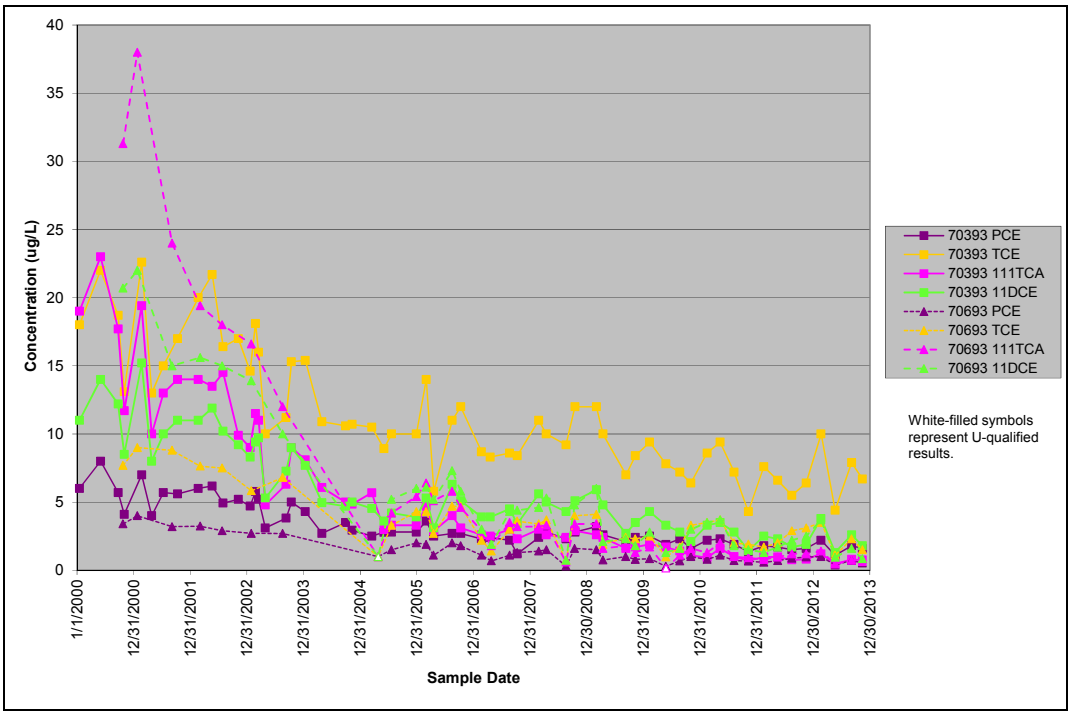
Each of these wells will continue to be monitored and the data evaluated in accordance with RFLMA.

*PU&D Yard Plume*

The PU&D Yard Plume is an area of groundwater with low concentrations of primarily PCE-family VOCs (PCE, TCE, and *cis*-1,2-DCE). This area was the site of the first application at Rocky Flats of electron donor material, in which a proprietary carbon source (HRC) was tested in a treatability study begun in early 2001 (K-H 2001, 2002b; see K-H 2005b for a final

summary report on this study). This plume is monitored by Evaluation well 30900 in the source area and Sentinel well 30002 to the east, at the north edge of North Walnut Creek. In addition, upgradient PLF RCRA wells 70393 and 70693 monitor the plume as it flows toward the PLF. The source-area Evaluation well was not scheduled for routine RFLMA sampling in 2013. Each of the other wells was monitored in accordance with RFLMA, with the Sentinel well sampled in the second and fourth quarters, and the RCRA wells sampled each quarter.

Downgradient Sentinel well 30002 reported no detections of VOCs in either sample collected in 2013 (May, November). The RCRA wells, however, reported detections of VOCs that were consistent with previous data. Those wells most affected by the PU&D Yard Plume, wells 70393 and 70693, reported low concentrations of VOCs that are typical at these locations. Commonly detected VOCs at these wells include PCE, TCE, 1,1,1-TCA, and 1,1-DCE. Time-series plots of these constituents in wells 70393 and 70693 are presented as Figure 253, which shows asymptotic decay curves for concentrations of each of these constituents. As illustrated, concentrations of each of these compounds generally have been gradually decreasing since 2000. TCE is a daughter product of PCE as well as being used itself during the production era at Rocky Flats. 1,1-DCE is a daughter product of PCE, TCE, and 1,1,1-TCA dechlorination. There is no apparent relative increase in daughter products with respect to the parent products, and each constituent appears to be decreasing at a similar rate. TCE was the only VOC that exceeded the RFLMA Table 1 values in 2013 at these upgradient RCRA wells: Concentrations of TCE in all four quarterly samples from well 70393, and from well 70693 in the first quarter, exceeded the RFLMA value of 2.5 µg/L. The highest reported concentration of TCE was 10 µg/L in the first quarter at well 70393.




**Notes:** Applicable RFLMA surface-water action levels for these constituents (µg/L; CDPHE et al. 2012): PCE, 5; TCE, 2.5; 1,1,1-TCA, 200; 1,1-DCE, 7. Several detections were qualified but for simplicity are not shown differently.

*Figure 253. Concentrations of Primary PU&D Yard Plume VOCs in Upgradient PLF RCRA Wells*

Statistical trends that are calculated to have a 95 percent level of significance include decreasing trends in 1,1,1-TCA, 1,1-DCE, PCE, and TCE at both wells 70393 and 70693 (Table 99; Appendix B). In addition, decreasing trends with this significance are calculated for carbon tetrachloride and chloroform at well 70693, though the corresponding data sets contain many nondetects and therefore these trends may not be valid. No increasing or decreasing trends are calculated at downgradient Sentinel well 30005, since VOCs are typically not detected here.

*OU 1 Plume*

The OU 1 Plume is located on the 881 Hillside, east of former Building 881 (B881) and immediately south of the former Contractor Yard. Its source area, former IHSS 119.1, was a drum and scrap metal storage area. This source area is monitored by Evaluation well 891WEL (the modification of which, in 2005, has been detailed in previous documents, e.g., DOE 2006c), and the pathway to surface water is monitored by AOC well 89104, located to the south adjacent to Woman Creek (Figure 4).

Evaluation well 891WEL was not scheduled for RFLMA sampling in 2013. AOC well 89104 was sampled twice, in May and October 2013. No VOCs were detected.

*Other Areas*

In addition to the major plumes discussed above, other areas warrant mention because they may be of interest. These are summarized below.

**AOC well B206989**: This well is located immediately east of the former Landfill Pond dam, which was breached in early 2012. Refer to previous annual reports (e.g., DOE 2012) for information on and discussion of the reportable condition for nitrate, which was fully expected and was initiated in 2007; see also the related Contact Record, 2007-06.

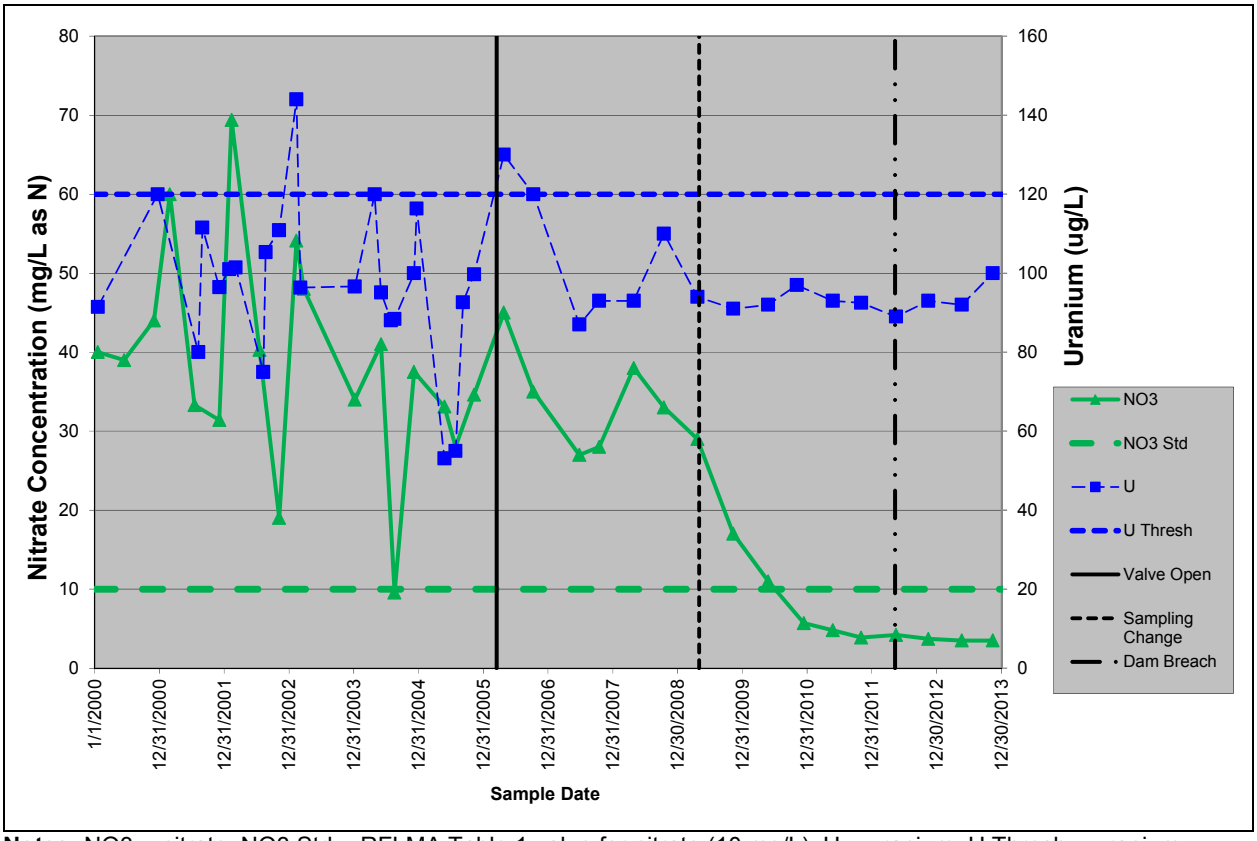
Annual reports issued since the report for 2008 (DOE 2009d) have noted the calculation of a decreasing trend in nitrate, with the associated level of statistical confidence reaching 95 percent in the 2009 report (DOE 2010b). Data collected since then, including those from 2013, continue to support this trend (see Table 99 and Appendix B.3). Nitrate results from samples collected in 2013 continued to be well below the applicable 10 mg/L standard, with the concentration in both samples reported at 3.5 mg/L.

At the same time, concentrations of U in groundwater samples from well B206989 have not exceeded the 120 µg/L total U threshold since 2006. Concentrations of this analyte have remained relatively uniform as of around 2007, appearing to have leveled off at concentrations around 90 µg/L to 100 µg/L. The highest concentration of uranium reported in 2013 was 100 µg/L.

Both of these constituents (nitrate and U) are illustrated in time-series plots on Figure 254. As noted above, a decreasing trend in nitrate is calculated to be 95 percent significant; a trend of this significance for uranium is not identified.

The mechanism responsible for the smoothing of these data is not certain and may be a combination of factors. The sampling method, as discussed in the 2011 Annual Report (DOE 2012), is probably a major factor.

This well is also sampled for VOCs. As with most years, none were detected in the samples collected in 2013.




**Notes:** NO3 = nitrate; NO3 Std = RFLMA Table 1 value for nitrate (10 mg/L); U = uranium; U Thresh = uranium threshold (120 µg/L). Note the use of two *y* axes to help illustrate the concentrations of the different constituents. Dates pertaining to dam operation and sampling methods are as indicated, and are discussed in previous annual reports (e.g., DOE 2012).

*Figure 254. Concentrations of Nitrate and U in Groundwater Samples from AOC Well B206989*

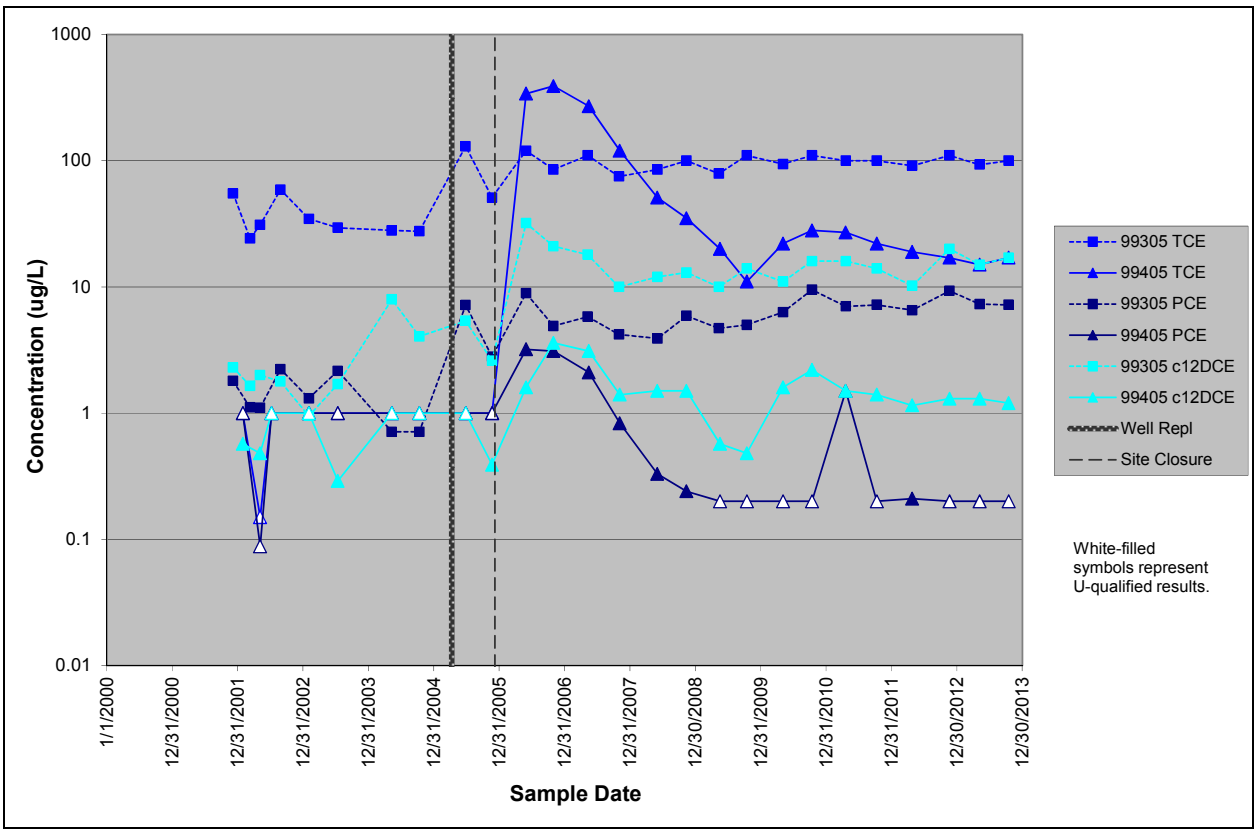
**Former B991**: Groundwater samples from wells 99305 and 99405 are monitored for VOCs, nitrate, and U. Both of these wells are located near the eastern edge of former B991, with well 99405 positioned at what was the east loading dock area, slightly southwest of well 99305 and closer to FC-4 and the valley bottom. Samples collected in May and October 2013 continued the post-closure pattern of higher concentrations of VOCs than were typical prior to closure. Noteworthy constituents continue to include PCE, TCE, and *cis*-1,2-DCE.

Figure 255 illustrates results for these VOCs in both wells, and indicates when the wells were replaced (when 99305 replaced 99301, and 99405 replaced 99401) and when the Site closed. The original wells were abandoned prior to building demolition, and the replacement wells were installed after building closure and hillside grading had been completed. Therefore, B991

demolition took place between the last data points from the original wells—in late 2004—and the indicated well replacement date.

As shown on this figure, water quality changes with respect to these three constituents occurred suddenly at well 99405, and seem temporally coincidental with Site closure rather than with work toward B991 demolition. These changes are less marked in samples from well 99305, and suggest an earlier mechanism that appears coincidental with well replacement, at least for PCE and TCE—changes in the concentrations of *cis*-1,2-DCE appear delayed. Since that initial increase in VOC concentrations reported at well 99405, concentrations of PCE have decreased and are now typically nondetect (as was the case in both samples collected in 2013). Concentrations of TCE in samples from this well exhibited a short-term increase starting in 2010, but since then have been on a gradual and inconsistent decrease, with the fourth-quarter 2013 sample reporting slightly higher concentrations than the second-quarter sample (17 µg/L and 15 µg/L, respectively). Concentrations of *cis*-1,2-DCE here appear to follow a pattern similar to those of TCE, though less uniformly and at a lower total concentration, with the highest value reported in 2013 being 1.3 µg/L.

The time-series plots for these constituents in samples from nearby well 99305 have a very different appearance (Figure 255). Each of these VOCs exhibits a series of increases beginning as early as 2004 for *cis*-1,2-DCE, and 2005 for PCE and TCE. Note that artifacts related to well replacement may play a role in the observed patterns; that is, geographic/spatial differences in groundwater quality may play a larger part than temporal changes. Changes that coincide with site closure appear to have affected concentrations of *cis*-1,2-DCE, but not PCE or TCE. Since 2006, these three constituents show fairly uniform concentrations from year to year that generally appear to be slowly increasing. No obvious effects are evident from the floods of September 2013.




**Notes:** c12DCE = *cis*-1,2-DCE; Well Repl = well replacement. Applicable RFLMA action levels for these constituents (µg/L; CDPHE et al. 2012): PCE, 5; TCE, 2.5; *cis*-1,2-DCE, 70. In addition to the nondetects (U-qualified results), several other results were qualified but are not shown differently for simplicity. Note logarithmic concentration scale.

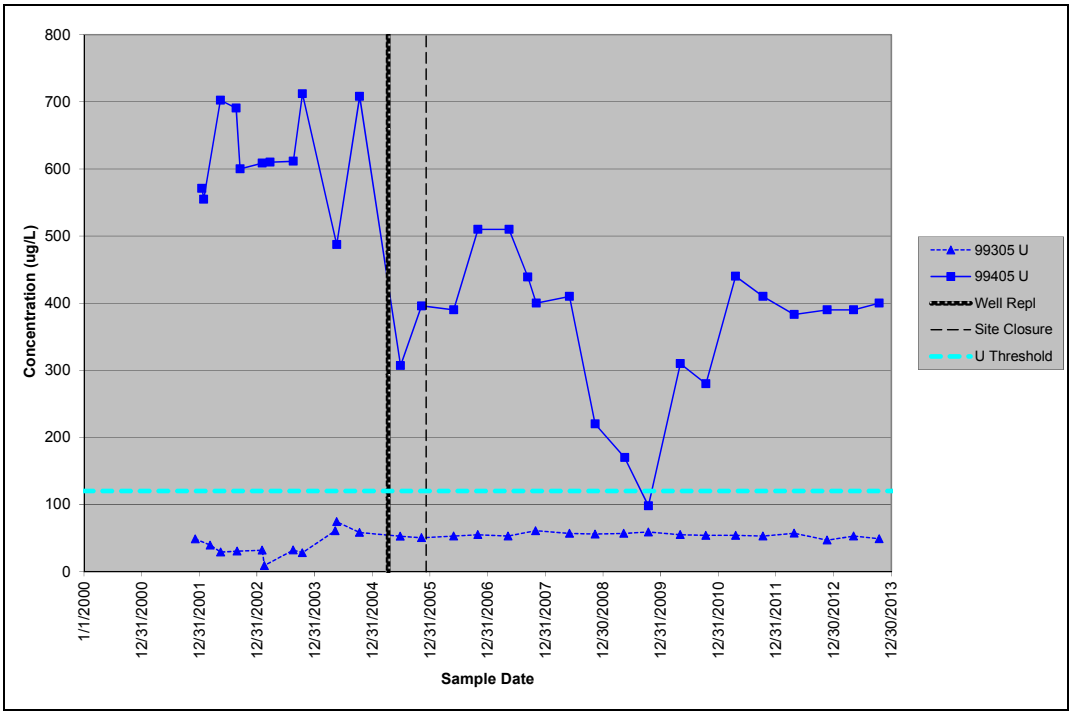
*Figure 255. Concentrations of Primary VOCs in B991-Area Groundwater*

Organic constituents that exceed their respective RFLMA Table 1 values in this area include PCE, TCE, and VC at well 99305; and TCE at well 99405. VC is not always detected in samples from well 99305, but because the RFLMA value is the PQL of 0.2 µg/L, almost any detection is above that value. This constituent was not detected in the October sample, but was reported at an estimated (J-qualified) concentration of 0.48 µg/L in the May sample.

These two B991 wells are also monitored for uranium. More so than with the VOCs depicted above in Figure 255, uranium concentrations at these two wells (Figure 256) are very different despite the fact that they are located only about 115 feet apart. Multiple samples from each of these wells have been analyzed using high-resolution isotopic methods to distinguish natural from anthropogenic uranium, and in every case the uranium in these wells has been characterized as 100 percent natural.

Uranium in well 99305 continues to be reported at concentrations that are very consistent from sample to sample; results in 2013 were 53 µg/L (May) and 49 µg/L (October). Concentrations of uranium at nearby well 99405 have become more consistent than in the past, when concentrations could vary by more than 200 µg/L from one sample to the next. Since 2011, concentrations of uranium in samples collected from this well have consistently ranged between 383 µg/L and 440 µg/L, with those collected in 2013 reported at 390 µg/L (May) and 400 µg/L (October). Reasons for this relative uniformity in uranium concentrations at well 99405 are not

known; the changes to sample collection methods were implemented after the November 2008 sampling event here, making this an unlikely mechanism unless the effects were delayed by several years. Stabilization of the geochemical conditions at this well and in the adjacent FC-4 wetland may be playing a larger role. Continued data collection may shed additional light on this question.




**Notes:** Applicable RFLMA action level (µg/L; CDPHE et al. 2012) for U (threshold), 120. U data include results for U-mass and converted isotopic activities. Several detections were qualified but for simplicity are not shown differently.

*Figure 256. Concentrations of U in B991 Sentinel Wells*

The SPP has been characterized as having a southeast-trending groundwater pathway for associated contaminants. Because it represents a primary constituent of SPP contamination, nitrate is analyzed in samples from wells 99305 and 99405 to assess the relative importance of such a pathway. The maximum concentration of nitrate in 2013 at well 99305 was 0.79 mg/L, and in well 99405 was 1.6 mg/L, both of which are consistent with past data. Therefore, as in previous years, these data continue to indicate a southeastern flowpath is not effective for migration of the SPP constituents.

Statistical trends with a 95 percent level of significance apply to several constituents detected at these wells. Three VOCs are calculated to be on increasing trends at this level of significance at well 99305: *cis*-1,2-DCE, PCE, and TCE. Each of these trends is visually apparent on Figure 255. At well 99405, the only trend calculated to have this level of statistical significance is for decreasing uranium, which is also visually evident. Refer to Table 99 for a summary of statistical trends, and Appendix B for the associated trend plots.

**Former B881 and 800 Area**: This area is monitored by Evaluation wells 88205 and 22996, and Sentinel wells 88104 and 00797. The Evaluation wells were not scheduled for RFLMA monitoring, but both Sentinel wells were sampled twice in 2013. Results were generally

consistent with previous data; no VOCs were detected, and uranium concentrations were in their historic ranges, all well below the uranium threshold.

Previous annual reports (e.g., DOE 2012 and DOE 2013b) have calculated a statistically significant (at the 95 percent confidence level) decreasing trend for U in Sentinel well 88104. For this 2013 report, data from the original well that was replaced by 88104 (88101) were deleted from the data on which statistical calculations are based. Therefore, the previous caveats to well replacement are no longer applicable.

Concentrations of uranium at well 88104, which is nearer former B881, were reported at 61 µg/L and 55.7 µg/L in the May and October 2013 samples, respectively. With removal of the data from the original well, this constituent is calculated to be on an increasing trend here, but the statistical significance of this trend is less than 95 percent. At well 00797, which is farther down the hill to the south, concentrations of uranium were reported as 32 µg/L and 14.7 µg/L, the latter of which is unusually low—typically uranium is reported here I the upper 20s to middle 30s µg/L. Uranium in well 00797 is also calculated to be on an increasing trend, but in this case with statistical significance of 95 percent (Table 99, Appendix B). No other trends are calculated for these wells.

Elsewhere in the former 800 Area, Evaluation well 22996 monitors groundwater downgradient of former Building 886 and other 800-Area buildings (such as Building 865 and Building 883). As noted above, this well was not scheduled for RFLMA sampling in 2013.

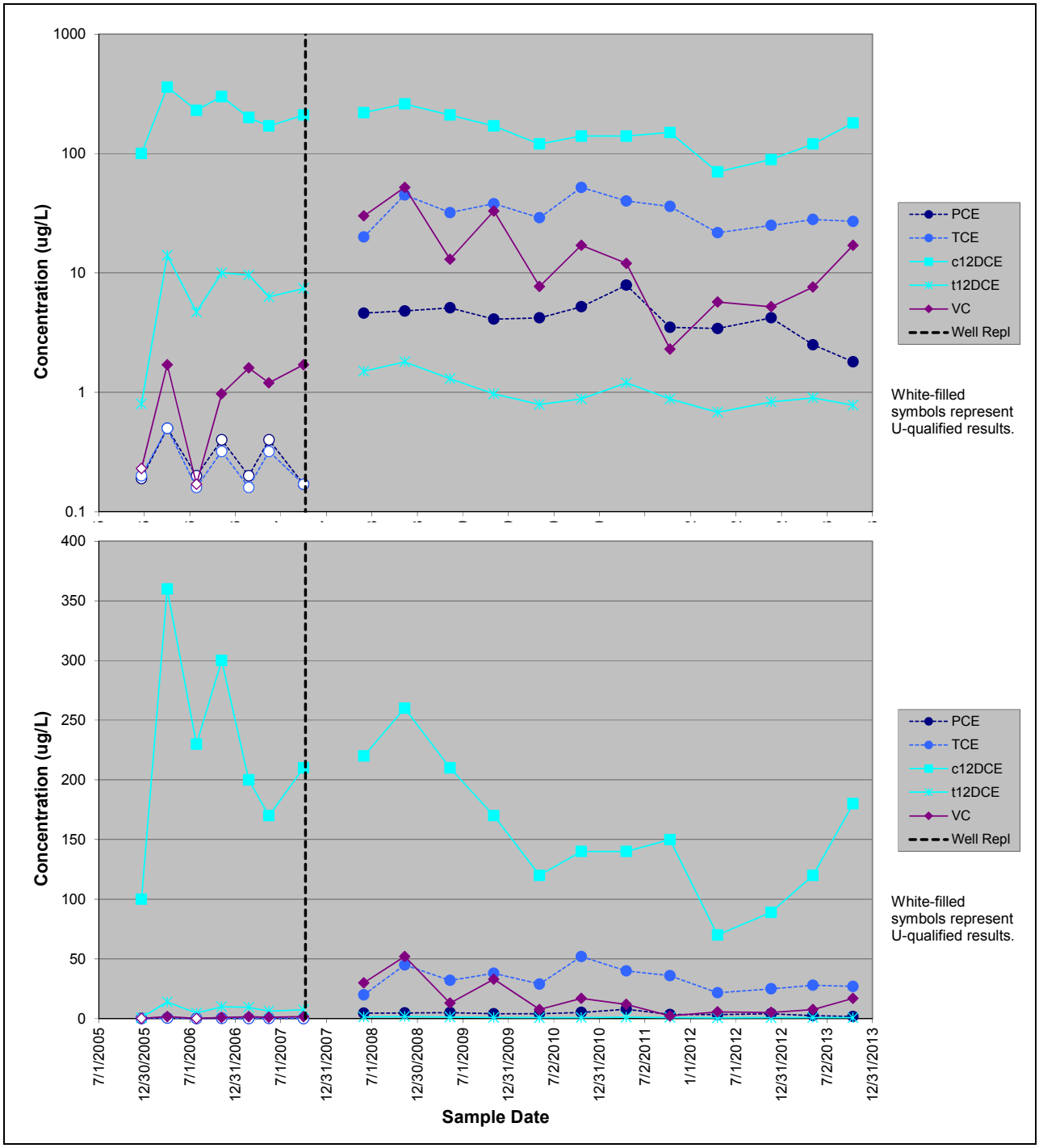
**Hillside south of former B991**: The north-facing hillside south of former B991 contains the remains of a French drain that was installed during the construction of this artificial hillside to stabilize it. Because the drain outfall (former surface water location SW056) produced water containing VOCs, prior to closure the outfall from this drain was removed, the drain itself was interrupted, and electron donor material was added to the backfill to enhance biodegradation of VOCs. Sentinel well 45605 was installed to monitor groundwater adjacent to the drain interruption, but because the French drain no longer had an outlet for collected water, the hillside slumped. Well 45605 was properly abandoned, the area was regraded, and Sentinel well 45608 was installed to replace 45605. For more detail on the hillside and French drain, see the 2006 Annual Report (DOE 2007b); for information on the well abandonment and hillside regrading, see the 2007 and 2008 Annual Reports (DOE 2008b, 2009d). Refer to the 2010 Annual Report (DOE 2011c) for a discussion of potential well replacement-related effects on contaminant concentrations.

Well 45608 was sampled twice in 2013 (May, October). The continuing detections of 1,2-DCE and VC are an indication that biodegradation is still occurring upgradient of the well, though whether this is still related to placement of the electron donor material in 2005 is not known. Figure 257 illustrates time-series plots of several VOCs at this well, with the upper portion of the figure utilizing a logarithmic scale to allow visualization of each constituent, and the lower portion using a linear scale to provide additional perspective on the relative concentrations. From 2008 until recently, concentrations of VC were clearly (but erratically) decreasing. However, in 2013 concentrations of VC increased (Figure 257), as did *cis*-1,2-DCE; concentrations of *trans*-1,2-DCE remained fairly stable with respect to recent years. Concentrations of TCE were also relatively unchanged, while PCE concentrations decreased in 2013. These changes could signify an increase in biodegradation in the 2013 timeframe; with successive removals of a

chlorine atom, PCE transforms to TCE, then to (most commonly) *cis*-1,2-DCE, then to VC and finally to the non-chlorinated compound, ethene. Decreasing PCE is evident, as are relative increases in *cis*-1,2-DCE and VC; conceivably, TCE is being transformed at roughly the same rate it is being created from PCE. As *trans*-1,2-DCE is not a favored metabolic byproduct from the breakdown of TCE (e.g., ITRC 1998; Leeson et al. 2004; K-H 2004c; USGS 2006; Lawrence **2007**), the consistent concentrations of this constituent are not surprising. This explanation, however, is hypothetical; the observed patterns could instead relate to conditions earlier and farther upgradient, or to higher water levels in 2013 flushing constituents to the French drain to be detected at well 45605. While the cause of these changes may never be clear, additional data will help to define any longer-term trends.

Statistical trends calculated for well 45608 have in the past been complicated by well replacement. However, as with well 88204 discussed above, for this 2013 report data from the original well were removed from the data set on which the statistical calculations are based. As a result, trends calculated for this location pertain only to data from this well, not its predecessor, which clearly produced samples with some chemical differences from the current well (see Figure 257). Trends calculated in 2013 and identified as statistically significant with a 95 percent level of confidence at well 45608 (Table 99) include decreasing *trans*-1,2-DCE and VC; decreasing trends with a lower significance are found for *cis*-1,2-DCE and PCE.

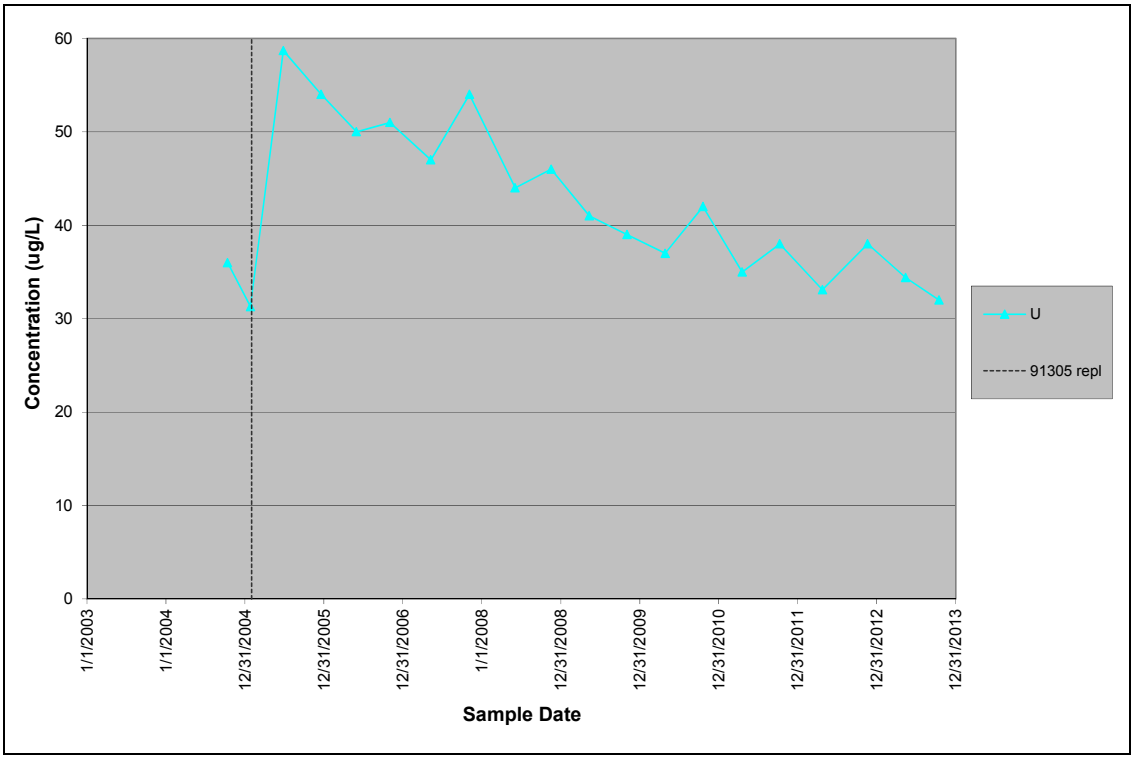
Sentinel well 91305 is also located in this area, west of well 91203 (discussed above in the context of the OBP #2/Mound Plumes) and adjacent to FC-4. As with other Sentinel wells, it was sampled in the second and fourth quarters of 2013 (in the case of this well, in May and October). Concentrations of VOCs in samples from well 91305 remain low, and fewer were detected in 2013 than in 2012. Detections in 2012 included *cis*-1,2-DCE (both sampling events), TCE (both events), and VC (fourth quarter only); in 2013, only *cis*-1,2-DCE and VC were detected, and only in the fourth quarter sample. The concentration of VC reported in 2013 (estimated at 0.11 µg/L) is less than the corresponding RFLMA value (PQL of 0.2 µg/L).




**Notes:** Top and bottom portion incorporate the same data, but top portion uses logarithmic concentration scale, bottom uses linear scale. c12DCE = *cis*-1,2-DCE; t2DCE = *trans*-1,2-DCE; Well Repl = date on which well 45605 was abandoned, with subsequent samples collected from its replacement, well 45608. RFLMA Table 1 values (CDPHE et al. 2012): PCE, 5; TCE, 2.5; *cis*-1,2-DCE, 70; *trans*-1,2-DCE, 100; VC, 0.2. In addition to the nondetects (U-qualified results), several detections were qualified but are not shown differently for simplicity.

*Figure 257. Concentrations of VOCs in Sentinel Well 45608, South of Former B991*

Well 91305 is also monitored for nitrate and uranium, again as part of the network evaluating a potential southeastern pathway for the SPP to reach surface water (as discussed above in the context of the two wells monitoring former B991). Nitrate was detected in both samples, and concentrations were consistent with previous data: both samples reported nitrate at less than 1 mg/L. Uranium concentrations were also consistent with past data, with the May sample at 34.4 µg/L and the October sample reported at 32 µg/L. Concentrations of uranium at this location have been as high as the upper 50 µg/L range, but have been visually decreasing, as shown below in Figure 258. There is an apparent jump in uranium concentrations from the levels reported for the original well, abandoned in January 2005, and the first samples collected from well 91305 in June 2005. This may relate to the roughly 59 feet separating the original from replacement well, or to the substantial reworking of the valley bottom in which this well is installed. Following closure of B991 and other work in this drainage, the small wetland previously present immediately west of original well 2187 was replaced with the larger FC-4 constructed wetland. Whether due to the slight shift in location or closure-related activities in the valley bottom, concentrations of uranium in the well are significantly lower than the uranium threshold of 120 µg/L.




**Notes:** U = uranium. 91305 repl indicates the date on which original well 2187 was abandoned; replacement well 91305 was installed 3 months later, roughly 2 months before the first 2005 sample was collected here. The RFLMA uranium threshold is 120 µg/L.

*Figure 258. Concentrations of Uranium in Samples from Sentinel Well 91305*

Two statistical trends having a 95 percent level of significance are calculated for well 91305 (Table 99 and trend plots in Appendix B). Both are decreasing, and represent concentrations of *cis*-1,2-DCE, and of uranium. The decreasing trend in *cis*-1,2-DCE was previously indicated (e.g., DOE 2013b), but at a lower level of significance. The uranium trend is fairly obvious on Figure 258.

**Former B371**: Groundwater at the former B371 complex is sampled at three Sentinel wells. Each of these wells was sampled twice in 2013 (May, October), in accordance with the RFLMA. These samples are analyzed for VOCs, nitrate, and U. (Samples from two of the wells are also analyzed for plutonium and americium, as discussed in a separate section below.)

Of the VOCs, the most commonly reported detection (consistently reported at J-qualified concentrations below 1 µg/L) is of PCE in samples collected from well 37505. Concentrations do not exceed the RFLMA Table 1 value (5 µg/L). PCE was detected in only the October sample from well 37505, and was reported at an estimated (J-qualified) concentration of 0.48 µg/L. No other VOCs were detected in 2013 in samples collected from any of these three wells.

Nitrate was detected in all samples collected in 2013 from the wells monitoring former B371. All results were below the 10 mg/L RFLMA Table 1 value. The highest concentration reported this year was 6.33 mg/L at well 37405.

Uranium concentrations in groundwater at the B371 monitoring wells are consistently well below the 120 µg/L threshold. The highest concentration reported in 2013 was in a sample from well 37505, with a value of 11.2 µg/L.

S-K trending results (Table 99) indicate an increasing trend meeting the 95 percent level of confidence for nitrate in samples from well 37405 and for U in samples from well 37505, and a decreasing trend of the same significance for uranium at well 37405. The associated trend plots are provided in Appendix B.

**Areas monitored for Plutonium and Americium, and B371 groundwater conditions**: Groundwater immediately downgradient of the former B371 and B771 complexes is monitored for Pu and Am. Abundant technical research (much of which focused specifically on Rocky Flats) has indicated that the groundwater regime does not constitute a meaningful migration pathway for these constituents. Therefore, as in previous years, it is not surprising that the groundwater monitoring wells at Rocky Flats that are sampled for Pu and Am consistently report results for these constituents that are qualified as nondetects. However, due to the production-era missions of these buildings Pu and Am were included in the RFLMA monitoring for these wells to provide stakeholder assurance.

In 2013, just as in previous years, the five wells monitored for Pu and Am (Sentinel wells 20205, 20505, and 20705 at former B771; and 37405 and 37705 at former B371) only reported values qualified as nondetects for these radionuclides. The RFLMA value is 0.15 pCi/L, and reported values in 2013 ranged from –0.00252 pCi/L to 0.0131 pCi/L, again all qualified as nondetects. (As an activity-based analysis that is compared against the activity in a laboratory blank, the analysis always generates a number.) In fact, the only Pu or Am results reported since Site closure that are not qualified as nondetects have been three J-qualified results in samples collected in December 2005, the highest activity of which was 0.0238 pCi/L (representing Am in a sample from well 20705).

### 3.1.6 High-Resolution Uranium Isotopic Analyses

Previous reports have presented data summaries and discussions of specialized uranium analyses performed on selected samples. These high-resolution isotopic analyses generate data used by experts to estimate the relative fraction of the uranium present in a sample that represents naturally-occurring uranium vs. anthropogenic uranium. This distinction is important because the former Rocky Flats Plant worked with anthropogenic (depleted and enriched) uranium only, not natural uranium. Therefore, if uranium in a given sample is natural, it does not represent Site-related uranium contamination.

This analytical service, and the associated data interpretation, was provided by workers at LANL from the 1990s through 2011. However, LANL stopped providing this service and formally notified the Site of this change in 2013. Efforts to locate an alternative service provider had been underway for some time when this notification was received. "Normal" commercial laboratories that were contacted were not able to provide this kind of service; it is very specialized and requires advanced instruments and methods.

In 2013, Lawrence Berkeley National Laboratory (LBNL) confirmed their ability and availability to perform the required analyses and interpretations. Once a contract was in place, the first set of samples was submitted to LBNL for analysis, along with the published model—the method of interpreting the isotopic distributions—used by LANL to estimate natural and anthropogenic quantities in samples previously analyzed by that lab (Janecky 2005). Although there is more than one method of estimating anthropogenic vs. natural uranium, retaining consistency in this method is important because otherwise, changes that might be reported in the isotopic distribution at a given location could be related to the method of interpretation rather than to changes in water quality.

The first batch of samples submitted to LBNL represented water that had been collected since 2011 for this type of analysis (Table 112). These samples had been stored at 4 °C while efforts were underway to either secure a continuing commitment from LANL or identify an alternative laboratory. Most of these samples were focused on characterizing then-new surface water POC WALPOC, and some were also collected to inform the evaluation of uranium at POE GS10. The WALPOC samples were selected to represent a fairly broad range of flow conditions, and the analytical results showed a very consistent isotopic uranium distribution. As shown in this table, surface water at WALPOC was characterized as containing uranium that ranged from approximately 76 percent to 80 percent natural over a period of about 7 months.

*Table 112. Summary of LBNL High-Resolution Uranium Isotopic Results for Samples Collected in 2011–Spring 2013*

| Sample Location | Date Collected | Total U (µg/L)[a] | Percent Natural | Percent Anthropogenic | Previous Number of Sample Events | Average Natural Percentage of Past Samples |
|---|---|---|---|---|---|---|
| WALPOC | 9/22–9/27/2011[b] | 7.6 | 77.39% | 22.61% | N/A | N/A |
| WALPOC | 9/27–11/30/2011[b] | 10.2 | 77.57% | 22.43% | N/A | N/A |
| WALPOC | 1/3–2/23/2012[b] | 12.6 | 79.63% | 20.37% | N/A | N/A |
| WALPOC | 2/23–3/6/2012[b] | 12.2 | 79.48% | 20.52% | N/A | N/A |
| WALPOC | 3/6–3/21/2012[b] | 14.2 | 78.35% | 21.65% | N/A | N/A |
| WALPOC | 4/13/2012–4/21/2013[b] | 15.1 | 77.53% | 22.47% | N/A | N/A |
| WALPOC | 4/21–4/29/2013[b] | 12.6 | 77.79% | 22.21% | N/A | N/A |
| WALPOC | 5/3–5/7/2013[b] | 11.3 | 75.95% | 24.05% | N/A | N/A |
| GS10 | 1/5–1/23/2012[b] | 11.1 | 52.59% | 47.41% | 8 | 68 |
| GS10 | 3/6–3/21/2012[b] | 49.7 | 43.29% | 56.71% | 8 | 68 |
| GS10 | 7/26–9/12/2012[b] | 38.7 | 64.33% | 35.67% | 8 | 68 |
| GS10 | 4/29–5/3/2013[b] | 4.2 | 59.07% | 40.93% | 8 | 68 |
| 79102 | 5/14/2012 | 36.5 | -0.50% | 100.50% | 1 | 0 |

**Notes**:
[a] Total uranium content as reported for split submitted to contract laboratory. LBNL is tasked with providing isotopic data and associated interpretation, not total uranium data. Previous samples representing some locations may predominantly represent pre–closure conditions. Average natural percentages provided incorporate all high-resolution uranium data for the given location received prior to the samples summarized in this table (including duplicates). Refer to previous reports for data for samples collected in earlier years. N/A: No previous data available.
[b] Flow-paced composite sample

Results from GS10 indicate a higher percentage of anthropogenic uranium than had been typical for this location. Previously, samples here were typically in the range of 60/40 to 70/30 natural to anthropogenic. One exception was for a sample collected in June 2011, when the range was approximately 51 percent natural and 49 percent anthropogenic. As seen in Table 112, uranium isotopic distributions at location GS10 were more variable in 2012. Anthropogenic content was estimated as ranging from the more typical (approximately 36 percent in the sample collected July 26, 2012) to representing the predominant form of uranium in a sample (57 percent in the April 29, 2013, sample).

One groundwater sample collected in May 2012 was also submitted to LBNL, and represents a well in the source area of the former SEPs. Evaluation well 79102 has previously been characterized as presenting uranium that is 100 percent anthropogenic, and essentially the same result was assigned to the 2012 sample. That previous sample was collected in June 2004. Given that the SEPs represent a source area for anthropogenic uranium contamination, these results are not surprising for groundwater from a well in this area.

A second batch of samples was submitted to LBNL in late 2013. These samples also focus largely on WALPOC and GS10, as well as selected locations near GS10 and two wells in the Solar Ponds source area. All were collected in 2013, many during or shortly after the elevated flow following the heavy September precipitation. Results are summarized below in Table 113.

*Table 113. Summary of LBNL High-Resolution Uranium Isotopic Results for Samples Collected Later in 2013*

| Sample Location | Date Collected | Total U (µg/L)[a] | Percent Natural | Percent Anthropogenic | Previous Number of Sample Events | Average Natural Percentage of Past Samples |
|---|---|---|---|---|---|---|
| GS10 | 9/13–9/16/2013[b] | 5.55 | 70.12 | 29.88 | 12 | 64 |
| GS10 | 9/24–10/16/2013[b] | 16.3 | 73.27 | 26.73 | 12 | 64 |
| WALPOC | 6/4–9/12/2013[b] | 3.21 | 76.55 | 23.45 | 8 | 78 |
| WALPOC | 9/13–9/14/2013[b] | 1.99 | 79.52 | 20.49 | 8 | 78 |
| WALPOC | 9/14–9/16/2013 | 2.55 | 77.46 | 22.54 | 8 | 78 |
| WALPOC | 9/16–10/25/2013[b] | 11.5 | 74.85 | 25.15 | 8 | 78 |
| SEEP995A | 9/30/2013 | 19.1 | 68.14 | 31.86 | | |
| SEEP995A | 11/25/2013 | 27.8 | 59.67 | 40.33 | | |
| FC4EFF | 9/30/2013 | 15.5 | 73.86 | 26.14 | | |
| FC4EFF | 11/25/2013 | 24.9 | 71.17 | 28.83 | | |
| GS10 | 10/1/2013 | 15.4 | 71.19 | 28.82 | 12 | 64 |
| GS10 | 10/1/2013 | 15.4 | 74.04 | 25.97 | 12 | 64 |
| GS10 | 11/25/2013 | 23.7 | 71.46 | 28.54 | 12 | 64 |
| 79502 | 10/29/2013 | 12.3 | 96.81 | 3.19 | N/A | N/A |
| 79302 | 10/29/2013 | 266 | 87.14 | 12.86 | N/A | N/A |

**Notes**:
[a] Total uranium content as reported for split submitted to contract laboratory. LBNL is tasked with providing isotopic data and interpretation, not total uranium data. Previous samples representing some locations may predominantly represent pre-closure conditions. Average natural percentages provided incorporate all high-resolution uranium data for the given location received prior to the samples summarized in this table. Refer to previous reports for data for samples collected in earlier years. N/A: No previous data available.
[b] Flow-paced composite sample

The data in Table 113 is discussed further in Section 3.1.4 as part of the GS10 uranium evaluation.

Evaluation wells 79302 and 79502 are both in the former SEPs source area, similar to well 79102 (Table 112). However, well 79102 is on the north side of former Pond 207C (the westernmost pond, in the vicinity of the original 1950s ponds) while well 79302 is located near the northeastern corner of the SEPs complex (north of former Pond 207B-North) and well 79502 is located off the southeast corner of the complex (southeast of former Pond 207B-South). (Refer to Figure 4 for a well location map.)

Whereas the uranium in well 79102 was characterized (twice) as 100 percent anthropogenic, that in nearby well 79302 is estimated at about 87 percent natural. This suggests well 79302 is not as impacted by the SPP. However, as shown on Figure 232 and Figure 233, Evaluation well 79305 produces groundwater samples with the highest concentrations of nitrate of any of these wells, signifying contamination with the SPP. Concentrations of uranium, however, are much lower than in other SEP-area wells, and these isotopic data indicate the uranium here is not as clearly indicative of SPP contamination.

Well 79502 produces groundwater samples with relatively low concentrations of nitrate and uranium. Of the Evaluation wells monitoring this source area, this well produces groundwater with concentrations of nitrate and uranium that most closely resemble those from well P210189, which is actually located a short distance upgradient of former Pond 207C. Based on the data consistently reported by well 79502, a southeastern pathway for migration of the SPP toward

South Walnut Creek is interpreted to be insignificant. The uranium isotopic data summarized in Table 113 further support this interpretation. See Section 3.1.5 for additional discussion of groundwater quality in the SPP area.

A third batch of samples was being identified for LBNL analysis as 2013 ended. Some will date to 2013, including just following the heavy precipitation of September. These samples will be selected and submitted to LBNL in 2014, and potentially additional batches will be submitted in 2014. Results will be summarized in the annual report for 2014. The reports from LBNL on the two sample batches summarized above are provided in Appendix G.

## 3.2 Ecological Monitoring at RFS

### 3.2.1 Introduction

The Ecology group conducts ecological monitoring of the Site's ecological resources to ensure regulatory compliance and to preserve, protect, and manage those resources. Ecological monitoring is an integral aspect of determining whether the management objectives and goals for the natural resources at the Site are being achieved. This report summarizes the results of the vegetation, revegetation, and wildlife monitoring conducted at the Site during 2013. It also includes a brief summary of the monitoring conducted for Preble's meadow jumping mouse (*Zapus hudsonius preblei*; Preble's mouse) mitigation and wetland mitigation activities; however, the details of those monitoring efforts are summarized in separate regulatory reports provided to the appropriate agencies.

At an elevation of approximately 6,000 feet, the Site contains a unique ecotonal mixture of mountain and prairie plant species resulting from the topography of the area and its proximity to the mountain front. The POU, the area surrounding the COU (the general area where the former IA was once located), is one of the largest remaining undeveloped tracts of its kind along the Colorado Piedmont. A number of plant communities present in the COU and POU have been identified as increasingly rare and unique by the Colorado Natural Heritage Program (CNHP 1994, 1995). These communities include the xeric tallgrass prairie, tall upland shrubland, wetlands, and Great Plains riparian woodland communities. Small inclusions of a number of other increasingly rare plant communities are also found on the Site. Many of these communities support populations of increasingly rare animals as well, including the federally protected Preble's mouse, and other uncommon species such as the grasshopper sparrow (*Ammodramus savannarum*), loggerhead shrike (*Lanius ludovicianus*), Merriam's shrew (*Sorex merriami*), black-crowned night heron (*Nycticorax nycticorax*), hops blue butterfly (*Celastrina* sp.), and Arogos skipper (*Atrytone arogos*).

During 2007, transfer of portions of the POU was made to USFWS to create the Rocky Flats National Wildlife Refuge. As a result, the total acreage managed by LM is now approximately 1,308 acres in the COU. A summary of the ecological monitoring highlights from the 2013 field season is provided in the following sections. Full, detailed summaries, methodology, and analyses for each field monitoring effort are presented as stand-alone reports on the Ecology DVD included with this report.

South Walnut Creek is interpreted to be insignificant. The uranium isotopic data summarized in Table 113 further support this interpretation. See Section 3.1.5 for additional discussion of groundwater quality in the SPP area.

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During 2007, transfer of portions of the POU was made to USFWS to create the Rocky Flats National Wildlife Refuge. As a result, the total acreage managed by LM is now approximately 1,308 acres in the COU. A summary of the ecological monitoring highlights from the 2013 field season is provided in the following sections. Full, detailed summaries, methodology, and analyses for each field monitoring effort are presented as stand-alone reports on the Ecology DVD included with this report.

### 3.2.2 Vegetation Monitoring

Vegetation monitoring reported here is conducted at the Site to provide information necessary for management of the natural resources. The objectives of the vegetation surveys in 2013 were to:

- Identify new plant species not found at the Site previously.
- Identify and document infestations of selected noxious weeds at the Site to assist with the planning of noxious weed control activities.
- Document and track herbicide applications in 2013.
- Document where revegetation activities were conducted in 2013.
- Conduct photomonitoring for visual documentation of changes in vegetation establishment at the Site.
- Document the establishment and survival rates of shrubs/trees that were planted as part of habitat enhancement projects.
- Document the establishment of volunteer-collected forbs in forb "nurseries."

The methods for these activities may be found in the full vegetation monitoring report on the Ecology DVD included with this report.

### 3.2.3 Site Flora

The complete list of plant species known to occur or that have been recorded at the Site is available on the ecology DVD. The Site species list includes the complete flora of both the COU and the POU. The vascular flora of the Site consists of 637 species of plants. In 2013, one new record of a vascular plant species was reported for the Site flora. Brassica napus, an agricultural plant commonly known as rape (the source of rapeseed oil or canola oil), was collected near the west boundary fence in a revegetation area in the POU. The following taxonomic name will be used at the Site for the new plant species record:

| Family | Scientific Name | Speccode | Common Name |
|---|---|---|---|
| Brassicaceae | *Brassica napus* L. | BRNA1 | Rape |

Voucher specimens of the species will be deposited at the University of Colorado Herbarium in Boulder, Colorado. No new species of noxious weeds were observed at the Site during 2013.

### 3.2.4 Weed Mapping and Weed Control

Figure 259 and Figure 260 show the 2013 weed distribution maps for diffuse knapweed (Centaurea diffusa) and Dalmatian toadflax (Linaria dalmatica), respectively. Table 114 shows the estimated total acreage and acreage-by-density categories for each species, based on the mapping data from 2007 through 2013. The total area of the COU is approximately 1,308 acres. In 2013, diffuse knapweed was observed on approximately 78 acres at various levels of infestation, the lowest amount observed since mapping began in the COU in 2007. Dalmatian toadflax was mapped on approximately 110 acres in 2013, the second lowest amount recorded since 2007. A variety of reasons may account for the reduced abundance of these two noxious weeds. Past herbicide applications certainly have reduced their abundance at the Site.

Additionally, biocontrol insects have been released onsite for both species and are known to have spread across the Site, helping to reduce and keep populations lower. In 2013, the dry conditions experienced at the Site from fall 2012 through spring 2013 have probably also contributed to the lower abundance. Observations in spring 2013 revealed very few diffuse knapweed rosettes at the Site. Annual fluctuations in the abundance of many grassland species are not uncommon, as populations respond to changes in temperature, precipitation amounts, timing of precipitation, and other environmental factors.

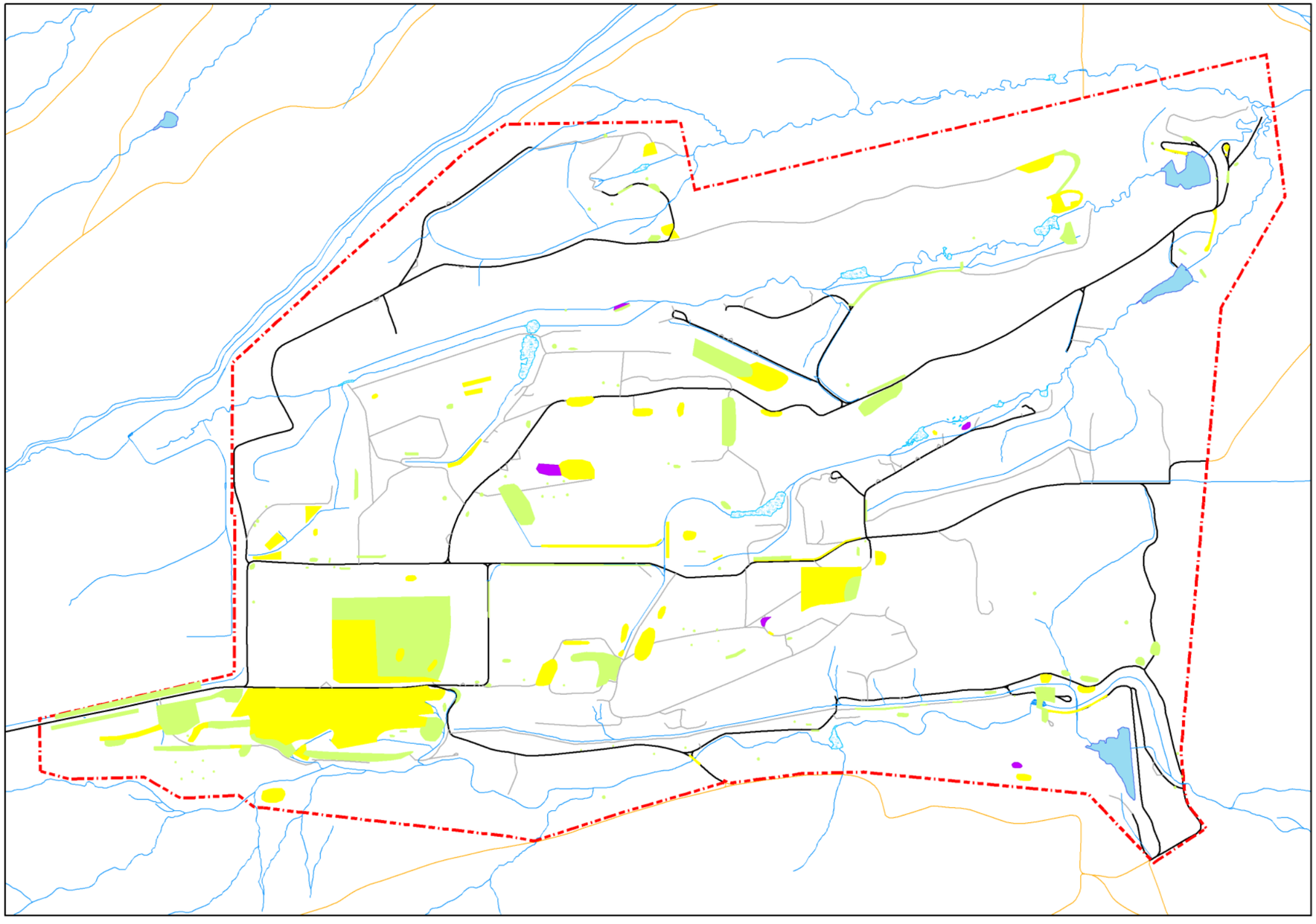
*Table 114. COU Noxious Weed Acreage Summary (2007–2013)*

| Species | Density (acres) | | | | Total | % of Total COU |
|---|---|---|---|---|---|---|
| | High | Medium | Low | Scattered | | |
| Diffuse knapweed | | | | | | |
| 2007 | 2.2 | 41.2 | 248.8 | 167.7 | 459.9 | 35 |
| 2008 | 1.8 | 20.6 | 110.0 | 147.5 | 279.9 | 21 |
| 2009 | 1.6 | 44.6 | 231.2 | 147.5 | 424.9 | 32 |
| 2010 | 0.1 | 10.6 | 155.0 | 64.3 | 230.1 | 18 |
| 2011 | 0.0 | 2.8 | 77.1 | 77.7 | 157.6 | 12 |
| 2012 | 0.0 | 7.6 | 109.1 | 56.4 | 173.1 | 13 |
| 2013 | 0.0 | 0.8 | 41.1 | 36.0 | 77.9 | 6 |
| Dalmatian toadflax | | | | | | |
| 2007 | 77.1 | 51.0 | 0.0 | 109.0 | 237.1 | 18 |
| 2008 | 0 | 0 | 54.3 | 151.8 | 206.1 | 16 |
| 2009 | 2.1 | 16.8 | 56.5 | 386.7 | 462.1 | 35 |
| 2010 | 0.0 | 2.1 | 64.2 | 101.4 | 167.7 | 13 |
| 2011 | 0.0 | 0.0 | 19.9 | 29.0 | 48.9 | 4 |
| 2012 | 0.0 | 2.8 | 53.8 | 58.9 | 115.5 | 9 |
| 2013 | 0 | 0 | 75.3 | 35.1 | 110.4 | 8 |

**Notes:** The total acreage of the COU is 1,308 acres.

For the first time in over a decade, no herbicide applications were made in spring 2013. Reconnaissance efforts during late winter/early spring in the COU revealed no areas that required chemical control efforts. In the fall, approximately 62 acres were treated with herbicides at the Site via ground application (Figure 261), with most of this along the gravel roads. Table 115 lists the target species, treatment (herbicides) used, application rates, acreage treated, and approximate timing of the application during the year. (**Note:** Multiple herbicides are listed at some locations. Depending on site-specific characteristics such as target weed species, the locations of water bodies, soil types, and professional judgment of the licensed herbicide applicator, different herbicides were used within that location to provide the control needed.)

Hand control and weed-whacking were also used to control some small patches of Scotch thistle (*Onopordum acanthium*) and whitetop (*Cardaria draba*) in 2013.



## 2013 Diffuse Knapweed (Centaurea diffusa) Distribution

**Legend**

**Diffuse Knapweed**

**Density**

- Scattered
- Low
- Medium

**Site Features**

- RFS COU Boundary
- Lakes; Ponds
- Wetland/Marsh
- Stream, ditch, or other drainage feature

**Road Type**

- Open
- ATV Only
- Truck By Permission

N

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*Figure 259. 2013 Diffuse Knapweed (Centaurea diffusa) Distribution at Rocky Flats*

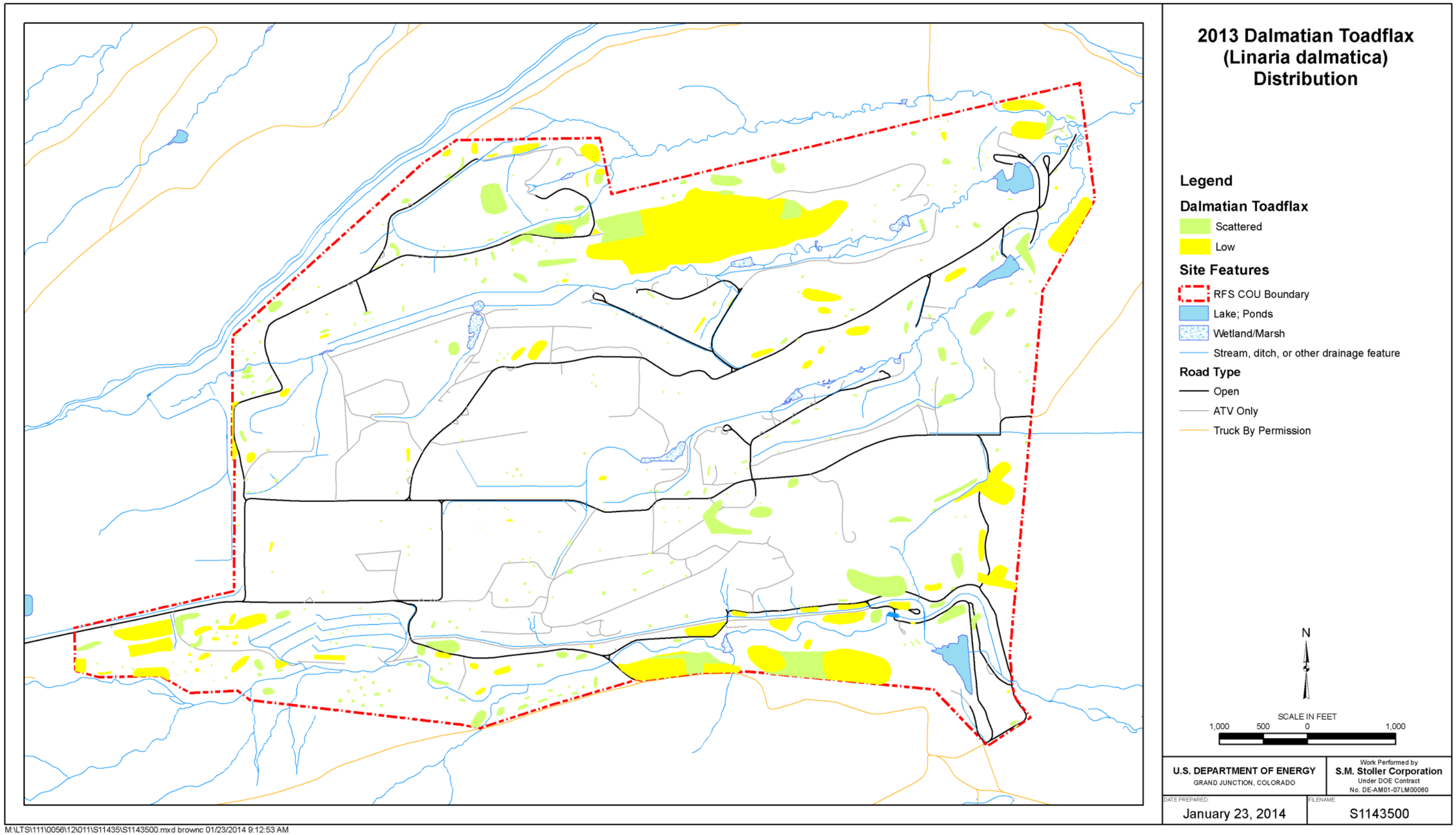



*Figure 260. 2013 Dalmation Toadflax (Linaria dalmatica) Distribution at Rocky Flats*

*Table 115. FY 2013 Herbicide Application Summary*

| Location | Target Species[a] | Treatment[b] (Rate/Acre) | Actual Acreage Treated[c] | Time of Year Treated |
|---|---|---|---|---|
| 1 | CEDI1, VETH1, DACA1 | 7 oz Milestone + 1 oz Escort | 5.60 | Fall 2013 |
| 2 | CEDI1, VETH1 | 7 oz Milestone + 1 oz Escort | 12.00 | Fall 2013 |
| 3 | Total Kill | 96 oz Rodeo | 0.84 | Fall 2013 |
| 4 | Total Kill | 96 oz Rodeo | 0.54 | Fall 2013 |
| 5 | Total Kill | 96 oz Rodeo | 0.67 | Fall 2013 |
| All Roads | BRTE1, AECY1, CEDI1 | 7 oz Milestone + 8 oz Plateau | 42.00 | Fall 2013 |
| | | Annual Total Acreage Treated | 61.65 | |

**Notes:**
[a] Species Codes: AECY1 = Jointed Goatgrass, BRTE1 = Downy Brome, CEDI1 = Diffuse Knapweed, DACA1 = Wild Carrot, VETH1 = Common Mullein
[b] Depending on location specific environmental conditions and which target species were present, one of more of the listed herbicides were mixed together and used in that area.
[c] Acreages based on billing statements, not GIS footprints on map.

A test to evaluate the effectiveness of mechanical control on common mullein (*Verbascum thapsus*) was conducted by mowing and cutting off flower stalks at some small patches in the COU. Reexamination of the patches after a few weeks showed the plants had regrown new flower stalks (often multiple flower stalks per plant where previously there had been one) at the point where the stem had been cut off. These stalks were removed; but resprouted again. Therefore, without continued mechanical control throughout the growing season, mechanical control is not very effective on this species and requires considerable labor. However, at one location (Location 1 on Figure 261), the removal of the flower stalks provided clear access to the rosettes for chemical control that was applied to these plants later in the summer. The combination of mowing plus herbicide applications seems to have been very effective at this location. Mowing and removing the flower stalk may weaken the plant (because it has expended a lot of energy to produce the flower stalk), making it more susceptible to the herbicide application. This could be an effective technique in a situation where chemical control cannot be or was not applied in the early spring when only rosettes are present.

Biocontrol insects continue to be used at the Site. In 2013, no additional releases of biocontrol insects were made since most of the biocontrols released in the past have now largely spread across the Site. Collections and transplants from other established populations of various biocontrols at the Site may be conducted if needed. Additional biocontrol insects for different weed species may be released as they become available.

### 3.2.5 Revegetation Activities

#### *3.2.5.1 Interseeding/Revegetation Activities*

During 2013, interseeding and revegetation activities were conducted to increase vegetation cover or diversity at several locations (Table 116 and Figure 262). An old mining road in the D-2A mine parcel on the western edge of the POU was revegetated in preparation for transfer of the mine parcel to the Rocky Flats National Wildlife Refuge (Figure 263). At three other locations (B371 Revegetation Area, East Trenches Revegetation Area, and Mound Revegetation Area) compost was disced to add organic matter to the soil. Other areas were interseeded to increase vegetation cover.

*Table 116. 2013 Revegetation Location Summary*

| Project Name | Seeding/ Installation Date | Acres | Seed Mix[a] or Plants Installed | Seeding/Planting Method |
|---|---|---|---|---|
| 2013 Shrub Planting | 4/4/2013 | 1.2 | Four-wing Saltbush, Buffaloberry | 10 cu. in. plants, Hand Installed |
| A-3 Interseeding | 11/14/2013 | 1.8 | Mesic seed mix | Hand Broadcasting |
| B371 Revegetation Area | 6/6/2013 | 0.5 | Mesic seed mix | Compost added, ATV Broadcasting and Harrowed |
| D-2 Parcel Road Revegetation Area | 4/8/2013 | 4.7 | Xeric seed mix | Sustane Fertilizer, Broadcast seeding and Harrowed |
| East Trenches Revegetation Area | 6/6/2013 | 0.2 | Xeric seed mix | Compost added, ATV Broadcasting and Harrowed |
| East Trenches Solar Project Interseeding | 10/17/2013 | 0.04 | Mesic seed mix | Hand Broadcasting |
| FC-1 Road Crossing Interseeding | 12/19/2013 | 0.03 | Mesic seed mix | Hand Broadcasting |
| Volunteer Graminoid Seed | 11/27/2013 | 1.6 | Volunteer collected seed | Hand Broadcasting |
| Forb Nurseries | 12/18/2013 | 0.7 | Volunteer collected seed | Hand Broadcasting |
| Mound Revegetation Area | 6/6/2013 | 1.7 | Mesic seed mix | Compost added, ATV Broadcasting and Harrowed |
| PLF Interseeding | 11/14/2013 | 1.3 | Mesic seed mix, coyote willow stake installation | Hand Broadcasting and Planting of Willow stakes |
| WALPOC Interseeding | 10/17/2013 | 0.2 | Mesic seed mix | Hand Broadcasting |
| WOMPOC Interseeding | 11/26/2013 | 0.2 | Mesic seed mix | Hand Broadcasting |
| | Total | 14.2 | | |

**Notes:**
[a] Seed mixes are listed in the *Rocky Flats, Colorado, Site Revegetation Plan* (DOE 2009b).

### *3.2.5.2 Habitat Enhancement Project Evaluations*

In 2012 and 2013, projects were begun to enhance onsite habitat for wildlife and to increase vegetation diversity. In spring 2012, five different shrub and tree species were planted on a hillside in the north-central COU (north of the 2013 Shrub Planting Location on Figure 262). The species included buffaloberry (*Shepherdia argentea*), fourwing saltbush (*Atriplex canescens*), coyote willow (*Salix exigua*), chokecherry (*Prunus virginiana*), and plains cottonwood (*Populus deltoides*). These plants were irrigated for only the first growing season (2012) using a gravity-fed irrigation system. Although several plains cottonwood and chokecherry plants had been repeatedly browsed (some to the ground) by mule deer (*Odocoileus hemionus*) and elk (*Cervus elaphus*), all plants were alive in fall 2012. As of fall 2013, all of the chokecherry, buffaloberry, and fourwing saltbush were still alive. One coyote willow and three plains cottonwood trees died in 2013. The death of the coyote willow was likely due to a lack of water, while the plains cottonwoods died from continued browsing by mule deer and elk. To protect the remaining chokecherry and plains cottonwood plants from future browse damage, welded-wire fencing attached to three t-posts was installed around each of the remaining chokecherry and plains cottonwood plants in the fall of 2013.

In spring 2013, 72 buffaloberry and 72 fourwing saltbush were planted near the location of the former Solar Ponds in the COU as a habitat enhancement project (Figure 262). These two species were selected based on the lessons learned from the 2012 habitat enhancement project. They were watered weekly through the first growing season. As of fall 2013, 33 of 72 (approximately

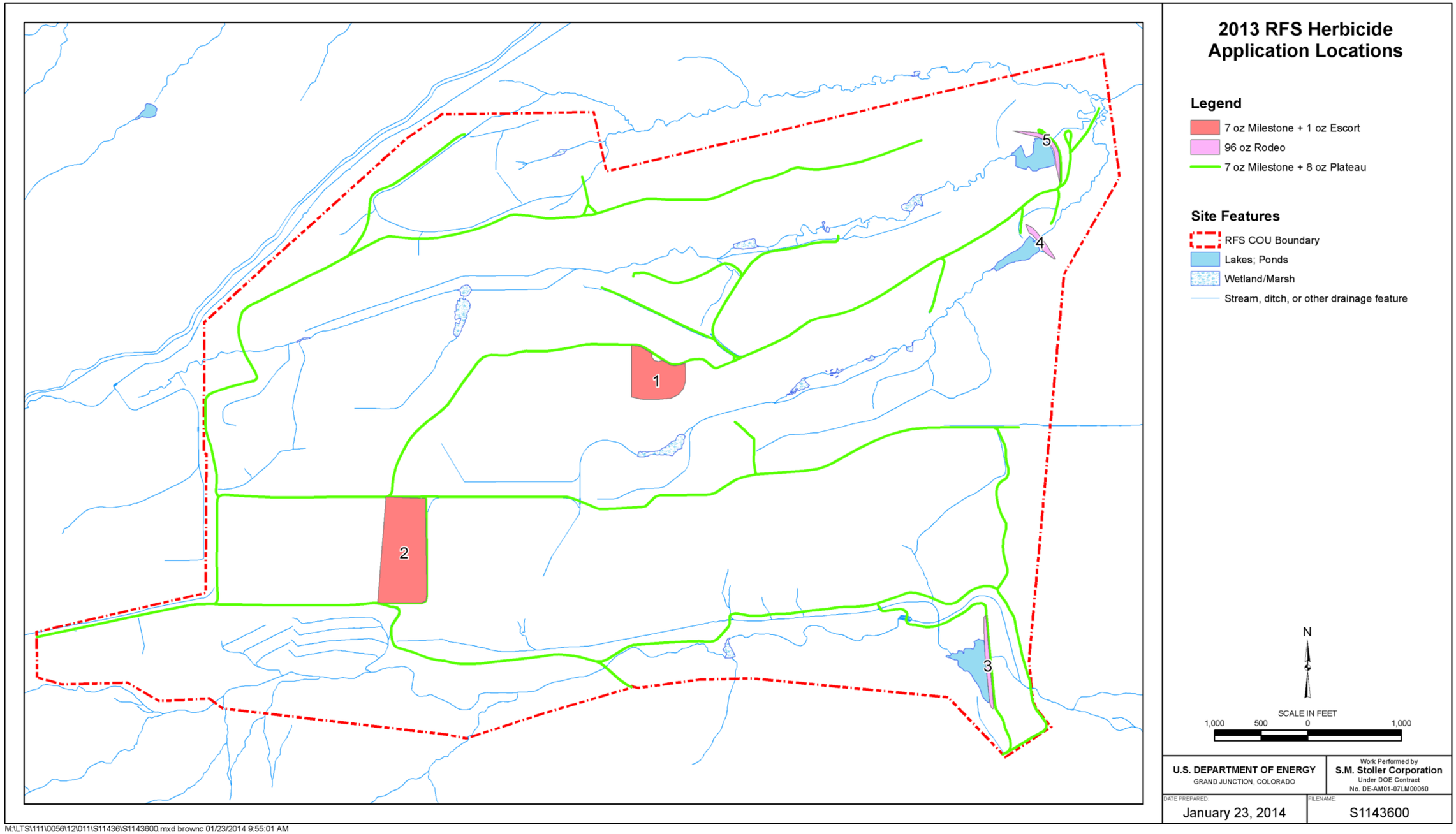



*Figure 261. 2013 Herbicide Application Locations at the Rocky Flats Site*

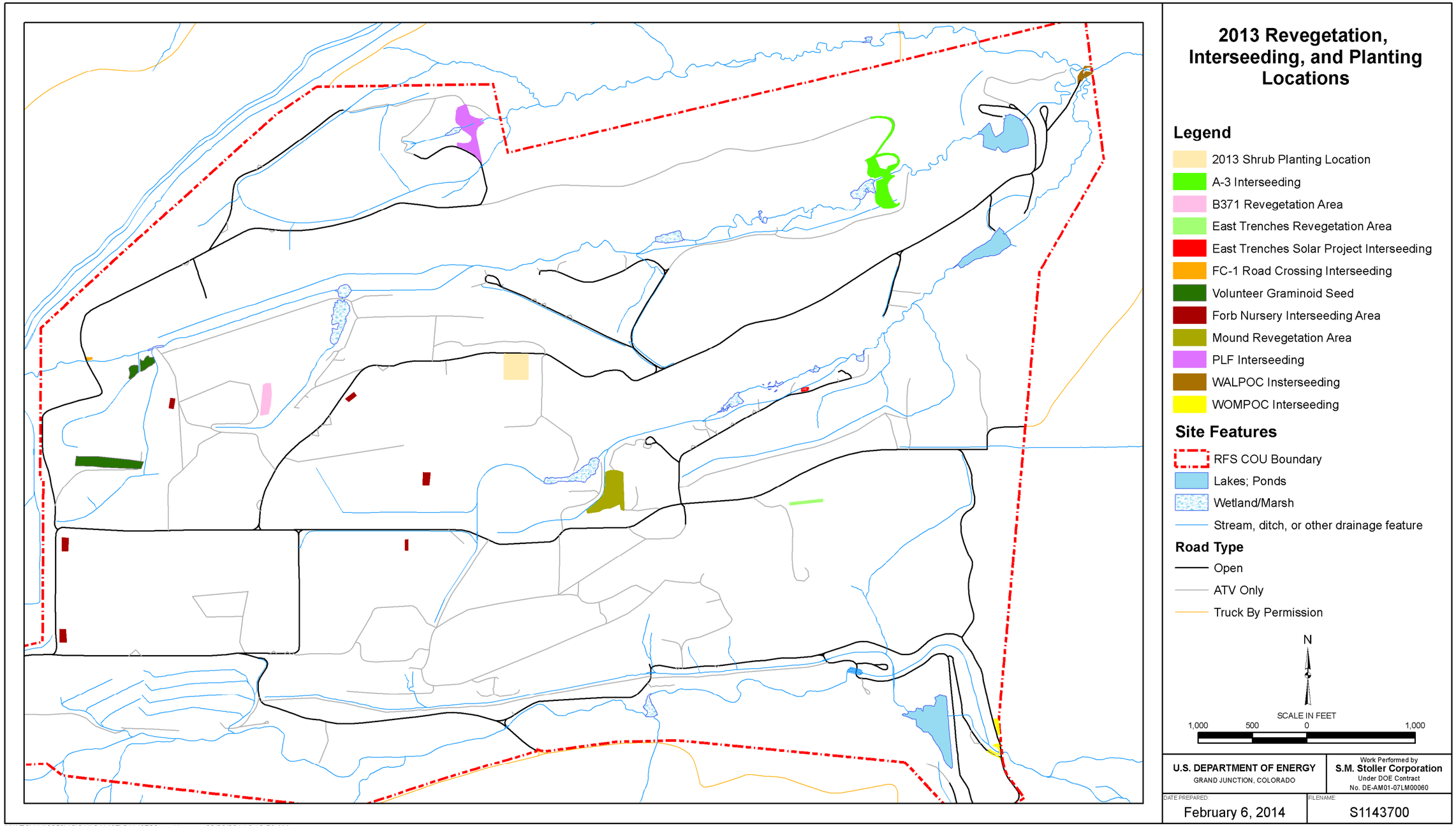
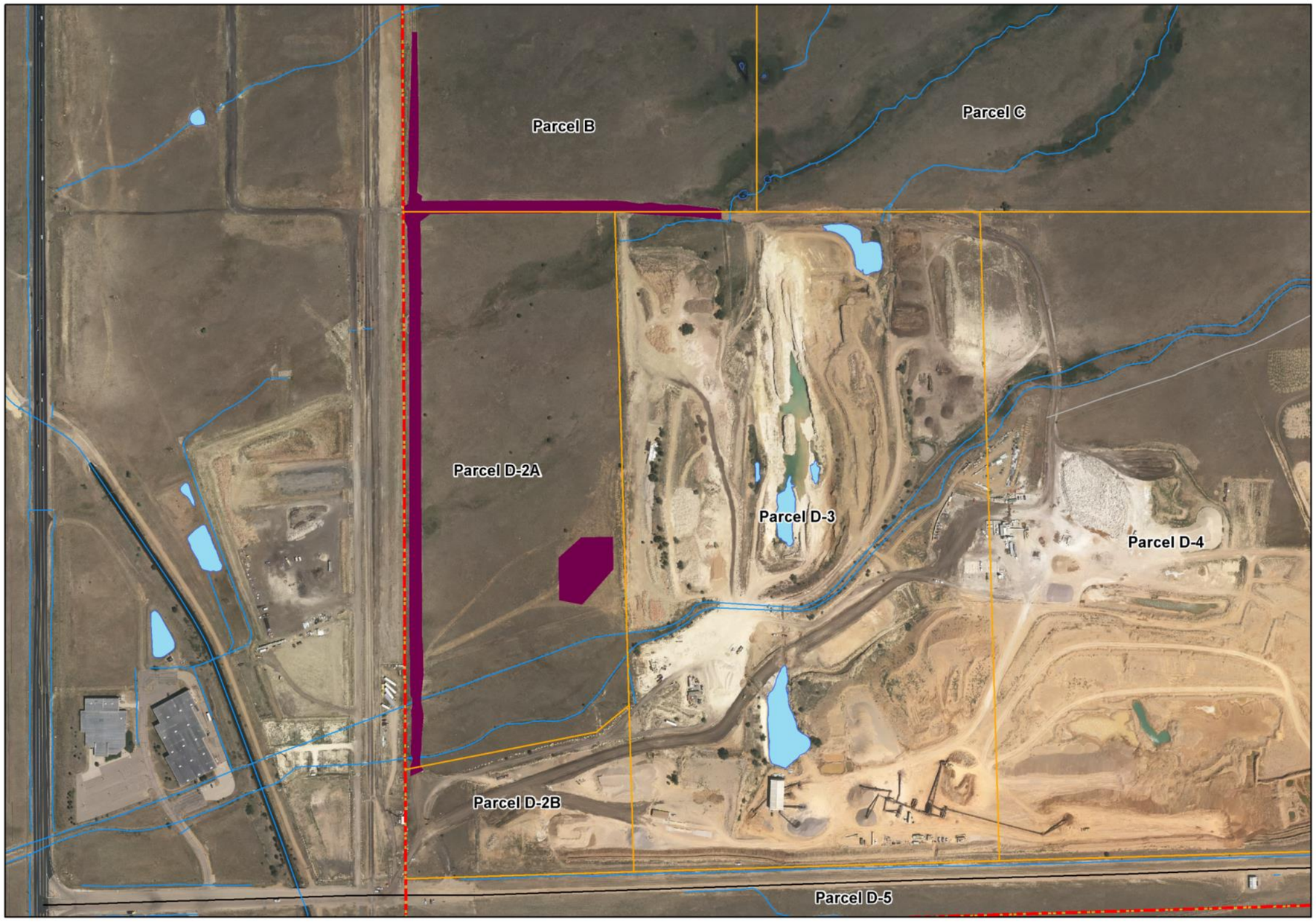



*Figure 262. 2013 Revegetation, Interseeding, and Planting Locations*




**D-2 Parcel Road Revegetation Project**

**Legend**

- D-2 Parcel Road Revegetation Area
- Mine Parcel Boundaries
- RFS POU Boundary
- Lakes; Ponds
- Wetland/Marsh
- Stream, ditch, or other drainage feature

**Roads**

- Open
- ATV Only
- Truck By Permission

N

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| U.S. DEPARTMENT OF ENERGY<br>GRAND JUNCTION, COLORADO | Work Performed by<br>S.M. Stoller Corporation<br>Under DOE Contract<br>No. DE-AM01-07LM00060 |
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*Figure 263. D-2 Parcel Road Revegetation Project*

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46 percent) buffaloberry and 57 of 72 (approximately 79 percent ) fourwing saltbush plants were still alive. Some of the loss of buffaloberry plants can be attributed to a heavy frost in the late spring. Initial damage was noted to the buffaloberry after the frost occurred, and many of the small plants never recovered. The fourwing saltbush plants were more tolerant of the frost. No browse damage was noted on any of the plants. Survival monitoring will continue at both of these locations for the next several years.

#### *3.2.5.3 Volunteer Seed Collections/Forb Nursery Evaluations*

For the past several years, the Jefferson County Nature Association has sponsored volunteer seed-picking days to provide local ecotype seed and local species, which are not available commercially, for inclusion in the revegetation efforts at the Site and other nearby projects. Sixteen forb "nurseries" have been established in the COU (Figure 264). Four were established in 2010 (F1, F2, F3, and F4), four in 2011 (F9, F11, F12, and F13), and eight in 2013 (F5, F6, F7, F8, F10, F14, GF1, and GF2). The forb nursery areas are locations where the forb seed was interseeded into a delineated "patch" that is not treated with herbicides. As the forbs establish in these areas, the seed from these plants is expected to spread downwind and further increase the forb diversity in the revegetation areas. In 2013, approximately 6 pounds of graminoid seed and 5 pounds of forb seed were collected by volunteers. The graminoid seed was interseeded on the hillsides at FC-1 (Figure 262). The forb seed was interseeded into the forb "nursery" locations that were established in early 2013 (Figure 262).

Table 117 summarizes the data collected in 2013. Rows highlighted in yellow are those species that were most likely to be in the volunteer-collected forb seed. Prior to 2013, presence/absence data was collected at the nurseries that were established in 2010, but no abundance data was associated with many species. If no abundance data were collected for a specific species, this is indicated by an "ND" in the table.

Evaluation of the data reveals a succession of native forb establishment over time. For this evaluation species classified as "infrequent" or "abundant/common" are included and those classified as "rare" are not included. In the nurseries planted in early 2013, Porter's aster (*Aster porteri*), hairy false golden aster (*Chrysopsis villosa*), and rockyscree false goldenaster (*Chysopsis fulcrata*), established readily in the first year. At the nurseries planted in 2011, these three species were the only infrequent or abundant species present after three growing seasons. It should be noted that at several 2013 locations and at one 2011 location (F12), these species were also present in the reference locations in similar abundance. This suggests that the seeds of these species which are easily wind-dispersed, blew in from the seeded areas or were already present.

At the locations seeded in 2010, several more native forb species have become established. Porter's aster, golden aster, western sagewort (*Artemesia campestris*), silky wormwood (*Artemesia dracunculus*), silver sage (*Artemesia frigida*), snakeweed (*Gutierrezia sarothrae*), blazing star (*Liatris punctata*), and soft goldenrod (*Solidago mollis*) have all become established and are doing well. In the reference areas at these locations, the abundance of these species is mostly rare, if they occur at all. This suggests that the seeding has influenced the abundance of these species at these locations and, although it may take several years before the some of these species appear, seeding is effective.

Interestingly all of the volunteer-collected species are in the composite (Asteraceae) plant family and they flower and set seed in late summer and early fall. Since the volunteer seed collection typically occurs from early September through November, this is not unexpected. If spring or mid-summer forbs are desired in the revegetation areas, seed collection would need to be done at other times of the year to collect those species when they have set seed.

### 3.2.6 Revegetation Monitoring

Revegetation monitoring is conducted to determine if new revegetation locations have met or are establishing to the point where they will meet success criteria. However, as part of the long-term stewardship of the Site, the various revegetation locations (which have already met the success criteria) are also monitored every few years to evaluate the long-term sustainability of the vegetation and the potential successional changes in plant community composition. Each of the revegetation units monitored in 2013 had previously met the success criteria. The methods are not presented here but may be found in the full revegetation report on the Ecology DVD included with this report.

The success criteria, as stated in the Rocky Flats, Colorado, Site Revegetation Plan (Revegetation Plan; DOE 2009b), are as follows:

- A minimum of 50 percent of the seeded native species will be present at the revegetation site.
- The revegetation site will have a minimum of 70 percent total ground cover that comprises litter cover, current-year live vegetation basal cover, and rock cover.
- The revegetation site will have a minimum of 30 percent relative foliar cover of live desired species (seeded or nonseeded native species). Relative cover is defined as the percentage of cover of a given species divided by the total amount of vegetation cover present. Example: Species A has 20 percent absolute cover, and total vegetation cover (all individual species cover values summed) is 80 percent:

Relative cover of Species A = (20 / 80) × 100 = 25 percent

- No single species will contribute more than 45 percent of the relative foliar cover (except in areas where dominance by a single species is appropriate for long-term wildlife and habitat management objectives).

Semi-quantitative revegetation monitoring was conducted during the summer 2013. The monitoring method provided in the Revegetation Plan, with some modification, was used. The revegetation areas were divided into units on the basis of geographic features (e.g., roads, streams) or previous building areas (e.g., 700 Area, 400 Area). The unit boundaries were the same as had been used for previous sampling efforts. Thirteen revegetation units were sampled in 2013 (Figure 265[20]).

[20] Although the text refers to the revegetation units with a prefix of "L," (e.g., L1), the revegetation unit numbers area shown on Figure 259 without the "L."

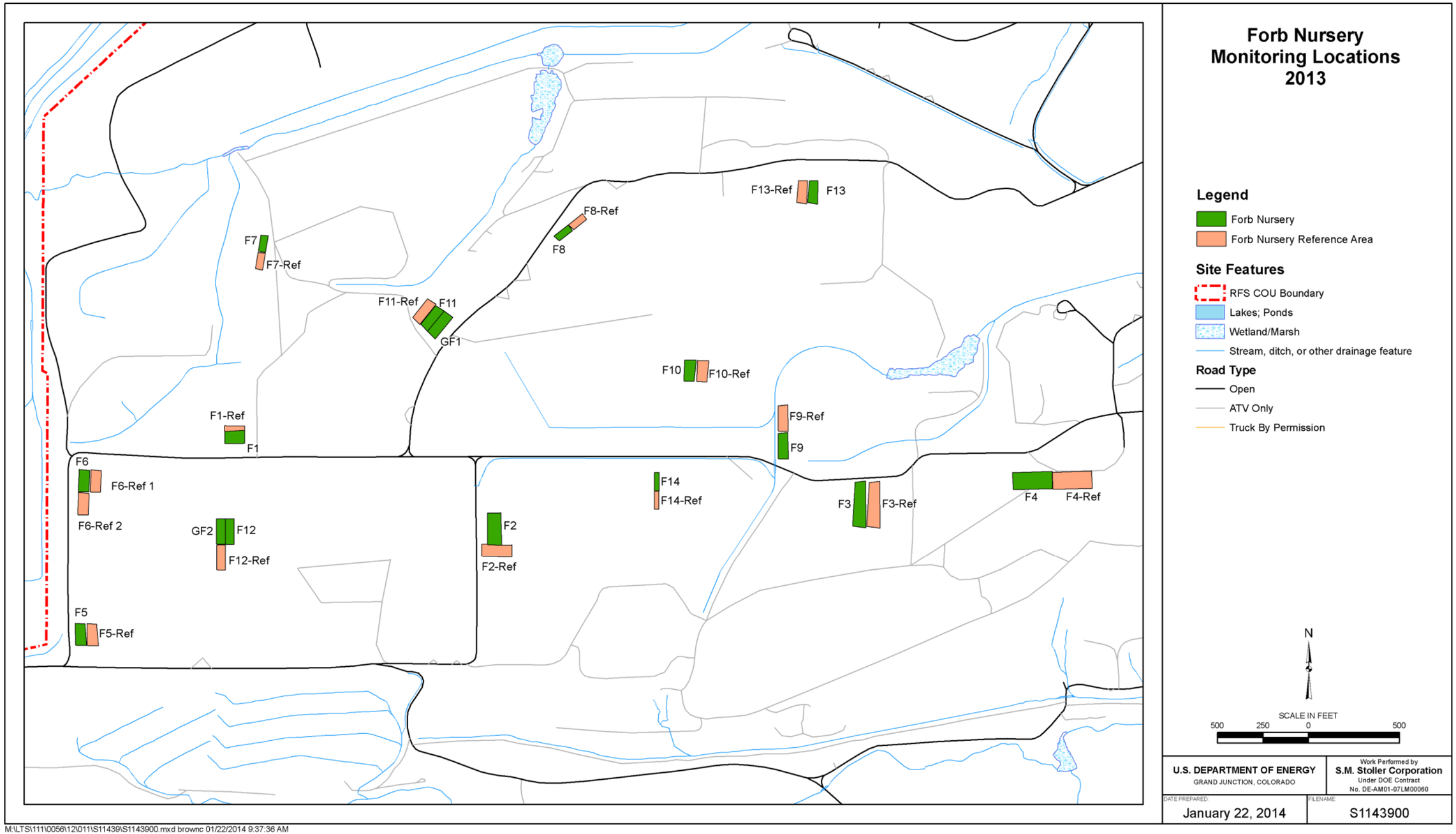


*Figure 264. Forb Nursery Monitoring Locations*

*Table 117. Forb Nursery Abundance Summary 2010–2013*

| | | | | | F1 | | | | | F2 | | | | | F3 | | | | | F4 | | | | | F9 | | F11 | | F12 | | F13 | | F5 | | F6 | | | F7 | | F8 | | F10 | | GF1 | | GF2 | | F14 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Year Forbs Seeded | | | 2010/2012 | | | | | 2010/2012 | | | | | 2010/2012 | | | | | 2010/2012 | | | | | 2011/2013 | | 2011 | | 2011 | | 2011 | | 2013 | | 2013 | | | 2013 | | 2013 | | 2013 | | 2013 | | 2013 | | 2013 | |
| | | Nursery (N) or Reference (Ref) Area | | | N | N | N | N | REF | N | N | N | N | REF | N | N | N | N | REF | N | N | N | N | REF | N | REF | N | REF | N | REF | N | REF | N | REF | N | REF | REF | N | REF | N | REF | N | REF | N | REF | N | REF | N | REF |
| Scientific Name | Speccode | Growth Form | Native | Noxious Weed | 2010 | 2011 | 2012 | 2013 | | 2010 | 2011 | 2012 | 2013 | | 2010 | 2011 | 2012 | 2013 | | 2010 | 2011 | 2012 | 2013 | | 2013 | | | | | | 2013 | | 2013 | | 2013 | | | 2013 | | 2013 | | 2013 | | 2013 | | 2013 | | 2013 | |
| Achillea millefolium L. ssp. lanulosa (Nutt.) Piper | ACMI1 | F | Y | | | | | | | | | | R | | | | | | | | | | | | | | | | I | | | | | | | | | | | | | | | | | | | | |
| Alyssum minus (L.) Rothmaler var. micranthus (C. A. Mey.) Dudley | ALMI1 | F | N | | | ND | ND | | | | | ND | | | | ND | ND | | | | ND | ND | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Amaranthus retroflexus L. | AMRE1 | F | Y | | | | | | | | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ambrosia artemisiifolia L. | AMAR1 | F | Y | | | | | R | | | | | | | | | | | | | | | | | R | | R | R | | | R | | R | R | R | | R | | | | | | | | R | | | | |
| Ambrosia psilostachya DC. | AMPS1 | F | Y | | | | | | | | | | | | | | ND | R | | | | | | | | | | | | | | | R | I | | | | | | | | | | | | | | | |
| Antennaria sp. | ANT1 | F | Y | | | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Artemisia campestris L. ssp. caudata (Michx.) Hall & Clem. | ARCA1 | F | Y | | | | | | | | R | I | I | | | | R | | | | R | R | I | | R | | | | R | | | | | | | | | | | | | | | | R | | | | |
| Artemisia dracunculus L. | ARDR1 | F | Y | | | | | | | | | | I | | | | | | | | | | I | | | | | | | | | | R | | | | | | | | | | | R | | | | | | |
| Artemisia frigida Willd. | ARFR1 | F | Y | | | | | | | | | | R | | | | | R | | | | R | I | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Artemisia ludoviciana Nutt. var. ludoviciana | ARLU1 | F | Y | | | | | | | | | | R | | | | | | | | | R | | | R | | | | | | | | | | | | R | | | | | | | | | | | | | |
| Asclepias speciosa Torr. | ASSP1 | F | Y | | | | | | | | | | | R | | | | | | | | | | | | | R | | R | R | | | | | R | | | | | | | | | | | | R | | | |
| Asclepias viridiflora Raf. | ASVI1 | F | Y | | | | | | | | | | | | | | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Aster falcatus Lindl. | ASFA1 | F | Y | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | | | | | | | | | | | | | | | R | | | |
| Aster fendleri A. Gray | ASFE1 | F | Y | | | | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | R | | | | | | | | | | | | | |
| Aster porteri Gray | ASPO1 | F | Y | | | | R | I | R | | I | I | A | R | | | | R | | | | R | I | R | I | R | | | A | A | R | | A | A | A | A | A | I | | | | A | | R | | A | A | | R |
| Carduus nutans L. ssp. macrolepis (Peterm.) Kazmi | CANU1 | F | N | X | | | | | | | | | | | | ND | ND | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Castilleja integra A. Gray | CAIN2 | F | Y | | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Centaurea diffusa Lam. | CEDI1 | F | N | X | | | ND | R | R | | ND | ND | I | R | | ND | ND | A | R | | ND | A | A | A | I | I | | R | I | I | A | I | I | I | R | R | | R | R | R | | | R | R | R | R | I | R | |
| Chenopodium fremontii S. Wats. | CHFR1 | F | Y | | | | | | | | | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chrysopsis fulcrata Greene | CHFU1 | F | Y | | | R | R | A | R | | I | A | A | | | R | R | A | | | R | R | A | I | A | R | I | R | I | I | I | R | A | A | I | I | I | R | R | R | | | | A | R | A | I | | |
| Chrysopsis villosa Pursh. | CHVI1 | F | Y | | R | R | R | I | | R | I | R | A | R | | R | R | | R | I | R | A | A | A | R | | I | R | A | A | | | | R | A | R | I | I | | | | R | | R | R | I | A | | |
| Cirsium arvense (L.) Scop. | CIAR1 | F | N | X | | | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Convolvulus arvensis L. | COAR1 | F | N | X | | ND | ND | R | R | | | | | R | | ND | ND | R | | | ND | ND | I | | | | | | | | A | A | R | R | | | | | | | | | | | | | | |
| Conyza canadensis (L.) Cronq. | COCA1 | F | Y | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | | | | | | | | R | | | | | | | R | | |
| Dalea purpurea Vent | DAPU1 | F | Y | | | | | | | | | R | | | | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dyssodia papposa (Vent) Hitchc. | DYPA1 | F | N | | | | | R | | | | | | | | | | | | | ND | | | R | | R | | | A | I | | | | | I | R | I | | | | | | | | | | I | I | | |
| Erigeron divergens T. & G. | ERDI1 | F | Y | | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Erigeron strigosus Muhl. ex Willd. | ERST1 | F | Y | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | | | | | R | | | R | | | | | | | R | | | |
| Eriogonum alatum Torr. | ERAL1 | F | Y | | | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Erodium cicutarium (L.) L'Her. | ERCI1 | F | N | X | | ND | ND | R | A | | | | | | | ND | ND | I | R | | | | | | | | | R | R | | | | R | I | | | | | | | | R | R | R | | | | R |
| Euphorbia serpyllifolia Pers. | EUSE1 | F | Y | | | ND | | | I | | ND | | | | | | | | | | | | | | R | R | R | R | R | | I | R | R | | | | | I | I | | | I | R | I | R | | | | R |
| Gaillardia aristata Pursh. | GAAR1 | F | Y | | | | R | | | | | R | R | | | | | R | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | |
| Grindelia squarrosa (Pursh.) Dun. | GRSQ1 | F | Y | | | ND | A | I | R | | ND | A | A | R | | ND | ND | I | | | ND | A | A | R | A | I | | | I | I | I | R | I | R | I | I | I | R | | | | A | R | I | | A | I | | R |
| Gutierrezia sarothrae (Pursh.) Britt. & Rusby | GUSA1 | F | Y | | | | R | R | | | R | | R | | | | | | | | ND | R | I | R | | | | | R | | | | | | | | | | | | | | | | | | | | |
| Hackelia floribunda (Lehm.) I. M. Johnst. | HAFL1 | F | Y | | | | | | | | | | | | | | | | | | | | | | | | | | R | R | | | | | R | R | | | | | | | | | | | R | | |
| Helianthus annuus L. | HEAN1 | F | Y | | | | | | R | | | | | | | ND | | | | | | | | | I | I | R | | | | A | A | | | | | | | R | I | | | | R | | | | | |
| Helianthus pumilus Nutt. | HEPU1 | F | Y | | | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hypericum perforatum L. | HYPE1 | F | N | X | | | | | | | | | R | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kochia scoparia (L.) Schrad. | KOSC1 | F | N | | | ND | | | | | | | | | | ND | ND | I | I | | | | | | | | | | | | | R | R | R | I | | R | R | R | A | R | R | I | | | | | | R |
| Kuhnia eupatorioides L. | KUEU1 | F | Y | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | | | | |
| Lactuca serriola L. | LASE1 | F | N | | | | ND | | | | | ND | | | | ND | ND | | | | | | | | | R | | R | | | | R | R | | | R | | | | | | | R | R | | | | |
| Liatris punctata Hook. | LIPU1 | F | Y | | | | | I | R | | | | R | | | | | | | R | R | R | I | I | | | | | | | | | R | | R | | | R | R | | | | | R | | | | | |
| Linaria dalmatica (L.) Mill. | LIDA1 | F | N | X | | | | | | | | ND | R | R | | ND | ND | I | | | | ND | R | I | | | R | R | | | | R | | | | | R | | | | | | R | R | | | | |
| Marrubium vulgare L. | MAVU1 | F | N | | | | | | R | | | | | | | ND | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Medicago lupulina L. | MELU1 | F | N | | | | | | | | ND | ND | | | | | | | | | ND | ND | | | | | | | | | | | | | | | | | | | | | | | | | | | R |
| Melilotus alba Medic. | MEAL1 | F | N | | | | | | | | | | | R | | | | | | | | | R | | R | R | | | I | | | | | | | | R | | | | | | | | | I | | | R |
| Melilotus officinalis (L.) Pall. | MEOF1 | F | N | | | | | R | R | | ND | | I | I | | | | | | | | ND | I | I | I | R | R | I | A | A | I | A | | R | I | R | I | I | I | | I | R | R | R | I | A | A | R | R |
| Oenothera villosa Thunb. ssp. strigosa (Rydb.) Dietrich & Raven | OEVI1 | F | Y | | | | | | | | | | | | | | ND | | | | | | | | I | R | | | R | R | | | | | | R | R | | | | R | R | | | R | R | | | R |
| Plantago lanceolata L. | PLLA1 | F | N | | | | ND | R | I | | | ND | | R | | ND | ND | I | R | | | ND | R | R | | R | | | I | I | | | I | I | I | A | A | | | | | | | | | I | I | | |
| Psoralea tenuiflora Pursh. | PSTE1 | F | Y | | | | | | | | | | | R | | | | | | | ND | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rumex salicifolius Weinm. ssp. triangulivalvis Danser | RUME1 | F | Y | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Salsola iberica Senn. & Pau. | SAIB1 | F | N | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | | | | | I | R | | | R | | | | | |
| Scorzonera laciniata L. | SCLA1 | F | N | | | | ND | | | | | | | | | | ND | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | |
| Senecio spartioides T. & G. | SESP1 | F | Y | | | | | | | | | | | R | | | | | | | | R | R | | | | | | R | | | | | | R | | R | R | | | | | R | | R | | | | |
| Sisymbrium altissimum L. | SIAL1 | F | N | | | | | | | | | | | | | ND | ND | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Solidago missouriensis Nutt. | SOMI1 | F | Y | | | | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Solidago mollis Bart. | SOMO1 | F | Y | | | | | R | | | | | A | | | | | | | | | | | | | | | | R | | | | | | | | | | | | | | | | | R | | | |
| Solidago rigida L. | SORI1 | F | Y | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sonchus arvensis L. ssp. arvensis L. | SOAR1 | F | N | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | | | | |
| Spergularia media (L.) Presl. | SPME1 | F | Y | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | | | | |
| Taraxacum officinale Weber | TAOF1 | F | N | | | | ND | R | | | | | | | | | | R | | | ND | ND | | | | | | | R | | | | | | | R | | | R | R | R | R | | | | | | |
| Tragopogon dubius Scop. | TRDU1 | F | N | | | | | | | | | ND | | | | ND | ND | R | | | | ND | | | | | | | | | I | I | R | R | R | R | R | R | | | | | | | | | | | R |
| Unknown Species | UNKN | F | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | | | | | | | | | | | |
| Verbascum blattaria L. | VEBL1 | F | N | X | | | | | | | | | | | | ND | ND | | | | ND | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Verbascum thapsus L. | VETH1 | F | N | X | | | | | | | | ND | R | R | | ND | ND | A | I | | ND | A | I | A | | | | R | | R | R | R | | R | | | R | | R | | | R | R | R | R | | R | | R |
| Verbena bracteata Lag. & Rodr. | VEBR1 | F | Y | | | | | | | | | | | R | | | | | | | | | | | | | | I | | | R | | | R | | | | | | | | R | | R | I | | | | |
| Xanthium strumarium L. | XAST1 | F | Y | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | R | R | | | | | | | | |

Nursery Area = N, Reference Area = R
Growth Form: F = Forb
Native: Y = Yes, N = No
Noxious: CO Listed Noxious Weed (2013 List)
Abundance Code: R = Rare, I = Infrequent, A = Abundant/Common, ND = No Data (Indicates that species was present, but no abundance data was collected in that year)
Blank Cells = Species was not observed that year.
Yellow rows indicate species that were likely in the volunteer collected seed.

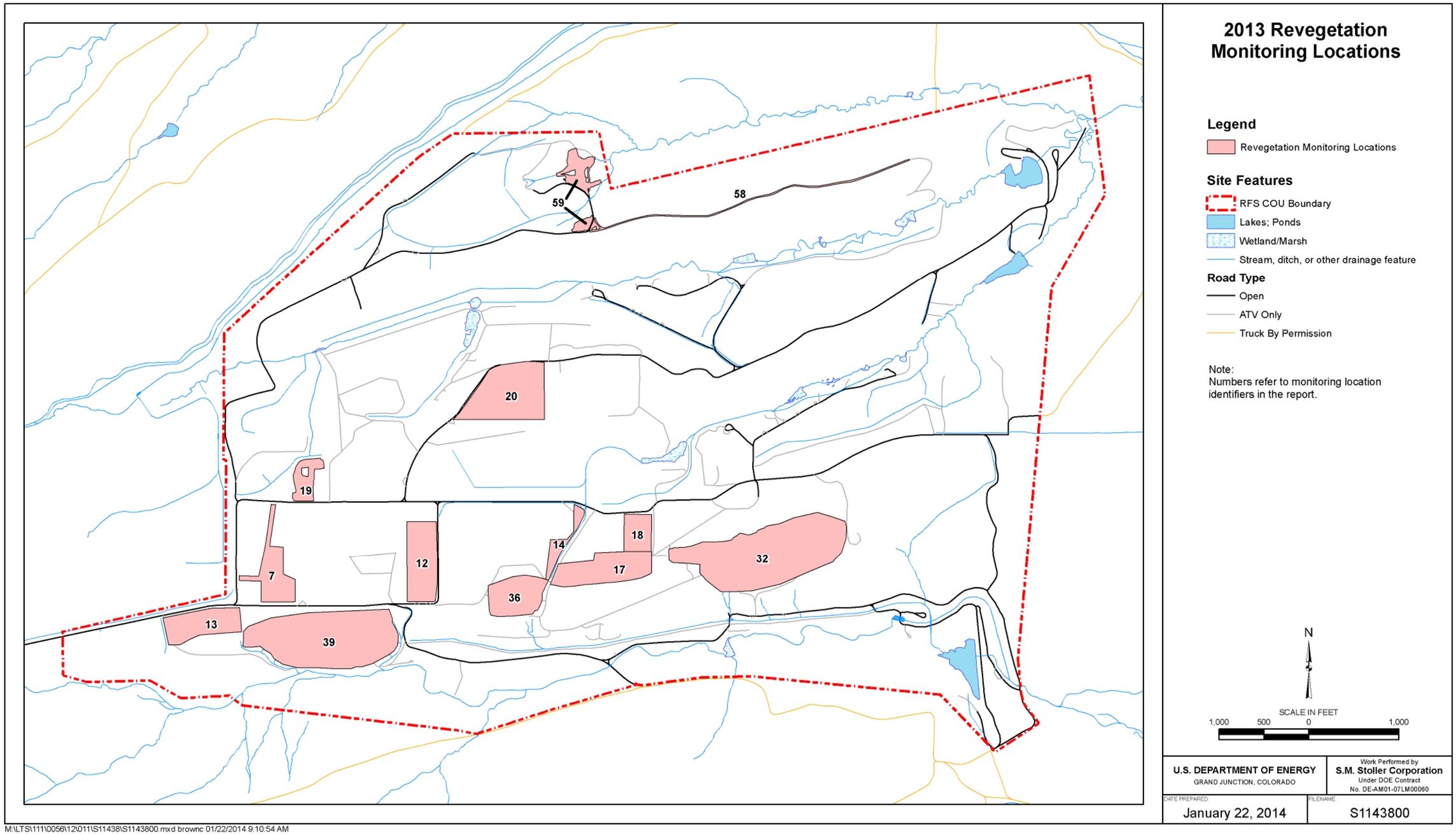


*Figure 265. 2013 Revegetation Monitoring Locations*

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The Revegetation Plan states that at least 50 percent of the seeded species must be present in an area for it to be considered successful. All 13 locations met this criterion in 2013. Ten different seeded graminoid species had become established and were growing at some locations in 2013. These included slender wheatgrass (*Agropyron caninum = Agropyron trachycaulum*), western wheatgrass (*Agropyron smithii*), big bluestem (*Andropogon gerardii*), little bluestem (*Andropogon scoparius*), sideoats grama (*Bouteloua curtipendula*), blue grama (*Bouteloua gracilis*), buffalograss (*Buchloe dactyloides*), Indian grass (*Sorghastrum nutans*), sand dropseed (*Sporobolus cryptandrus*), and green needlegrass (*Stipa viridula*). Four species were established at all 13 locations in 2013: western wheatgrass, sideoats grama, blue grama, and buffalograss. Several noxious weeds were also found at the locations monitored in 2013. These included quackgrass (*Agropyron repens*), downy brome (*Bromus tectorum*), jointed goatgrass (*Aegilops cylindrica*), filaree (*Erodium cicutarium*), diffuse knapweed, bindweed (*Convolvulus arvensis*), Dalmatian toadflax, moth mullein (*Verbascum blattaria*), common mullein, musk thistle (*Carduus nutans*), and field sow thistle (*Sonchus arvensis*). Total mean absolute foliar cover of noxious weeds at the various locations ranged from 0.9 percent to 8.4 percent. Weeds will continue to be managed as needed to reduce noxious weed populations in the revegetation areas and to enable the desired seeded species to become established more quickly and compete with the weeds.

Ground cover protection from rock, litter, and current-year live vegetation varied from 80 percent to over 100 percent at the revegetation locations in 2013. The Revegetation Plan states that a minimum of 70 percent total ground cover comprising litter cover, current-year live vegetation basal cover, and rock cover is to be present to help prevent erosion. All 13 locations met this criterion in 2013.

The third success criterion states that a minimum of 30 percent relative cover of desired species must be present. Total relative vegetation cover of desired (native) species was greater than 50 percent at all 13 of the locations monitored in 2013.

The fourth criterion states that no single species should constitute more than 45 percent of the total relative cover. Five of the 13 monitored revegetation locations (38 percent) had a single species that constituted greater than 45 percent of the relative cover in 2013. All five of these locations were dominated by western wheatgrass (one of the seeded native species) and the five locations that failed to meet all four success criteria failed solely because they each had a single species that covered greater than 45 percent of the area. Western wheatgrass is a desirable species. Previous reports (and the full revegetation summary found on the Ecology DVD included with this report) have provided many reasons for accepting areas dominated by species such as western wheatgrass. For reasons outlined in these reports, all areas in 2013 are still considered to have passed this criterion.

In summary, all 13 locations (approximately 97 acres) continued to meet all four criteria in 2013. This continues to demonstrate that the vegetation has become well established and that the vegetation should be sustainable in the long-term. Supporting data for each criteria are presented in summary tables found in the revegetation report on the Ecology DVD included with this report.

To evaluate potential successional change and trajectories in plant community composition, a comparison of past monitoring data was made with the 2013 data for each location (Table 118). Some locations have no data for a specific year because no monitoring was conducted at those locations in that year.

Changes in species richness from 2008 to 2013 varied by location. Of the 11 locations that had been previously monitored, three showed an increase in species richness from the first year of monitoring to 2013 (ranging from 1 to 10 species) while the other eight locations showed declines (ranging from a loss of 1 to 10 species). The declines are likely due to a decrease in weedy species, with two primary causes. Initially most revegetation locations tend to have a flush of weedy species at the beginning of a project, and as the seeded perennial graminoids begin to establish, some of the early successional weedy species are outcompeted and disappear from the area. An additional factor is the application of herbicides to remove the weedy competition and allow the seeded native graminoid species a better chance to establish.

The percentage of seeded species that are present has increased at 8 of the 11 previously monitored locations since 2008, remained the same at 2 locations, and declined at 1 location.

Total absolute foliar cover has increased at all 13 locations from 2008 to 2013. This means the abundance of vegetation is continuing to increase across these areas and therefore providing additional soil protection and reducing the potential for surface erosion. The total relative native cover increased at 12 of 13 locations. At the one location where it decreased, it only declined by two percent, which is insignificant. These two measures suggest that a “native” prairie is establishing and is not merely weedy vegetation.

The seeded native species continue to increase in dominance at each of these revegetation locations. Table 118 lists the species that contributed more than 5 percent cover at each location from 2008 through 2013 (where data are available). The early dominance by the native, short-lived, cool-season, perennial, slender wheatgrass has given way to an increase in western wheatgrass (a long-lived, native, cool-season species). Slender wheatgrass, which is used in the seed mixes at the Site because it is a good early native colonizer, is expected to decline over time. It provides good vegetation cover for other slower establishing species such as many of the warm-season species. Examination of the dominant species listed for 2013 shows the continuing increase in warm-season, native graminoid cover as time progresses. The mix of both cool-season and warm-season graminoids is desirable for long-term sustainability.

In general, the successional trajectory of the revegetation areas is on track and should result in long-term sustainable native grassland communities in the COU. Continued proactive management of noxious weeds using an integrated vegetation management program will aid in that process. Future monitoring will to evaluate the sustainability of the grassland communities and successional changes.

### 3.2.7 Photopoint Monitoring Results

Photomonitoring results are presented on the Ecology DVD included with this report.

## *Table 118. Evaluation of Successional Changes in Plant Community Composition at Revegetation Locations*

| | | Location | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **L7** | **L12** | **L13** | **L14** | **L17** | **L18** | **L19** | **L20** | **L32** | **L36** | **L39** | **L58** | **L59** |
| Species Richness | 2008 | 17 | 26 | 23 | 26 | 22 | 23 | 26 | 17 | 45 | 25 | 30 | ND | ND |
| | 2009 | 21 | 25 | 32 | 27 | 22 | 23 | 23 | 13 | 38 | 20 | 30 | ND | ND |
| | 2010 | 13 | 19 | 26 | ND | 17 | ND | 25 | 23 | ND | ND | 23 | ND | ND |
| | 2011 | ND | ND | ND | ND | ND | ND | ND | ND | 49 | ND | ND | ND | ND |
| | 2012 | ND | ND | ND | ND | ND | ND | ND | ND | 24 | ND | ND | ND | ND |
| | 2013 | 15 | 27 | 26 | 19 | 18 | 14 | 16 | 16 | 37 | 21 | 40 | 24 | 33 |
| Percent Seeded Species Present | 2008 | 36 | 36 | 55 | 55 | 45 | 45 | 64 | 18 | 86 | 43 | 86 | ND | ND |
| | 2009 | 45 | 45 | 45 | 55 | 45 | 55 | 45 | 36 | 86 | 71 | 100 | ND | ND |
| | 2010 | 55 | 91 | 73 | ND | 73 | ND | 82 | 64 | ND | ND | 86 | ND | ND |
| | 2011 | ND | ND | ND | ND | ND | ND | ND | ND | 86 | ND | ND | ND | ND |
| | 2012 | ND | ND | ND | ND | ND | ND | ND | ND | 86 | ND | ND | ND | ND |
| | 2013 | 73 | 91 | 64 | 73 | 73 | 64 | 64 | 64 | 86 | 71 | 71 | 73 | 86 |
| Total Absolute Foliar Cover | 2008 | 35.6 | 38.6 | 42.9 | 45.3 | 30.3 | 28.2 | 33.8 | 30.6 | 44.5 | 37.3 | 23.7 | ND | ND |
| | 2009 | 54.4 | 47.3 | 65.9 | 71.5 | 49.8 | 48.8 | 71.9 | 69.8 | 71.1 | 36.0 | 45.0 | ND | ND |
| | 2010 | 60.3 | 59.6 | 57.9 | ND | 48.2 | ND | 60.0 | 63.1 | ND | ND | 36.4 | ND | ND |
| | 2011 | ND | ND | ND | ND | ND | ND | ND | ND | 76.1 | ND | ND | ND | ND |
| | 2012 | ND | ND | ND | ND | ND | ND | ND | ND | 63.3 | ND | ND | ND | ND |
| | 2013 | 54.4 | 53.5 | 70.5 | 62.8 | 56.7 | 53.8 | 54.9 | 48.5 | 64.7 | 65.0 | 59.4 | 27.3 | 40.8 |
| Total Relative Native Foliar Cover | 2008 | 45.3 | 31.7 | 65.3 | 44.1 | 35.2 | 39.6 | 36.7 | 26.9 | 50.2 | 61.7 | 84.9 | ND | ND |
| | 2009 | 71.1 | 56.6 | 70.8 | 74.6 | 71.6 | 61.1 | 49.0 | 57.3 | 53.6 | 70.8 | 82.0 | ND | ND |
| | 2010 | 92.5 | 74.2 | 75.4 | ND | 82.0 | ND | 66.3 | 65.3 | ND | ND | 88.1 | ND | ND |
| | 2011 | ND | ND | ND | ND | ND | ND | ND | ND | 58.9 | ND | ND | ND | ND |
| | 2012 | ND | ND | ND | ND | ND | ND | ND | ND | 71.8 | ND | ND | ND | ND |
| | 2013 | 91.0 | 80.4 | 83.7 | 89.7 | 85.3 | 80.5 | 85.0 | 95.1 | 68.9 | 66.9 | 82.9 | 82.1 | 50.9 |
| Total Absolute Ground Cover * (Basal Veg, Litter, Rock) | 2008 | 51.8 | 63.5 | 76.6 | 55.2 | 62.0 | 76.7 | 70.3 | 69.6 | 84.6 | 60.3 | 82.7 | ND | ND |
| | 2009 | 82.9 | 76.4 | 93.9 | 69.5 | 76.5 | 86.0 | 101.0 | 71.9 | 88.3 | 82.5 | 78.9 | ND | ND |
| | 2010 | 89.0 | 93.3 | 92.4 | ND | 87.3 | ND | 93.3 | 91.4 | ND | ND | 83.8 | ND | ND |
| | 2011 | ND | ND | ND | ND | ND | ND | ND | ND | 90.3 | ND | ND | ND | ND |
| | 2012 | ND | ND | ND | ND | ND | ND | ND | ND | 94.4 | ND | ND | ND | ND |
| | 2013 | 91.3 | 93.0 | 100.4 | 97.8 | 93.8 | 102.0 | 96.9 | 88.0 | 92.1 | 80.3 | 89.7 | 84.8 | 85.5 |
| Species with greater than 5 percent relative foliar cover | 2008 | Kochia scoparia (33.7%)<br>Agroypron caninum (22.5%)<br>Agropyron smithii (19.6%)<br>Polygonum arenastrum (10.9%) | Lactuca serriola (22.0%)<br>Agropyron caninum (16.2%)<br>Triticum aestivum (12.9%)<br>Agropyron smithii (12.0%)<br>Erodium cicutarium (9.1%)<br>Kochia scoparia (7.1%)<br>Centaurea diffusa (5.2%) | Agropyron caninum (50.1%)<br>Agropyron smithii (11.1%)<br>Bromus tectorum (9.9%)<br>Kochia scoparia (7.6%) | Agropyron smithii (17.3%)<br>Erodium cicutarium (16.2%)<br>Centaurea diffusa (15.1%)<br>Agropyron caninum (14.3%) | Kochia scoparia (24.2%)<br>Agropyron caninum (21.4%)<br>Centaurea diffusa (19.2%)<br>Lactuca serriola (6.6%)<br>Agropyron smithii (6.0%) | Agropyron caninum (24.9%)<br>Centaurea diffusa (18.3%)<br>Lactuca serriola (8.9%)<br>Kochia scoparia (7.7%)<br>Agropyron smithii (7.1%)<br>Agropyron cristatum (7.1%) | Agropyron smithii (23.7%)<br>Kochia scoparia (23.0%)<br>Bromus tectorum (19.3%)<br>Agropyron caninum (9.6%)<br>Alyssum minus (8.9%) | Kochia scoparia (35.9%)<br>Triticum aestivum (14.7%)<br>Agropyron smithii (14.3%)<br>Agropyron caninum (9.8%)<br>Salsola iberica (8.6%)<br>Bromus tectorum (6.5%) | Centaurea diffusa (13.5%)<br>Agropyron caninum (11.2%)<br>Agropyron smithii (10.7%)<br>Buchloe dactyloides (9.6%)<br>Bromus inermis (9.4%)<br>Bromus tectorum (6.0%)<br>Bouteloua curtipendula (5.8%) | Agropyron smithii (30.9%)<br>Grindelia squarrosa (9.4%)<br>Agropyron caninum (7.4%)<br>Melilotus officinalis (6.0%)<br>Convolvulus arvensis (6.0%)<br>Daucus carota (5.4%) | Agropyron smithii (35.2%)<br>Agropyron caninum (32.4%) | ND | ND |
| | 2009 | Agropyron smithii (38.2%)<br>Agropyron caninum (27.8%)<br>Bromus tectorum (16.3%)<br>Kochia scoparia (8.3%) | Agropyron caninum (27.2%)<br>Kochia scoparia (16.1%)<br>Agropyron smithii (15.3%)<br>Bromus inermis (6.1%)<br>Bromus tectorum 5.3%) | Agropyron smithii (32.1%)<br>Agropyron caninum (28.7%)<br>Kochia scoparia (10.4%)<br>Bromus tectorum (9.5%) | Agropyron smithii (31.0%)<br>Agropyron caninum (21.4%)<br>Kochia scoparia (7.7%) | Agropyron smithii (27.1%)<br>Agropyron caninum (19.4%)<br>Kochia scoparia (13.0%)<br>Bouteloua gracilis (9.4%)<br>Buchloe dactyloides (7.4%)<br>Bromus tectorum (5.4%) | Agropyron caninum (19.5%)<br>Kochia scoparia (16.7%)<br>Buchloe dactyloides (12.3%)<br>Agropyron smithii (10.9%)<br>Alyssum minus (7.5%)<br>Bouteloua gracilis (6.5%)<br>Erodium cicutarium (5.5%) | Agropyron smithii (26.8%)<br>Kochia scoparia (25.9%)<br>Agropyron caninum (15.3%)<br>Bromus tectorum (8.3%)<br>Centaurea diffusa (8.2%) | Kochia scoparia (31.0%)<br>Agropyron smithii (27.6%)<br>Agropyron caninum (26.5%)<br>Melilotus officinalis (6.3%) | Bromus inermis (28.8%)<br>Agropyron smithii (14.0%)<br>Bouteloua curtipendula (13.2%)<br>Kochia scoparia (5.7%)<br>Buchloe dactyloides (5.0%) | Agropyron smithii (27.1%)<br>Buchloe dactyloides (13.2%)<br>Sporobolis cryptandrus (11.1%)<br>Agropyron caninum (10.4%) | Agropyron smithii (31.1%)<br>Agropyron caninum (27.4%)<br>Melilotus officinalis (8.0%)<br>Buchloe dactyloides (6.3%)<br>Bouteloua curtipendula (5.7%)<br>Bouteloua gracilis (5.2%) | ND | ND |
| | 2010 | Agropyron smithii (62.2%)<br>Agropyron caninum (25.5%) | Agropyron caninum (33.3%)<br>Agropyron smithii (27.7%)<br>Bromus tectorum (19.7%)<br>Bouteloua curtipendula (7.1%) | Agropyron smithii (40.4%)<br>Agropyron caninum (25.1%)<br>Bromus tectorum (13.6%) | ND | Agropyron smithii (39.8%)<br>Agropyron caninum (13.5%)<br>Buchloe dactyloides (11.4%)<br>Bromus tectorum (6.6%)<br>Bouteloua curtipendula (5.2%) | ND | Agropyron smithii (43.8%)<br>Bromus tectorum (22.9%)<br>Agropyron caninum (7.1%)<br>Buchloe dactyloides (5.6%) | Agropyron smithii (40.8%)<br>Agropyron caninum (21.2%)<br>Bromus tectorum (13.7%)<br>Melilotus officinalis (12.3%) | ND | ND | Agropyron smithii (25.5%)<br>Agropyron caninum (25.0%)<br>Buchloe dactyloides (13.8%)<br>Bouteloua curtipendula (8.0%)<br>Bouteloua gracilis (6.9%)<br>Melilotus officinalis (9.4%) | ND | ND |
| | 2011 | ND | ND | ND | ND | ND | ND | ND | ND | Bromus inermis (26.2%)<br>Bouteloua curitipendula (14.9%)<br>Buchloe dactyloides (7.1%)<br>Panicum virgatum (6.8%) | ND | ND | ND | ND |
| | 2012 | ND | ND | ND | ND | ND | ND | ND | ND | Bouteloua curtipendula (32.8%)<br>Bromus inermis (21.9%)<br>Agrypyron smithii (9.4%)<br>Bouteloua gracilis (8.8%)<br>Buchloe dactyloides (7.9%) | ND | ND | ND | ND |
| | 2013 | Agropyron smithii (77.0%)<br>Bromus tectorum (7.8%)<br>Buchloe dactyloides (6.7%) | Agropyron smithii (34.6%)<br>Buchloe dactyloides (13.3%)<br>Bouteloua curtipendula (12.6%)<br>Bromus tectorum (10.3%)<br>Agropyron caninum (6.8%) | Agropyron smithii (58.5%)<br>Andropogon gerardii (7.5%)<br>Bromus tectorum (7.3%)<br>Buchloe dactyloides (5.9%) | Agropyron smithii (41.6%)<br>Buchloe dactyloides (22.8%)<br>Bouteloua gracilis (8.5%)<br>Bouteloua curtipendula (7.4%)<br>Bromus tectorum (6.4%)<br>Sporobolus cryptandrus (5.8%) | Agropyron smithii (48.8%)<br>Buchloe dactyloides (17.7%)<br>Bouteloua gracilis (10.9%)<br>Bromus tectorum (6.5%)<br>Bromus inermis (5.6%) | Agropyron smithii (46.8%)<br>Bouteloua gracilis (14.2%)<br>Buchloe dactyloides (12.1%)<br>Agropyron intermedium (11.5%)<br>Bromus tectorum (5.3%) | Agropyron smithii (40.3%)<br>Bouteloua gracilis (22.8%)<br>Bromus tectorum (13.7%) | Agropyron smithii (77.1%)<br>Bouteloua curtipendula (6.7%) | Bouteloua curtipendula (29.4%)<br>Bromus inermis (24.2%)<br>Agropyron smithii (10.3%)<br>Buchloe dactyloides (8.5%)<br>Stipa viridula (5.7%) | Bouteloua curtipendula (16.9%)<br>Bromus inermis (16.2%)<br>Agropyron smithii (12.3%)<br>Buchloe dactyloides (11.9%)<br>Sporobolus cryptandrus (7.7%)<br>Grindelia squarrosa (7.7%)<br>Melilotus officinalis (6.9%)<br>Melilotus alba (5.8%) | Buchloe dactyloides (30.4%)<br>Agropyron smithii (22.0%)<br>Bouteloua curtipendula (9.0%)<br>Bouteloua gracilis (8.1%)<br>Melilotus officinalis (5.1%) | Bouteloua gracilis (19.3%)<br>Buchloe dactyloides (17.9%)<br>Agropyron caninum (14.7%)<br>Bouteloua curtipendula (11.5%)<br>Kochia scoparia (8.7%)<br>Agropyron smithii (6.4%) | Agropyron caninum (19.3%)<br>Agropyron intermedium (17.5%)<br>Agropyron smithii (12.6%)<br>Buchloe dactyloides (8.6%)<br>Bromus tectorum (7.7%)<br>Bromus inermis (5.2%) |

* Values greater than 100 percent are a result of the monitoring protocol that uses the midpoints of the cover class system for analysis.

ND = No Data collected at this location for this year.

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### 3.2.8 Wildlife Monitoring

During 2013, wildlife surveys at the Site consisted of observing black-tailed prairie dogs (*Cynomys ludovicianus*), monitoring bird nesting boxes, and observing active raptor nests. A summary of the survey results are presented here, while more-detailed information on the wildlife monitoring is presented on the Ecology DVD included with this report.

#### *3.2.8.1 Prairie Dog Monitoring*

Figure 266 shows the locations of former and current prairie dog towns in the COU and on the adjacent POU property. An outbreak of the plague killed all the prairie dogs at the Site in 2009. Observations of the former towns in the southern portion of the Site during 2013 revealed that no prairie dog towns were active within the COU. However, two small towns in the POU north of the A-4 pond (northern towns shown on Figure 266) had prairie dogs present this year. The maximum number of individuals recorded at each of these towns varied throughout the year, but the northern-most town had approximately 11 individuals present in October and November, 2013, while the town closer to the COU fence had approximately 37 individuals in August. In general, the numbers of prairie dogs have been gradually increasing over the past few years at the towns north of the COU.

No individual prairie dogs were observed roaming along the roads at the Site in 2013. The prairie dogs typically travel beyond their existing towns in search of other potential burrow locations in the late spring and early summer. With the exception of the sightings at the towns north of the A-4 pond, inspectors have observed no signs of the prairie dogs' return at the previously occupied prairie dog towns in the southern areas. Fortuitous monitoring of these locations will continue throughout 2014 to determine whether the prairie dogs are returning at these locations.

#### *3.2.8.2 Nest Box Monitoring*

Table 119 summarizes the nest box observations made in 2013. Seven of the 16 nest boxes showed evidence of nesting activity in 2013. For the first time a mountain bluebird (*Sialia currucoides*) nested in one of the boxes in the center of the COU (#3; Figure 267). Tree swallows (*Tachycineta bicolor*) occupied five nest boxes (# 5, 6, 9, 12, and 15) and house wrens (*Troglodytes aedon*) occupied the other nest box (#11) that was used this year. During the cleanout of the next boxes conducted in December it was discovered that two of the boxes (#3, 6) were broken. One had fallen off the tree, and the wooden sides of another box had split causing it to fall apart. The boxes will be repaired or replaced before the nesting season begins in 2014.

#### *3.2.8.3 Raptor Nesting Observations*

In 2013, no active raptor nests were observed within the COU.

#### *3.2.8.4 Video of RFS Wildlife*

In 2013, a game trail camera, capable of capturing still photos and video, was set out at various locations at the Site. In addition, a high-definition video camera was used to capture footage of the elk herd in the COU in fall 2013. Videos are provided on the Ecology DVD included with this report and may be watched by clicking on the various video links.

*Table 119. Bluebird Nest Box Summary 2013*

| Nest Box Number | Active Nest Yes/No | Species | Comments |
|---|---|---|---|
| 1 | No | | |
| 2 | No | | |
| 3 | Yes | Mountain Bluebird | A mountain bluebird flew out of the box in May and eggs were present. However, during June, July, and August the nest did not appear to be active, but the box was full of grass. A few bluish feathers were observed. |
| 5 | Yes | House Wren/Tree Swallow | In May the box was being filled with twigs, probably by a house wren. In June, a tree swallow flew out of the box. In July, the side of the box was open and most of the twigs had been pulled out. Also the metal number tag on the side of the box was torn. Perhaps a raccoon or other animal found the box and pulled everything out. |
| 6 | Yes | Tree Swallow | Two tree swallows were at the box in June. One was observed going into the box. |
| 7 | No | | |
| 8 | No | | |
| 9 | Yes | Tree Swallow | A tree swallow was using the box in May. It was gone the remainder of the summer. |
| 10 | No | | |
| 11 | Yes | House Wren | House wren flew out of box in July. Box was full of twigs in June. |
| 12 | Yes | Tree Swallow | Two tree swallows were at the box in June. One was observed going into the box while the other guarded the door opening. In July young could be heard in the box. Box was empty in August. |
| 13 | No | | |
| 14 | No | | |
| 15 | Yes | Tree Swallow | Nest material was present in June. A tree swallow was sitting in the box entrance in July. |
| 16 | No | | |
| 17 | No | | |

**Notes:** Nest box #4 was destroyed when the tree fell over several years ago.

### 3.2.9 Preble's Meadow Jumping Mouse Mitigation Monitoring

The Preble's meadow jumping mouse (*Zapus hudsonius preblei*) is a federally listed threatened species under the Endangered Species Act that lives in most of the stream drainages at the Site. Prior to site closure, DOE conducted Section 7 consultation with USFWS on a Programmatic Biological Assessment (PBA) that addressed closure and post-closure activities that could have a potential impact on the Preble's mouse. The resulting Biological Opinion gave approval for the activities listed in the PBA. Mitigation was required for impacts to Preble's mouse habitat. As part of the mitigation process, monitoring of the mitigation efforts and reporting was also required. In 2013, vegetation monitoring and photopoint monitoring was conducted at various Preble's mouse mitigation locations in the COU. No locations had met all the success criteria and monitoring will continue in 2014. The results were summarized in an annual report that is due to USFWS by December 1 each year. Although the 2013 results are not discussed in this annual report, they are available in a separate 2013 report on Preble's meadow jumping mouse mitigation monitoring (DOE 2013c).

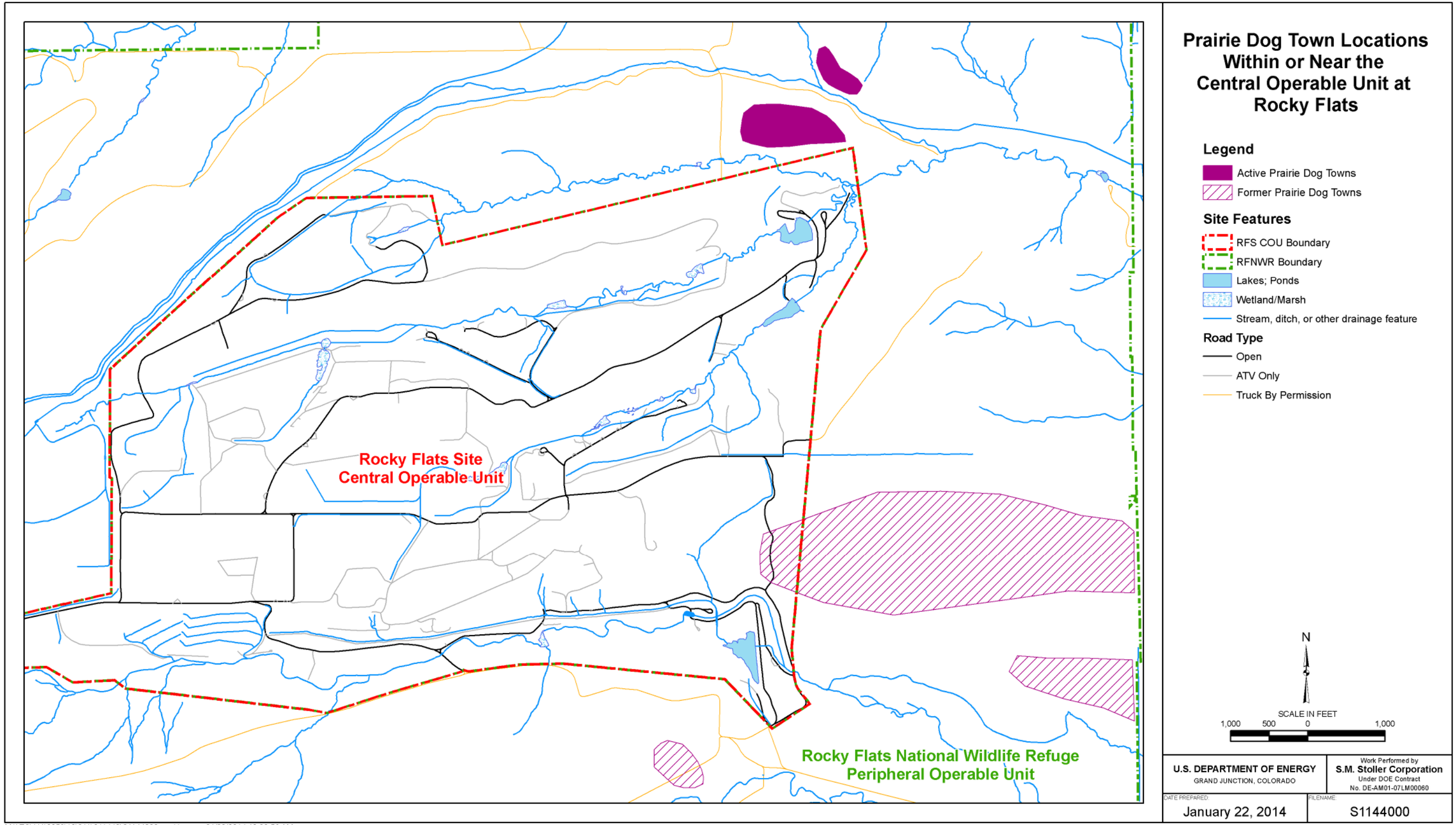
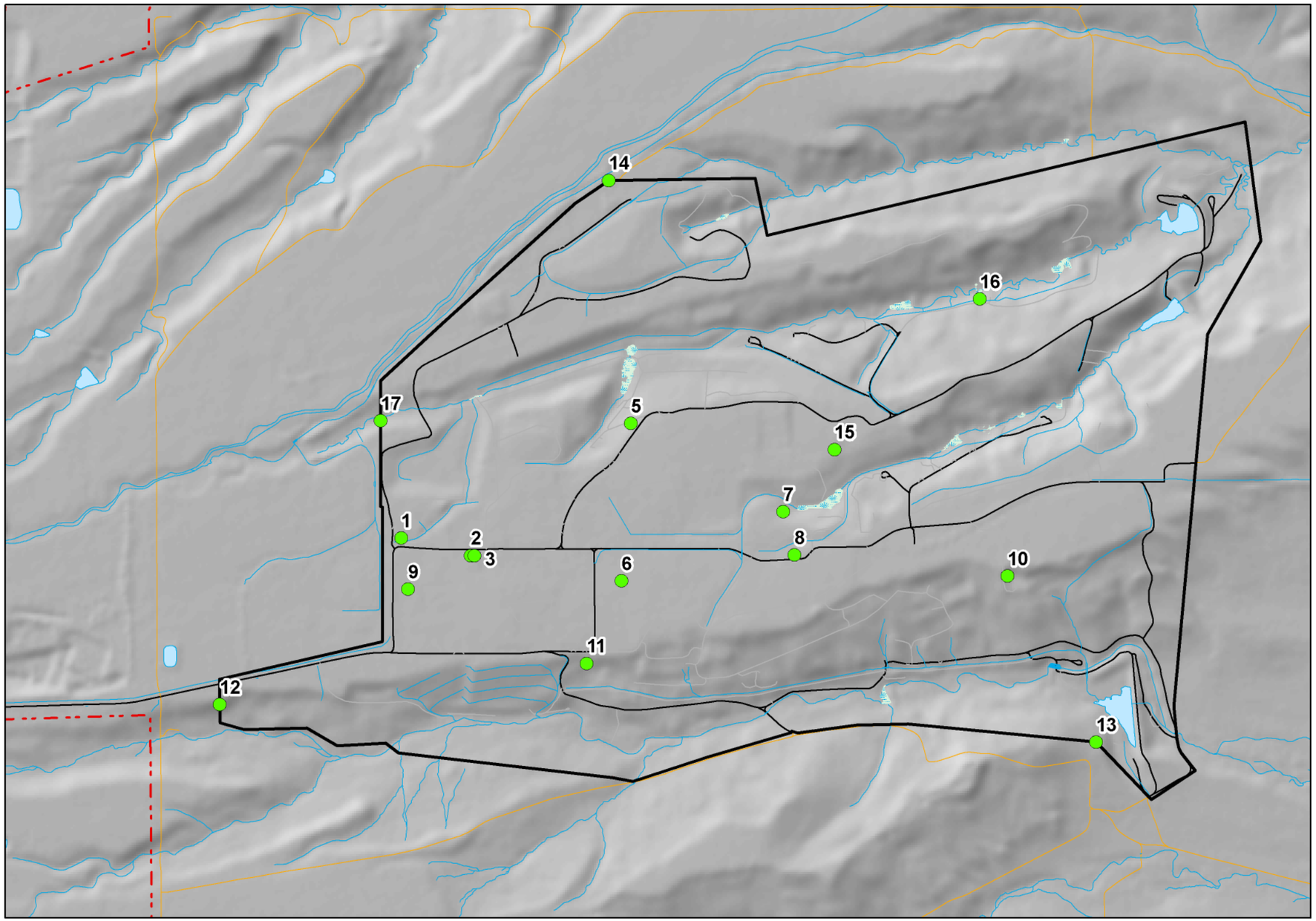



*Figure 266. Prairie Dog Town Locations Within or Near the Central Operable Unit at Rocky Flats*




**Rocky Flats Site**
**Nest Box Locations**

**LEGEND**

- Nest Box Locations
- RFS COU Boundary
- RFNWR Boundary
- Lake or Pond
- Wetland/Marsh
- Stream, Ditch, or Other Drainage Feature
- Open
- ATV Only
- Truck By Permission

| U.S. DEPARTMENT OF ENERGY<br>GRAND JUNCTION, COLORADO | Work Performed by<br>S.M. Stoller Corporation<br>Under DOE Contract<br>No. DE-AM01-07LM00060 |
|---|---|
| DATE PREPARED:<br>January 22, 2014 | FILENAME:<br>S1144100 |

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*Figure 267. Rocky Flats Site Nest Box Locations*

### 3.2.10 Wetland Monitoring

The *Rocky Flats Wetland Mitigation Monitoring and Management Plan* (Plan) (DOE 2006b) was established to provide the strategy to determine successful wetland mitigation at the Site. The Plan requires annual interim qualitative assessments and annual reporting for the first 4 years to evaluate the successfulness of the compensatory mitigation wetlands. Typically during the fifth year after project completion, wetland delineations and mapping efforts are conducted to determine the type and extent of the wetlands. Wetland delineations are conducted to characterize and determine whether hydrophytic vegetation, hydric soils, and wetland hydrology exist at a location. Mitigation wetlands are mapped and delineated following the current U.S. Army Corps of Engineers (USACE) wetland delineation procedure (USACE 2010). The goal of the wetland mitigation at Rocky Flats is no-net loss of wetlands. Wetlands are mitigated at a 1:1 ratio.

During and since Site closure, impacts to wetlands have been classified as either CERCLA related or non-CERCLA related and tracked separately. CERCLA related wetland impacts are administered under the EPA, while non-CERCLA related wetland impacts are administered under USACE. The Plan states "The annual report for the fifth year will contain the wetland delineation data and will serve as the final wetland mitigation report (unless further monitoring is required by the regulatory agencies)." This report serves as that final wetland mitigation report for those projects that disturbed wetlands in 2009 or earlier and closes out the Plan. An accounting for the impacted and compensatory mitigation wetland acreage is provided in the section below.

Although the Plan is closed out (with the delivery of this report), projects with wetland impacts after 2009 will continue to be monitored following the same basic methodology as outlined in the Plan. The methodology and process will be documented in the RFSOG. CERCLA-related projects that impact wetlands will have their compensatory wetlands delineated in the fifth year and closed out. Non-CERCLA projects that impact wetlands subject to the USACE Clean Water Act 404 permitting process will be closed out as required by the permit issued for the project.

#### *3.2.10.1 Wetland Mitigation Closeouts*

As mentioned above, impacts to wetlands at the Site, during and since Site closure, have been classified as either CERCLA related or non-CERCLA related and tracked separately. The following discussion closes out the wetland mitigation activities for each of the projects that were completed in 2009 and earlier and lists those that are still ongoing.

Table 120 shows the total acreage of wetlands impacted by completed (–6.3983 acres) and ongoing (–0.1688 acre) CERCLA project activities at the Site. The completed projects have a wetland mitigation credit of 6.3848 acres. The list of engineered[21] wetlands used for credit for the completed CERCLA related projects is shown in Table 121. These wetlands were delineated in 2010 and 2012. Details related to these wetlands (based on their GIS #) can be found in the 2010

[21] Engineered wetlands are defined as those wetland areas that were engineered or expected to develop into wetlands. Naturally occurring wetlands are those that developed at various locations where seeps or wet spots appeared on the ground after Site closure. These naturally occurring wetlands were not planned or engineered and therefore are not counted as mitigation.

and 2012 annual wetland mitigation and monitoring reports (DOE 2011b, 2013d). These locations are considered closed out and having met the 1:1 mitigation ratio. These locations are no longer monitored and will no longer be accounted for.

*Table 120. Wetland Impacts From CERCLA Projects at Rocky Flats*

| Project Description | Agency | Actual Wetland Acres Disturbed (Debits) | Mitigation Wetland Acres (Credit) |
|---|---|---|---|
| **CERCLA Completed Projects** | | | |
| RFS CERCLA Cleanup/Reconfiguration | EPA | -6.3983 | 6.3848 |
| **CERCLA Ongoing Projects** | | | |
| Point of Compliance Flume Project (2011) | EPA | -0.1279 | In Process |
| GS10 Flume Project (2014) | EPA | -0.0409 | In Process |
| | Total Debit | -0.1688 | |

**Notes:** Date in parentheses is the year of the first full growing season after the mitigation was installed.

*Table 121. Engineered Mitigation Wetlands at Rocky Flats Used for CERCLA Mitigation*

| Delineation Year | Location | GIS # | Acres | Wetland Y/N |
|---|---|---|---|---|
| 2010 | East Shooting Range | 32 | 0.0134 | Y |
| 2010 | East Trenches | 33 | 0.0001 | Y |
| 2010 | FC1 - A | 34 | 1.0272 | Y |
| 2010 | FC2 - A | 44 | 1.0328 | Y |
| 2010 | FC2 - B | 45 | 0.1068 | Y |
| 2010 | FC3 - Upper | 51 | 0.1345 | Y |
| 2010 | FC4 - A | 52 | 1.0528 | Y |
| 2010 | PLF - A | 76 | 0.0802 | Y |
| 2010 | PLF - B | 77 | 0.1806 | Y |
| 2010 | PLF - C | 78 | 0.0170 | Y |
| 2010 | PLF - D | 79 | 0.0040 | Y |
| 2010 | PLF - E | 80 | 0.0117 | Y |
| 2010 | PLF - F | 81 | 0.0518 | Y |
| 2010 | PLF - G | 82 | 0.3838 | Y |
| 2010 | PLF Pond - Open Water | NA | 0.5299 | Y |
| 2010 | Solar Ponds Discharge Gallery | 85 | 0.0087 | Y |
| 2012 | B1 - A | 6 | 0.5399 | Y |
| 2012 | B1 - B | 7 | 0.0398 | Y |
| 2012 | B1 - C | 8 | 0.0341 | Y |
| 2012 | B2 - A | 13 | 0.4205 | Y |
| 2012 | B2 - B | 14 | 0.1119 | Y |
| 2012 | B3 - A | 15 | 0.3443 | Y |
| 2012 | B3 - B | 16 | 0.1576 | Y |
| 2012 | OLF - B | 67 | 0.0761 | Y |
| 2012 | OLF - E | 70 | 0.0253 | Y |
| | Total | | 6.3848 | |

The ongoing CERCLA project activities will continue to have interim monitoring conducted in years one through four, with final wetland delineations conducted in the fifth year. Data from

interim monitoring and final wetland delineations will be presented and summarized in the *Annual Report of Site Surveillance and Maintenance Activities at the Rocky Flats, Colorado, Site*. Wetland monitoring and reporting will be concluded after the final wetland delineations are reported in the fifth year unless further monitoring is required by EPA.

Non-CERLCA related wetland impacts have been covered under various nationwide permits through the USACE (Table 122). Both completed and ongoing projects are presented in the table. The total wetland impact from completed USACE permitted projects is –1.4028 acres. On-going USACE permitted project wetland impacts account for –0.1703 acre. The completed USACE permitted projects have a wetland mitigation credit of 1.5033 acres. The list of engineered wetlands used for credit for the completed USACE permitted related projects is shown in Table 123. These wetlands were delineated in 2010 and 2012. Details related to these wetlands (based on their GIS #) can be found in the 2010 and 2012 annual wetland mitigation and monitoring reports (DOE 2011b, 2013d). These locations are considered closed out and having met the 1:1 mitigation ratio. These locations are no longer monitored and will no longer be accounted for.

*Table 122. Wetland Impacts From USACE Permitted Projects At Rocky Flats*

| Project | NWP # | Permit # | Permit Date | Specified Compensatory Mitigation | Mitigation Acres Required in NWP | Actual Wetland Acres Disturbed (Debits) | Mitigation Credit |
|---|---|---|---|---|---|---|---|
| **Completed USACE Permitted Projects** | | | | | | | |
| COU Fence Installation | 18 | 200680545 | 10/18/2006 | No | 0.00 | (-)2.47 cu. yds. | |
| Cleaning/Removing and Repairing Culverts, Tributaries at Rocky Flats | 3 | 200580288 | 5/13/2005 | No | 0.00 | -0.0011 | |
| C-1 Pond Breach | 3 | 200380639 | 12/31/2003 | No | 0.00 | -0.2507 | |
| Removing Culverts and to Reconstruct Portions of Stream Channels at RFETS, Six Locations | 27 | 200480620 | 12/8/2004 | No | 0.00 | -0.5045 | |
| Modification of Six Dams, North Branch Walnut Creek and South Branch Walnut Creek | 27 | NOW-2008-1051-DEN | 4/22/2008 | No | 0.00 | -0.6454 | |
| Upgrading Outlet Works on the C-2 Dam, Woman Creek | 3 | 200580337 | 6/9/2005 | No | 0.00 | -0.0011 | |
| | | | | Total | 0.00 | -1.4028 | 1.5033 |
| **Ongoing USACE Permitted Projects** | | | | | | | |
| PLF/A-3 Dam Breach (2012) | 43 | NOW-2011-2455-DEN | 11/18/2011 | Yes | 0.24 | -0.1703 | In Process |
| | | | | Total | 0.24 | -0.1703 | |

**Notes:** Date in parentheses is the year of the first full growing season after the mitigation was installed.

*Table 123. Engineered Mitigation Wetlands at Rocky Flats used for USACE Permitted Project Mitigation*

| Delineation Year | Location | GIS # | Acres | Wetland Y/N |
|---|---|---|---|---|
| 2010 | B116 - North | 9 | 0.0100 | Y |
| 2010 | B116 - South | 10 | 0.0190 | Y |
| 2010 | B131 | 11 | 0.0547 | Y |
| 2010 | C1 Pond - A | 28 | 0.0169 | Y |
| 2010 | C1 Pond - B | 29 | 0.0230 | Y |
| 2010 | C1 Pond - C | 30 | 0.1503 | Y |
| 2010 | FC1 - B | 35 | 0.0318 | Y |
| 2010 | FC1 - D | 37 | 0.0005 | Y |
| 2010 | FC1 - E | 38 | 0.0311 | Y |
| 2010 | FC1 - F | 39 | 0.0099 | Y |
| 2010 | FC1 - G | 40 | 0.1000 | Y |
| 2010 | FC1 Road Crossing | 43 | 0.0118 | Y |
| 2010 | FC2 Hillside - A | 46 | 0.0980 | Y |
| 2010 | FC2 Hillside - B | 47 | 0.0677 | Y |
| 2010 | FC2/FC3 Confluence - A | 48 | 0.0504 | Y |
| 2010 | FC2/FC3 Confluence - B | 49 | 0.1656 | Y |
| 2010 | FC2/FC3 Confluence - Open Water | NA | 0.0918 | Y |
| 2010 | FC3 - Lower | 50 | 0.0616 | Y |
| 2010 | FC4 - B | 53 | 0.1280 | Y |
| 2010 | FC5 - East | 58 | 0.0262 | Y |
| 2010 | FC5 - West | 59 | 0.0440 | Y |
| 2010 | SW093 - A | 86 | 0.0207 | Y |
| 2012 | A1 - A | 1 | 0.0742 | Y |
| 2012 | A1 - B | 2 | 0.0018 | Y |
| 2012 | A2 - A | 3 | 0.1566 | Y |
| 2012 | A2 - B | 4 | 0.0212 | Y |
| 2012 | B4 - A | 19 | 0.0046 | Y |
| 2012 | B4 - B | 20 | 0.0304 | Y |
| 2012 | B4 - C | 21 | 0.0016 | Y |
| | Total | | 1.5033 | |

The ongoing USACE permitted project activities will be monitored as required by the permits. Typically this monitoring includes interim monitoring conducted in years one through four, with final wetland delineations conducted in the fifth year. Data from interim monitoring and final wetland delineations will be presented and summarized in the *Annual Report of Site Surveillance and Maintenance Activities at the Rocky Flats, Colorado, Site* and/or in specific reports as required by the USACE for specific permits issued for projects. Wetland monitoring and reporting will be concluded after the final wetland delineations are reported in the fifth year unless further monitoring is required by the USACE.

Naturally occurring wetlands that have developed at various locations where seeps or wet spots have appeared on the ground since Site closure are shown in Table 124. These account for approximately 1.2 acres. These naturally occurring wetlands were not planned or engineered and therefore are not counted as mitigation.

*Table 124. Naturally Occurring (Non-Engineered) Wetlands in the COU at Rocky Flats*

| Delineation Year | Location | GIS # | Acres | Wetland Y/N | Engineered Y/N |
|---|---|---|---|---|---|
| 2010 | B131 - SAEX1 | 12 | 0.0779 | Y | N |
| 2010 | B371 - A | 17 | 0.0029 | Y | N |
| 2010 | B371 - B | 18 | 0.0038 | Y | N |
| 2010 | B771 - N | 22 | 0.0195 | Y | N |
| 2010 | B771 - NW | 23 | 0.0176 | Y | N |
| 2010 | B881 - A | 24 | 0.2941 | Y | N |
| 2010 | B881 - B | 25 | 0.0086 | Y | N |
| 2010 | B881 - C | 26 | 0.0084 | Y | N |
| 2010 | Bowman's Pond | 27 | 0.0270 | Y | N |
| 2010 | FC4 Hillside - A | 54 | 0.0273 | Y | N |
| 2010 | FC4 Hillside - B | 55 | 0.0945 | Y | N |
| 2010 | FC4 Hillside - C | 56 | 0.0173 | Y | N |
| 2010 | FC4 Hillside - D | 57 | 0.0525 | Y | N |
| 2010 | Mound - East | 60 | 0.0393 | Y | N |
| 2010 | Mound - SW | 62 | 0.0084 | Y | N |
| 2010 | Mound - Well | 63 | 0.0014 | Y | N |
| 2010 | Mound - West | 64 | 0.0519 | Y | N |
| 2010 | Mound W-W | 65 | 0.0026 | Y | N |
| 2010 | Ridge Road | 83 | 0.0359 | Y | N |
| 2010 | Solar Pond Well Wetland | 84 | 0.1404 | Y | N |
| 2012 | OLF - A | 66 | 0.0104 | Y | N |
| 2012 | OLF - C | 68 | 0.0688 | Y | N |
| 2012 | OLF - D | 69 | 0.1182 | Y | N |
| 2012 | OLF - F | 71 | 0.0020 | Y | N |
| 2012 | OLF - G | 73 | 0.0301 | Y | N |
| 2012 | OLF - H | 74 | 0.0189 | Y | N |
| 2012 | OLF - J | 75 | 0.0241 | Y | N |
| | Total | | 1.2038 | | |

### *3.2.10.2 Interim Wetland Monitoring*

During 2013, interim wetland monitoring was conducted at 15 potential wetland locations (Figure 268). (**Note:** Several of the locations shown on the map had multiple potential wetland areas evaluated.) Based on the 2013 monitoring, 12 of the 15 areas monitored had hydrophytic vegetation, hydric soils, and wetland hydrology (the three criteria necessary for an area to be classified as a wetland). This indicates that these areas have and are continuing to develop the necessary conditions to support wetlands. After the appropriate amount of time, wetland delineations will be conducted at these locations. Additional details and monitoring summaries of the 2013 interim monitoring are presented on the Ecology DVD included with this report.

An additional wetland mitigation monitoring report was also written and submitted to the USACE in 2013 as a requirement for the Nationwide Permit #43 that was used for the A-3/PLF dam breach project that took place in spring 2012. Results of the interim monitoring conducted in 2013 are not presented here, but are available in the *Annual Mitigation Monitoring Report for Nationwide Permit #43, A-3/PLF Dam Breach Project at the Rocky Flats Site, 2013 Annual Report* (2013a). This report is due to USACE by December 31 each year.

### 3.2.11 Summary

The Ecology Program at the Site conducts monitoring of the ecological resources to ensure regulatory compliance and to preserve, protect, and manage those resources. Proactive management of the natural resources is critical to the long-term sustainability of the ecosystems at the Site. Noxious weeds continue to be a top priority, as does the revegetation of the COU. Data from 2013 documented the continuing establishment of vegetation at revegetation locations. Noxious weed control activities and additional habitat management activities were conducted during 2013 to improve and enhance the vegetation at the Site. Preble's mouse mitigation monitoring continued to document the establishment of Preble's habitat at several locations. Wetland mitigation was closed out at several locations and interim monitoring documented the establishment of additional mitigation for ongoing projects. Overall, the monitoring results continue to provide useful information for management activities. Full, detailed reports and analyses for each field monitoring effort are presented as stand-alone reports on the Ecology DVD included with this report.

## 3.3 Data Management

### 3.3.1 Water Data

Data from samples submitted to an analytical laboratory are received in both hard copy and electronic data deliverable formats. The electronic data are loaded into an Oracle-based relational database. The environmental monitoring data are accessible using the SEEPro (Site Environmental Evaluation for Projects) application. The hard-copy analytical reports are archived in the records library in Grand Junction, Colorado, along with the original field data forms and other relevant hard-copy forms or documents containing project data. Well construction and lithology logs are maintained for previously drilled wells and are produced for all new wells drilled. These logs are archived in the records library and can also be accessed electronically via the SEEPro database and the Geospatial Environmental Mapping System.

SEEPro uses Oracle software for data management and Microsoft Access for data retrieval and display. It compiles water quality, air quality, field parameter, sample-tracking, sample location, and water-level data for groundwater, surface water, boreholes, soils, and sediment samples. Field parameter data include such information as sample location, sample date, pH, turbidity, conductivity, and temperature. Chemical information (Chemical Abstracts Service registry numbers, analytical results, and detection limits) is also included. Data managers follow specific procedures for verification of database information received from subcontractors or verification of data input directly into SEEPro. These procedures provide quality assurance (QA) documentation, which ensures that available data have been incorporated and entered or uploaded properly into SEEPro. Data integrity is maintained with standardized error-checking routines used when loading data into SEEPro. Other procedures address database system security and software change control.

The Site field data are entered through the FieldPar field data entry system. This system is a data entry module that is compatible with the SEEPro database and is used in the office by field personnel. The samplers verify data entered into FieldPar before loading the data into the main SEEPro database.

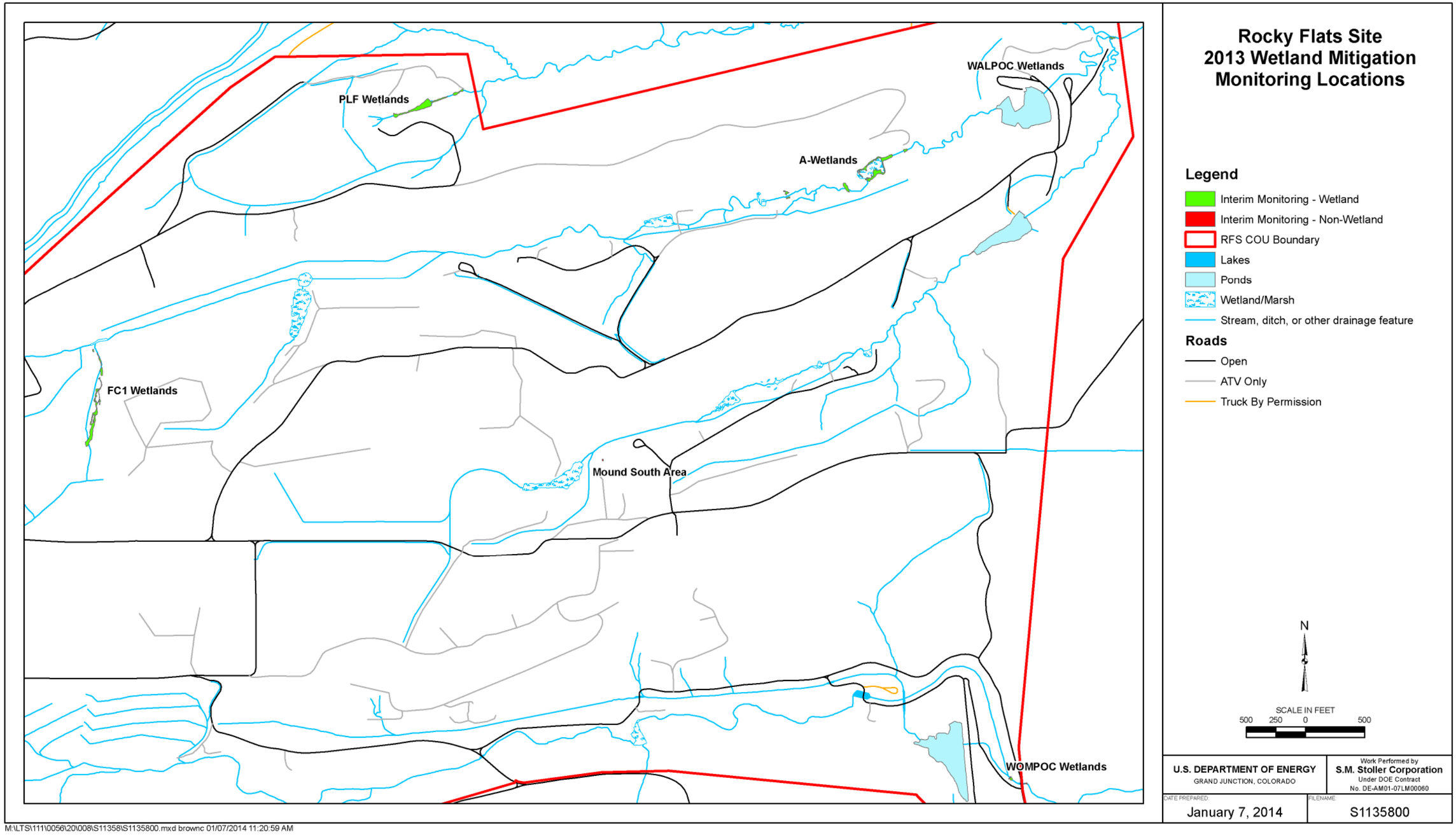


*Figure 268. Rocky Flats Site 2013 Wetland Mitigation Monitoring Locations*

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Spatial information for air and water data features is located in the LM GIS database. Some of the data features included are monitoring locations, potentiometric surfaces, plume configurations, streams/creeks, lakes/ponds, topographic contours, and historical Site facilities. This system uses an Esri ArcGIS suite of software to store and present data. Automated monitoring locations and other sample location data features are derived from location information stored in the SEEPro database.

Analytical results for water samples for the fourth quarter of CY 2013 are provided in Appendix B.

### 3.3.2 Ecology Data

Ecological data have been collected at the Site for many years. Since the early 1990s, ecological data have been kept in electronic files for easier access, retrieval, and analysis. In the mid-1990s, the Sitewide Ecological Database (SED) was established as a master data set for the various types of ecological data collected at the Site. The SED is a Microsoft Access database that contains all quality-assured ecological data for Rocky Flats Environmental Technology Site (RFETS) from early 1993 through the end of 2001. Data that did not meet the QA objectives are not included in the database. Ecology data in the SED include vegetation monitoring, weed control and controlled burn vegetation monitoring, wildlife surveys (including birds, small mammals, frogs, insects, and fish), Preble's mouse habitat characterization and telemetry tracking, a small amount of soil characterization survey data (for revegetation issues), and a few other types of ecological data. The SED does not contain data on potential contaminants, nor is it linked to any GIS or other geospatial tool. The data in the SED are primarily observational or catch-and-release; they are considered raw data taken directly from field logbooks and datasheets. The SED is not intended as a reference for the layperson. It is a repository of quality-assured raw field data collected by Site ecologists and cannot be taken out of context of the methods used to collect the data. Data collection methods are not stored in the database, they are described in reports and field sampling plans.

From 2002 to the present, the ecology data have been stored as separate data sets by sample type, event, and year. Depending on the data set, the data may be in a Microsoft Access database or in a Microsoft Excel spreadsheet format. The nonspatial electronic ecology data are stored on the servers at the Site in Westminster, Colorado, or on backup electronic media.

Spatial ecology data for the Site are available for several data types and are stored in the GIS on the servers in Grand Junction, Colorado. The types of ecological spatial data that are available include annual weed distribution data (for selected species), annual weed control locations, biocontrol release locations, vegetation and wildlife monitoring locations (transect endpoints and sample points), vegetation community classifications, Preble's mouse habitat, wetland locations, wildfire/prescribed burn locations, Preble's mouse and wetland mitigation areas, and rare plant locations. These data are available in various ArcGIS-compatible formats. In addition to these types of spatial data, orthorectified aerial and satellite imagery is also available for the Site for different time frames, including pre- and post-closure.

## 3.4 Validation and Data Quality Assessment

Data validation and verification (V&V) during CY 2012 was performed by Legacy Management Support contractor personnel at the Grand Junction, Colorado, office. Data quality assessment (DQA) is performed by personnel at the Site. The following section distinguishes DQA from data validation and discusses the technical basis, equations, and criteria used in the DQA of the water sampling analytical data.

### 3.4.1 General Discussion

Data validation is the principal means of assessing the usability of water analytical data. Validation also improves overall data quality by allowing the laboratory coordinator to closely monitor laboratory performance and to provide feedback to each laboratory regarding its ability to produce quality data that meets subcontract requirements. The laboratory coordinator may also use the results of data validation to direct analytical work to laboratories that demonstrate superior performance by generating timely, high-quality analytical data for the Site.

Data validation is a rigorous data review performed by the laboratory coordinator or designee on all of the water analytical data generated by the Site. Additionally, the Site lead may request a secondary detailed validation on a case-by-case basis. Data validation is currently performed as specified in the *Environmental Procedures Catalog* (LMS/POL/S04325), "Standard Practice for Validation of Environmental Data." This procedure is based on the following EPA documents:

- EPA 2010, *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review,* USEPA-540-R-10-011, January;
- EPA 2008, *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review*, USEPA-540-R-08-01, June;
- EPA 2001, *USEPA Contract Laboratory Program National Functional Guidelines for Low Concentration Organic Data Review,* EPA-540-R-00-006, June; and
- DOE 1997, *Evaluation of Radiochemical Data Usability*, Office of Environmental Management, ES/ER/MS-5, April.

All water analytical data collected by the Site are considered valid unless analytical problems are identified during data validation that require data qualification. When it is necessary to qualify individual data records, standard qualifier codes are applied.

Common data qualifiers used by LM are defined below. Refer to the *Environmental Procedures Catalog*, "Standard Practice for Validation of Environmental Data" for formal definitions.

- U For organic and inorganic analytes, the analyte was not detected at a concentration greater than the method detection limit. For radiochemistry, the analyte was not detected at a concentration greater than the decision-level concentration.
- J The associated numerical value is an estimated quantity.
- R The data are unusable (analyte may or may not be present). Resampling and reanalysis may be necessary for verification.

Data validation includes the evaluation of laboratory quality control (QC) data such as method blank results, laboratory control sample results, and matrix spike recoveries. Adherence to sample and extract holding times, standard analytical methods, contractual requirements, and proper documentation are also verified.

Although DQA and data validation examine some of the same QC data, they do so from different perspectives. DQA (in this report) looks at the overall quality of an entire year of water data, in contrast to validation, which looks at the analytical details of individual data packages. Data validation focuses on laboratory performance, while DQA focuses on interpretation of data describing QC samples that originated in the field, such as field duplicate samples and equipment rinsate samples.

In contrast to data validation, the DQA performed by personnel at the Site does not result in assignment of data qualifiers to individual analytical results or data packages. DQA is a second level of QA intended to be a general assessment of how well the water data collection program is operating. The DQA is performed by evaluating water quality data in terms of the precision, accuracy, representativeness, completeness, and comparability (PARCC) parameters.

### 3.4.2 PARCC Parameters

Use of the PARCC parameters for DQA has been promoted by EPA guidance documents. Accuracy and precision are quantitative measures. Representativeness and comparability are qualitative measures. Completeness is a combination of both quantitative and qualitative measures.

Site personnel evaluate the PARCC parameters by following guidelines published in these former QC documents:

- *Procedure for Evaluation of Data for Usability* (RMRS 1998)
- *Quality Assurance Program Plan for the Automated Surface-Water Monitoring Program*, RF/RMRS-2000-013, Revision 0 (RMRS 2000b)
- *Quality Assurance Program Plan for the Groundwater Monitoring Program Rocky Flats Environmental Technology Site* (RMRS 2001)

The following sections discuss the PARCC parameters and the types of data available to assess them.

#### *3.4.2.1 Criteria for Precision*

The precision of a measurement is an expression of the agreement between duplicate measurements of the same property taken under similar conditions. Precision can be expressed quantitatively by the relative percent difference (RPD) between real and field duplicate sample results for non-radiochemical parameters as defined by the following equation:

$$RPD = \frac{|(S - D)|}{(S + D)/2} \times 100$$

where: S = Concentration of analyte in the real sample,
D = Concentration of analyte in the duplicate sample, and
RPD = relative percent difference.
Nondetects are not included.

The Site uses the duplicate error ratio (DER) to quantify the precision of radiochemical data:

$$DER = \frac{|(S - D)|}{\sqrt{\left[(TPU_S)^2 + (TPU_D)^2\right]}}$$

where: DER = Duplicate error ratio,
S = Sample result,
D = Duplicate (or lab replicate) result,
$TPU_S$ = Total propagated uncertainty of the sample,
$TPU_D$ = Total propagated uncertainty of the duplicate.

The Site QC criterion for water RPDs is that individual RPDs should be ≤30 percent. The analogous criterion for DERs is ≤1.96. The overall goal for the water data set is to have 85 percent of the RPD and DER values comply with the QC criteria.

#### *3.4.2.2 Criteria for Accuracy*

Accuracy is the degree of agreement for a measurement with an accepted reference or true value and is a measure of the bias in a system. The closer the measurement is to the true value, the more accurate the measurement. The Site validation process is the principal means for evaluating the accuracy of analytical results.

Because the Site V&V process compares the actual analytical methods used by each laboratory to the contract-required analytical methods, the Site does not repeat this evaluation.

Matrix spike (MS) and matrix spike duplicate (MSD) analysis are required for most non-radiochemical analyses to demonstrate method performance when applied to a specific sample matrix. Acceptance criteria for MS recoveries vary depending on the laboratory, analyte, and analytical method. The Site criterion for acceptable MS results ranges from 75 to 125 percent recovery.

Laboratory control samples (LCS) are analyzed to provide information on the accuracy of the analytical method and the overall laboratory performance. The acceptance criteria for LCS recovery is analyte and method specific, but generally is within the range of 70 to 130 percent. The Site acceptance range for LCS recoveries is 75 to 125 percent.

The Site evaluates LCS performance using the "relative bias" reporting criterion. The relative bias criterion is defined by the following formula:

Relative Bias = (Observed – Known) ÷ Known

where: Observed = measured concentration of the LCS,
Known = known concentration of the LCS.

Acceptable values for relative bias results range from –0.25 to +0.25.

#### *3.4.2.3 Criteria for Representativeness*

Representativeness in DQA is limited to an evaluation of whether analytical results for field samples are truly representative of environmental concentrations, or whether they may have been influenced by the introduction of contamination during collection and handling. The potential introduction of contamination is commonly evaluated by examination of the analytical results for equipment rinsates.

Equipment rinsates are used to assess the efficacy of the process used to clean and decontaminate water sampling equipment. Analytes detected in rinsate samples indicate possible cross-contamination between environmental samples. Rinsates are samples of analyte-free distilled or deionized water that has been poured over or through decontaminated sampling equipment and subsequently handled in the same manner as environmental samples. For flow-paced composite samples that are collected over time in carboys, a location-specific "rinse carboy" is prepared using distilled water. This carboy is treated the same as other surface-water samples from that location and analyzed for the same parameters. Analytical data for these rinse carboys are used to assess how well the carboys were cleaned between field deployments and to determine whether contamination was introduced during sample preparation.

Although rinsates are used specifically as indicators of cross-contamination from improper decontamination of equipment, they are carried through the entire sampling, shipping, and laboratory process. Therefore, they are good indicators of potential contamination introduced during any of these steps.

#### *3.4.2.4 Criteria for Completeness*

A qualitative measure of completeness is the rate of successful sampling. The DQA verifies that all planned samples were collected, unless insufficient water was available for sampling. The completeness goal for successful sampling is the collection of at least 90 percent of the planned samples. However, the availability of water is outside the control of the Site. If all required stations were visited, sampling completeness is considered acceptable.

Completeness as a quantitative measure of data quality may be expressed as the percentage of valid or acceptable data obtained from a measurement system. The Site tracks analytical laboratory performance through both the shipment of samples to the laboratory and the receipt of data from the laboratory. The Site also evaluates data completeness using the following formula:

$$Completeness = DP_u = \frac{DP_t - DP_n}{DP_t} \times 100$$

where: $DP_u$ = Percentage of usable data points
$DP_t$ = Total number of data points
$DP_n$ = Nonusable (rejected) data points

The completeness criterion is having ≥90 percent valid samples.

#### *3.4.2.5 Criteria for Comparability*

Comparability is a qualitative parameter. Consistency in the acquisition, handling, and analysis of samples is necessary for comparing results. Samples are collected in accordance with Site standard operating procedures, transported according to Site standard operating procedures and U.S. Department of Transportation shipping regulations, and analyzed using standard EPA or nationally recognized analytical methods. These criteria help to ensure comparability of results with other analyses performed in a similar manner.

The laboratory coordinator or designee verifies that laboratory analyses are performed according to the standard protocols specified by the Site subcontract to each laboratory. Therefore, the analytical results should be comparable to data produced by similar methods.

### 3.4.3 Water DQA Results for CY 2013

Data used to evaluate the PARCC parameters are included in the available CY 2013 analytical data generated by the laboratories. These include analyses of field duplicate and rinsate QC samples submitted to the laboratory, and laboratory-generated QA/QC samples such as LCSs. ***This PARCC evaluation is limited to analyses at routine RFLMA locations listed in Table 2 of RFLMA Attachment 2, for samples collected and analyzed by routine method, and for analytes that are listed in Table 1 of RFLMA Attachment 2***.[22] By limiting the evaluation to RFLMA locations, sample protocols, and analytes, more targeted and accurate assessment is made for analytes that have water quality standards applicable to the Site. The DQA of these analyses is discussed below by each PARCC parameter.

During CY 2013, 84 locations were sampled one or more times. This resulted in a total of 451 water samples collected.[23] During CY 2013, 1,117 bottles of water were submitted to analytical laboratories for analysis. Table 125 breaks this data down by sample type.

*Table 125. CY 2013 Sample Type Breakdown*

| | Unique Water Samples | Unique Bottle Codes |
|---|---|---|
| Primary samples (REALs) | 416 | 989 |
| Field duplicates (DUPs) | 35 | 92 |
| Rinsates (RNSs) | 12 | 36 |
| **Totals** | 463 | 1,117 |

[22] Hardness and total suspended solids are also included, though these analytes are not listed in Table 1 of RFLMA Attachment 2.
[23] This is the sum of real and duplicate samples for unique sampling events.

### *3.4.3.1 Precision During CY 2013*

DERs are indicators of precision for radionuclide analyses. The QC criterion for precision requires that individual DER values should be ≤1.96, and overall the data set should have ≥85 percent compliance with the criterion. Appendix Table B-1 is a tabulation of the DER values for CY 2013 radionuclide analyses. The table has been sorted by the DER parameter so that the range of values is apparent. The DER range is from 0.06 to 1.58.

Table 126 summarizes the DER findings of Table B-1 and indicates if the 85 percent goal has been met. Overall, 100 percent of the DER data are in compliance with the criterion, indicating excellent precision for radionuclide analyses.

*Table 126. Summary of DER Values*

| Analyte Group | Total Number of DER Results | Number of Unacceptable Results DER >1.96 | Number of Acceptable Results | Percentage Acceptable | Goal Met |
|---|---|---|---|---|---|
| Radionuclides | 20 | 0 | 20 | 100 | Yes |

The RPD between real and field duplicate sample results is an indicator of precision for nonradionuclide analyses. Individual RPD values should be ≤30 percent, and at least 85 percent of the RPDs should comply with the criterion. Appendix Table B–2 tabulates RPD values and is sorted first by analyte suite, then by RPD, in order to highlight the RPD range of each suite. RPD values ranged from 0.0 percent to 31.2 percent for metals, 0.0 percent to 25.0 percent for water quality parameters (WQPs), and 0.0 percent to 106.6 percent for VOCs/SVOCs.

Table 127 summarizes the RPD findings of Table B-2 and indicates if the 85 percent goal has been met. During CY 2013, the RPD goal was met for all analyte groups. Overall, the nonradionuclide data had 93.1 percent acceptable RPDs and therefore exceeded the 85 percent goal.

*Table 127. Summary of RPD Values*

| Analyte Group | Total Number of RPD Results | Number of Unacceptable Results RPD >30% | Number of Acceptable Results | Percentage Acceptable | Goal Met |
|---|---|---|---|---|---|
| Metals | 42 | 1 | 41 | 97.6 | Yes |
| WQPs | 14 | 0 | 14 | 100 | Yes |
| VOCs/SVOCs | 46 | 6 | 40 | 87.0 | Yes |
| Totals | 102 | 7 | 95 | 93.1 | Yes (overall) |

### *3.4.3.2 Accuracy During CY 2013*

MS recoveries provide another measure of accuracy. Appendix Table B–3 displays recoveries for 2,542 MS and MSD analytical records for metals, VOCs/SVOCs, and WQPs. These data are summarized in Table 128. All individual suites met the goal with greater than 90 percent of their

spike recoveries falling in the acceptable range. Overall, across all analytical suites, the percentage of acceptable MS/MSD results was 95.8 percent.

*Table 128. Summary of MS and MSD Recovery Data*

| Analyte Group | Total Number of MS & MSD Results | Number of Low Results Below 75% | Number of High Results Above 125% | Number Acceptable | Percentage Acceptable | Goal Met |
|---|---|---|---|---|---|---|
| Metals | 647 | 1 | 2 | 644 | 99.5 | Yes |
| WQPs | 118 | 6 | 1 | 111 | 94.1 | Yes |
| VOCs/SVOCs | 1,777 | 77 | 20 | 1,680 | 94.5 | Yes |
| Totals | 2,563 | 84 | 23 | 2,435 | 95.8 | Yes (overall) |

Appendix Table B-4 contains 178 relative bias values for LCSs. These are used by the Site to evaluate the accuracy of radionuclide analyses. The QC criterion for the acceptable range of relative bias values is from –0.25 to +0.25. During CY 2013, the bias ranged from –0.166 to +0.130. All of the data met the QC criterion.

LCS results for nonradionuclide suites were available for metals, VOCs/SVOCs, and WQPs (including anions). These LCS recoveries are tabulated in Appendix Table B-5, which is sorted by analyte group, then by percent recovery. There are 501 LCS data records for metals. The LCS recoveries for metals fell in the range 88 percent to 119 percent and were all within the 75 percent to 125 percent acceptable QC range. There are 1,359 LCS data records for VOCs/SVOCs. LCS recoveries for VOCs/SVOCs fell between 14.1 percent and 137 percent. Sixty records are outside the 75 percent to 125 percent acceptable QC range (95.6 percent acceptable). There are 133 LCS data records for WQPs. LCS recoveries for WQPs fell between 91 percent and 108 percent and were all acceptable. Overall for nonradionuclides, 97.0 percent of the LCS recoveries indicate that CY 2013 water analytical data for metals, VOCs/SVOCs, and WQPs are of high accuracy.

Another aspect of accuracy is “rejected data.” Out of 10,770 analytical records representing reals, duplicates, and rinsates during CY 2013, 79 records were R-qualified (rejected as unusable) during data V&V. Another way to state this is that 99.3 percent of the analytical data collected during the year were considered to be valid and usable.

#### *3.4.3.3 Representativeness During CY 2013*

As defined earlier, representativeness is an evaluation of the sampling procedure for its ability to reflect the true concentrations of contaminants in water. The Site uses equipment rinsate samples (and “rinse carboys”) to determine whether contamination is introduced from improper or incomplete decontamination of the sampling equipment.

During CY 2013 a total of 137 rinsate analytical records were generated for metals, radionuclides, VOCs/SVOCs, and WQPs.

Overall, there is no evidence of introduced contamination during CY 2013 water sampling and shipping activities. All of the 137 rinsate records appear to be clean. Three records show “B”

qualified metals concentrations; i.e., the reported concentrations were above the instrument detection limit, but *below* the contract required detection limit. Therefore, water quality data for the year are judged to be representative of the actual water concentrations.

Because all required sampling locations were visited, and the samples that could be collected were analyzed, analyses for the year are judged to be representative with respect to spatial coverage.

#### *3.4.3.4 Completeness During CY 2013*

If sufficient water is available for sampling, the goal is to have 100 percent successful sampling of all required locations. However, the availability of water is beyond the control of the samplers. Surface-water monitoring during CY 2013 targeted sampling at 16 routine RFLMA surface-water sampling locations. In actuality, samples were collected at 12 sites and were submitted to the laboratory for analysis. Four locations were not sampled:

- Sampling at PLFPONDEFF / NNG01 was not triggered in CY 2013 based on upstream results at PLFSYSEFF according to the RFLMA monitoring protocols.
- Ponds A-4, B-5, and C-2 were operated in flow-through mode for the entire year and therefore no predischarge samples were collected at A4 POND, B5 POND, or C2 POND.

Routine RFLMA groundwater monitoring during CY 2013 targeted sampling at 47 wells. In actuality, samples were collected at 45 wells and were submitted to the laboratory for analysis. Two locations, Sentinel wells 90299 and 95299 were dry.

Treatment system monitoring during CY 2013 targeted sampling at eight locations; samples were collected at all eight locations and were submitted to the laboratory for analysis.

Because dry locations do not count against sampling success rates (being beyond the control of samplers), success rates for surface water, groundwater, and treatment system sampling are all 100 percent.

V&V completeness is summarized in Table 129. This table compiles, by analyte group, the total number of data points for reals, duplicates, and rinsate samples. It then subtracts rejected data points (seventy-nine for 2013) as well as points that lack validation qualifiers (zero for 2013). The result is the net number of usable validated or verified data points, and this is expressed as percent usable data, or percent V&V completeness. The QC goal for completeness is ≥90 percent.

Overall completeness for all suites was 99.3 percent and exceeded the completeness goal. Therefore, from the perspective of V&V completeness, the CY 2013 water data are acceptable.

Another measure of completeness is that an adequate number of QC samples (field duplicates and equipment rinsates) must be collected to meet QC requirements. The recommended frequency for collecting duplicate samples is 1 duplicate (DUP) per 20 or fewer primary (REAL) water samples. In other words, duplicates should be collected at a 5 percent or greater frequency per REAL sample.

*Table 129. Summary of V&V Data Completeness*

| Analyte Group | Number of Data Points | Number of Unvalidated Points | Number Rejected | Net Usable Points | Percent Completeness | Goal Met |
|---|---|---|---|---|---|---|
| Metals | 1,376 | 0 | 1 | 1,375 | 99.9 | Yes |
| Radionuclides | 226 | 0 | 0 | 226 | 100.0 | Yes |
| WQPs | 183 | 0 | 10 | 173 | 94.5 | Yes |
| VOCs/SVOCs | 8,985 | 0 | 68 | 8,917 | 99.2 | Yes |
| | | | | | | |
| | **Sum of Number of Data Points** | **Sum of Number of Unvalidated Points** | **Sum of Number Rejected** | **Sum of Net Usable Points** | **Overall Completeness** | **Goal Met** |
| **Totals** | **10,770** | **0** | **79** | **10,691** | **99.3** | **Yes** |

Like duplicates, rinsate samples (RNS) are also to be collected at a 5 percent or greater rate. However, this rate applies only for sampling done with reusable equipment. For example, for wells without dedicated equipment, a Teflon bailer is used to collect the sample. This same bailer is then decontaminated before being used at the next well. Therefore, RNS samples taken from the decontaminated bailer are used as a measure of proper decontamination to prevent cross-contamination between locations.

Similarly, for automated composite sampling locations that employ reusable carboy containers or wells with reusable equipment, RNSs are periodically collected after carboys and equipment are decontaminated between samples. However, since carboys and equipment are dedicated to a single location, RNS samples are used as a measure of proper decontamination to prevent cross-contamination between samples at a particular location, and not between locations.

The sample collection frequencies of REAL and DUP samples are tabulated by analyte group in Table 130. The ratios of REAL/DUP samples shown meet water program QC goals with 1 DUP per 10.6 REALs. Across all analyte suites and samples collected during the year, the overall frequency of duplicates was 9.4 percent, exceeding program goals (≥5 percent).

*Table 130. Summary of Field QC Samples (DUPs) and Data Records*

| Analyte Group | Number of Locations Sampled for REALs | Number of Locations Sampled for DUPs | Ratio REALs/ DUPs (Goal <20) | Number REAL Records | Number DUP Records | Total Records |
|---|---|---|---|---|---|---|
| Metals | 61 | 19 | 11.0 | 1,213 | 110 | 1,323 |
| Radionuclides | 12 | 5 | 9.7 | 194 | 20 | 214 |
| WQPs | 35 | 13 | 10.9 | 163 | 15 | 178 |
| VOCs/SVOCs | 68 | 18 | 10.6 | 8,146 | 771 | 8,917 |
| | | **Totals** | **10.6** | **9,716** | **916** | **10,632** |
| | | **Percentages** | | | **9.4%** | |

The ratios of REAL/RNS samples shown in Table 131 exceeded water program QC goals with 1 RNS per 5.58 REALs. Across all analyte suites and samples collected during the year, the overall frequency of rinsates was 17.9 percent, far exceeding program goals (≥5 percent).

*Table 131. Summary of Field QC Samples (RNSs) and Data Records*

| Analyte Group | Number of Locations Sampled for REALs | Number of Locations Sampled for RNSs | Ratio REALs/ RNSs (Goal <20) | Number REAL Records | Number RNS Records | Total Records |
|---|---|---|---|---|---|---|
| Metals | 10 | 1 | 9.1 | 483 | 53 | 536 |
| Radionuclides | 7 | 3 | 14.3 | 172 | 12 | 184 |
| WQPs | 6 | 2 | 9.4 | 47 | 5 | 52 |
| VOCs/SVOCs | 0 | 1 | 1.0 | 68 | 68 | 136 |
| | | **Totals** | **5.58** | **770** | **138** | **908** |
| | | **Percentages** | | | **17.9%** | |

**Notes:** Data are only for surface-water locations that collect composite carboys or wells without dedicated sampling equipment.

### *3.4.3.5 Comparability During CY 2013*

No significant changes were made to water sampling or analytical procedures during CY 2013. Therefore, the analytical data generated during the year should be generally comparable to corresponding analyses from previous years.

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Appendix A: Hydrologic Data


A.1 Surface-Water Discharge Data
- A.1.1 GS01: Woman Creek at Indiana Street
- A.1.2 GS03: Walnut Creek at Indiana Street
- A.1.3 WOMPOC: Woman Creek at Eastern COU Boundary
- A.1.4 WALPOC: Walnut Creek at Eastern COU Boundary
- A.1.5 GS05: Woman Creek at West Fenceline
- A.1.6 GS08: South Walnut Creek at Pond B-5 Outlet
- A.1.7 GS10: South Walnut Creek at B-1 Bypass
- A.1.8 GS11: North Walnut Creek at Pond A-4 Outlet
- A.1.9 GS12: North Walnut Creek at Pond A-3 Outlet
- A.1.10 GS13: North Walnut Creek Above Pond A-1
- A.1.11 GS31: Woman Creek at Pond C-2 Outlet
- A.1.12 GS33: No Name Gulch at Walnut Creek
- A.1.13 GS51: Ditch South of Former 903 Pad
- A.1.14 GS59: Woman Creek Upstream of Antelope Springs Confluence
- A.1.15 B5INFLOW: South Walnut Creek Above Pond B-5
- A.1.16 SW018: Functional Channel 2 at FC-2 Wetland
- A.1.17 SW027: South Interceptor Ditch at Pond C-2
- A.1.18 SW093: North Walnut Creek 1,300 feet Upstream of A-1 Bypass

A.2 Precipitation Data
- A.2.1 PG58: Gaging Station GS01
- A.2.2 PG59: Gaging Station GS03
- A.2.3 PG61: Gaging Station GS05
- A.2.4 PG73: Gaging Station GS13
- A.2.5 PG74: Gaging Station GS59
- A.2.6 PG75: Gaging Station SW018
- A.2.7 PG76: Telemetry Repeater Node RTU3
- A.2.8 PG77: Telemetry Repeater Node RTU2
- A.2.9 PG78: Gaging Station WALPOC
- A.2.10 PG79: Gaging Station WOMPOC

A.3 Groundwater Level Data for CY 2013

A.4 Groundwater Hydrographs
- A.4.1 Hydrographs for Manually Collected Water Level Data

# Appendix A: Hydrologic Data

## A.1 Surface-Water Discharge Data

This section includes mean daily discharge tables and hydrographs by monitoring location and calendar year.

## A.1.1 GS01: Woman Creek at Indiana Street

*Table A–1. CY 2013 Discharge Summary for GS01: Woman Creek at Indiana Street*

**Calendar Year 2013: Daily Mean Discharge Values in Cubic Feet per Second**

| Day | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | WR | *0.000* | 0.102 | 0.147 | 0.733 | 0.011 | 0.000 | 0.000 | 0.000 | 0.169 | 0.200 | 0.176 |
| 2 | WR | 0.000 | 0.218 | 0.173 | 1.861 | 0.005 | 0.000 | 0.000 | 0.000 | 0.151 | 0.188 | 0.174 |
| 3 | WR | 0.017 | 0.763 | 0.406 | 3.499 | 0.001 | 0.000 | 0.000 | 0.000 | 0.142 | 0.188 | 0.165 |
| 4 | 0.027 | 0.041 | 0.583 | 0.248 | 1.687 | 0.000 | 0.000 | 0.000 | 0.000 | 1.140 | 0.161 | 0.138 |
| 5 | 0.026 | 0.030 | 0.221 | 0.153 | 0.973 | 0.000 | 0.000 | 0.000 | 0.000 | 0.762 | 0.157 | *0.099* |
| 6 | *0.033* | 0.050 | 0.188 | 0.101 | 0.780 | 0.000 | 0.000 | 0.000 | 0.000 | 0.411 | 0.142 | *0.068* |
| 7 | 0.025 | 0.064 | 0.242 | 0.074 | 0.661 | 0.000 | 0.000 | 0.000 | 0.000 | 0.328 | 0.139 | *0.044* |
| 8 | 0.015 | 0.055 | 0.249 | 0.061 | 0.696 | 0.000 | 0.000 | 0.000 | 0.000 | 0.271 | 0.152 | *0.035* |
| 9 | 0.011 | 0.052 | 0.173 | 0.069 | 1.705 | 0.000 | 0.000 | 0.000 | 0.000 | 0.218 | 0.133 | *0.035* |
| 10 | 0.008 | 0.033 | 0.158 | 0.183 | 2.035 | 0.000 | 0.000 | 0.000 | 0.000 | 0.239 | 0.133 | *0.035* |
| 11 | *0.008* | *0.022* | 0.353 | 0.585 | 0.976 | 0.000 | 0.000 | 0.000 | 0.002 | 0.292 | 0.130 | *0.035* |
| 12 | *0.007* | *0.018* | 0.727 | 0.753 | 0.764 | 0.000 | 0.000 | 0.000 | *267.841* | 0.199 | 0.130 | *0.036* |
| 13 | *0.006* | 0.020 | 0.598 | 0.349 | 0.542 | 0.000 | 0.000 | 0.000 | *79.629* | 0.198 | 0.145 | *0.035* |
| 14 | *0.005* | 0.016 | 0.888 | 0.311 | 0.427 | 0.000 | 0.000 | 0.000 | 4.418 | 0.214 | 0.143 | 0.029 |
| 15 | *0.004* | *0.018* | 0.514 | 0.280 | 0.364 | 0.000 | 0.000 | 0.000 | *17.405* | 0.199 | 0.147 | 0.099 |
| 16 | *0.003* | *0.017* | 0.341 | 0.380 | 0.323 | 0.000 | 0.000 | 0.000 | 13.948 | 0.193 | 0.142 | 0.208 |
| 17 | *0.003* | *0.063* | 0.213 | 0.561 | 0.262 | 0.000 | 0.000 | 0.000 | 7.468 | 0.177 | 0.123 | 0.251 |
| 18 | *0.003* | *0.058* | 0.125 | 0.756 | 0.201 | 0.000 | 0.000 | 0.000 | 8.546 | 0.318 | 0.115 | 0.296 |
| 19 | 0.002 | *0.041* | 0.079 | 1.404 | 0.161 | 0.000 | 0.000 | 0.000 | 1.285 | 0.406 | 0.132 | 0.273 |
| 20 | 0.001 | 0.038 | 0.062 | 2.989 | 0.148 | 0.000 | 0.000 | 0.000 | 0.703 | 0.277 | 0.134 | 0.185 |
| 21 | 0.000 | 0.045 | 0.057 | 3.399 | 0.201 | 0.000 | 0.000 | 0.000 | 0.534 | 0.447 | 0.142 | 0.112 |
| 22 | 0.000 | 0.063 | 0.050 | 1.622 | 0.150 | 0.000 | 0.000 | 0.000 | 0.403 | 0.293 | 0.161 | 0.114 |
| 23 | 0.000 | 0.083 | 0.055 | 2.012 | 0.138 | 0.000 | 0.000 | 0.000 | 1.376 | 0.243 | 0.204 | *0.107* |
| 24 | 0.001 | *0.097* | 0.074 | 4.283 | 0.124 | 0.000 | 0.000 | 0.000 | 0.508 | 0.245 | 0.245 | 0.151 |
| 25 | 0.001 | 0.141 | 0.102 | 2.396 | 0.082 | 0.000 | 0.000 | 0.000 | 0.391 | 0.230 | 0.245 | 0.138 |
| 26 | 0.001 | 0.126 | 0.281 | 1.052 | 0.050 | 0.000 | 0.000 | 0.000 | 0.298 | 0.203 | 0.228 | 0.115 |
| 27 | 0.001 | 0.099 | 0.863 | 0.709 | 0.028 | 0.000 | 0.000 | 0.000 | 0.409 | 0.195 | 0.211 | 0.137 |
| 28 | 0.000 | 0.124 | 0.947 | 0.523 | 0.018 | 0.000 | 0.000 | 0.000 | 0.834 | 0.184 | 0.204 | 0.161 |
| 29 | 0.000 | NA | 0.547 | 0.418 | 0.206 | 0.000 | 0.000 | 0.000 | 0.342 | 0.230 | 0.194 | 0.160 |
| 30 | *0.000* | NA | 0.291 | 0.413 | 0.199 | 0.000 | 0.000 | 0.000 | 0.229 | 0.321 | 0.181 | 0.155 |
| 31 | *0.000* | NA | 0.203 | NA | 0.051 | NA | 0.000 | 0.000 | NA | 0.299 | NA | 0.177 |

Partial Data

**Flow Rate**

| | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Average* | 0.007 | 0.051 | 0.331 | 0.894 | 0.647 | 0.001 | 0.000 | 0.000 | 13.552 | 0.297 | 0.165 | 0.127 |
| *Maximum* | 0.033 | 0.141 | 0.947 | 4.283 | 3.499 | 0.011 | 0.000 | 0.000 | 267.841 | 1.140 | 0.245 | 0.296 |
| *Minimum* | 0.000 | 0.000 | 0.050 | 0.061 | 0.018 | 0.000 | 0.000 | 0.000 | 0.000 | 0.142 | 0.115 | 0.029 |

Partial Data

**Discharge**

| | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Cubic Feet* | 16422 | 123593 | 887129 | 2316112 | 1731972 | 1507 | 0 | 0 | 35127550 | 794275 | 427650 | 340717 |
| *Gallons* | 122847 | 924541 | 6636186 | 17325725 | 12956051 | 11274 | 0 | 0 | 262772341 | 5941592 | 3199043 | 2548738 |
| *Acre-Feet* | 0.38 | 2.84 | 20.37 | 53.17 | 39.76 | 0.03 | 0.00 | 0.00 | 806.42 | 18.23 | 9.82 | 7.82 |

Partial Data

**Annual Summaries for CY13**

| | |
|---|---|
| $Ft^3$/Sec | 1.335 |
| GPM | 599.4 |
| Cubic Feet | 41766928 |
| Gallons | 312438337 |
| Acre-Feet | 958.84 |

Partial Data

**KEY:** WR: No data or unacceptable data due to winter icing conditions
BD: Bad data due to equipment failures
*ITALICS:* Italic values contain data estimated from field observations and electronic record at adjacent or comparable gages

## A.1.2 GS03: Walnut Creek at Indiana Street

*Table A–2. CY 2013 Discharge Summary for GS03: Walnut Creek at Indiana Street*

**Calendar Year 2013: Daily Mean Discharge Values in Cubic Feet per Second**

| Day | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.000 | 0.000 | 0.000 | 0.000 | 0.519 | 0.021 | 0.000 | 0.000 | 0.000 | 0.737 | 0.121 | 0.053 |
| 2 | 0.000 | 0.000 | 0.000 | 0.000 | 1.567 | 0.028 | 0.000 | 0.000 | 0.000 | 0.951 | 0.092 | 0.049 |
| 3 | 0.000 | 0.000 | 0.000 | 0.000 | 3.545 | 0.013 | 0.000 | 0.000 | 0.000 | 0.823 | 0.089 | 0.049 |
| 4 | 0.000 | 0.000 | 0.000 | 0.000 | 2.081 | 0.012 | 0.000 | 0.000 | 0.000 | 1.965 | 0.077 | 0.037 |
| 5 | 0.000 | 0.000 | 0.000 | 0.000 | 1.043 | 0.012 | 0.000 | 0.000 | 0.000 | 1.571 | 0.073 | 0.026 |
| 6 | 0.000 | 0.000 | 0.000 | 0.000 | 0.572 | 0.009 | 0.000 | 0.000 | 0.000 | 0.866 | 0.053 | *0.006* |
| 7 | 0.000 | 0.000 | 0.000 | 0.000 | 0.401 | 0.007 | 0.000 | 0.000 | 0.000 | 0.726 | 0.054 | *0.004* |
| 8 | 0.000 | 0.000 | 0.000 | 0.000 | 0.459 | 0.005 | 0.000 | 0.000 | 0.000 | 0.670 | 0.120 | *0.005* |
| 9 | 0.000 | 0.000 | 0.000 | 0.000 | 1.036 | 0.004 | 0.000 | 0.000 | 0.000 | 0.617 | 0.073 | *0.007* |
| 10 | 0.000 | 0.000 | 0.000 | 0.000 | 1.670 | 0.002 | 0.000 | 0.000 | 0.000 | 0.681 | 0.064 | *0.009* |
| 11 | 0.000 | 0.000 | 0.000 | 0.000 | 0.767 | 0.001 | 0.000 | 0.000 | 0.000 | 0.662 | 0.064 | *0.011* |
| 12 | 0.000 | 0.000 | 0.000 | 0.000 | 0.464 | 0.000 | 0.000 | 0.000 | BD | 0.266 | 0.055 | *0.014* |
| 13 | 0.000 | 0.000 | 0.000 | 0.000 | 0.312 | 0.000 | 0.000 | 0.000 | BD | 0.170 | 0.066 | *0.018* |
| 14 | 0.000 | 0.000 | 0.000 | 0.000 | 0.350 | 0.000 | 0.000 | 0.000 | 25.519 | 0.169 | 0.068 | *0.023* |
| 15 | 0.000 | 0.000 | 0.000 | 0.000 | 0.288 | 0.000 | 0.000 | 0.000 | 31.512 | 0.141 | 0.074 | *0.030* |
| 16 | 0.000 | 0.000 | 0.000 | 0.000 | 0.252 | 0.000 | 0.000 | 0.000 | 11.424 | 0.133 | 0.065 | 0.037 |
| 17 | 0.000 | 0.000 | 0.000 | 0.000 | 0.194 | 0.000 | 0.000 | 0.000 | 4.111 | 0.125 | 0.046 | 0.036 |
| 18 | 0.000 | 0.000 | 0.000 | 0.000 | 0.171 | 0.000 | 0.000 | 0.000 | 2.419 | 0.225 | 0.037 | 0.101 |
| 19 | 0.000 | 0.000 | 0.000 | 0.000 | 0.122 | 0.000 | 0.000 | 0.000 | 1.828 | 0.319 | 0.040 | 0.119 |
| 20 | 0.000 | 0.000 | 0.000 | 1.454 | 0.086 | 0.000 | 0.000 | 0.000 | 1.656 | 0.264 | 0.039 | 0.087 |
| 21 | 0.000 | 0.000 | 0.000 | 1.732 | 0.060 | 0.000 | 0.000 | 0.000 | 1.516 | 0.332 | 0.055 | 0.057 |
| 22 | 0.000 | 0.000 | 0.000 | 1.040 | 0.041 | 0.000 | 0.000 | 0.000 | 1.327 | 0.238 | 0.058 | 0.042 |
| 23 | 0.000 | 0.000 | 0.000 | 1.302 | 0.055 | 0.000 | 0.000 | 0.000 | 1.997 | 0.458 | 0.073 | 0.037 |
| 24 | 0.000 | 0.000 | 0.000 | 2.098 | 0.060 | 0.000 | 0.000 | 0.000 | 1.088 | 0.932 | 0.101 | 0.034 |
| 25 | 0.000 | 0.000 | 0.000 | 1.548 | 0.054 | *0.000* | 0.000 | 0.000 | 0.523 | 0.681 | 0.100 | 0.038 |
| 26 | 0.000 | 0.000 | 0.000 | 0.992 | 0.038 | *0.000* | 0.000 | 0.000 | 0.288 | 0.490 | 0.090 | 0.038 |
| 27 | 0.000 | 0.000 | 0.000 | 0.620 | 0.022 | 0.000 | 0.000 | 0.000 | 0.349 | 0.373 | 0.084 | 0.037 |
| 28 | 0.000 | 0.000 | 0.000 | 0.423 | 0.015 | 0.000 | 0.000 | 0.000 | 0.871 | 0.168 | 0.076 | 0.048 |
| 29 | 0.000 | NA | 0.000 | 0.323 | 0.100 | 0.000 | 0.000 | 0.000 | 0.763 | 0.236 | 0.068 | 0.058 |
| 30 | 0.000 | NA | 0.000 | 0.249 | 0.259 | 0.000 | 0.000 | 0.000 | 0.637 | 0.451 | 0.058 | 0.046 |
| 31 | 0.000 | NA | 0.000 | NA | 0.114 | NA | 0.000 | 0.000 | NA | 0.243 | NA | 0.055 |
| | | | | | | | | | Partial Data | | | |

**Flow Rate**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Average* | 0.000 | 0.000 | 0.000 | 0.393 | 0.539 | 0.004 | 0.000 | 0.000 | 3.137 | 0.538 | 0.071 | 0.039 |
| *Maximum* | 0.000 | 0.000 | 0.000 | 2.098 | 3.545 | 0.028 | 0.000 | 0.000 | 31.512 | 1.965 | 0.121 | 0.119 |
| *Minimum* | 0.000 | 0.000 | 0.000 | 0.000 | 0.015 | 0.000 | 0.000 | 0.000 | 0.000 | 0.125 | 0.037 | 0.004 |
| | | | | | | | | | Partial Data | | | |

**Discharge**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Cubic Feet* | 0 | 0 | 0 | 1017973 | 1444192 | 9792 | 0 | 0 | 7588365 | 1441260 | 184346 | 104584 |
| *Gallons* | 0 | 0 | 0 | 7614967 | 10803307 | 73253 | 0 | 0 | 56764916 | 10781377 | 1379003 | 782343 |
| *Acre-Feet* | 0.00 | 0.00 | 0.00 | 23.37 | 33.15 | 0.22 | 0.00 | 0.00 | 174.20 | 33.09 | 4.23 | 2.40 |
| | | | | | | | | | Partial Data | | | |

**Annual Summaries for CY13**

| | |
|---|---|
| $Ft^3$/Sec | 0.376 |
| GPM | 168.7 |
| Cubic Feet | 11790513 |
| Gallons | 88199165 |
| Acre-Feet | 270.67 |

Partial Data

**KEY:** WR: No data or unacceptable data due to winter icing conditions
BD: Bad data due to equipment failures
*ITALICS:* Italic values contain data estimated from field observations and electronic record at adjacent or comparable gages

## A.1.3 WOMPOC: Woman Creek at Eastern COU Boundary

*Table A–3. CY 2013 Discharge Summary for WOMPOC: Woman Creek at Eastern COU Boundary*

**Calendar Year 2013: Daily Mean Discharge Values in Cubic Feet per Second**

| Day | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | WR | 0.107 | 0.177 | 0.228 | 0.966 | 0.127 | 0.000 | 0.000 | 0.000 | *0.278* | 0.250 | 0.188 |
| 2 | WR | 0.143 | 0.360 | 0.285 | 2.508 | 0.122 | 0.000 | 0.000 | 0.000 | *0.240* | 0.236 | 0.186 |
| 3 | WR | 0.170 | *1.044* | 0.538 | 3.519 | 0.092 | 0.000 | 0.000 | 0.000 | 0.223 | 0.237 | 0.177 |
| 4 | WR | 0.156 | 0.582 | 0.316 | 1.668 | 0.063 | 0.000 | 0.000 | 0.000 | 1.332 | 0.217 | *0.157* |
| 5 | WR | 0.129 | 0.307 | 0.229 | 1.065 | 0.104 | 0.000 | 0.000 | 0.000 | 0.802 | 0.213 | *0.123* |
| 6 | WR | 0.179 | 0.320 | 0.186 | 0.894 | 0.145 | 0.000 | 0.000 | 0.000 | 0.481 | 0.195 | *0.090* |
| 7 | WR | *0.179* | 0.372 | 0.162 | 0.787 | 0.079 | 0.000 | 0.000 | 0.000 | 0.408 | 0.191 | *0.066* |
| 8 | WR | *0.153* | 0.314 | 0.144 | 0.861 | 0.060 | 0.000 | 0.000 | 0.000 | 0.359 | 0.201 | *0.055* |
| 9 | WR | 0.148 | *0.252* | 0.192 | 2.143 | 0.045 | 0.000 | 0.000 | 0.000 | 0.315 | 0.185 | *0.054* |
| 10 | WR | 0.124 | *0.248* | 0.298 | 2.034 | 0.027 | 0.000 | 0.000 | 0.000 | 0.324 | 0.183 | *0.053* |
| 11 | WR | *0.102* | 0.557 | 0.837 | 1.047 | 0.016 | 0.000 | 0.000 | *2.012* | 0.403 | 0.182 | *0.051* |
| 12 | WR | *0.105* | 0.736 | 0.789 | 0.875 | 0.008 | 0.000 | 0.000 | *167.576* | 0.281 | 0.177 | *0.050* |
| 13 | WR | *0.111* | 0.801 | 0.415 | 0.645 | 0.000 | 0.000 | 0.000 | *28.848* | 0.279 | 0.185 | *0.048* |
| 14 | WR | *0.089* | 0.905 | 0.453 | 0.545 | 0.000 | 0.000 | 0.000 | *3.356* | 0.294 | 0.180 | *0.045* |
| 15 | WR | *0.089* | 0.581 | 0.375 | 0.486 | 0.000 | 0.000 | 0.000 | *11.662* | 0.277 | 0.183 | *0.120* |
| 16 | WR | *0.141* | 0.412 | 0.515 | 0.455 | 0.000 | 0.000 | 0.000 | *8.602* | 0.268 | 0.180 | *0.228* |
| 17 | WR | 0.203 | 0.283 | 0.706 | 0.389 | 0.000 | 0.000 | 0.000 | *1.894* | 0.249 | 0.165 | *0.273* |
| 18 | WR | 0.182 | 0.202 | 0.878 | 0.324 | 0.000 | 0.000 | 0.000 | *0.999* | 0.446 | 0.155 | 0.321 |
| 19 | WR | *0.123* | 0.160 | 1.521 | 0.300 | 0.000 | 0.000 | 0.000 | *0.660* | 0.441 | 0.167 | *0.274* |
| 20 | WR | *0.120* | 0.135 | 3.588 | 0.283 | 0.000 | 0.000 | 0.000 | *0.541* | 0.343 | 0.170 | *0.201* |
| 21 | WR | 0.140 | 0.150 | 3.381 | 0.371 | 0.000 | 0.000 | 0.000 | *0.414* | 0.526 | 0.184 | *0.151* |
| 22 | WR | *0.150* | 0.131 | 1.639 | 0.287 | 0.000 | 0.000 | 0.000 | *0.348* | 0.346 | 0.200 | 0.156 |
| 23 | WR | *0.158* | 0.153 | 2.649 | 0.294 | 0.000 | 0.000 | 0.000 | *1.204* | 0.316 | 0.238 | 0.142 |
| 24 | WR | *0.213* | *0.192* | 4.509 | 0.267 | 0.000 | 0.000 | 0.000 | *0.418* | 0.316 | 0.260 | *0.188* |
| 25 | WR | *0.233* | *0.205* | 2.225 | 0.222 | 0.000 | 0.000 | 0.000 | *0.413* | 0.298 | 0.285 | *0.162* |
| 26 | WR | *0.223* | 0.412 | 1.081 | 0.184 | 0.000 | 0.000 | 0.000 | 0.301 | 0.271 | 0.254 | *0.142* |
| 27 | *0.214* | 0.189 | 1.063 | 0.760 | 0.168 | 0.000 | 0.000 | 0.000 | 0.463 | 0.254 | 0.232 | *0.159* |
| 28 | *0.173* | *0.228* | 0.977 | 0.588 | 0.155 | 0.000 | 0.000 | 0.000 | 0.783 | 0.239 | 0.228 | *0.177* |
| 29 | *0.145* | NA | 0.599 | 0.499 | 0.470 | 0.000 | 0.000 | 0.000 | 0.419 | 0.291 | 0.213 | 0.191 |
| 30 | *0.105* | NA | 0.370 | 0.526 | 0.315 | 0.000 | 0.000 | 0.000 | 0.343 | 0.395 | 0.197 | *0.184* |
| 31 | *0.096* | NA | 0.284 | NA | 0.170 | NA | 0.000 | 0.000 | NA | 0.338 | NA | 0.203 |

Partial Data

**Flow Rate**

| | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Average* | 0.146 | 0.153 | 0.429 | 1.017 | 0.797 | 0.030 | 0.000 | 0.000 | 7.708 | 0.375 | 0.205 | 0.149 |
| *Maximum* | 0.214 | 0.233 | 1.063 | 4.509 | 3.519 | 0.145 | 0.000 | 0.000 | 167.576 | 1.332 | 0.285 | 0.321 |
| *Minimum* | 0.096 | 0.089 | 0.131 | 0.144 | 0.155 | 0.000 | 0.000 | 0.000 | 0.000 | 0.223 | 0.155 | 0.045 |

Partial Data

**Discharge**

| | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Cubic Feet* | 63278 | 370458 | 1147784 | 2636304 | 2133837 | 76777 | 0 | 0 | 19980408 | 1005007 | 530720 | 398834 |
| *Gallons* | 473350 | 2771215 | 8586020 | 19720925 | 15962213 | 574328 | 0 | 0 | 149463844 | 7517978 | 3970062 | 2983487 |
| *Acre-Feet* | 1.45 | 8.50 | 26.35 | 60.52 | 48.99 | 1.76 | 0.00 | 0.00 | 458.69 | 23.07 | 12.18 | 9.16 |

Partial Data

**Annual Summaries for CY13**

| | |
|---|---|
| $Ft^3$/Sec | 0.968 |
| GPM | 434.3 |
| Cubic Feet | 28343407 |
| Gallons | 212023422 |
| Acre-Feet | 650.68 |

Partial Data

**KEY:** WR: No data or unacceptable data due to winter icing conditions
BD: Bad data due to equipment failures
*ITALICS:* Italic values contain data estimated from field observations and electronic record at adjacent or comparable gages

## A.1.4 WALPOC: Walnut Creek at Eastern COU Boundary

*Table A–4. CY 2013 Discharge Summary for WALPOC: Walnut Creek at Eastern COU Boundary*

**Calendar Year 2013: Daily Mean Discharge Values in Cubic Feet per Second**

| Day | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.000 | 0.000 | 0.000 | 0.000 | 0.656 | 0.041 | 0.000 | 0.000 | 0.000 | 0.141 | 0.148 | *0.088* |
| 2 | 0.000 | 0.000 | 0.000 | 0.000 | 1.524 | 0.053 | 0.000 | 0.000 | 0.000 | 0.140 | 0.121 | 0.081 |
| 3 | 0.000 | 0.000 | 0.000 | 0.000 | 2.019 | 0.108 | 0.000 | 0.000 | 0.000 | 0.149 | 0.121 | 0.079 |
| 4 | 0.000 | 0.000 | 0.000 | 0.000 | 1.264 | 0.063 | 0.000 | 0.000 | 0.000 | 0.924 | 0.113 | *0.066* |
| 5 | 0.000 | 0.000 | 0.000 | 0.000 | 0.827 | 0.061 | 0.000 | 0.000 | 0.000 | 0.705 | 0.106 | *0.044* |
| 6 | 0.000 | 0.000 | 0.000 | 0.000 | 0.626 | 0.062 | 0.000 | 0.000 | 0.000 | 0.329 | 0.085 | *0.018* |
| 7 | 0.000 | 0.000 | 0.000 | 0.000 | 0.512 | 0.046 | 0.000 | 0.000 | 0.000 | 0.243 | 0.089 | *0.017* |
| 8 | 0.000 | 0.000 | 0.000 | 0.000 | 0.526 | 0.029 | 0.000 | 0.000 | 0.000 | 0.210 | 0.092 | *0.019* |
| 9 | 0.000 | 0.000 | 0.000 | 0.000 | 0.989 | 0.017 | 0.000 | 0.000 | 0.000 | 0.181 | 0.095 | *0.021* |
| 10 | 0.000 | 0.000 | 0.000 | 0.000 | 1.107 | 0.011 | 0.000 | 0.000 | 0.000 | 0.204 | 0.098 | *0.024* |
| 11 | 0.000 | 0.000 | 0.000 | 0.060 | 0.720 | 0.001 | 0.000 | 0.000 | 0.389 | 0.222 | 0.096 | *0.028* |
| 12 | 0.000 | 0.000 | 0.000 | 0.045 | 0.567 | 0.000 | 0.000 | 0.000 | *43.573* | 0.153 | 0.087 | *0.032* |
| 13 | 0.000 | 0.000 | 0.000 | 0.024 | 0.434 | 0.000 | 0.000 | 0.000 | *45.590* | 0.138 | 0.096 | *0.038* |
| 14 | 0.000 | 0.000 | 0.000 | 0.036 | 0.407 | 0.000 | 0.000 | 0.000 | 22.816 | 0.156 | 0.098 | *0.045* |
| 15 | 0.000 | 0.000 | 0.000 | 0.026 | 0.411 | 0.000 | 0.000 | 0.000 | *24.244* | 0.134 | 0.100 | *0.056* |
| 16 | 0.000 | 0.000 | 0.000 | 0.075 | 0.386 | 0.000 | 0.000 | 0.000 | 6.108 | 0.131 | 0.094 | *0.063* |
| 17 | 0.000 | 0.000 | 0.000 | 0.110 | 0.319 | 0.000 | 0.000 | 0.000 | 2.011 | 0.126 | 0.073 | *0.069* |
| 18 | 0.000 | 0.000 | 0.000 | 0.178 | 0.304 | 0.000 | 0.000 | 0.000 | 0.889 | 0.247 | 0.062 | *0.171* |
| 19 | 0.000 | 0.000 | 0.000 | 0.861 | 0.212 | 0.000 | 0.000 | 0.000 | 0.524 | 0.302 | 0.071 | 0.177 |
| 20 | 0.000 | 0.000 | 0.000 | 2.171 | 0.176 | 0.000 | 0.000 | 0.000 | 0.419 | 0.239 | 0.078 | *0.132* |
| 21 | 0.000 | 0.000 | 0.000 | 1.749 | 0.148 | 0.000 | 0.000 | 0.000 | 0.339 | 0.284 | 0.106 | *0.100* |
| 22 | 0.000 | 0.000 | 0.000 | 1.109 | 0.130 | 0.000 | 0.000 | 0.000 | 0.272 | 0.224 | 0.102 | *0.069* |
| 23 | 0.000 | 0.000 | 0.000 | 1.446 | 0.163 | 0.000 | 0.000 | 0.000 | 0.931 | 0.163 | 0.122 | *0.058* |
| 24 | 0.000 | 0.000 | 0.000 | 2.107 | 0.165 | 0.000 | 0.000 | 0.000 | 0.434 | 0.145 | 0.146 | *0.054* |
| 25 | 0.000 | 0.000 | 0.000 | 1.546 | 0.163 | 0.000 | 0.000 | 0.000 | 0.261 | 0.163 | 0.145 | *0.050* |
| 26 | 0.000 | 0.000 | 0.000 | 1.024 | 0.122 | 0.000 | 0.000 | 0.000 | 0.200 | 0.163 | 0.134 | *0.056* |
| 27 | 0.000 | 0.000 | 0.000 | 0.695 | 0.099 | 0.000 | 0.000 | 0.000 | 0.261 | 0.158 | 0.124 | 0.070 |
| 28 | 0.000 | 0.000 | 0.000 | 0.493 | 0.088 | 0.000 | 0.000 | 0.000 | 0.514 | 0.151 | 0.118 | 0.080 |
| 29 | 0.000 | NA | 0.000 | 0.380 | 0.254 | 0.000 | 0.000 | 0.000 | 0.256 | 0.185 | 0.108 | 0.098 |
| 30 | 0.000 | NA | 0.000 | 0.300 | 0.437 | 0.000 | 0.000 | 0.000 | 0.173 | 0.258 | 0.098 | 0.084 |
| 31 | 0.000 | NA | 0.000 | NA | 0.145 | NA | 0.000 | 0.000 | NA | 0.238 | NA | 0.092 |

**Flow Rate**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Average* | 0.000 | 0.000 | 0.000 | 0.481 | 0.513 | 0.016 | 0.000 | 0.000 | 5.007 | 0.232 | 0.104 | 0.067 |
| *Maximum* | 0.000 | 0.000 | 0.000 | 2.171 | 2.019 | 0.108 | 0.000 | 0.000 | 45.590 | 0.924 | 0.148 | 0.177 |
| *Minimum* | 0.000 | 0.000 | 0.000 | 0.000 | 0.088 | 0.000 | 0.000 | 0.000 | 0.000 | 0.126 | 0.062 | 0.017 |

**Discharge**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Cubic Feet* | 0 | 0 | 0 | 1247347 | 1373951 | 42572 | 0 | 0 | 12977520 | 622322 | 269991 | 179753 |
| *Gallons* | 0 | 0 | 0 | 9330806 | 10277865 | 318463 | 0 | 0 | 97078596 | 4655292 | 2019673 | 1344645 |
| *Acre-Feet* | 0.00 | 0.00 | 0.00 | 28.64 | 31.54 | 0.98 | 0.00 | 0.00 | 297.92 | 14.29 | 6.20 | 4.13 |

**Annual Summaries for CY13**

| | |
|---|---|
| $Ft^3/Sec$ | 0.530 |
| GPM | 237.9 |
| Cubic Feet | 16713456 |
| Gallons | 125025340 |
| Acre-Feet | 383.69 |

**KEY:** WR: No data or unacceptable data due to winter icing conditions
BD: Bad data due to equipment failures
*ITALICS:* Italic values contain data estimated from field observations and electronic record at adjacent or comparable gages

## A.1.5 GS05: Woman Creek at West Fenceline

*Table A–5. CY 2013 Discharge Summary for GS05: Woman Creek at West Fenceline*

**Calendar Year 2013: Daily Mean Discharge Values in Cubic Feet per Second**

| Day | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | WR | WR | *0.137* | 0.103 | 0.843 | 0.129 | 0.105 | *0.075* | 0.038 | 0.105 | *0.061* | 0.046 |
| 2 | WR | WR | *0.323* | 0.179 | 2.651 | 0.128 | 0.100 | *0.066* | 0.037 | 0.093 | *0.057* | 0.046 |
| 3 | WR | WR | *0.506* | 0.242 | 1.913 | 0.106 | *0.104* | *0.069* | 0.030 | 0.094 | *0.061* | 0.044 |
| 4 | WR | WR | *0.237* | 0.117 | 1.066 | 0.113 | *0.093* | *0.065* | 0.034 | 0.509 | *0.057* | 0.053 |
| 5 | WR | WR | *0.190* | 0.081 | 0.815 | 0.126 | *0.090* | *0.078* | 0.049 | 0.254 | *0.057* | WR |
| 6 | WR | WR | *0.197* | 0.055 | 0.713 | 0.111 | 0.060 | *0.088* | 0.041 | 0.186 | *0.048* | WR |
| 7 | WR | WR | *0.198* | 0.045 | 0.643 | 0.111 | 0.053 | *0.099* | 0.026 | 0.161 | *0.049* | WR |
| 8 | WR | WR | *0.144* | 0.041 | 0.860 | 0.112 | 0.045 | *0.099* | 0.030 | 0.133 | *0.048* | WR |
| 9 | WR | WR | *0.112* | 0.074 | 1.995 | 0.102 | *0.039* | *BD* | 0.136 | 0.116 | *0.045* | WR |
| 10 | WR | WR | *0.129* | 0.241 | 1.299 | 0.094 | *0.050* | *BD* | 0.173 | 0.138 | *0.047* | WR |
| 11 | WR | WR | *0.347* | 0.433 | 0.789 | 0.083 | *0.054* | *BD* | BD | 0.125 | *0.043* | WR |
| 12 | WR | WR | *0.254* | 0.263 | 0.617 | 0.079 | *0.055* | BD | BD | 0.095 | *0.043* | WR |
| 13 | WR | WR | *0.491* | 0.144 | 0.416 | 0.094 | *0.058* | BD | BD | 0.091 | *0.042* | WR |
| 14 | WR | WR | *0.379* | 0.204 | 0.331 | 0.099 | *0.036* | BD | 1.579 | 0.096 | 0.041 | WR |
| 15 | WR | WR | *0.263* | 0.151 | 0.264 | 0.116 | *0.323* | *BD* | 5.568 | 0.092 | 0.042 | WR |
| 16 | WR | WR | *0.173* | 0.339 | 0.236 | 0.101 | *0.066* | *BD* | 4.175 | 0.079 | 0.041 | WR |
| 17 | WR | WR | *0.121* | 0.385 | 0.194 | 0.092 | *0.029* | *BD* | 0.790 | 0.080 | 0.040 | WR |
| 18 | WR | WR | *0.088* | 0.616 | 0.172 | 0.102 | *0.024* | *0.018* | 0.415 | 0.199 | 0.038 | WR |
| 19 | WR | WR | *0.063* | 1.021 | 0.159 | 0.092 | *0.033* | *0.013* | 0.294 | 0.176 | 0.040 | WR |
| 20 | WR | WR | *0.053* | 3.144 | 0.189 | 0.056 | *0.040* | *0.016* | 0.268 | 0.182 | 0.042 | WR |
| 21 | WR | WR | 0.039 | 2.329 | 0.176 | 0.054 | *0.034* | *0.035* | 0.232 | 0.235 | 0.047 | WR |
| 22 | WR | WR | 0.035 | 1.425 | 0.167 | 0.059 | *0.027* | *0.041* | 0.212 | 0.151 | 0.057 | WR |
| 23 | WR | WR | *0.061* | 3.096 | 0.165 | 0.060 | *0.027* | BD | 0.516 | 0.196 | 0.067 | WR |
| 24 | WR | WR | 0.093 | 2.986 | 0.156 | 0.064 | *0.042* | BD | 0.222 | 0.151 | 0.070 | WR |
| 25 | WR | WR | 0.111 | 1.161 | 0.152 | 0.070 | *0.066* | BD | 0.204 | 0.123 | 0.071 | WR |
| 26 | WR | WR | 0.211 | 0.613 | 0.150 | 0.072 | *0.055* | BD | 0.180 | 0.088 | 0.059 | WR |
| 27 | WR | WR | 0.564 | 0.376 | 0.150 | 0.066 | *0.083* | BD | 0.310 | 0.062 | 0.057 | WR |
| 28 | WR | WR | 0.455 | 0.279 | 0.149 | 0.076 | *0.120* | BD | 0.252 | 0.054 | 0.056 | WR |
| 29 | WR | NA | 0.256 | 0.344 | 0.205 | 0.112 | *0.112* | 0.026 | 0.168 | *0.092* | 0.053 | WR |
| 30 | WR | NA | 0.168 | 0.369 | 0.141 | 0.114 | *0.071* | 0.030 | 0.131 | *0.139* | 0.048 | WR |
| 31 | WR | NA | 0.142 | NA | 0.121 | NA | *0.062* | 0.042 | NA | *0.090* | NA | WR |
| | No Data | No Data | | | | | | Partial Data | Partial Data | | | Partial Data |
| **Flow Rate** | | | | | | | | | | | | |
| *Average* | | | 0.211 | 0.695 | 0.577 | 0.093 | 0.069 | 0.054 | 0.597 | 0.142 | 0.051 | 0.047 |
| *Maximum* | | | 0.564 | 3.144 | 2.651 | 0.129 | 0.323 | 0.099 | 5.568 | 0.509 | 0.071 | 0.053 |
| *Minimum* | | | 0.035 | 0.041 | 0.121 | 0.054 | 0.024 | 0.013 | 0.026 | 0.054 | 0.038 | 0.044 |
| | No Data | No Data | | | | | | Partial Data | Partial Data | | | Partial Data |
| **Discharge** | | | | | | | | | | | | |
| *Cubic Feet* | | | 564898 | 1801900 | 1546419 | 241393 | 186040 | 74253 | 1391849 | 379119 | 131970 | 16374 |
| *Gallons* | | | 4225733 | 13479149 | 11568018 | 1805746 | 1391674 | 555453 | 10411754 | 2836007 | 987201 | 122490 |
| *Acre-Feet* | | | 12.97 | 41.37 | 35.50 | 5.54 | 4.27 | 1.70 | 31.95 | 8.70 | 3.03 | 0.38 |
| | No Data | No Data | | | | | | Partial Data | Partial Data | | | Partial Data |

**Annual Summaries for CY13**

| | |
|---|---|
| $Ft^3$/Sec | 0.281 |
| GPM | 126.1 |
| Cubic Feet | 6334216 |
| Gallons | 47383226 |
| Acre-Feet | 145.41 |
| | Partial Data |

**KEY:** WR: No data or unacceptable data due to winter icing conditions
BD: Bad data due to equipment failures
*ITALICS:* Italic values contain data estimated from field observations and electronic record at adjacent or comparable gages

## A.1.6 GS08: South Walnut Creek at Pond B-5 Outlet

*Table A–6. CY 2013 Discharge Summary for GS08: South Walnut Creek at Pond B-5 Outlet*

**Calendar Year 2013: Daily Mean Discharge Values in Cubic Feet per Second**

| Day | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.000 | 0.000 | 0.000 | 0.000 | 0.070 | 0.009 | 0.000 | 0.000 | 0.000 | 0.049 | 0.050 | 0.038 |
| 2 | 0.000 | 0.000 | 0.000 | 0.000 | 0.146 | 0.006 | 0.000 | 0.000 | 0.000 | 0.044 | 0.046 | 0.039 |
| 3 | 0.000 | 0.000 | 0.000 | 0.000 | 0.385 | 0.004 | 0.000 | 0.000 | 0.000 | 0.044 | 0.047 | 0.038 |
| 4 | 0.000 | 0.000 | 0.000 | 0.000 | 0.244 | 0.002 | 0.000 | 0.000 | 0.000 | 0.128 | 0.043 | 0.036 |
| 5 | 0.000 | 0.000 | 0.000 | 0.000 | 0.123 | 0.006 | 0.000 | 0.000 | 0.000 | 0.169 | 0.040 | 0.027 |
| 6 | 0.000 | 0.000 | 0.000 | 0.000 | 0.085 | 0.009 | 0.000 | 0.000 | 0.000 | 0.098 | 0.034 | *0.015* |
| 7 | 0.000 | 0.000 | 0.000 | 0.000 | 0.068 | 0.006 | 0.000 | 0.000 | 0.000 | 0.072 | 0.033 | *0.009* |
| 8 | 0.000 | 0.000 | 0.000 | 0.000 | 0.066 | 0.002 | 0.000 | 0.000 | 0.000 | 0.063 | 0.034 | *0.008* |
| 9 | 0.000 | 0.000 | 0.000 | 0.000 | 0.123 | 0.000 | 0.000 | 0.000 | 0.000 | 0.057 | 0.033 | *0.007* |
| 10 | 0.000 | 0.000 | 0.000 | 0.000 | 0.179 | 0.000 | 0.000 | 0.000 | 0.000 | 0.057 | 0.033 | *0.006* |
| 11 | 0.000 | 0.000 | 0.000 | 0.000 | 0.115 | 0.000 | 0.000 | 0.000 | 0.025 | 0.056 | 0.031 | 0.003 |
| 12 | 0.000 | 0.000 | 0.000 | 0.000 | 0.086 | 0.000 | 0.000 | 0.000 | 11.694 | 0.049 | 0.029 | *0.003* |
| 13 | 0.000 | 0.000 | 0.000 | 0.000 | 0.066 | 0.000 | 0.000 | 0.000 | 18.497 | 0.045 | 0.029 | 0.008 |
| 14 | 0.000 | 0.000 | 0.000 | 0.000 | 0.064 | 0.000 | 0.000 | 0.000 | 1.353 | 0.048 | 0.027 | 0.017 |
| 15 | 0.000 | 0.000 | 0.000 | 0.000 | 0.054 | 0.000 | 0.000 | 0.000 | 2.699 | 0.044 | 0.027 | 0.026 |
| 16 | 0.000 | 0.000 | 0.000 | 0.000 | 0.045 | 0.000 | 0.000 | 0.000 | 1.637 | 0.044 | 0.026 | 0.038 |
| 17 | 0.000 | 0.000 | 0.000 | 0.000 | 0.036 | 0.000 | 0.000 | 0.000 | 0.772 | 0.043 | 0.024 | 0.043 |
| 18 | 0.000 | 0.000 | 0.000 | 0.000 | 0.027 | 0.000 | 0.000 | 0.000 | 0.289 | 0.063 | 0.024 | 0.038 |
| 19 | 0.000 | 0.000 | 0.000 | 0.008 | 0.024 | 0.000 | 0.000 | 0.000 | 0.156 | 0.069 | 0.027 | 0.036 |
| 20 | 0.000 | 0.000 | 0.000 | 0.191 | 0.027 | 0.000 | 0.000 | 0.000 | 0.123 | 0.061 | 0.029 | 0.026 |
| 21 | 0.000 | 0.000 | 0.000 | 0.238 | 0.029 | 0.000 | 0.000 | 0.000 | 0.100 | 0.067 | 0.037 | 0.019 |
| 22 | 0.000 | 0.000 | 0.000 | 0.175 | 0.027 | 0.000 | 0.000 | 0.000 | 0.084 | 0.058 | 0.034 | 0.018 |
| 23 | 0.000 | 0.000 | 0.000 | 0.152 | 0.027 | 0.000 | 0.000 | 0.000 | 0.169 | 0.048 | 0.038 | 0.018 |
| 24 | 0.000 | 0.000 | 0.000 | 0.267 | 0.027 | 0.000 | 0.000 | 0.000 | 0.143 | 0.043 | 0.041 | 0.021 |
| 25 | 0.000 | 0.000 | 0.000 | 0.288 | 0.023 | 0.000 | 0.000 | 0.000 | 0.091 | 0.045 | 0.042 | 0.020 |
| 26 | 0.000 | 0.000 | 0.000 | 0.190 | 0.017 | 0.000 | 0.000 | 0.000 | 0.069 | 0.043 | 0.041 | 0.019 |
| 27 | 0.000 | 0.000 | 0.000 | 0.123 | 0.014 | 0.000 | 0.000 | 0.000 | 0.078 | 0.043 | 0.040 | 0.020 |
| 28 | 0.000 | 0.000 | 0.000 | 0.086 | 0.008 | 0.000 | 0.000 | 0.000 | 0.111 | 0.041 | 0.041 | 0.023 |
| 29 | 0.000 | NA | 0.000 | 0.060 | 0.053 | 0.000 | 0.000 | 0.000 | 0.086 | 0.049 | 0.041 | 0.023 |
| 30 | 0.000 | NA | 0.000 | 0.042 | 0.063 | 0.000 | 0.000 | 0.000 | 0.060 | 0.063 | 0.040 | 0.023 |
| 31 | 0.000 | NA | 0.000 | NA | 0.021 | NA | 0.000 | 0.000 | NA | 0.062 | NA | 0.026 |

**Flow Rate**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Average* | 0.000 | 0.000 | 0.000 | 0.061 | 0.076 | 0.001 | 0.000 | 0.000 | 1.275 | 0.060 | 0.035 | 0.022 |
| *Maximum* | 0.000 | 0.000 | 0.000 | 0.288 | 0.385 | 0.009 | 0.000 | 0.000 | 18.497 | 0.169 | 0.050 | 0.043 |
| *Minimum* | 0.000 | 0.000 | 0.000 | 0.000 | 0.008 | 0.000 | 0.000 | 0.000 | 0.000 | 0.041 | 0.024 | 0.003 |

**Discharge**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Cubic Feet* | 0 | 0 | 0 | 157376 | 202433 | 3846 | 0 | 0 | 3303702 | 161149 | 91644 | 59624 |
| *Gallons* | 0 | 0 | 0 | 1177251 | 1514304 | 28767 | 0 | 0 | 24713410 | 1205477 | 685547 | 446018 |
| *Acre-Feet* | 0.00 | 0.00 | 0.00 | 3.61 | 4.65 | 0.09 | 0.00 | 0.00 | 75.84 | 3.70 | 2.10 | 1.37 |

**Annual Summaries for CY13**

| | |
|---|---|
| $Ft^3$/Sec | 0.126 |
| GPM | 56.6 |
| Cubic Feet | 3979773 |
| Gallons | 29770775 |
| Acre-Feet | 91.36 |

**KEY:** WR: No data or unacceptable data due to winter icing conditions
BD: Bad data due to equipment failures
*ITALICS:* Italic values contain data estimated from field observations and electronic record at adjacent or comparable gages

## A.1.7 GS10: South Walnut Creek at B-1 Bypass

*Table A–7. CY 2013 Discharge Summary for GS10: South Walnut Creek at B-1 Bypass*

**Calendar Year 2013: Daily Mean Discharge Values in Cubic Feet per Second**

| Day | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | WR | WR | WR | 0.010 | 0.081 | 0.058 | 0.049 | 0.007 | 0.003 | 0.081 | 0.066 | 0.041 |
| 2 | WR | WR | WR | 0.016 | 0.306 | 0.059 | 0.026 | 0.009 | 0.007 | 0.080 | 0.061 | 0.032 |
| 3 | WR | WR | WR | 0.026 | 0.255 | 0.057 | 0.009 | 0.007 | 0.004 | 0.075 | 0.059 | 0.031 |
| 4 | WR | WR | WR | 0.015 | 0.128 | 0.057 | 0.005 | 0.010 | 0.002 | 0.215 | 0.056 | 0.024 |
| 5 | WR | WR | 0.004 | 0.013 | 0.095 | 0.069 | 0.008 | 0.008 | 0.000 | 0.119 | 0.052 | *0.019* |
| 6 | WR | WR | 0.007 | 0.012 | 0.089 | 0.059 | 0.006 | 0.010 | 0.005 | 0.091 | 0.050 | *0.012* |
| 7 | WR | WR | 0.013 | 0.013 | 0.083 | 0.053 | 0.004 | 0.013 | 0.006 | 0.083 | 0.049 | *0.009* |
| 8 | WR | WR | 0.010 | 0.013 | 0.090 | 0.055 | 0.004 | 0.012 | 0.006 | 0.080 | 0.051 | *0.008* |
| 9 | WR | WR | 0.006 | 0.018 | 0.178 | 0.053 | 0.003 | 0.010 | 0.015 | 0.073 | 0.049 | *0.007* |
| 10 | WR | WR | 0.008 | 0.029 | 0.152 | 0.052 | 0.003 | 0.008 | 0.091 | 0.073 | 0.047 | *0.006* |
| 11 | WR | WR | 0.030 | 0.050 | 0.117 | 0.048 | 0.003 | 0.009 | 2.343 | 0.083 | 0.045 | *0.003* |
| 12 | WR | WR | 0.022 | 0.036 | 0.108 | 0.036 | 0.004 | 0.007 | *20.030* | 0.069 | 0.042 | *0.003* |
| 13 | WR | WR | 0.040 | 0.024 | 0.097 | 0.040 | 0.006 | 0.024 | 3.695 | 0.067 | 0.041 | *0.008* |
| 14 | WR | WR | 0.037 | 0.032 | 0.094 | 0.046 | 0.012 | 0.011 | 0.489 | 0.068 | 0.040 | *0.017* |
| 15 | WR | WR | 0.021 | 0.025 | 0.095 | 0.040 | 0.305 | 0.008 | 2.977 | 0.060 | 0.040 | *0.024* |
| 16 | WR | WR | 0.014 | 0.034 | 0.099 | 0.043 | 0.056 | 0.005 | 1.195 | 0.056 | 0.041 | *0.032* |
| 17 | WR | WR | 0.009 | 0.039 | 0.089 | 0.041 | 0.013 | 0.005 | 0.364 | 0.052 | 0.041 | 0.040 |
| 18 | WR | WR | 0.006 | 0.052 | 0.083 | 0.051 | 0.010 | 0.005 | 0.213 | 0.077 | 0.040 | 0.055 |
| 19 | WR | WR | 0.005 | 0.168 | 0.083 | 0.055 | 0.010 | 0.004 | 0.165 | 0.079 | 0.041 | 0.040 |
| 20 | WR | WR | 0.004 | 0.357 | 0.086 | 0.043 | 0.010 | 0.006 | 0.143 | 0.077 | 0.044 | 0.031 |
| 21 | WR | WR | 0.005 | 0.183 | 0.086 | 0.049 | 0.009 | 0.052 | 0.127 | 0.066 | 0.040 | 0.025 |
| 22 | WR | WR | 0.005 | 0.109 | 0.080 | 0.052 | 0.009 | 0.070 | 0.115 | 0.050 | 0.041 | 0.028 |
| 23 | WR | WR | 0.004 | 0.284 | 0.087 | 0.053 | 0.006 | 0.018 | 0.249 | 0.046 | 0.043 | 0.028 |
| 24 | WR | WR | 0.004 | 0.380 | 0.083 | 0.081 | 0.007 | 0.023 | 0.129 | 0.049 | 0.042 | *0.031* |
| 25 | WR | WR | 0.005 | 0.185 | 0.083 | 0.061 | 0.012 | 0.014 | 0.121 | 0.043 | 0.043 | *0.026* |
| 26 | WR | WR | 0.026 | 0.121 | 0.083 | 0.050 | 0.014 | 0.005 | 0.118 | 0.041 | 0.036 | 0.025 |
| 27 | WR | WR | 0.042 | 0.092 | 0.079 | 0.037 | 0.010 | 0.003 | 0.141 | 0.040 | 0.037 | 0.027 |
| 28 | WR | WR | 0.034 | 0.080 | 0.078 | 0.033 | 0.027 | 0.009 | 0.146 | 0.040 | 0.035 | 0.028 |
| 29 | WR | NA | 0.022 | 0.068 | 0.169 | *0.042* | 0.019 | 0.005 | 0.099 | 0.045 | 0.041 | 0.026 |
| 30 | WR | NA | 0.014 | 0.063 | 0.081 | 0.045 | 0.014 | 0.003 | 0.087 | 0.051 | 0.043 | 0.028 |
| 31 | WR | NA | 0.011 | NA | 0.061 | NA | 0.009 | 0.003 | NA | 0.062 | NA | 0.032 |
| | No Data | No Data | Partial Data | | | | | | | | | |

**Flow Rate**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Average* | | | 0.015 | 0.085 | 0.109 | 0.051 | 0.022 | 0.012 | 1.103 | 0.071 | 0.045 | 0.024 |
| *Maximum* | | | 0.042 | 0.380 | 0.306 | 0.081 | 0.305 | 0.070 | 20.030 | 0.215 | 0.066 | 0.055 |
| *Minimum* | | | 0.004 | 0.010 | 0.061 | 0.033 | 0.003 | 0.003 | 0.000 | 0.040 | 0.035 | 0.003 |
| | No Data | No Data | Partial Data | | | | | | | | | |

**Discharge**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Cubic Feet* | | | 35588 | 219977 | 291921 | 130984 | 58927 | 32826 | 2858521 | 189303 | 116979 | 64362 |
| *Gallons* | | | 266220 | 1645539 | 2183722 | 979826 | 440802 | 245555 | 21383225 | 1416089 | 875064 | 481460 |
| *Acre-Feet* | | | 0.82 | 5.05 | 6.70 | 3.01 | 1.35 | 0.75 | 65.62 | 4.35 | 2.69 | 1.48 |
| | No Data | No Data | Partial Data | | | | | | | | | |

**Annual Summaries for CY13**

| | |
|---|---|
| $Ft^3$/Sec | 0.153 |
| GPM | 68.8 |
| Cubic Feet | 3999388 |
| Gallons | 29917501 |
| Acre-Feet | 91.81 |
| | Partial Data |

**KEY:** WR: No data or unacceptable data due to winter icing conditions
BD: Bad data due to equipment failures
*ITALICS:* Italic values contain data estimated from field observations and electronic record at adjacent or comparable gages

## A.1.8 GS11: North Walnut Creek at Pond A-4 Outlet

*Table A–8. CY 2013 Discharge Summary for GS11: North Walnut Creek at Pond A-4 Outlet*

**Calendar Year 2013: Daily Mean Discharge Values in Cubic Feet per Second**

| Day | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.000 | 0.000 | 0.000 | 0.000 | 0.309 | 0.015 | 0.000 | 0.000 | 0.000 | 0.018 | 0.054 | 0.037 |
| 2 | 0.000 | 0.000 | 0.000 | 0.000 | 0.734 | 0.028 | 0.000 | 0.000 | 0.000 | 0.037 | 0.039 | 0.030 |
| 3 | 0.000 | 0.000 | 0.000 | 0.000 | 0.964 | 0.066 | 0.000 | 0.000 | 0.000 | 0.069 | 0.040 | 0.025 |
| 4 | 0.000 | 0.000 | 0.000 | 0.000 | 0.582 | 0.032 | 0.000 | 0.000 | 0.000 | 0.542 | 0.038 | 0.032 |
| 5 | 0.000 | 0.000 | 0.000 | 0.000 | 0.400 | 0.030 | 0.000 | 0.000 | 0.000 | 0.380 | 0.034 | *0.023* |
| 6 | 0.000 | 0.000 | 0.000 | 0.000 | 0.299 | 0.032 | 0.000 | 0.000 | 0.000 | 0.162 | 0.021 | *0.019* |
| 7 | 0.000 | 0.000 | 0.000 | 0.000 | 0.245 | 0.022 | 0.000 | 0.000 | 0.000 | 0.124 | 0.025 | *0.015* |
| 8 | 0.000 | 0.000 | 0.000 | 0.000 | 0.239 | 0.012 | 0.000 | 0.000 | 0.000 | 0.109 | 0.024 | *0.012* |
| 9 | 0.000 | 0.000 | 0.000 | 0.000 | 0.473 | 0.006 | 0.000 | 0.000 | 0.000 | 0.098 | 0.029 | *0.010* |
| 10 | 0.000 | 0.000 | 0.000 | 0.000 | 0.550 | 0.005 | 0.000 | 0.000 | 0.000 | 0.105 | 0.031 | *0.007* |
| 11 | 0.000 | 0.000 | 0.000 | 0.000 | 0.342 | 0.004 | 0.000 | 0.000 | 0.063 | 0.105 | 0.029 | 0.005 |
| 12 | 0.000 | 0.000 | 0.000 | 0.000 | 0.264 | 0.006 | 0.000 | 0.000 | 19.410 | 0.080 | 0.024 | 0.005 |
| 13 | 0.000 | 0.000 | 0.000 | 0.000 | 0.209 | 0.008 | 0.000 | 0.000 | 23.434 | 0.070 | 0.027 | 0.005 |
| 14 | 0.000 | 0.000 | 0.000 | 0.000 | 0.200 | 0.003 | 0.000 | 0.000 | 21.646 | 0.080 | 0.029 | 0.004 |
| 15 | 0.000 | 0.000 | 0.000 | 0.000 | 0.212 | 0.004 | 0.000 | 0.000 | 18.229 | 0.070 | 0.029 | 0.002 |
| 16 | 0.000 | 0.000 | 0.000 | 0.000 | 0.197 | 0.002 | 0.000 | 0.000 | 3.130 | 0.069 | 0.024 | 0.011 |
| 17 | 0.000 | 0.000 | 0.000 | 0.000 | 0.171 | 0.000 | 0.000 | 0.000 | 0.848 | 0.065 | 0.015 | 0.033 |
| 18 | 0.000 | 0.000 | 0.000 | 0.000 | 0.178 | 0.000 | 0.000 | 0.000 | 0.428 | 0.110 | 0.013 | 0.045 |
| 19 | 0.000 | 0.000 | 0.000 | 0.514 | 0.112 | 0.000 | 0.000 | 0.000 | 0.275 | 0.152 | 0.015 | 0.049 |
| 20 | 0.000 | 0.000 | 0.000 | 1.236 | 0.085 | 0.000 | 0.000 | 0.000 | 0.225 | 0.113 | 0.020 | 0.032 |
| 21 | 0.000 | 0.000 | 0.000 | 0.932 | 0.066 | 0.000 | 0.000 | 0.000 | 0.190 | 0.129 | 0.034 | 0.017 |
| 22 | 0.000 | 0.000 | 0.000 | 0.539 | 0.059 | 0.000 | 0.000 | 0.000 | 0.151 | 0.113 | 0.033 | 0.010 |
| 23 | 0.000 | 0.000 | 0.000 | 0.730 | 0.089 | 0.000 | 0.000 | 0.000 | 0.474 | 0.081 | 0.045 | 0.007 |
| 24 | 0.000 | 0.000 | 0.000 | 1.192 | 0.089 | 0.000 | 0.000 | 0.000 | 0.121 | 0.074 | 0.056 | 0.010 |
| 25 | 0.000 | 0.000 | 0.000 | 0.758 | 0.091 | 0.000 | 0.000 | 0.000 | 0.038 | 0.085 | 0.068 | 0.015 |
| 26 | 0.000 | 0.000 | 0.000 | 0.502 | 0.065 | 0.000 | 0.000 | 0.000 | 0.020 | 0.082 | 0.079 | 0.011 |
| 27 | 0.000 | 0.000 | 0.000 | 0.328 | 0.054 | 0.000 | 0.000 | 0.000 | 0.030 | 0.078 | 0.074 | 0.013 |
| 28 | 0.000 | 0.000 | 0.000 | 0.224 | 0.050 | 0.000 | 0.000 | 0.000 | 0.169 | 0.073 | 0.069 | 0.019 |
| 29 | 0.000 | NA | 0.000 | 0.175 | 0.102 | 0.000 | 0.000 | 0.000 | 0.056 | 0.098 | 0.057 | 0.021 |
| 30 | 0.000 | NA | 0.000 | 0.138 | 0.241 | 0.000 | 0.000 | 0.000 | 0.029 | 0.106 | 0.049 | 0.014 |
| 31 | 0.000 | NA | 0.000 | NA | 0.061 | NA | 0.000 | 0.000 | NA | 0.092 | NA | 0.016 |

**Flow Rate**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Average* | 0.000 | 0.000 | 0.000 | 0.242 | 0.249 | 0.009 | 0.000 | 0.000 | 2.966 | 0.115 | 0.037 | 0.018 |
| *Maximum* | 0.000 | 0.000 | 0.000 | 1.236 | 0.964 | 0.066 | 0.000 | 0.000 | 23.434 | 0.542 | 0.079 | 0.049 |
| *Minimum* | 0.000 | 0.000 | 0.000 | 0.000 | 0.050 | 0.000 | 0.000 | 0.000 | 0.000 | 0.018 | 0.013 | 0.002 |

**Discharge**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Cubic Feet* | 0 | 0 | 0 | 627848 | 668092 | 23872 | 0 | 0 | 7686681 | 308309 | 97002 | 48107 |
| *Gallons* | 0 | 0 | 0 | 4696629 | 4997676 | 178573 | 0 | 0 | 57500367 | 2306308 | 725629 | 359863 |
| *Acre-Feet* | 0.00 | 0.00 | 0.00 | 14.41 | 15.34 | 0.55 | 0.00 | 0.00 | 176.46 | 7.08 | 2.23 | 1.10 |

**Annual Summaries for CY13**

| | |
|---|---|
| $Ft^3$/Sec | 0.300 |
| GPM | 134.6 |
| Cubic Feet | 9459910 |
| Gallons | 70765045 |
| Acre-Feet | 217.17 |

**KEY:** WR: No data or unacceptable data due to winter icing conditions
BD: Bad data due to equipment failures
*ITALICS:* Italic values contain data estimated from field observations and electronic record at adjacent or comparable gages

## A.1.9 GS12: North Walnut Creek at Pond A-3 Outlet

*Table A–9. CY 2013 Discharge Summary for GS12: North Walnut Creek at Pond A-3 Outlet*

**Calendar Year 2013: Daily Mean Discharge Values in Cubic Feet per Second**

| Day | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.000 | 0.000 | 0.000 | 0.028 | 0.571 | 0.057 | 0.000 | 0.000 | 0.000 | 0.171 | 0.152 | 0.076 |
| 2 | 0.000 | 0.000 | 0.000 | 0.033 | 1.484 | 0.140 | 0.000 | 0.000 | 0.000 | 0.177 | 0.140 | 0.079 |
| 3 | 0.000 | 0.000 | 0.000 | 0.053 | 1.109 | 0.093 | 0.000 | 0.000 | 0.000 | 0.180 | 0.153 | 0.076 |
| 4 | 0.000 | 0.000 | 0.000 | 0.059 | 0.646 | 0.061 | 0.000 | 0.000 | 0.000 | 0.785 | 0.150 | 0.073 |
| 5 | 0.000 | 0.000 | 0.000 | 0.048 | 0.493 | 0.085 | 0.000 | 0.000 | 0.000 | 0.400 | 0.151 | *0.057* |
| 6 | 0.000 | 0.000 | 0.000 | 0.032 | 0.413 | 0.083 | 0.000 | 0.000 | 0.000 | 0.236 | 0.150 | *0.047* |
| 7 | 0.000 | 0.000 | 0.000 | 0.026 | 0.365 | 0.063 | 0.000 | 0.000 | 0.000 | 0.204 | 0.137 | *0.046* |
| 8 | 0.000 | 0.000 | 0.000 | 0.018 | 0.432 | 0.042 | 0.000 | 0.000 | 0.000 | 0.201 | 0.122 | 0.045 |
| 9 | 0.000 | 0.000 | 0.000 | 0.034 | 0.837 | 0.030 | 0.000 | 0.000 | 0.000 | 0.190 | 0.088 | 0.043 |
| 10 | 0.000 | 0.000 | 0.000 | 0.041 | 0.704 | 0.022 | 0.000 | 0.000 | 0.000 | 0.199 | 0.089 | 0.052 |
| 11 | 0.000 | 0.000 | 0.000 | 0.194 | 0.469 | 0.018 | 0.000 | 0.000 | 2.702 | *0.234* | 0.085 | 0.073 |
| 12 | 0.000 | 0.000 | 0.000 | 0.138 | 0.402 | 0.015 | 0.000 | 0.000 | *60.663* | *0.158* | 0.085 | 0.077 |
| 13 | 0.000 | 0.000 | 0.152 | 0.093 | 0.293 | 0.016 | 0.000 | 0.000 | *9.559* | *0.135* | 0.093 | 0.085 |
| 14 | 0.000 | 0.000 | 0.235 | 0.075 | 0.305 | 0.019 | 0.000 | 0.000 | 1.406 | *0.137* | 0.098 | 0.077 |
| 15 | 0.000 | 0.000 | 0.074 | 0.108 | 0.285 | 0.015 | 0.000 | 0.000 | 4.879 | *0.119* | 0.081 | 0.075 |
| 16 | 0.000 | 0.000 | 0.036 | 0.181 | 0.282 | 0.015 | 0.050 | 0.000 | 2.411 | 0.119 | 0.083 | 0.093 |
| 17 | 0.000 | 0.000 | 0.027 | 0.457 | 0.247 | 0.014 | 0.040 | 0.000 | 0.925 | 0.115 | 0.070 | 0.116 |
| 18 | 0.000 | 0.000 | 0.014 | *0.488* | 0.197 | 0.012 | 0.021 | 0.000 | 0.574 | 0.176 | 0.063 | 0.122 |
| 19 | 0.000 | 0.000 | 0.008 | *1.461* | 0.161 | 0.008 | 0.015 | 0.000 | 0.416 | 0.231 | 0.071 | 0.115 |
| 20 | 0.000 | 0.000 | 0.007 | *2.148* | 0.148 | 0.011 | 0.011 | 0.000 | 0.373 | *0.157* | 0.073 | 0.088 |
| 21 | 0.000 | 0.000 | 0.006 | *1.100* | 0.138 | 0.000 | 0.010 | 0.000 | 0.327 | 0.194 | 0.081 | 0.067 |
| 22 | 0.000 | 0.000 | 0.006 | 0.664 | 0.116 | 0.000 | 0.009 | 0.000 | 0.284 | *0.147* | 0.092 | 0.060 |
| 23 | 0.000 | 0.000 | 0.017 | 1.902 | 0.106 | 0.000 | 0.006 | 0.000 | 0.746 | *0.121* | 0.104 | 0.061 |
| 24 | 0.000 | 0.000 | 0.020 | *1.629* | 0.105 | 0.000 | 0.005 | 0.000 | 0.322 | *0.120* | 0.110 | 0.083 |
| 25 | 0.000 | 0.000 | 0.019 | *0.833* | 0.086 | 0.000 | 0.000 | 0.000 | 0.265 | *0.138* | 0.107 | 0.078 |
| 26 | 0.000 | 0.000 | 0.071 | 0.535 | 0.084 | 0.000 | 0.000 | 0.000 | 0.229 | *0.133* | 0.101 | 0.079 |
| 27 | 0.000 | 0.000 | 0.343 | 0.414 | 0.049 | 0.000 | 0.000 | 0.000 | 0.263 | *0.129* | 0.096 | 0.076 |
| 28 | 0.000 | 0.000 | 0.172 | 0.323 | 0.045 | 0.000 | 0.000 | 0.000 | 0.453 | 0.117 | 0.092 | 0.080 |
| 29 | 0.000 | NA | 0.098 | 0.248 | 0.280 | 0.000 | 0.000 | 0.000 | 0.222 | 0.132 | 0.087 | 0.078 |
| 30 | 0.000 | NA | 0.059 | 0.209 | 0.182 | 0.000 | 0.000 | 0.000 | 0.180 | *0.176* | 0.082 | 0.078 |
| 31 | 0.000 | NA | 0.039 | NA | 0.054 | NA | 0.000 | 0.000 | NA | *0.170* | NA | 0.089 |

**Flow Rate**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Average* | 0.000 | 0.000 | 0.045 | 0.452 | 0.358 | 0.027 | 0.005 | 0.000 | 2.907 | 0.190 | 0.103 | 0.076 |
| *Maximum* | 0.000 | 0.000 | 0.343 | 2.148 | 1.484 | 0.140 | 0.050 | 0.000 | 60.663 | 0.785 | 0.153 | 0.122 |
| *Minimum* | 0.000 | 0.000 | 0.000 | 0.018 | 0.045 | 0.000 | 0.000 | 0.000 | 0.000 | 0.115 | 0.063 | 0.043 |

**Discharge**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Cubic Feet* | 0 | 0 | 121480 | 1172619 | 958005 | 70830 | 14534 | 2 | 7533993 | 509798 | 266448 | 202339 |
| *Gallons* | 0 | 0 | 908737 | 8771798 | 7166375 | 529843 | 108721 | 17 | 56358186 | 3813551 | 1993168 | 1513602 |
| *Acre-Feet* | 0.00 | 0.00 | 2.79 | 26.92 | 21.99 | 1.63 | 0.33 | 0.00 | 172.96 | 11.70 | 6.12 | 4.65 |

**Annual Summaries for CY13**

| | |
|---|---|
| $Ft^3$/Sec | 0.344 |
| GPM | 154.4 |
| Cubic Feet | 10850048 |
| Gallons | 81163999 |
| Acre-Feet | 249.08 |

**KEY:** WR: No data or unacceptable data due to winter icing conditions
BD: Bad data due to equipment failures
*ITALICS:* Italic values contain data estimated from field observations and electronic record at adjacent or comparable gages

## A.1.10 GS13: North Walnut Creek Above Pond A-1

*Table A–10. CY 2013 Discharge Summary for GS13: North Walnut Creek Above Pond A-1*

**Calendar Year 2013: Daily Mean Discharge Values in Cubic Feet per Second**

| Day | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | *0.015* | *0.010* | 0.016 | 0.016 | 0.603 | 0.153 | 0.001 | 0.004 | 0.004 | 0.147 | 0.086 | 0.065 |
| 2 | *0.016* | *0.012* | 0.056 | 0.018 | 1.174 | 0.136 | 0.000 | 0.006 | 0.004 | 0.157 | 0.086 | 0.064 |
| 3 | *0.015* | 0.015 | 0.291 | 0.060 | 0.883 | 0.070 | 0.000 | 0.004 | 0.003 | 0.156 | 0.087 | 0.062 |
| 4 | *0.013* | 0.013 | 0.097 | 0.038 | 0.587 | 0.067 | 0.000 | 0.005 | 0.004 | 0.762 | 0.081 | 0.056 |
| 5 | *0.014* | 0.011 | 0.030 | 0.023 | 0.446 | 0.078 | 0.000 | 0.003 | 0.005 | 0.283 | 0.074 | 0.046 |
| 6 | *0.015* | 0.012 | 0.025 | 0.017 | 0.364 | 0.068 | 0.000 | 0.004 | 0.005 | 0.188 | 0.064 | 0.034 |
| 7 | *0.015* | 0.015 | 0.029 | 0.014 | 0.339 | 0.043 | 0.000 | 0.004 | 0.003 | 0.174 | 0.063 | 0.029 |
| 8 | *0.015* | 0.014 | 0.030 | 0.012 | 0.428 | 0.032 | 0.001 | 0.006 | 0.001 | 0.164 | 0.074 | 0.029 |
| 9 | *0.016* | 0.013 | 0.027 | 0.014 | 0.756 | 0.023 | 0.000 | 0.003 | 0.003 | 0.150 | 0.073 | 0.028 |
| 10 | *0.015* | 0.011 | 0.035 | 0.156 | 0.537 | 0.015 | 0.000 | 0.003 | 0.111 | 0.175 | 0.072 | 0.028 |
| 11 | *0.015* | 0.010 | 0.232 | 0.140 | 0.388 | 0.007 | 0.000 | 0.002 | *4.379* | 0.167 | 0.066 | 0.033 |
| 12 | *0.014* | 0.009 | 0.198 | 0.097 | 0.331 | 0.005 | 0.000 | 0.000 | *61.480* | 0.119 | 0.067 | 0.035 |
| 13 | *0.014* | *0.008* | 0.305 | 0.052 | 0.286 | 0.004 | 0.000 | 0.003 | *8.774* | 0.121 | 0.069 | 0.042 |
| 14 | *0.015* | *0.007* | *0.119* | 0.085 | 0.289 | 0.003 | 0.000 | 0.001 | 1.206 | 0.121 | 0.070 | 0.048 |
| 15 | *0.017* | *0.007* | 0.050 | 0.076 | 0.269 | 0.003 | 0.758 | 0.000 | *4.408* | 0.115 | 0.070 | 0.053 |
| 16 | *0.011* | *0.007* | 0.029 | 0.304 | 0.260 | 0.002 | 0.110 | 0.000 | 2.239 | 0.111 | 0.065 | 0.072 |
| 17 | *0.008* | *0.009* | 0.022 | 0.380 | 0.221 | 0.002 | 0.017 | 0.000 | 0.828 | 0.108 | 0.059 | 0.083 |
| 18 | *0.009* | *0.011* | 0.015 | 0.638 | 0.165 | 0.002 | 0.008 | 0.000 | 0.494 | 0.222 | 0.055 | 0.089 |
| 19 | *0.006* | *0.010* | 0.011 | 1.219 | 0.133 | 0.002 | 0.006 | 0.000 | 0.360 | 0.164 | 0.060 | 0.076 |
| 20 | *0.006* | *0.009* | 0.009 | 1.515 | 0.117 | 0.002 | 0.004 | 0.000 | 0.313 | 0.132 | 0.062 | 0.054 |
| 21 | *0.006* | *0.009* | 0.008 | 0.878 | 0.115 | 0.002 | 0.004 | 0.146 | 0.265 | 0.199 | 0.068 | 0.041 |
| 22 | *0.006* | *0.010* | 0.007 | 0.646 | 0.091 | 0.001 | 0.003 | 0.147 | 0.233 | 0.125 | 0.082 | 0.039 |
| 23 | *0.007* | *0.012* | 0.007 | 1.506 | 0.093 | 0.001 | 0.003 | 0.018 | 0.647 | 0.116 | 0.091 | 0.043 |
| 24 | *0.009* | *0.013* | 0.012 | 1.157 | 0.078 | 0.001 | 0.002 | 0.010 | 0.230 | 0.140 | 0.091 | 0.055 |
| 25 | *0.011* | 0.022 | 0.019 | 0.738 | 0.058 | 0.001 | 0.003 | 0.006 | 0.194 | 0.149 | 0.094 | 0.050 |
| 26 | *0.016* | 0.015 | 0.268 | 0.510 | 0.045 | 0.001 | 0.002 | 0.005 | 0.162 | 0.135 | 0.083 | 0.043 |
| 27 | *0.022* | 0.015 | 0.192 | 0.393 | 0.040 | 0.001 | 0.002 | 0.004 | 0.291 | 0.128 | 0.077 | 0.049 |
| 28 | *0.019* | 0.015 | 0.116 | 0.301 | 0.035 | 0.002 | 0.003 | 0.004 | 0.275 | 0.114 | 0.077 | 0.054 |
| 29 | *0.021* | NA | 0.056 | 0.235 | 0.280 | 0.002 | 0.004 | 0.003 | 0.168 | 0.132 | 0.073 | 0.054 |
| 30 | *0.017* | NA | 0.032 | 0.197 | 0.096 | 0.003 | 0.004 | 0.003 | 0.153 | 0.182 | 0.068 | 0.055 |
| 31 | *0.011* | NA | 0.022 | NA | 0.042 | NA | 0.003 | 0.003 | NA | 0.122 | NA | 0.063 |

**Flow Rate**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Average* | 0.013 | 0.012 | 0.076 | 0.381 | 0.308 | 0.024 | 0.030 | 0.013 | 2.908 | 0.170 | 0.074 | 0.051 |
| *Maximum* | 0.022 | 0.022 | 0.305 | 1.515 | 1.174 | 0.153 | 0.758 | 0.147 | 61.480 | 0.762 | 0.094 | 0.089 |
| *Minimum* | 0.006 | 0.007 | 0.007 | 0.012 | 0.035 | 0.001 | 0.000 | 0.000 | 0.001 | 0.108 | 0.055 | 0.028 |

**Discharge**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Cubic Feet* | 35364 | 28118 | 204702 | 988051 | 824818 | 63300 | 81052 | 34386 | 7537705 | 456277 | 190899 | 135623 |
| *Gallons* | 264540 | 210338 | 1531275 | 7391132 | 6170070 | 473520 | 606312 | 257228 | 56385956 | 3413189 | 1428022 | 1014528 |
| *Acre-Feet* | 0.81 | 0.65 | 4.70 | 22.68 | 18.94 | 1.45 | 1.86 | 0.79 | 173.04 | 10.47 | 4.38 | 3.11 |

**Annual Summaries for CY13**

| | |
|---|---|
| $Ft^3/Sec$ | 0.335 |
| GPM | 150.6 |
| Cubic Feet | 10580295 |
| Gallons | 79146110 |
| Acre-Feet | 242.89 |

**KEY:** WR: No data or unacceptable data due to winter icing conditions
BD: Bad data due to equipment failures
*ITALICS:* Italic values contain data estimated from field observations and electronic record at adjacent or comparable gages

## A.1.11 GS31: Woman Creek at Pond C-2 Outlet

*Table A–11. CY 2013 Discharge Summary for GS31: Woman Creek at Pond C-2 Outlet*

**Calendar Year 2013: Daily Mean Discharge Values in Cubic Feet per Second**

| Day | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.000 | 0.000 | 0.050 | 0.010 | 0.051 | 0.000 | 0.000 | 0.000 | 0.000 | 0.016 | 0.026 | 0.052 |
| 2 | 0.000 | 0.000 | 0.069 | 0.024 | 0.080 | 0.000 | 0.000 | 0.000 | 0.000 | 0.012 | 0.022 | 0.048 |
| 3 | 0.000 | 0.027 | 0.077 | 0.040 | 0.080 | 0.000 | 0.000 | 0.000 | 0.000 | 0.009 | 0.018 | 0.044 |
| 4 | 0.000 | 0.044 | 0.088 | 0.007 | 0.053 | 0.000 | 0.000 | 0.000 | 0.000 | 0.054 | 0.014 | 0.055 |
| 5 | 0.000 | 0.014 | 0.080 | 0.000 | 0.040 | 0.000 | 0.000 | 0.000 | 0.000 | 0.088 | 0.014 | WR |
| 6 | 0.000 | 0.010 | 0.073 | 0.007 | 0.030 | 0.000 | 0.000 | 0.000 | 0.000 | 0.058 | 0.011 | WR |
| 7 | 0.000 | 0.008 | 0.072 | 0.004 | 0.018 | 0.000 | 0.000 | 0.000 | 0.000 | 0.041 | 0.007 | WR |
| 8 | 0.000 | 0.008 | 0.018 | 0.000 | 0.025 | 0.000 | 0.000 | 0.000 | 0.000 | 0.027 | 0.005 | WR |
| 9 | 0.000 | 0.028 | 0.058 | 0.018 | 0.052 | 0.000 | 0.000 | 0.000 | 0.000 | 0.018 | 0.002 | WR |
| 10 | 0.000 | 0.046 | 0.083 | 0.052 | 0.044 | 0.000 | 0.000 | 0.000 | 0.000 | 0.017 | 0.001 | WR |
| 11 | 0.000 | 0.036 | 0.068 | 0.058 | 0.026 | 0.000 | 0.000 | 0.000 | 0.017 | 0.029 | 0.000 | WR |
| 12 | 0.000 | 0.032 | 0.080 | 0.052 | 0.014 | 0.000 | 0.000 | 0.000 | 14.023 | 0.021 | 0.000 | WR |
| 13 | 0.000 | 0.020 | 0.073 | 0.037 | 0.002 | 0.000 | 0.000 | 0.000 | 11.662 | 0.018 | 0.000 | WR |
| 14 | 0.000 | 0.017 | 0.055 | 0.029 | 0.000 | 0.000 | 0.000 | 0.000 | 0.213 | 0.016 | 0.000 | WR |
| 15 | 0.000 | 0.020 | 0.027 | 0.047 | 0.000 | 0.000 | 0.000 | 0.000 | 1.225 | 0.014 | 0.000 | WR |
| 16 | 0.000 | 0.013 | 0.019 | 0.071 | 0.000 | 0.000 | 0.000 | 0.000 | 0.418 | 0.011 | 0.047 | WR |
| 17 | 0.000 | 0.028 | 0.014 | 0.077 | 0.000 | 0.000 | 0.000 | 0.000 | 0.124 | 0.008 | 0.040 | 0.136 |
| 18 | 0.000 | 0.056 | 0.007 | 0.082 | 0.000 | 0.000 | 0.000 | 0.000 | 0.082 | 0.006 | 0.034 | 0.156 |
| 19 | 0.000 | 0.038 | 0.003 | 0.102 | 0.000 | 0.000 | 0.000 | 0.000 | 0.073 | 0.004 | 0.030 | 0.145 |
| 20 | 0.000 | 0.038 | 0.002 | 0.114 | 0.000 | 0.000 | 0.000 | 0.000 | 0.068 | 0.001 | 0.024 | 0.122 |
| 21 | 0.000 | 0.050 | 0.000 | 0.087 | 0.000 | 0.000 | 0.000 | 0.000 | 0.054 | 0.001 | 0.024 | 0.139 |
| 22 | 0.000 | 0.036 | 0.000 | 0.072 | 0.000 | 0.000 | 0.000 | 0.000 | 0.043 | 0.000 | 0.026 | 0.133 |
| 23 | 0.000 | 0.042 | 0.029 | 0.099 | 0.000 | 0.000 | 0.000 | 0.000 | 0.074 | 0.000 | 0.026 | 0.123 |
| 24 | 0.000 | 0.062 | 0.057 | 0.098 | 0.000 | 0.000 | 0.000 | 0.000 | 0.069 | 0.000 | 0.030 | 0.089 |
| 25 | 0.000 | 0.072 | 0.049 | 0.075 | 0.000 | 0.000 | 0.000 | 0.000 | 0.049 | 0.000 | 0.073 | 0.102 |
| 26 | 0.000 | 0.064 | 0.063 | 0.060 | 0.000 | 0.000 | 0.000 | 0.000 | 0.031 | 0.000 | 0.076 | 0.078 |
| 27 | 0.000 | 0.059 | 0.084 | 0.040 | 0.000 | 0.000 | 0.000 | 0.000 | 0.039 | 0.000 | 0.074 | 0.072 |
| 28 | 0.000 | 0.054 | 0.071 | 0.016 | 0.000 | 0.000 | 0.000 | 0.000 | 0.068 | 0.000 | 0.068 | 0.072 |
| 29 | 0.000 | NA | 0.034 | 0.006 | 0.001 | 0.000 | 0.000 | 0.000 | 0.044 | 0.000 | 0.062 | 0.079 |
| 30 | 0.000 | NA | 0.024 | 0.001 | 0.010 | 0.000 | 0.000 | 0.000 | 0.026 | 0.044 | 0.051 | 0.078 |
| 31 | 0.000 | NA | 0.026 | NA | 0.000 | NA | 0.000 | 0.000 | NA | 0.045 | NA | 0.080 |

Partial Data

**Flow Rate**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Average* | 0.000 | 0.033 | 0.047 | 0.046 | 0.017 | 0.000 | 0.000 | 0.000 | 0.947 | 0.018 | 0.027 | 0.095 |
| *Maximum* | 0.000 | 0.072 | 0.088 | 0.114 | 0.080 | 0.000 | 0.000 | 0.000 | 14.023 | 0.088 | 0.076 | 0.156 |
| *Minimum* | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.044 |

Partial Data

**Discharge**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Cubic Feet* | 0 | 79709 | 125522 | 119593 | 45514 | 0 | 0 | 0 | 2453799 | 48118 | 69494 | 155821 |
| *Gallons* | 0 | 596262 | 938968 | 894619 | 340470 | 0 | 0 | 0 | 18355693 | 359950 | 519854 | 1165621 |
| *Acre-Feet* | 0.00 | 1.83 | 2.88 | 2.75 | 1.04 | 0.00 | 0.00 | 0.00 | 56.33 | 1.10 | 1.60 | 3.58 |

Partial Data

**Annual Summaries for CY13**

| | |
|---|---|
| $Ft^3/Sec$ | 0.102 |
| GPM | 45.6 |
| Cubic Feet | 3097570 |
| Gallons | 23171438 |
| Acre-Feet | 71.11 |

Partial Data

**KEY:** WR: No data or unacceptable data due to winter icing conditions
BD: Bad data due to equipment failures
*ITALICS:* Italic values contain data estimated from field observations and electronic record at adjacent or comparable gages

## A.1.12 GS33: No Name Gulch at Walnut Creek

*Table A–12. CY 2013 Discharge Summary for GS33: No Name Gulch at Walnut Creek*

**Calendar Year 2013: Daily Mean Discharge Values in Cubic Feet per Second**

| Day | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.000 | 0.000 | 0.000 | 0.000 | 0.209 | 0.000 | 0.000 | 0.000 | 0.000 | *0.045* | WR | 0.000 |
| 2 | 0.000 | 0.000 | 0.000 | 0.000 | 0.508 | 0.000 | 0.000 | 0.000 | 0.000 | *0.023* | WR | 0.001 |
| 3 | 0.000 | 0.000 | 0.000 | 0.000 | 0.477 | 0.000 | 0.000 | 0.000 | 0.000 | *0.003* | WR | WR |
| 4 | 0.000 | 0.000 | 0.000 | 0.000 | 0.269 | 0.000 | 0.000 | 0.000 | 0.000 | 0.230 | WR | WR |
| 5 | 0.000 | 0.000 | 0.000 | 0.000 | 0.174 | 0.000 | 0.000 | 0.000 | 0.000 | 0.108 | WR | WR |
| 6 | 0.000 | 0.000 | 0.000 | 0.000 | 0.137 | 0.000 | 0.000 | 0.000 | 0.000 | 0.048 | WR | WR |
| 7 | 0.000 | 0.000 | 0.000 | 0.000 | 0.109 | 0.000 | 0.000 | 0.000 | 0.000 | 0.040 | WR | WR |
| 8 | 0.000 | 0.000 | 0.000 | 0.000 | 0.135 | 0.000 | 0.000 | 0.000 | 0.000 | 0.033 | WR | WR |
| 9 | 0.000 | 0.000 | 0.000 | 0.000 | 0.277 | 0.000 | 0.000 | 0.000 | 0.000 | 0.017 | WR | WR |
| 10 | 0.000 | 0.000 | 0.000 | 0.008 | 0.214 | 0.000 | 0.000 | 0.000 | 0.000 | 0.028 | WR | WR |
| 11 | 0.000 | 0.000 | 0.000 | 0.103 | 0.138 | 0.000 | 0.000 | 0.000 | *0.405* | 0.049 | WR | WR |
| 12 | 0.000 | 0.000 | 0.000 | 0.066 | 0.118 | 0.000 | 0.000 | 0.000 | *13.298* | 0.000 | WR | WR |
| 13 | 0.000 | 0.000 | 0.000 | 0.036 | 0.073 | 0.000 | 0.000 | 0.000 | *4.553* | 0.001 | WR | WR |
| 14 | 0.000 | 0.000 | 0.000 | 0.052 | 0.056 | 0.000 | 0.000 | 0.000 | *0.950* | 0.026 | WR | WR |
| 15 | 0.000 | 0.000 | 0.000 | 0.031 | 0.046 | 0.000 | 0.000 | 0.000 | *3.846* | 0.003 | WR | WR |
| 16 | 0.000 | 0.000 | 0.000 | 0.101 | 0.045 | 0.000 | 0.000 | 0.000 | *1.369* | 0.000 | WR | WR |
| 17 | 0.000 | 0.000 | 0.000 | 0.144 | 0.026 | 0.000 | 0.000 | 0.000 | *0.444* | 0.000 | WR | WR |
| 18 | 0.000 | 0.000 | 0.000 | 0.228 | 0.018 | 0.000 | 0.000 | 0.000 | *0.214* | 0.073 | WR | WR |
| 19 | 0.000 | 0.000 | 0.000 | 0.417 | 0.019 | 0.000 | 0.000 | 0.000 | *0.127* | 0.060 | WR | WR |
| 20 | 0.000 | 0.000 | 0.000 | 0.659 | 0.021 | 0.000 | 0.000 | 0.000 | *0.102* | 0.037 | WR | WR |
| 21 | 0.000 | 0.000 | 0.000 | 0.417 | 0.018 | 0.000 | 0.000 | 0.000 | *0.075* | 0.082 | WR | WR |
| 22 | 0.000 | 0.000 | 0.000 | 0.280 | 0.013 | 0.000 | 0.000 | 0.000 | *0.058* | 0.024 | WR | WR |
| 23 | 0.000 | 0.000 | 0.000 | 0.447 | 0.002 | 0.000 | 0.000 | 0.000 | *0.342* | 0.002 | WR | WR |
| 24 | 0.000 | 0.000 | 0.000 | 0.498 | 0.000 | 0.000 | 0.000 | 0.000 | *0.180* | 0.000 | WR | WR |
| 25 | 0.000 | 0.000 | 0.000 | 0.328 | 0.000 | 0.000 | 0.000 | 0.000 | *0.127* | 0.000 | 0.022 | WR |
| 26 | 0.000 | 0.000 | 0.000 | 0.188 | 0.000 | 0.000 | 0.000 | 0.000 | *0.095* | 0.000 | WR | WR |
| 27 | 0.000 | 0.000 | 0.000 | 0.129 | 0.000 | 0.000 | 0.000 | 0.000 | *0.141* | 0.000 | WR | WR |
| 28 | 0.000 | 0.000 | 0.000 | 0.094 | 0.000 | 0.000 | 0.000 | 0.000 | *0.256* | 0.000 | WR | WR |
| 29 | 0.000 | NA | 0.000 | 0.071 | 0.044 | 0.000 | 0.000 | 0.000 | *0.114* | 0.033 | WR | WR |
| 30 | 0.000 | NA | 0.000 | 0.059 | 0.013 | 0.000 | 0.000 | 0.000 | *0.074* | 0.066 | WR | WR |
| 31 | 0.000 | NA | 0.000 | NA | 0.000 | NA | 0.000 | 0.000 | NA | 0.034 | NA | WR |
| | | | | | | | | | | | Partial Data | Partial Data |

**Flow Rate**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Average* | 0.000 | 0.000 | 0.000 | 0.145 | 0.102 | 0.000 | 0.000 | 0.000 | 0.892 | 0.034 | 0.022 | 0.001 |
| *Maximum* | 0.000 | 0.000 | 0.000 | 0.659 | 0.508 | 0.000 | 0.000 | 0.000 | 13.298 | 0.230 | 0.022 | 0.001 |
| *Minimum* | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.022 | 0.000 |
| | | | | | | | | | | | Partial Data | Partial Data |

**Discharge**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Cubic Feet* | 0 | 0 | 0 | 376356 | 272953 | 0 | 0 | 0 | 2313032 | 92098 | 1929 | 108 |
| *Gallons* | 0 | 0 | 0 | 2815338 | 2041828 | 0 | 0 | 0 | 17302684 | 688944 | 14431 | 808 |
| *Acre-Feet* | 0.00 | 0.00 | 0.00 | 8.64 | 6.27 | 0.00 | 0.00 | 0.00 | 53.10 | 2.11 | 0.04 | 0.00 |
| | | | | | | | | | | | Partial Data | Partial Data |

**Annual Summaries for CY13**

| | |
|---|---|
| $Ft^3$/Sec | 0.115 |
| GPM | 51.7 |
| Cubic Feet | 3056477 |
| Gallons | 22864034 |
| Acre-Feet | 70.17 |
| | Partial Data |

**KEY:** WR: No data or unacceptable data due to winter icing conditions
BD: Bad data due to equipment failures
*ITALICS:* Italic values contain data estimated from field observations and electronic record at adjacent or comparable gages

## A.1.13 GS51: Ditch South of Former 903 Pad

*Table A–13. CY 2013 Discharge Summary for GS51: Ditch South of Former 903 Pad*

**Calendar Year 2013: Daily Mean Discharge Values in Cubic Feet per Second**

| Day | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 2 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 3 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 4 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.025 | 0.000 | *0.000* |
| 5 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | *0.000* |
| 6 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | *0.000* |
| 7 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | *0.000* |
| 8 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | *0.000* |
| 9 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | *0.000* |
| 10 | 0.000 | 0.000 | 0.000 | *0.000* | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | *0.000* |
| 11 | 0.000 | 0.000 | 0.000 | *0.000* | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | *0.000* |
| 12 | 0.000 | 0.000 | 0.000 | *0.000* | 0.000 | 0.000 | 0.000 | 0.000 | *0.410* | 0.000 | 0.000 | *0.000* |
| 13 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | *0.034* | 0.000 | 0.000 | *0.000* |
| 14 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | *0.000* |
| 15 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | *0.166* | 0.000 | 0.000 | *0.000* |
| 16 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.013 | 0.000 | 0.000 | 0.000 |
| 17 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 |
| 18 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003 | 0.000 | 0.000 |
| 19 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 20 | 0.000 | 0.000 | *0.000* | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003 | 0.000 | *0.000* |
| 21 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | *0.000* |
| 22 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | *0.000* |
| 23 | 0.000 | 0.000 | *0.000* | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.008 | 0.000 | 0.000 | *0.000* |
| 24 | 0.000 | 0.000 | *0.000* | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | *0.000* |
| 25 | 0.000 | 0.000 | *0.000* | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | *0.000* |
| 26 | 0.000 | 0.000 | *0.000* | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | *0.000* |
| 27 | 0.000 | 0.000 | *0.000* | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.005 | 0.000 | 0.000 | 0.000 |
| 28 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 29 | 0.000 | NA | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 30 | 0.000 | NA | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | *0.000* |
| 31 | 0.000 | NA | 0.000 | NA | 0.000 | NA | 0.000 | 0.000 | NA | 0.000 | NA | 0.000 |

**Flow Rate**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Average* | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.021 | 0.001 | 0.000 | 0.000 |
| *Maximum* | 0.000 | 0.000 | 0.000 | 0.002 | 0.003 | 0.000 | 0.000 | 0.000 | 0.410 | 0.025 | 0.000 | 0.000 |
| *Minimum* | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

**Discharge**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Cubic Feet* | 0 | 0 | 0 | 205 | 307 | 0 | 0 | 0 | 55276 | 3035 | 0 | 0 |
| *Gallons* | 0 | 0 | 0 | 1534 | 2295 | 0 | 0 | 0 | 413491 | 22704 | 0 | 0 |
| *Acre-Feet* | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 1.27 | 0.07 | 0.00 | 0.00 |

**Annual Summaries for CY13**

| | |
|---|---|
| $Ft^3/Sec$ | 0.002 |
| GPM | 0.8 |
| Cubic Feet | 58823 |
| Gallons | 440026 |
| Acre-Feet | 1.35 |

**KEY:** WR: No data or unacceptable data due to winter icing conditions
BD: Bad data due to equipment failures
*ITALICS:* Italic values contain data estimated from field observations and electronic record at adjacent or comparable gages

## A.1.14 GS59: Woman Creek Upstream of Antelope Springs Confluence

*Table A–14. CY 2013 Discharge Summary for GS59: Woman Creek Upstream of Antelope Springs Confluence*

**Calendar Year 2013: Daily Mean Discharge Values in Cubic Feet per Second**

| Day | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | WR | 0.088 | *0.221* | 0.172 | 0.850 | 0.202 | 0.013 | 0.000 | 0.000 | 0.145 | 0.146 | 0.161 |
| 2 | WR | 0.100 | 0.449 | 0.271 | 2.725 | 0.192 | 0.010 | 0.000 | 0.000 | 0.132 | 0.142 | 0.164 |
| 3 | WR | *0.126* | 0.682 | 0.332 | 2.223 | 0.157 | 0.006 | 0.000 | 0.000 | 0.131 | 0.143 | 0.158 |
| 4 | WR | *0.084* | 0.333 | 0.196 | 1.042 | 0.161 | 0.003 | 0.000 | 0.000 | 0.982 | 0.141 | 0.145 |
| 5 | WR | 0.100 | 0.279 | 0.163 | 0.748 | 0.210 | 0.002 | 0.000 | 0.000 | 0.468 | 0.138 | WR |
| 6 | WR | 0.119 | 0.289 | 0.139 | 0.640 | 0.175 | 0.001 | 0.000 | 0.000 | 0.292 | 0.139 | WR |
| 7 | WR | 0.118 | 0.290 | 0.126 | 0.575 | 0.150 | 0.001 | 0.000 | 0.000 | 0.244 | 0.142 | WR |
| 8 | WR | 0.113 | 0.226 | 0.123 | 0.789 | 0.147 | 0.000 | 0.000 | 0.000 | 0.193 | 0.136 | WR |
| 9 | WR | 0.095 | 0.192 | 0.164 | 1.906 | 0.128 | 0.000 | 0.000 | 0.000 | 0.167 | 0.133 | WR |
| 10 | WR | 0.095 | 0.213 | 0.315 | 1.221 | 0.094 | 0.000 | 0.000 | 0.014 | 0.201 | 0.130 | WR |
| 11 | WR | WR | 0.487 | 0.647 | 0.702 | 0.068 | 0.000 | 0.000 | *26.214* | 0.206 | 0.132 | WR |
| 12 | WR | WR | 0.353 | 0.395 | 0.565 | 0.052 | 0.000 | 0.000 | *125.071* | 0.146 | 0.137 | WR |
| 13 | WR | WR | 0.654 | 0.255 | 0.445 | 0.073 | 0.000 | 0.000 | 11.133 | 0.141 | 0.139 | WR |
| 14 | WR | WR | 0.510 | 0.323 | 0.402 | 0.073 | 0.000 | 0.001 | 2.475 | 0.152 | 0.135 | WR |
| 15 | WR | WR | 0.363 | 0.266 | 0.374 | 0.097 | 0.275 | 0.000 | 9.126 | 0.146 | 0.139 | WR |
| 16 | WR | WR | 0.259 | 0.412 | 0.365 | 0.095 | 0.042 | 0.000 | 6.144 | 0.142 | 0.145 | WR |
| 17 | WR | WR | 0.202 | 0.495 | 0.331 | 0.080 | 0.006 | 0.000 | 1.404 | 0.139 | 0.143 | 0.227 |
| 18 | WR | WR | 0.166 | 0.731 | 0.310 | 0.094 | 0.000 | 0.000 | 0.733 | 0.297 | 0.139 | 0.241 |
| 19 | WR | WR | 0.141 | 1.193 | 0.301 | 0.088 | 0.000 | 0.000 | 0.473 | 0.215 | 0.147 | 0.210 |
| 20 | WR | WR | 0.135 | 3.361 | 0.349 | 0.051 | 0.000 | 0.000 | 0.379 | 0.241 | 0.143 | 0.155 |
| 21 | WR | WR | 0.132 | 2.167 | 0.348 | 0.037 | 0.000 | 0.045 | 0.288 | 0.267 | 0.180 | 0.140 |
| 22 | WR | WR | 0.128 | 1.092 | 0.325 | 0.033 | 0.000 | 0.000 | 0.247 | 0.183 | 0.191 | 0.151 |
| 23 | WR | WR | 0.151 | 2.901 | 0.332 | 0.036 | 0.000 | 0.000 | 0.931 | 0.189 | 0.211 | 0.154 |
| 24 | WR | 0.317 | 0.152 | 3.362 | 0.303 | 0.027 | 0.000 | 0.000 | 0.278 | 0.175 | 0.211 | 0.170 |
| 25 | 0.102 | WR | 0.173 | 1.280 | 0.290 | 0.024 | 0.000 | 0.000 | 0.233 | 0.159 | 0.215 | 0.133 |
| 26 | 0.106 | WR | 0.376 | 0.685 | 0.268 | 0.016 | 0.000 | 0.000 | 0.204 | 0.141 | 0.197 | 0.134 |
| 27 | 0.111 | WR | 0.773 | 0.491 | 0.260 | 0.007 | 0.000 | 0.000 | 0.517 | 0.125 | 0.190 | 0.144 |
| 28 | 0.081 | WR | 0.547 | 0.383 | 0.254 | 0.001 | 0.000 | 0.000 | 0.415 | 0.134 | 0.190 | 0.151 |
| 29 | *0.075* | NA | 0.347 | 0.389 | 0.406 | 0.000 | 0.000 | 0.000 | 0.223 | 0.166 | 0.175 | 0.154 |
| 30 | *0.068* | NA | 0.249 | 0.415 | 0.249 | 0.000 | 0.000 | 0.000 | 0.166 | 0.237 | 0.170 | 0.141 |
| 31 | *0.064* | NA | 0.200 | NA | 0.207 | NA | 0.000 | 0.000 | NA | 0.176 | NA | 0.164 |
| | Partial Data | Partial Data | | | | | | | | | | Partial Data |

**Flow Rate**

| | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Average* | 0.087 | 0.123 | 0.312 | 0.775 | 0.649 | 0.086 | 0.012 | 0.001 | 6.222 | 0.217 | 0.157 | 0.163 |
| *Maximum* | 0.111 | 0.317 | 0.773 | 3.362 | 2.725 | 0.210 | 0.275 | 0.045 | 125.071 | 0.982 | 0.215 | 0.241 |
| *Minimum* | 0.064 | 0.084 | 0.128 | 0.123 | 0.207 | 0.000 | 0.000 | 0.000 | 0.000 | 0.125 | 0.130 | 0.133 |
| | Partial Data | Partial Data | | | | | | | | | | Partial Data |

**Discharge**

| | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Cubic Feet* | 52549 | 117065 | 835838 | 2008265 | 1737170 | 221932 | 30961 | 3943 | 16128126 | 581694 | 407800 | 267625 |
| *Gallons* | 393097 | 875705 | 6252506 | 15022867 | 12994934 | 1660163 | 231607 | 29492 | 120646767 | 4351375 | 3050553 | 2001972 |
| *Acre-Feet* | 1.21 | 2.69 | 19.19 | 46.10 | 39.88 | 5.09 | 0.71 | 0.09 | 370.25 | 13.35 | 9.36 | 6.14 |
| | Partial Data | Partial Data | | | | | | | | | | Partial Data |

**Annual Summaries for CY13**

| | |
|---|---|
| $Ft^3/Sec$ | 0.831 |
| GPM | 372.8 |
| Cubic Feet | 22392967 |
| Gallons | 167511037 |
| Acre-Feet | 514.07 |
| | Partial Data |

**KEY:** WR: No data or unacceptable data due to winter icing conditions
BD: Bad data due to equipment failures
*ITALICS:* Italic values contain data estimated from field observations and electronic record at adjacent or comparable gages

## A.1.15 B5INFLOW: South Walnut Creek Above Pond B-5

*Table A–15. CY 2013 Discharge Summary for B5INFLOW: South Walnut Creek Above Pond B-5*

**Calendar Year 2013: Daily Mean Discharge Values in Cubic Feet per Second**

| Day | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.000 | 0.000 | 0.008 | 0.013 | 0.153 | 0.026 | 0.000 | 0.000 | 0.000 | 0.113 | 0.050 | 0.041 |
| 2 | 0.000 | 0.000 | 0.035 | 0.022 | 0.379 | 0.025 | 0.000 | 0.000 | 0.000 | 0.104 | 0.047 | 0.040 |
| 3 | 0.000 | 0.000 | 0.082 | 0.043 | 0.486 | 0.022 | 0.000 | 0.000 | 0.000 | 0.092 | 0.047 | 0.037 |
| 4 | 0.000 | 0.000 | 0.064 | 0.029 | 0.214 | 0.018 | 0.000 | 0.001 | 0.000 | 0.199 | 0.045 | 0.027 |
| 5 | 0.000 | *0.000* | *0.027* | 0.018 | 0.144 | 0.032 | 0.000 | 0.001 | 0.000 | 0.092 | 0.042 | WR |
| 6 | 0.000 | *0.000* | *0.023* | 0.012 | 0.122 | 0.030 | 0.000 | 0.001 | 0.000 | 0.042 | 0.039 | WR |
| 7 | 0.000 | *0.000* | 0.025 | 0.008 | 0.106 | 0.024 | 0.000 | 0.001 | 0.000 | 0.033 | 0.039 | WR |
| 8 | 0.000 | *0.000* | 0.026 | 0.001 | 0.120 | 0.019 | 0.000 | 0.000 | 0.000 | 0.039 | 0.040 | WR |
| 9 | 0.000 | *0.000* | 0.028 | 0.017 | 0.253 | 0.014 | 0.000 | 0.000 | 0.000 | 0.043 | 0.037 | WR |
| 10 | 0.000 | *0.000* | 0.029 | 0.027 | 0.238 | 0.006 | 0.000 | 0.001 | 0.002 | 0.045 | 0.037 | WR |
| 11 | 0.000 | *0.000* | 0.048 | 0.052 | 0.149 | 0.000 | 0.000 | 0.002 | *1.480* | 0.042 | 0.035 | WR |
| 12 | 0.000 | *0.000* | 0.072 | 0.058 | 0.127 | 0.000 | 0.000 | 0.001 | *20.095* | 0.040 | 0.034 | WR |
| 13 | 0.000 | *0.000* | 0.064 | 0.033 | 0.101 | 0.000 | 0.000 | 0.003 | *4.177* | 0.046 | 0.033 | WR |
| 14 | 0.000 | *0.000* | 0.088 | 0.031 | 0.088 | 0.000 | 0.000 | 0.001 | 0.598 | 0.056 | 0.033 | WR |
| 15 | 0.000 | 0.000 | 0.054 | 0.044 | 0.081 | 0.000 | 0.068 | 0.000 | *3.062* | 0.057 | 0.033 | WR |
| 16 | 0.000 | 0.000 | 0.034 | 0.055 | 0.078 | 0.000 | 0.170 | 0.000 | 1.679 | 0.054 | 0.032 | WR |
| 17 | 0.000 | *0.000* | 0.022 | 0.059 | 0.067 | 0.000 | 0.023 | 0.000 | 0.721 | 0.053 | 0.029 | WR |
| 18 | 0.000 | *0.000* | 0.013 | 0.072 | 0.058 | 0.000 | 0.000 | 0.000 | 0.410 | 0.078 | 0.024 | WR |
| 19 | 0.000 | *0.000* | 0.007 | 0.172 | 0.052 | 0.000 | 0.000 | 0.000 | 0.306 | 0.080 | 0.025 | WR |
| 20 | 0.000 | *0.000* | 0.000 | 0.457 | 0.056 | 0.000 | 0.000 | 0.000 | 0.272 | 0.070 | 0.026 | *0.054* |
| 21 | 0.000 | 0.000 | 0.000 | 0.310 | 0.056 | 0.000 | 0.000 | 0.000 | 0.238 | 0.078 | 0.028 | *0.046* |
| 22 | 0.000 | *0.000* | 0.000 | 0.176 | 0.054 | 0.000 | 0.000 | 0.086 | 0.241 | 0.065 | 0.029 | *0.045* |
| 23 | 0.000 | 0.000 | 0.013 | 0.327 | 0.059 | 0.000 | 0.000 | 0.015 | 0.395 | 0.055 | 0.031 | *0.044* |
| 24 | 0.000 | *0.000* | 0.013 | 0.605 | 0.058 | 0.000 | 0.000 | 0.020 | 0.218 | 0.052 | 0.031 | *0.046* |
| 25 | 0.000 | *0.000* | 0.018 | 0.280 | 0.051 | 0.000 | 0.000 | 0.005 | 0.189 | 0.055 | 0.034 | *0.045* |
| 26 | 0.000 | *0.000* | 0.040 | 0.155 | 0.045 | 0.000 | 0.000 | 0.000 | 0.178 | 0.050 | 0.038 | *0.043* |
| 27 | 0.000 | 0.000 | 0.083 | 0.111 | 0.040 | 0.000 | 0.000 | 0.001 | 0.195 | 0.048 | 0.045 | *0.044* |
| 28 | 0.000 | 0.000 | 0.080 | 0.089 | 0.040 | 0.000 | 0.001 | 0.000 | 0.219 | 0.048 | 0.046 | *0.046* |
| 29 | 0.000 | NA | 0.052 | 0.074 | 0.139 | 0.000 | 0.002 | 0.000 | 0.137 | 0.058 | 0.045 | *0.045* |
| 30 | 0.000 | NA | 0.032 | 0.068 | 0.089 | 0.000 | 0.001 | 0.000 | 0.119 | 0.071 | 0.043 | *0.044* |
| 31 | 0.000 | NA | 0.021 | NA | 0.037 | NA | 0.000 | 0.000 | NA | 0.064 | NA | *0.046* |

Partial Data

**Flow Rate**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Average* | 0.000 | 0.000 | 0.036 | 0.114 | 0.121 | 0.007 | 0.009 | 0.005 | 1.164 | 0.065 | 0.037 | 0.043 |
| *Maximum* | 0.000 | 0.000 | 0.088 | 0.605 | 0.486 | 0.032 | 0.170 | 0.086 | 20.095 | 0.199 | 0.050 | 0.054 |
| *Minimum* | 0.000 | 0.000 | 0.000 | 0.001 | 0.037 | 0.000 | 0.000 | 0.000 | 0.000 | 0.033 | 0.024 | 0.027 |

Partial Data

**Discharge**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Cubic Feet* | 0 | 0 | 95182 | 295281 | 323138 | 18657 | 22893 | 12063 | 3018123 | 174520 | 94870 | 59941 |
| *Gallons* | 0 | 0 | 712012 | 2208853 | 2417237 | 139566 | 171253 | 90234 | 22577128 | 1305500 | 709676 | 448391 |
| *Acre-Feet* | 0.00 | 0.00 | 2.19 | 6.78 | 7.42 | 0.43 | 0.53 | 0.28 | 69.29 | 4.01 | 2.18 | 1.38 |

Partial Data

**Annual Summaries for CY13**

| | |
|---|---|
| $Ft^3$/Sec | 0.136 |
| GPM | 61.1 |
| Cubic Feet | 4114667 |
| Gallons | 30779851 |
| Acre-Feet | 94.46 |

Partial Data

**KEY:** WR: No data or unacceptable data due to winter icing conditions
BD: Bad data due to equipment failures
*ITALICS:* Italic values contain data estimated from field observations and electronic record at adjacent or comparable gages

## A.1.16 SW018: Functional Channel 2 at FC-2 Wetland

*Table A–16. CY 2013 Discharge Summary for SW018: North Walnut Creek Tributary East of B371*

**Calendar Year 2013: Daily Mean Discharge Values in Cubic Feet per Second**

| Day | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | WR | WR | *0.009* | *0.010* | 0.048 | 0.014 | 0.004 | 0.002 | 0.012 | 0.031 | 0.021 | 0.016 |
| 2 | 0.005 | WR | *0.013* | *0.011* | 0.105 | 0.014 | 0.003 | 0.002 | 0.011 | 0.028 | 0.021 | 0.018 |
| 3 | 0.004 | WR | *0.021* | *0.014* | 0.095 | 0.012 | 0.002 | 0.002 | 0.008 | 0.027 | 0.021 | 0.017 |
| 4 | 0.006 | WR | *0.012* | *0.012* | 0.063 | 0.011 | 0.001 | 0.002 | 0.009 | 0.067 | 0.019 | WR |
| 5 | WR | WR | *0.010* | *0.010* | 0.054 | 0.012 | 0.001 | 0.002 | 0.009 | 0.035 | 0.018 | WR |
| 6 | WR | WR | *0.011* | *0.010* | 0.049 | 0.010 | 0.001 | 0.002 | 0.008 | 0.029 | 0.017 | WR |
| 7 | 0.009 | WR | *0.011* | 0.009 | 0.045 | 0.010 | 0.001 | 0.003 | 0.008 | 0.027 | 0.017 | WR |
| 8 | 0.010 | WR | *0.010* | 0.011 | 0.050 | 0.009 | 0.001 | 0.003 | 0.008 | 0.024 | 0.019 | WR |
| 9 | 0.008 | WR | *0.015* | 0.012 | 0.060 | 0.009 | 0.001 | 0.002 | 0.016 | 0.023 | 0.019 | WR |
| 10 | 0.009 | WR | *0.022* | 0.017 | 0.051 | 0.008 | 0.001 | 0.003 | 0.025 | 0.024 | 0.020 | WR |
| 11 | WR | WR | *0.028* | 0.021 | 0.044 | 0.006 | 0.001 | 0.005 | *0.550* | 0.026 | 0.019 | WR |
| 12 | WR | WR | *0.019* | 0.016 | 0.039 | 0.006 | 0.001 | 0.004 | *3.386* | 0.028 | 0.019 | WR |
| 13 | WR | WR | *0.030* | 0.012 | 0.036 | 0.008 | 0.002 | 0.005 | *0.881* | 0.025 | 0.018 | WR |
| 14 | WR | WR | *0.026* | 0.015 | 0.031 | 0.007 | 0.002 | 0.004 | 0.209 | 0.024 | 0.018 | WR |
| 15 | WR | WR | *0.019* | 0.014 | 0.029 | 0.007 | 0.086 | 0.003 | *0.608* | 0.021 | 0.018 | WR |
| 16 | WR | WR | *0.014* | 0.015 | 0.028 | 0.007 | 0.011 | 0.002 | 0.339 | 0.025 | 0.018 | 0.023 |
| 17 | WR | *0.007* | *0.012* | 0.017 | 0.026 | 0.007 | 0.004 | 0.002 | 0.168 | 0.019 | 0.017 | 0.023 |
| 18 | WR | *0.005* | *0.010* | 0.024 | 0.024 | 0.008 | 0.003 | 0.002 | 0.119 | 0.029 | 0.017 | 0.021 |
| 19 | WR | WR | *0.011* | 0.054 | 0.024 | 0.007 | 0.003 | 0.002 | 0.092 | 0.022 | 0.017 | 0.018 |
| 20 | WR | WR | *0.009* | 0.109 | 0.024 | 0.006 | 0.003 | 0.001 | 0.078 | 0.029 | 0.016 | 0.017 |
| 21 | WR | *0.008* | *0.008* | 0.073 | 0.024 | 0.007 | 0.003 | 0.053 | 0.067 | 0.030 | 0.016 | WR |
| 22 | WR | *0.008* | *0.008* | 0.050 | 0.021 | 0.006 | 0.002 | 0.020 | 0.060 | 0.026 | 0.016 | WR |
| 23 | WR | *0.009* | WR | 0.090 | 0.021 | 0.005 | 0.001 | 0.011 | 0.096 | 0.025 | 0.017 | WR |
| 24 | WR | *0.008* | WR | 0.109 | 0.019 | 0.003 | 0.002 | 0.009 | 0.054 | 0.022 | 0.017 | WR |
| 25 | WR | *0.008* | WR | 0.067 | 0.017 | 0.003 | 0.004 | 0.007 | 0.050 | 0.021 | 0.017 | WR |
| 26 | WR | *0.008* | WR | 0.049 | 0.016 | 0.003 | 0.003 | 0.008 | 0.046 | 0.019 | 0.017 | WR |
| 27 | WR | *0.008* | *0.025* | 0.043 | 0.016 | 0.002 | 0.004 | 0.007 | 0.061 | 0.018 | 0.017 | WR |
| 28 | WR | *0.008* | *0.020* | 0.038 | 0.015 | 0.002 | 0.006 | 0.007 | 0.046 | 0.018 | 0.016 | WR |
| 29 | WR | NA | *0.014* | 0.034 | 0.034 | 0.004 | 0.006 | 0.007 | 0.037 | 0.019 | 0.016 | WR |
| 30 | WR | NA | *0.012* | 0.033 | 0.017 | 0.005 | 0.003 | 0.007 | 0.033 | 0.024 | 0.016 | WR |
| 31 | WR | NA | *0.012* | NA | 0.014 | NA | 0.003 | 0.009 | NA | 0.022 | NA | WR |
| | Partial Data | Partial Data | Partial Data | | | | | | | | | Partial Data |

**Flow Rate**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Average* | 0.007 | 0.008 | 0.015 | 0.033 | 0.037 | 0.007 | 0.005 | 0.006 | 0.236 | 0.026 | 0.018 | 0.019 |
| *Maximum* | 0.010 | 0.009 | 0.030 | 0.109 | 0.105 | 0.014 | 0.086 | 0.053 | 3.386 | 0.067 | 0.021 | 0.023 |
| *Minimum* | 0.004 | 0.005 | 0.008 | 0.009 | 0.014 | 0.002 | 0.001 | 0.001 | 0.008 | 0.018 | 0.016 | 0.016 |
| | Partial Data | Partial Data | Partial Data | | | | | | | | | Partial Data |

**Discharge**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Cubic Feet* | 4406 | 6738 | 35724 | 86207 | 98406 | 18797 | 14509 | 17077 | 612823 | 69659 | 46239 | 13221 |
| *Gallons* | 32963 | 50405 | 267234 | 644873 | 736125 | 140613 | 108538 | 127743 | 4584234 | 521086 | 345893 | 98903 |
| *Acre-Feet* | 0.10 | 0.15 | 0.82 | 1.98 | 2.26 | 0.43 | 0.33 | 0.39 | 14.07 | 1.60 | 1.06 | 0.30 |
| | Partial Data | Partial Data | Partial Data | | | | | | | | | Partial Data |

**Annual Summaries for CY13**

| | |
|---|---|
| $Ft^3$/Sec | 0.040 |
| GPM | 18.0 |
| Cubic Feet | 1023807 |
| Gallons | 7658610 |
| Acre-Feet | 23.50 |
| | Partial Data |

**KEY:** WR: No data or unacceptable data due to winter icing conditions
BD: Bad data due to equipment failures
*ITALICS:* Italic values contain data estimated from field observations and electronic record at adjacent or comparable gages

## A.1.17 SW027: South Interceptor Ditch at Pond C-2

*Table A–17. CY 2013 Discharge Summary for SW027: South Interceptor Ditch at Pond C-2*

**Calendar Year 2013: Daily Mean Discharge Values in Cubic Feet per Second**

| Day | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 2 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 3 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 4 | 0.000 | 0.000 | *0.000* | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 |
| 5 | 0.000 | 0.000 | *0.000* | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 |
| 6 | 0.000 | 0.000 | *0.000* | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 7 | 0.000 | 0.000 | *0.000* | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 8 | 0.000 | 0.000 | *0.000* | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 9 | 0.000 | 0.000 | *0.000* | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 10 | 0.000 | 0.000 | *0.000* | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 11 | 0.000 | 0.000 | *0.000* | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | *7.115* | 0.000 | 0.000 | 0.000 |
| 13 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.332 | 0.000 | 0.000 | 0.000 |
| 14 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.055 | 0.000 | 0.000 | 0.000 |
| 15 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.959 | 0.000 | 0.000 | 0.000 |
| 16 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.254 | 0.000 | 0.000 | 0.000 |
| 17 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.030 | 0.000 | 0.000 | 0.000 |
| 18 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.012 | 0.000 | 0.000 | 0.000 |
| 19 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.008 | 0.000 | 0.000 | 0.000 |
| 20 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.007 | 0.000 | 0.000 | 0.000 |
| 21 | 0.000 | 0.000 | 0.000 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.005 | 0.000 | 0.000 | 0.000 |
| 22 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.005 | 0.000 | 0.000 | 0.000 |
| 23 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.006 | 0.000 | 0.000 | 0.000 |
| 24 | 0.000 | 0.000 | 0.000 | 0.004 | 0.000 | 0.000 | 0.000 | 0.000 | 0.004 | 0.000 | 0.000 | 0.000 |
| 25 | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003 | 0.000 | 0.000 | 0.000 |
| 26 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.003 | 0.000 | 0.000 | 0.000 |
| 27 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.005 | 0.000 | 0.000 | 0.000 |
| 28 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 | 0.000 |
| 29 | 0.000 | NA | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 30 | 0.000 | NA | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 31 | 0.000 | NA | 0.000 | NA | 0.000 | NA | 0.000 | 0.000 | NA | 0.000 | NA | 0.000 |

**Flow Rate**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Average* | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.327 | 0.000 | 0.000 | 0.000 |
| *Maximum* | 0.000 | 0.000 | 0.000 | 0.005 | 0.001 | 0.000 | 0.000 | 0.000 | 7.115 | 0.002 | 0.000 | 0.000 |
| *Minimum* | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

**Discharge**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Cubic Feet* | 0 | 0 | 0 | 1009 | 115 | 0 | 0 | 0 | 847249 | 296 | 0 | 0 |
| *Gallons* | 0 | 0 | 0 | 7548 | 863 | 0 | 0 | 0 | 6337861 | 2215 | 0 | 0 |
| *Acre-Feet* | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 19.45 | 0.01 | 0.00 | 0.00 |

**Annual Summaries for CY13**

| | |
|---|---|
| $Ft^3/Sec$ | 0.027 |
| GPM | 12.1 |
| Cubic Feet | 848669 |
| Gallons | 6348487 |
| Acre-Feet | 19.48 |

**KEY:** WR: No data or unacceptable data due to winter icing conditions
BD: Bad data due to equipment failures
*ITALICS:* Italic values contain data estimated from field observations and electronic record at adjacent or comparable gages

## A.1.18 SW093: North Walnut Creek 1,300 feet Upstream of A-1 Bypass

*Table A–18. CY 2013 Discharge Summary for SW093: North Walnut Creek Upstream of A-1 Bypass*

**Calendar Year 2013: Daily Mean Discharge Values in Cubic Feet per Second**

| Day | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | WR | 0.013 | 0.019 | 0.015 | 0.605 | 0.225 | 0.011 | 0.007 | 0.010 | 0.140 | 0.097 | 0.056 |
| 2 | WR | *0.020* | 0.083 | 0.018 | 1.123 | 0.196 | 0.011 | 0.006 | 0.008 | 0.148 | 0.096 | 0.052 |
| 3 | WR | *0.022* | 0.247 | 0.061 | 0.837 | 0.094 | 0.014 | 0.007 | 0.007 | 0.151 | 0.096 | 0.050 |
| 4 | WR | *0.017* | 0.075 | 0.031 | 0.556 | 0.093 | 0.014 | 0.008 | 0.006 | 0.728 | 0.090 | *0.045* |
| 5 | WR | *0.015* | 0.036 | 0.020 | 0.429 | 0.098 | 0.013 | 0.011 | 0.005 | 0.259 | 0.083 | *0.039* |
| 6 | WR | 0.017 | 0.029 | 0.016 | 0.351 | 0.087 | 0.012 | 0.008 | 0.005 | 0.172 | 0.074 | *0.028* |
| 7 | WR | 0.021 | 0.028 | 0.013 | 0.332 | 0.063 | 0.013 | 0.009 | 0.004 | 0.158 | 0.071 | *0.025* |
| 8 | WR | 0.019 | 0.028 | 0.012 | 0.429 | 0.049 | 0.013 | 0.008 | 0.003 | 0.150 | 0.084 | *0.025* |
| 9 | WR | 0.016 | 0.027 | 0.018 | 0.734 | 0.035 | 0.015 | 0.009 | 0.007 | 0.137 | 0.087 | *0.024* |
| 10 | WR | 0.014 | 0.029 | 0.173 | 0.512 | 0.023 | 0.012 | 0.008 | 0.143 | 0.157 | 0.086 | *0.024* |
| 11 | WR | *0.013* | 0.223 | 0.106 | 0.376 | 0.016 | 0.011 | 0.005 | 4.312 | *0.161* | 0.083 | *0.028* |
| 12 | WR | *0.012* | 0.178 | 0.078 | 0.318 | 0.012 | 0.013 | 0.009 | *56.231* | *0.108* | 0.083 | *0.030* |
| 13 | WR | *0.011* | 0.251 | 0.044 | 0.282 | 0.011 | 0.014 | 0.006 | *6.715* | *0.110* | 0.084 | *0.036* |
| 14 | WR | *0.010* | *0.083* | 0.080 | 0.283 | 0.008 | 0.015 | 0.005 | 0.957 | *0.106* | 0.085 | *0.041* |
| 15 | WR | *0.009* | *0.038* | 0.073 | 0.263 | 0.007 | *0.942* | 0.004 | 3.802 | *0.099* | 0.086 | *0.045* |
| 16 | WR | *0.008* | *0.024* | 0.308 | 0.268 | 0.008 | *0.112* | 0.005 | 1.868 | 0.092 | 0.082 | *0.062* |
| 17 | WR | 0.012 | *0.019* | 0.352 | 0.226 | 0.009 | *0.032* | 0.004 | 0.700 | 0.087 | 0.078 | *0.073* |
| 18 | WR | *0.018* | *0.016* | 0.627 | 0.184 | 0.009 | *0.019* | 0.005 | 0.426 | 0.184 | 0.070 | 0.076 |
| 19 | WR | *0.012* | 0.014 | 1.162 | 0.143 | 0.009 | *0.015* | 0.011 | 0.328 | 0.122 | 0.072 | 0.066 |
| 20 | WR | *0.010* | 0.011 | 1.432 | 0.132 | 0.010 | *0.013* | 0.009 | 0.286 | 0.103 | 0.074 | *0.048* |
| 21 | *0.012* | 0.011 | 0.012 | 0.820 | 0.132 | 0.010 | *0.016* | 0.330 | 0.245 | 0.145 | 0.080 | *0.035* |
| 22 | 0.011 | *0.012* | 0.012 | 0.617 | 0.107 | 0.010 | *0.012* | 0.152 | 0.220 | 0.085 | 0.090 | 0.037 |
| 23 | 0.007 | *0.013* | 0.016 | 1.465 | 0.125 | 0.011 | *0.015* | 0.026 | 0.589 | 0.078 | 0.093 | *0.038* |
| 24 | 0.007 | *0.023* | 0.025 | 1.082 | 0.113 | 0.011 | 0.009 | 0.019 | 0.212 | 0.096 | 0.090 | 0.049 |
| 25 | 0.008 | *0.029* | 0.025 | 0.695 | 0.098 | 0.012 | 0.007 | 0.015 | 0.175 | 0.099 | 0.091 | 0.047 |
| 26 | 0.013 | *0.019* | 0.290 | 0.486 | 0.090 | 0.011 | 0.007 | 0.013 | 0.146 | 0.086 | 0.077 | 0.040 |
| 27 | 0.021 | *0.017* | 0.158 | 0.375 | 0.085 | 0.009 | 0.008 | 0.011 | 0.282 | 0.079 | 0.069 | 0.045 |
| 28 | *0.023* | *0.020* | 0.096 | 0.285 | 0.078 | 0.011 | 0.009 | 0.009 | 0.246 | 0.067 | 0.069 | 0.050 |
| 29 | 0.022 | NA | 0.049 | 0.226 | 0.321 | 0.008 | 0.008 | 0.009 | 0.155 | 0.083 | 0.065 | 0.049 |
| 30 | 0.018 | NA | 0.030 | 0.190 | 0.131 | 0.013 | 0.006 | 0.016 | 0.144 | 0.117 | 0.060 | 0.052 |
| 31 | 0.013 | NA | 0.021 | NA | 0.088 | NA | 0.007 | 0.014 | NA | 0.075 | NA | 0.058 |

Partial Data

**Flow Rate**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Average* | 0.014 | 0.015 | 0.071 | 0.363 | 0.315 | 0.039 | 0.046 | 0.024 | 2.608 | 0.141 | 0.082 | 0.044 |
| *Maximum* | 0.023 | 0.029 | 0.290 | 1.465 | 1.123 | 0.225 | 0.942 | 0.330 | 56.231 | 0.728 | 0.097 | 0.076 |
| *Minimum* | 0.007 | 0.008 | 0.011 | 0.012 | 0.078 | 0.007 | 0.006 | 0.004 | 0.003 | 0.067 | 0.060 | 0.024 |

Partial Data

**Discharge**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Cubic Feet* | 13482 | 37159 | 189412 | 940326 | 842642 | 101007 | 122558 | 65503 | 6759581 | 378825 | 211351 | 118580 |
| *Gallons* | 100849 | 277971 | 1416903 | 7034129 | 6303398 | 755586 | 916796 | 489993 | 50565184 | 2833807 | 1581016 | 887037 |
| *Acre-Feet* | 0.31 | 0.85 | 4.35 | 21.59 | 19.34 | 2.32 | 2.81 | 1.50 | 155.18 | 8.70 | 4.85 | 2.72 |

Partial Data

**Annual Summaries for CY13**

| | |
|---|---|
| $Ft^3$/Sec | 0.328 |
| GPM | 147.3 |
| Cubic Feet | 9780426 |
| Gallons | 73162672 |
| Acre-Feet | 224.53 |

Partial Data

**KEY:** WR: No data or unacceptable data due to winter icing conditions
BD: Bad data due to equipment failures
*ITALICS:* Italic values contain data estimated from field observations and electronic record at adjacent or comparable gages

## A.2 Precipitation Data

This section includes total daily precipitation tables and hyetographs by precipitation gage and calendar year.

### A.2.1 PG58: Gaging Station GS01

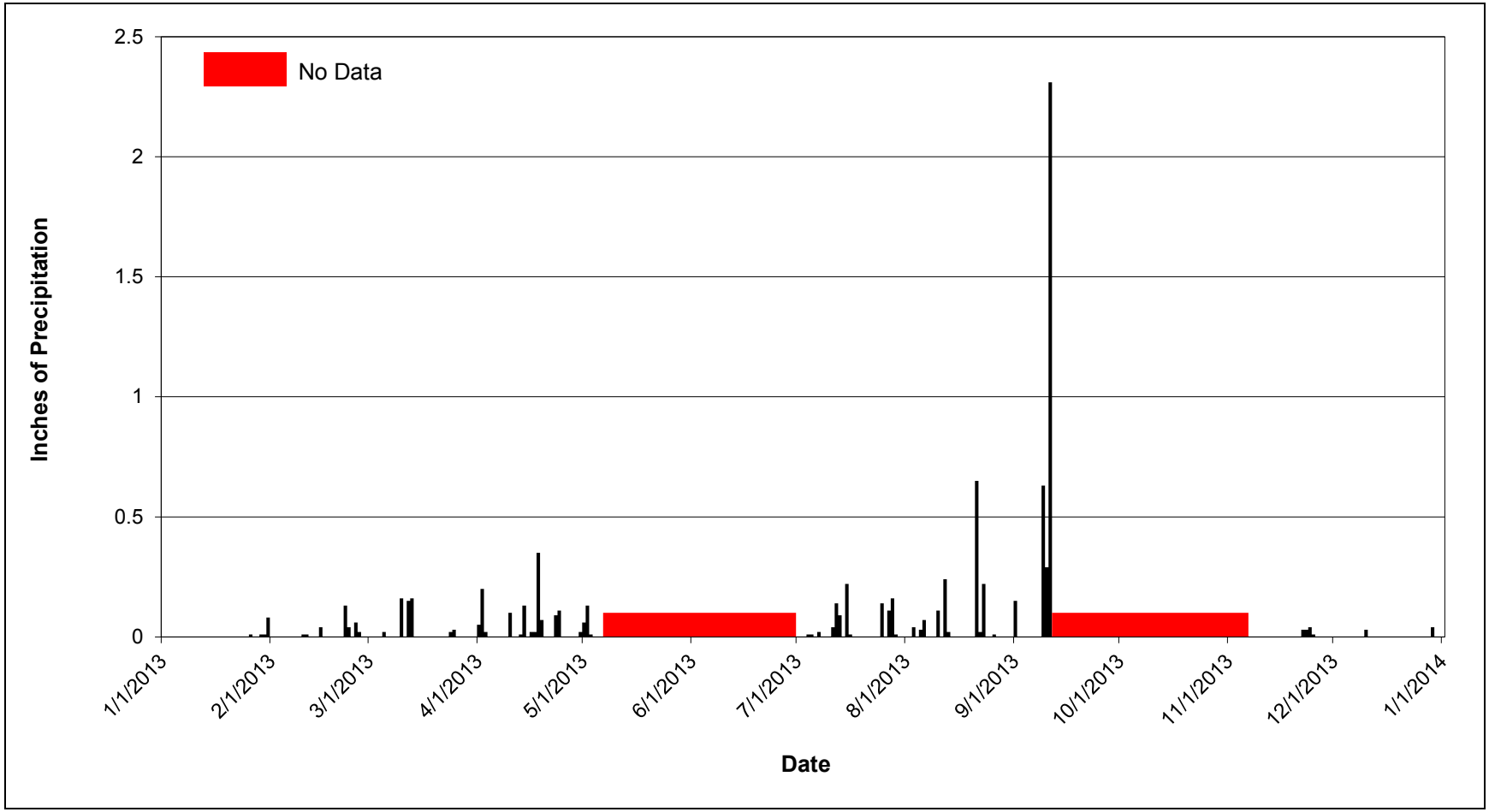



*Figure A−1. CY 2013 Annual Hyetograph at PG58: Gaging Station GS01*

*Table A–19. CY 2013 Precipitation Summary for PG58: Gaging Station GS01*

## Calendar Year 2013: Daily Total Precipitation Values in Inches

| Day | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.00 | 0.05 | 0.06 | No Data | 0.00 | 0.00 | 0.15 | No Data | No Data | 0.00 |
| 2 | 0.00 | 0.00 | 0.00 | 0.20 | 0.13 | No Data | 0.00 | 0.00 | 0.00 | No Data | No Data | 0.00 |
| 3 | 0.00 | 0.00 | 0.00 | 0.02 | 0.01 | No Data | 0.00 | 0.04 | 0.00 | No Data | No Data | 0.00 |
| 4 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | No Data | 0.01 | 0.00 | 0.00 | No Data | No Data | 0.00 |
| 5 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | No Data | 0.01 | 0.03 | 0.00 | No Data | No Data | 0.00 |
| 6 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | No Data | 0.00 | 0.07 | 0.00 | No Data | No Data | 0.00 |
| 7 | 0.00 | 0.00 | 0.00 | 0.00 | No Data | No Data | 0.02 | 0.00 | 0.00 | No Data | 0.00 | 0.00 |
| 8 | 0.00 | 0.00 | 0.00 | 0.00 | No Data | No Data | 0.00 | 0.00 | 0.00 | No Data | 0.00 | 0.00 |
| 9 | 0.00 | 0.00 | 0.00 | 0.00 | No Data | No Data | 0.00 | 0.00 | 0.63 | No Data | 0.00 | 0.00 |
| 10 | 0.00 | 0.01 | 0.16 | 0.10 | No Data | No Data | 0.00 | 0.11 | 0.29 | No Data | 0.00 | 0.03 |
| 11 | 0.00 | 0.01 | 0.00 | 0.00 | No Data | No Data | 0.04 | 0.00 | 2.31 | No Data | 0.00 | 0.00 |
| 12 | 0.00 | 0.00 | 0.15 | 0.00 | No Data | No Data | 0.14 | 0.24 | No Data | No Data | 0.00 | 0.00 |
| 13 | 0.00 | 0.00 | 0.16 | 0.01 | No Data | No Data | 0.09 | 0.02 | No Data | No Data | 0.00 | 0.00 |
| 14 | 0.00 | 0.00 | 0.00 | 0.13 | No Data | No Data | 0.00 | 0.00 | No Data | No Data | 0.00 | 0.00 |
| 15 | 0.00 | 0.04 | 0.00 | 0.00 | No Data | No Data | 0.22 | 0.00 | No Data | No Data | 0.00 | 0.00 |
| 16 | 0.00 | 0.00 | 0.00 | 0.02 | No Data | No Data | 0.01 | 0.00 | No Data | No Data | 0.00 | 0.00 |
| 17 | 0.00 | 0.00 | 0.00 | 0.02 | No Data | No Data | 0.00 | 0.00 | No Data | No Data | 0.00 | 0.00 |
| 18 | 0.00 | 0.00 | 0.00 | 0.35 | No Data | No Data | 0.00 | 0.00 | No Data | No Data | 0.00 | 0.00 |
| 19 | 0.00 | 0.00 | 0.00 | 0.07 | No Data | No Data | 0.00 | 0.00 | No Data | No Data | 0.00 | 0.00 |
| 20 | 0.00 | 0.00 | 0.00 | 0.00 | No Data | No Data | 0.00 | 0.00 | No Data | No Data | 0.00 | 0.00 |
| 21 | 0.00 | 0.00 | 0.00 | 0.00 | No Data | No Data | 0.00 | 0.65 | No Data | No Data | 0.00 | 0.00 |
| 22 | 0.00 | 0.13 | 0.00 | 0.00 | No Data | No Data | 0.00 | 0.02 | No Data | No Data | 0.03 | 0.00 |
| 23 | 0.00 | 0.04 | 0.00 | 0.09 | No Data | No Data | 0.00 | 0.22 | No Data | No Data | 0.03 | 0.00 |
| 24 | 0.00 | 0.00 | 0.02 | 0.11 | No Data | No Data | 0.00 | 0.00 | No Data | No Data | 0.04 | 0.00 |
| 25 | 0.00 | 0.06 | 0.03 | 0.00 | No Data | No Data | 0.14 | 0.00 | No Data | No Data | 0.01 | 0.00 |
| 26 | 0.01 | 0.02 | 0.00 | 0.00 | No Data | No Data | 0.00 | 0.01 | No Data | No Data | 0.00 | 0.00 |
| 27 | 0.00 | 0.00 | 0.00 | 0.00 | No Data | No Data | 0.11 | 0.00 | No Data | No Data | 0.00 | 0.00 |
| 28 | 0.00 | 0.00 | 0.00 | 0.00 | No Data | No Data | 0.16 | 0.00 | No Data | No Data | 0.00 | 0.00 |
| 29 | 0.01 | NA | 0.00 | 0.00 | No Data | No Data | 0.01 | 0.00 | No Data | No Data | 0.00 | 0.04 |
| 30 | 0.01 | NA | 0.00 | 0.02 | No Data | No Data | 0.00 | 0.00 | No Data | No Data | 0.00 | 0.00 |
| 31 | 0.08 | NA | 0.00 | NA | No Data | NA | 0.00 | 0.00 | NA | No Data | NA | 0.00 |
| | | | | | Partial Data | No Data | | | Partial Data | No Data | Partial Data | |

## Precipitation

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Monthly Total* | 0.11 | 0.31 | 0.54 | 1.19 | 0.20 | | 0.96 | 1.41 | 3.38 | | 0.11 | 0.07 |
| *Daily Maximum* | 0.08 | 0.13 | 0.16 | 0.35 | 0.13 | | 0.22 | 0.65 | 2.31 | | 0.04 | 0.04 |
| | | | | | Partial Data | No Data | | | Partial Data | No Data | Partial Data | |

**Annual Summaries for CY13**

Total Inches 8.28

**KEY:** No Data: Bad or missing data due to equipment failures or discontinued operation

### A.2.2 PG59: Gaging Station GS03

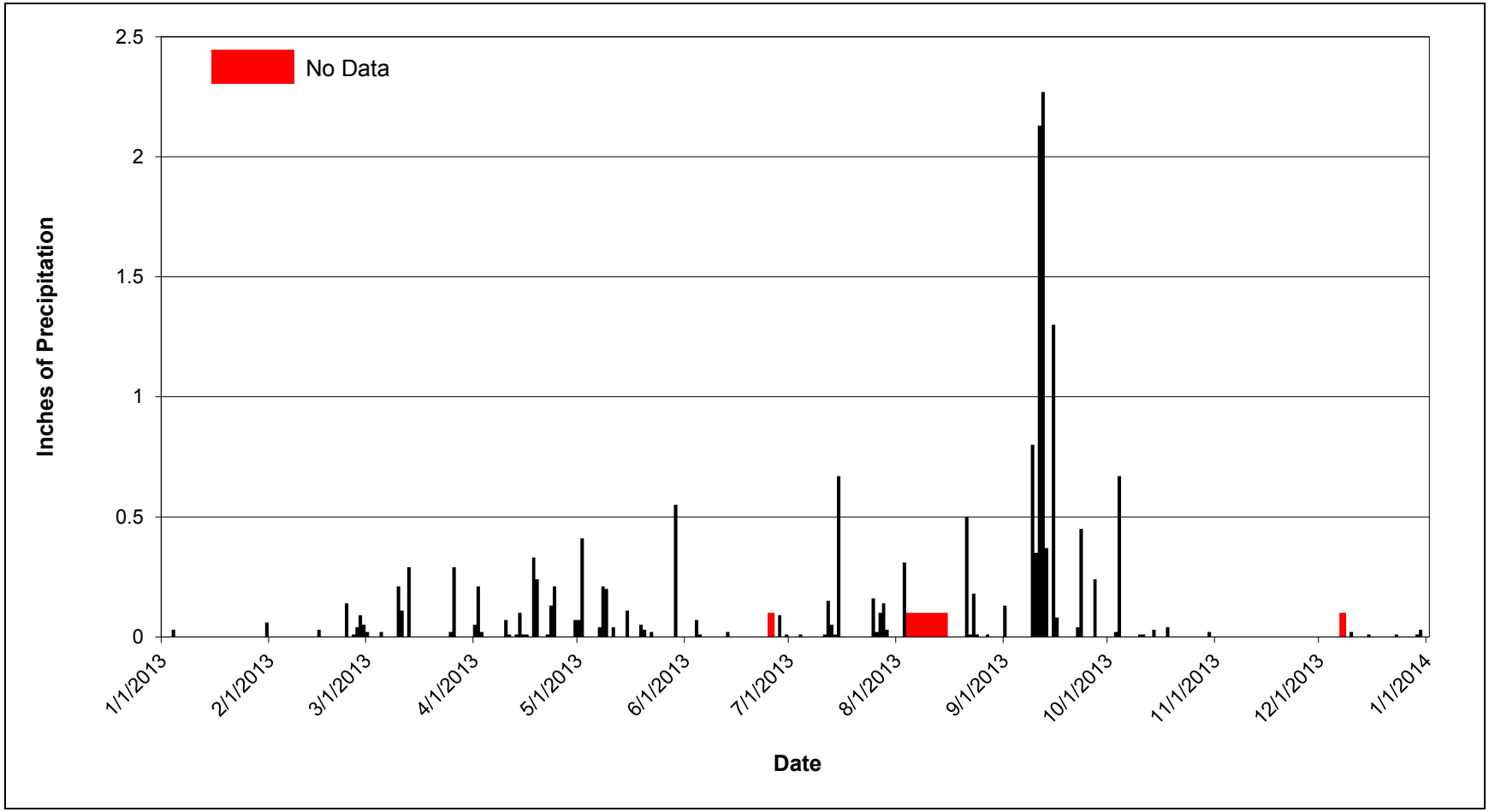



*Figure A−2. CY 2013 Annual Hyetograph at PG59: Gaging Station GS03*

*Table A–20. CY 2013 Precipitation Summary for PG59: Gaging Station GS03*

## Calendar Year 2013: Daily Total Precipitation Values in Inches

| Day | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.02 | 0.05 | 0.07 | 0.00 | 0.00 | 0.00 | 0.13 | 0.00 | 0.00 | 0.00 |
| 2 | 0.00 | 0.00 | 0.00 | 0.21 | 0.41 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.31 | 0.00 | 0.02 | 0.00 | 0.00 |
| 4 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.07 | 0.01 | No Data | 0.00 | 0.67 | 0.00 | 0.00 |
| 5 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.01 | 0.00 | No Data | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | No Data | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | 0.00 | 0.00 | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 | No Data | 0.00 | 0.00 | 0.00 | No Data |
| 8 | 0.00 | 0.00 | 0.00 | 0.00 | 0.21 | 0.00 | 0.00 | No Data | 0.00 | 0.00 | 0.00 | No Data |
| 9 | 0.00 | 0.00 | 0.00 | 0.00 | 0.20 | 0.00 | 0.00 | No Data | 0.80 | 0.00 | 0.00 | 0.00 |
| 10 | 0.00 | 0.00 | 0.21 | 0.07 | 0.00 | 0.00 | 0.00 | No Data | 0.35 | 0.01 | 0.00 | 0.02 |
| 11 | 0.00 | 0.00 | 0.11 | 0.01 | 0.04 | 0.00 | 0.01 | No Data | 2.13 | 0.01 | 0.00 | 0.00 |
| 12 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.15 | No Data | 2.27 | 0.00 | 0.00 | 0.00 |
| 13 | 0.00 | 0.00 | 0.29 | 0.01 | 0.00 | 0.02 | 0.05 | No Data | 0.37 | 0.00 | 0.00 | 0.00 |
| 14 | 0.00 | 0.00 | 0.00 | 0.10 | 0.00 | 0.00 | 0.01 | No Data | 0.00 | 0.03 | 0.00 | 0.00 |
| 15 | 0.00 | 0.03 | 0.00 | 0.01 | 0.11 | 0.00 | 0.67 | No Data | 1.30 | 0.00 | 0.00 | 0.01 |
| 16 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.08 | 0.00 | 0.00 | 0.00 |
| 17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18 | 0.00 | 0.00 | 0.00 | 0.33 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 |
| 19 | 0.00 | 0.00 | 0.00 | 0.24 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 21 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.50 | 0.00 | 0.00 | 0.00 | 0.00 |
| 22 | 0.00 | 0.00 | 0.00 | 0.01 | 0.02 | 0.00 | 0.00 | 0.01 | 0.04 | 0.00 | 0.00 | 0.00 |
| 23 | 0.00 | 0.14 | 0.00 | 0.13 | 0.00 | 0.00 | 0.00 | 0.18 | 0.45 | 0.00 | 0.00 | 0.01 |
| 24 | 0.00 | 0.00 | 0.00 | 0.21 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25 | 0.00 | 0.01 | 0.02 | 0.00 | 0.00 | No Data | 0.16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26 | 0.00 | 0.04 | 0.29 | 0.00 | 0.00 | No Data | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27 | 0.00 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.01 | 0.24 | 0.00 | 0.00 | 0.00 |
| 28 | 0.00 | 0.05 | 0.00 | 0.00 | 0.00 | 0.09 | 0.14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29 | 0.00 | NA | 0.00 | 0.00 | 0.55 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 |
| 30 | 0.00 | NA | 0.00 | 0.07 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.03 |
| 31 | 0.06 | NA | 0.00 | NA | 0.00 | NA | 0.00 | 0.00 | NA | 0.00 | NA | 0.00 |
| | | | | | | Partial Data | | Partial Data | | | | Partial Data |

## Precipitation

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Monthly Total* | 0.09 | 0.36 | 0.96 | 1.48 | 1.73 | 0.20 | 1.35 | 1.02 | 8.16 | 0.80 | 0.00 | 0.08 |
| *Daily Maximum* | 0.06 | 0.14 | 0.29 | 0.33 | 0.55 | 0.09 | 0.67 | 0.50 | 2.27 | 0.67 | 0.00 | 0.03 |
| | | | | | | Partial Data | | Partial Data | | | | Partial Data |

**Annual Summaries for CY13**

Total Inches 16.23

Partial Data

**KEY:** No Data: Bad or missing data due to equipment failures or discontinued operation

### A.2.3 PG61: Gaging Station GS05

No data during CY 2013.

### A.2.4 PG73: Gaging Station GS13

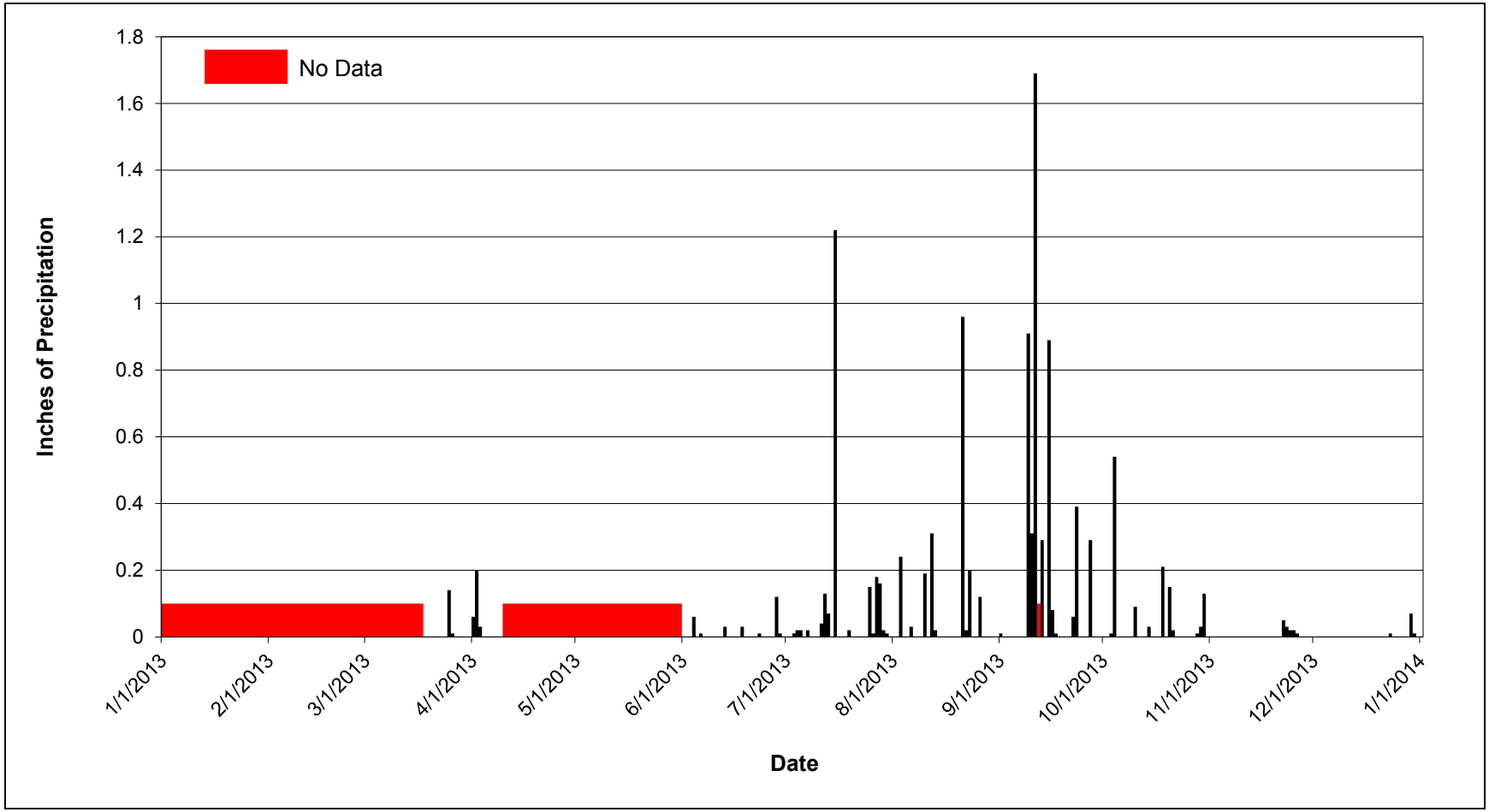



*Figure A-3. CY 2013 Annual Hyetograph at PG73: Gaging Station GS13*

*Table A–21. CY 2013 Precipitation Summary for PG73: Gaging Station GS13*

## Calendar Year 2013: Daily Total Precipitation Values in Inches

| Day | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | No Data | No Data | No Data | 0.06 | No Data | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 |
| 2 | No Data | No Data | No Data | 0.20 | No Data | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | No Data | No Data | No Data | 0.03 | No Data | 0.00 | 0.01 | 0.24 | 0.00 | 0.01 | 0.00 | 0.00 |
| 4 | No Data | No Data | No Data | 0.00 | No Data | 0.06 | 0.02 | 0.00 | 0.00 | 0.54 | 0.00 | 0.00 |
| 5 | No Data | No Data | No Data | 0.00 | No Data | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | No Data | No Data | No Data | 0.00 | No Data | 0.01 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | No Data | No Data | No Data | 0.00 | No Data | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | No Data | No Data | No Data | 0.00 | No Data | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9 | No Data | No Data | No Data | 0.00 | No Data | 0.00 | 0.00 | 0.00 | 0.91 | 0.00 | 0.00 | 0.00 |
| 10 | No Data | No Data | No Data | No Data | No Data | 0.00 | 0.00 | 0.19 | 0.31 | 0.09 | 0.00 | 0.00 |
| 11 | No Data | No Data | No Data | No Data | No Data | 0.00 | 0.04 | 0.00 | 1.69 | 0.00 | 0.00 | 0.00 |
| 12 | No Data | No Data | No Data | No Data | No Data | 0.00 | 0.13 | 0.31 | No Data | 0.00 | 0.00 | 0.00 |
| 13 | No Data | No Data | No Data | No Data | No Data | 0.03 | 0.07 | 0.02 | 0.29 | 0.00 | 0.00 | 0.00 |
| 14 | No Data | No Data | No Data | No Data | No Data | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 |
| 15 | No Data | No Data | No Data | No Data | No Data | 0.00 | 1.22 | 0.00 | 0.89 | 0.00 | 0.00 | 0.00 |
| 16 | No Data | No Data | No Data | No Data | No Data | 0.00 | 0.00 | 0.00 | 0.08 | 0.00 | 0.00 | 0.00 |
| 17 | No Data | No Data | No Data | No Data | No Data | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 |
| 18 | No Data | No Data | 0.00 | No Data | No Data | 0.03 | 0.00 | 0.00 | 0.00 | 0.21 | 0.00 | 0.00 |
| 19 | No Data | No Data | 0.00 | No Data | No Data | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | No Data | No Data | 0.00 | No Data | No Data | 0.00 | 0.00 | 0.00 | 0.00 | 0.15 | 0.00 | 0.00 |
| 21 | No Data | No Data | 0.00 | No Data | No Data | 0.00 | 0.00 | 0.96 | 0.00 | 0.02 | 0.00 | 0.00 |
| 22 | No Data | No Data | 0.00 | No Data | No Data | 0.00 | 0.00 | 0.02 | 0.06 | 0.00 | 0.05 | 0.00 |
| 23 | No Data | No Data | 0.00 | No Data | No Data | 0.01 | 0.00 | 0.20 | 0.39 | 0.00 | 0.03 | 0.01 |
| 24 | No Data | No Data | 0.00 | No Data | No Data | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 |
| 25 | No Data | No Data | 0.14 | No Data | No Data | 0.00 | 0.15 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 |
| 26 | No Data | No Data | 0.01 | No Data | No Data | 0.00 | 0.01 | 0.12 | 0.00 | 0.00 | 0.01 | 0.00 |
| 27 | No Data | No Data | 0.00 | No Data | No Data | 0.00 | 0.18 | 0.00 | 0.29 | 0.00 | 0.00 | 0.00 |
| 28 | No Data | No Data | 0.00 | No Data | No Data | 0.12 | 0.16 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| 29 | No Data | NA | 0.00 | No Data | No Data | 0.01 | 0.02 | 0.00 | 0.00 | 0.03 | 0.00 | 0.07 |
| 30 | No Data | NA | 0.00 | No Data | No Data | 0.00 | 0.01 | 0.00 | 0.00 | 0.13 | 0.00 | 0.01 |
| 31 | No Data | NA | 0.00 | NA | No Data | NA | 0.00 | 0.00 | NA | 0.00 | NA | 0.00 |
| | No Data | No Data | Partial Data | Partial Data | No Data | | | | Partial Data | | | |

## Precipitation

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Monthly Total* | | | 0.15 | 0.29 | | 0.27 | 2.08 | 2.09 | 4.93 | 1.22 | 0.13 | 0.09 |
| *Daily Maximum* | | | 0.14 | 0.20 | | 0.12 | 1.22 | 0.96 | 1.69 | 0.54 | 0.05 | 0.07 |
| | No Data | No Data | Partial Data | Partial Data | No Data | | | | Partial Data | | | |

**Annual Summaries for CY13**

Total Inches 11.25

Partial Data

**KEY:** No Data: Bad or missing data due to equipment failures or discontinued operation

### A.2.5 PG74: Gaging Station GS59

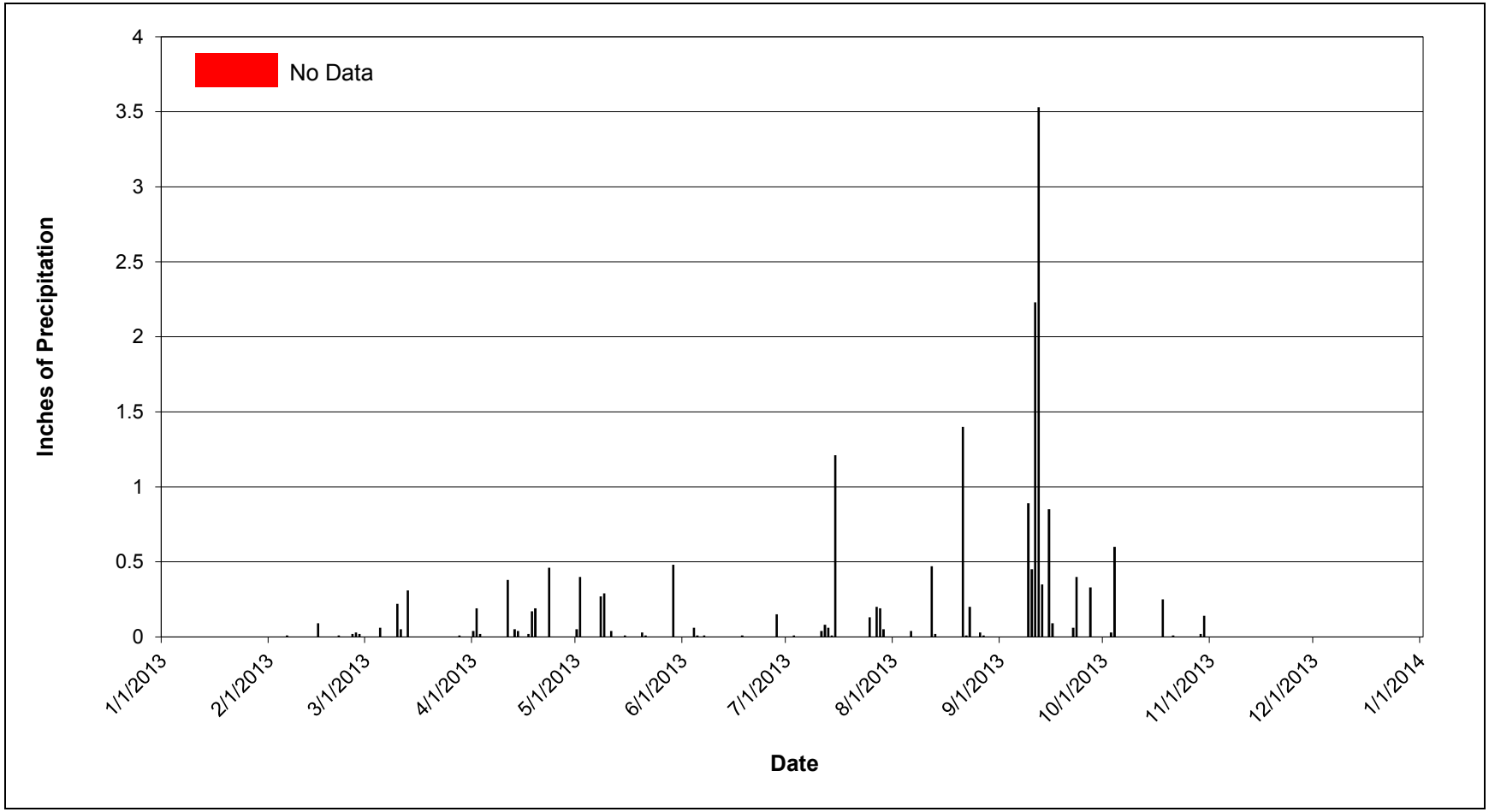



*Figure A-4. CY 2013 Annual Hyetograph at PG74: Gaging Station GS59*

*Table A–22. CY 2013 Precipitation Summary for PG74: Gaging Station GS59*

## Calendar Year 2013: Daily Total Precipitation Values in Inches

| Day | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.00 | 0.04 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | 0.00 | 0.00 | 0.00 | 0.19 | 0.40 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 |
| 4 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 | 0.00 | 0.60 | 0.00 | 0.00 |
| 5 | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | 0.00 | 0.00 | 0.00 | 0.00 | 0.27 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9 | 0.00 | 0.00 | 0.00 | 0.00 | 0.29 | 0.00 | 0.00 | 0.00 | 0.89 | 0.00 | 0.00 | 0.00 |
| 10 | 0.00 | 0.00 | 0.22 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.45 | 0.00 | 0.00 | 0.00 |
| 11 | 0.00 | 0.00 | 0.05 | 0.38 | 0.04 | 0.00 | 0.04 | 0.00 | 2.23 | 0.00 | 0.00 | 0.00 |
| 12 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.08 | 0.47 | 3.53 | 0.00 | 0.00 | 0.00 |
| 13 | 0.00 | 0.00 | 0.31 | 0.05 | 0.00 | 0.00 | 0.06 | 0.02 | 0.35 | 0.00 | 0.00 | 0.00 |
| 14 | 0.00 | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 15 | 0.00 | 0.09 | 0.00 | 0.00 | 0.01 | 0.00 | 1.21 | 0.00 | 0.85 | 0.00 | 0.00 | 0.00 |
| 16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.09 | 0.00 | 0.00 | 0.00 |
| 17 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18 | 0.00 | 0.00 | 0.00 | 0.17 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.25 | 0.00 | 0.00 |
| 19 | 0.00 | 0.00 | 0.00 | 0.19 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 21 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 1.40 | 0.00 | 0.01 | 0.00 | 0.00 |
| 22 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.06 | 0.00 | 0.00 | 0.00 |
| 23 | 0.00 | 0.00 | 0.00 | 0.46 | 0.00 | 0.00 | 0.00 | 0.20 | 0.40 | 0.00 | 0.00 | 0.00 |
| 24 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.20 | 0.01 | 0.33 | 0.00 | 0.00 | 0.00 |
| 28 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.15 | 0.19 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29 | 0.00 | NA | 0.00 | 0.00 | 0.48 | 0.00 | 0.05 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 |
| 30 | 0.00 | NA | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.14 | 0.00 | 0.00 |
| 31 | 0.00 | NA | 0.00 | NA | 0.00 | NA | 0.00 | 0.00 | NA | 0.00 | NA | 0.00 |

## Precipitation

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Monthly Total* | 0.00 | 0.18 | 0.65 | 1.56 | 1.58 | 0.24 | 1.98 | 2.18 | 9.18 | 1.05 | 0.00 | 0.00 |
| *Daily Maximum* | 0.00 | 0.09 | 0.31 | 0.46 | 0.48 | 0.15 | 1.21 | 1.40 | 3.53 | 0.60 | 0.00 | 0.00 |

**Annual Summaries for CY13**

Total Inches 18.60

**KEY:** No Data: Bad or missing data due to equipment failures or discontinued operation

### A.2.6 PG75: Gaging Station SW018

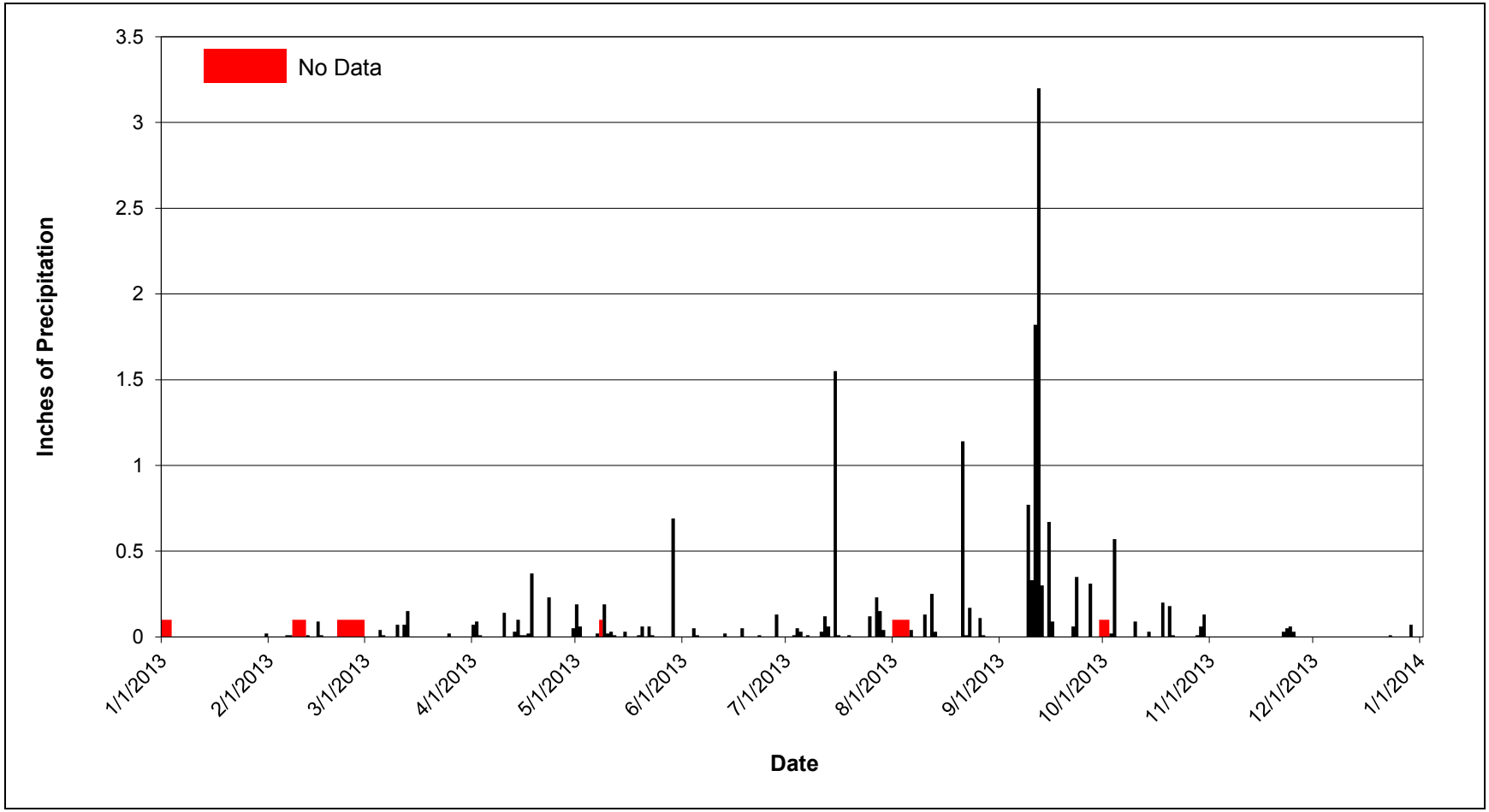



*Figure A-5. CY 2013 Annual Hyetograph at PG75: Gaging Station SW018*

*Table A–23. CY 2013 Precipitation Summary for PG75: Gaging Station SW018*

## Calendar Year 2013: Daily Total Precipitation Values in Inches

| Day | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | No Data | 0.00 | 0.00 | 0.07 | 0.19 | 0.00 | 0.00 | No Data | 0.00 | No Data | 0.00 | 0.00 |
| 2 | No Data | 0.00 | 0.00 | 0.09 | 0.06 | 0.00 | 0.00 | No Data | 0.00 | No Data | 0.00 | 0.00 |
| 3 | No Data | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 | No Data | 0.00 | 0.02 | 0.00 | 0.00 |
| 4 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.05 | 0.05 | No Data | 0.00 | 0.57 | 0.00 | 0.00 |
| 5 | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 | 0.01 | 0.03 | No Data | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | 0.00 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | 0.00 | 0.01 | 0.00 | 0.00 | 0.02 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | 0.00 | No Data | 0.00 | 0.00 | No Data | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9 | 0.00 | No Data | 0.00 | 0.00 | 0.19 | 0.00 | 0.00 | 0.00 | 0.77 | 0.00 | 0.00 | 0.00 |
| 10 | 0.00 | No Data | 0.07 | 0.14 | 0.02 | 0.00 | 0.00 | 0.13 | 0.33 | 0.09 | 0.00 | 0.00 |
| 11 | 0.00 | No Data | 0.00 | 0.00 | 0.03 | 0.00 | 0.03 | 0.00 | 1.82 | 0.00 | 0.00 | 0.00 |
| 12 | 0.00 | 0.01 | 0.07 | 0.00 | 0.01 | 0.00 | 0.12 | 0.25 | 3.20 | 0.00 | 0.00 | 0.00 |
| 13 | 0.00 | 0.00 | 0.15 | 0.03 | 0.00 | 0.02 | 0.06 | 0.03 | 0.30 | 0.00 | 0.00 | 0.00 |
| 14 | 0.00 | 0.00 | 0.00 | 0.10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 |
| 15 | 0.00 | 0.09 | 0.00 | 0.01 | 0.03 | 0.00 | 1.55 | 0.00 | 0.67 | 0.00 | 0.00 | 0.00 |
| 16 | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.09 | 0.00 | 0.00 | 0.00 |
| 17 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18 | 0.00 | 0.00 | 0.00 | 0.37 | 0.00 | 0.05 | 0.00 | 0.00 | 0.00 | 0.20 | 0.00 | 0.00 |
| 19 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.18 | 0.00 | 0.00 |
| 21 | 0.00 | No Data | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.14 | 0.00 | 0.01 | 0.00 | 0.00 |
| 22 | 0.00 | No Data | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 | 0.01 | 0.06 | 0.00 | 0.03 | 0.00 |
| 23 | 0.00 | No Data | 0.00 | 0.23 | 0.01 | 0.01 | 0.00 | 0.17 | 0.35 | 0.00 | 0.05 | 0.01 |
| 24 | 0.00 | No Data | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.06 | 0.00 |
| 25 | 0.00 | No Data | 0.02 | 0.00 | 0.00 | 0.00 | 0.12 | 0.00 | 0.00 | 0.00 | 0.03 | 0.00 |
| 26 | 0.00 | No Data | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.11 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27 | 0.00 | No Data | 0.00 | 0.00 | 0.00 | 0.00 | 0.23 | 0.01 | 0.31 | 0.00 | 0.00 | 0.00 |
| 28 | 0.00 | No Data | 0.00 | 0.00 | 0.00 | 0.13 | 0.15 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| 29 | 0.00 | NA | 0.00 | 0.00 | 0.69 | 0.00 | 0.04 | 0.00 | 0.00 | 0.06 | 0.00 | 0.07 |
| 30 | 0.00 | NA | 0.00 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | No Data | 0.13 | 0.00 | 0.00 |
| 31 | 0.02 | NA | 0.00 | NA | 0.00 | NA | 0.00 | 0.00 | NA | 0.00 | NA | 0.00 |
| | Partial Data | Partial Data | | | Partial Data | | | Partial Data | Partial Data | Partial Data | | |

## Precipitation

| | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Monthly Total* | 0.02 | 0.13 | 0.36 | 1.13 | 1.38 | 0.27 | 2.42 | 1.89 | 7.90 | 1.30 | 0.17 | 0.08 |
| *Daily Maximum* | 0.02 | 0.09 | 0.15 | 0.37 | 0.69 | 0.13 | 1.55 | 1.14 | 3.20 | 0.57 | 0.06 | 0.07 |
| | Partial Data | Partial Data | | | Partial Data | | | Partial Data | Partial Data | Partial Data | | |

**Annual Summaries for CY13**

Total Inches 17.05

Partial Data

**KEY:** No Data: Bad or missing data due to equipment failures or discontinued operation

### A.2.7 PG76: Telemetry Repeater Node RTU3

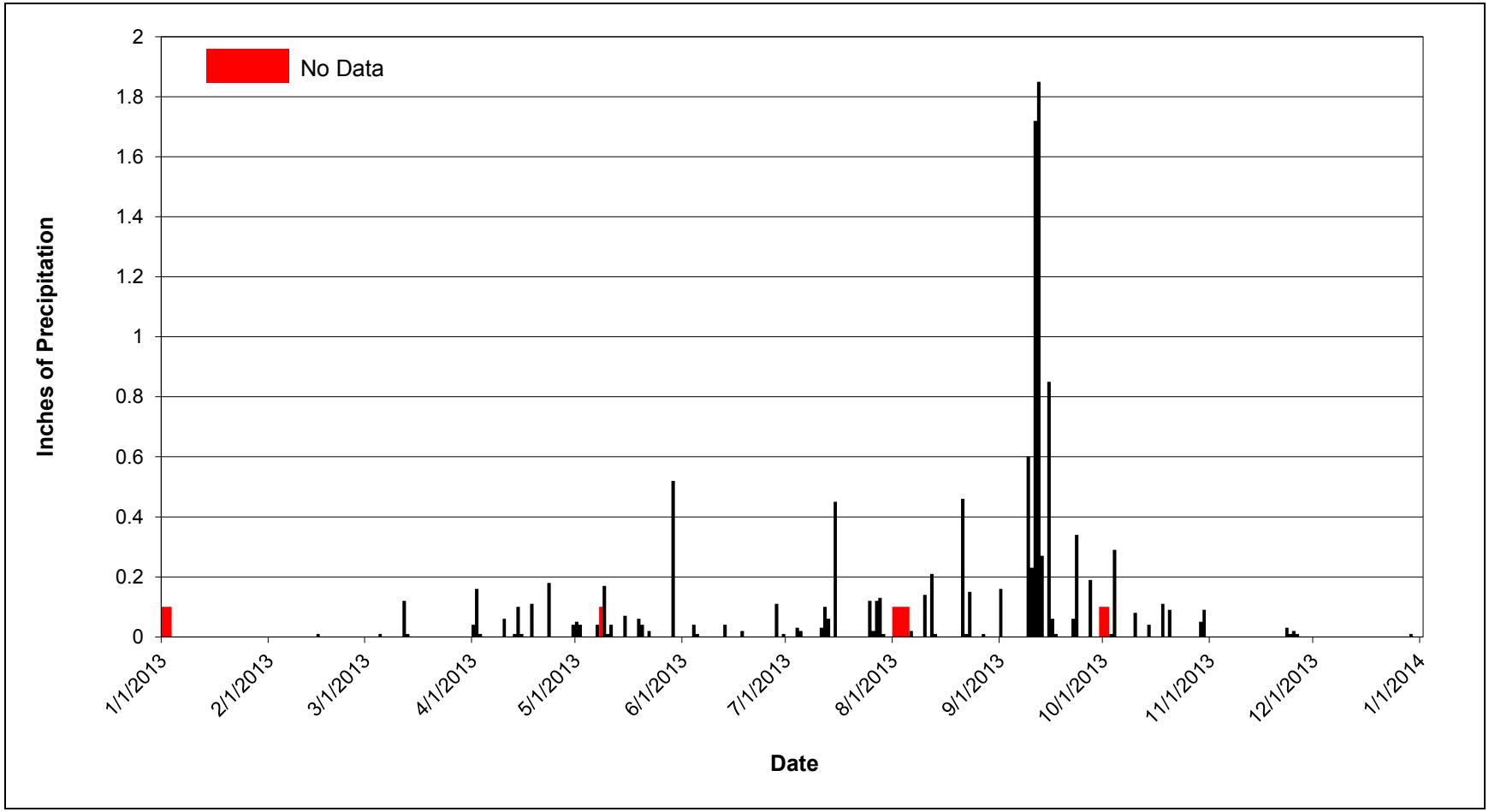



*Figure A-6. CY 2013 Annual Hyetograph at PG76: Telemetry Repeater Node RTU3*

*Table A–24. CY 2013 Precipitation Summary for PG76: Telemetry Repeater Node RTU3*

**Calendar Year 2013: Daily Total Precipitation Values in Inches**

| Day | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | No Data | 0.00 | 0.00 | 0.04 | 0.05 | 0.00 | 0.00 | No Data | 0.16 | No Data | 0.00 | 0.00 |
| 2 | No Data | 0.00 | 0.00 | 0.16 | 0.04 | 0.00 | 0.00 | No Data | 0.00 | No Data | 0.00 | 0.00 |
| 3 | No Data | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | No Data | 0.00 | 0.01 | 0.00 | 0.00 |
| 4 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.04 | 0.03 | No Data | 0.00 | 0.29 | 0.00 | 0.00 |
| 5 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 | 0.02 | No Data | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | 0.00 | 0.00 | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | 0.00 | 0.00 | 0.00 | 0.00 | No Data | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9 | 0.00 | 0.00 | 0.00 | 0.00 | 0.17 | 0.00 | 0.00 | 0.00 | 0.60 | 0.00 | 0.00 | 0.00 |
| 10 | 0.00 | 0.00 | 0.00 | 0.06 | 0.01 | 0.00 | 0.00 | 0.14 | 0.23 | 0.08 | 0.00 | 0.00 |
| 11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.04 | 0.00 | 0.03 | 0.00 | 1.72 | 0.00 | 0.00 | 0.00 |
| 12 | 0.00 | 0.00 | 0.12 | 0.00 | 0.00 | 0.00 | 0.10 | 0.21 | 1.85 | 0.00 | 0.00 | 0.00 |
| 13 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | 0.04 | 0.06 | 0.01 | 0.27 | 0.00 | 0.00 | 0.00 |
| 14 | 0.00 | 0.00 | 0.00 | 0.10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 |
| 15 | 0.00 | 0.01 | 0.00 | 0.01 | 0.07 | 0.00 | 0.45 | 0.00 | 0.85 | 0.00 | 0.00 | 0.00 |
| 16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 | 0.00 |
| 17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 |
| 18 | 0.00 | 0.00 | 0.00 | 0.11 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.11 | 0.00 | 0.00 |
| 19 | 0.00 | 0.00 | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.09 | 0.00 | 0.00 |
| 21 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.46 | 0.00 | 0.00 | 0.00 | 0.00 |
| 22 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.01 | 0.06 | 0.00 | 0.00 | 0.00 |
| 23 | 0.00 | 0.00 | 0.00 | 0.18 | 0.00 | 0.00 | 0.00 | 0.15 | 0.34 | 0.00 | 0.03 | 0.00 |
| 24 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 |
| 25 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.12 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 |
| 26 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 |
| 27 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.12 | 0.01 | 0.19 | 0.00 | 0.00 | 0.00 |
| 28 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.11 | 0.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29 | 0.00 | NA | 0.00 | 0.00 | 0.52 | 0.00 | 0.01 | 0.00 | 0.00 | 0.05 | 0.00 | 0.01 |
| 30 | 0.00 | NA | 0.00 | 0.04 | 0.00 | 0.01 | 0.00 | 0.00 | No Data | 0.09 | 0.00 | 0.00 |
| 31 | 0.00 | NA | 0.00 | NA | 0.00 | NA | 0.00 | 0.00 | NA | 0.00 | NA | 0.00 |
| | Partial Data | | | | Partial Data | | | Partial Data | Partial Data | Partial Data | | |

**Precipitation**

| | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Monthly Total* | 0.00 | 0.01 | 0.14 | 0.72 | 1.06 | 0.23 | 1.09 | 1.01 | 6.34 | 0.76 | 0.07 | 0.01 |
| *Daily Maximum* | 0.00 | 0.01 | 0.12 | 0.18 | 0.52 | 0.11 | 0.45 | 0.46 | 1.85 | 0.29 | 0.03 | 0.01 |
| | Partial Data | | | | Partial Data | | | Partial Data | Partial Data | Partial Data | | |

**Annual Summaries for CY13**

Total Inches 11.44

Partial Data

**KEY:** No Data: Bad or missing data due to equipment failures or discontinued operation

### A.2.8 PG77: Telemetry Repeater Node RTU2

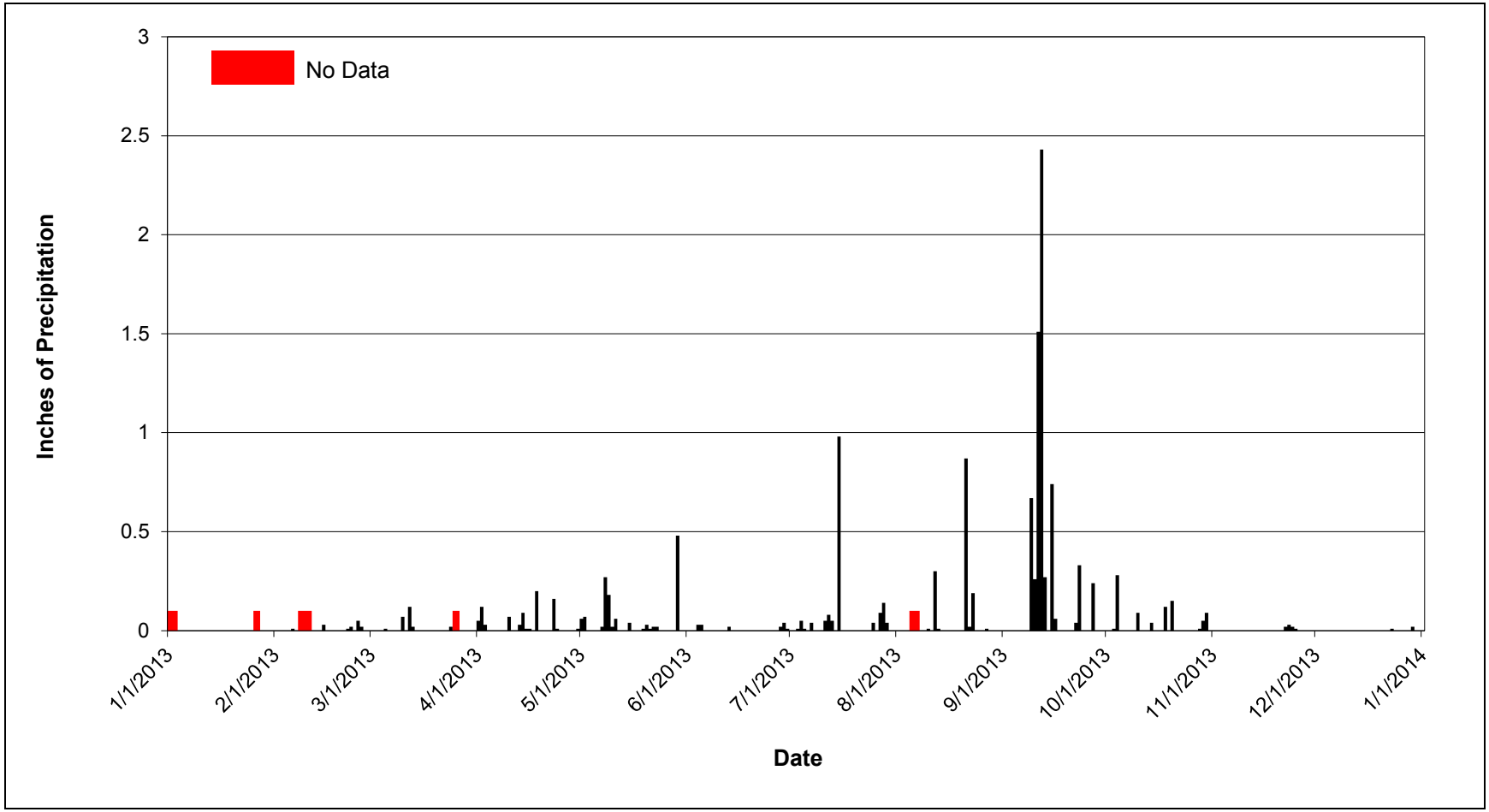



*Figure A-7. CY 2013 Annual Hyetograph at PG77: Telemetry Repeater Node RTU2*

*Table A–25. CY 2013 Precipitation Summary for PG77: Telemetry Repeater Node RTU2*

## Calendar Year 2013: Daily Total Precipitation Values in Inches

| Day | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | No Data | 0.00 | 0.00 | 0.05 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | No Data | 0.00 | 0.00 | 0.12 | 0.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | No Data | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| 4 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 | 0.05 | 0.00 | 0.00 | 0.28 | 0.00 | 0.00 |
| 5 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.03 | 0.01 | No Data | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | No Data | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.04 | No Data | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | 0.00 | No Data | 0.00 | 0.00 | 0.27 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9 | 0.00 | No Data | 0.00 | 0.00 | 0.18 | 0.00 | 0.00 | 0.00 | 0.67 | 0.00 | 0.00 | 0.00 |
| 10 | 0.00 | No Data | 0.07 | 0.07 | 0.02 | 0.00 | 0.00 | 0.01 | 0.26 | 0.09 | 0.00 | 0.00 |
| 11 | 0.00 | No Data | 0.00 | 0.00 | 0.06 | 0.00 | 0.05 | 0.00 | 1.51 | 0.00 | 0.00 | 0.00 |
| 12 | 0.00 | 0.00 | 0.12 | 0.00 | 0.00 | 0.00 | 0.08 | 0.30 | 2.43 | 0.00 | 0.00 | 0.00 |
| 13 | 0.00 | 0.00 | 0.02 | 0.03 | 0.00 | 0.02 | 0.05 | 0.01 | 0.27 | 0.00 | 0.00 | 0.00 |
| 14 | 0.00 | 0.00 | 0.00 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 |
| 15 | 0.00 | 0.03 | 0.00 | 0.01 | 0.04 | 0.00 | 0.98 | 0.00 | 0.74 | 0.00 | 0.00 | 0.00 |
| 16 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 | 0.00 |
| 17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18 | 0.00 | 0.00 | 0.00 | 0.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.12 | 0.00 | 0.00 |
| 19 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.15 | 0.00 | 0.00 |
| 21 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.87 | 0.00 | 0.00 | 0.00 | 0.00 |
| 22 | 0.00 | 0.01 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.02 | 0.04 | 0.00 | 0.02 | 0.00 |
| 23 | 0.00 | 0.02 | 0.00 | 0.16 | 0.02 | 0.00 | 0.00 | 0.19 | 0.33 | 0.00 | 0.03 | 0.01 |
| 24 | 0.00 | 0.00 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 |
| 25 | 0.00 | 0.05 | No Data | 0.00 | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 |
| 26 | No Data | 0.02 | No Data | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27 | No Data | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.09 | 0.01 | 0.24 | 0.00 | 0.00 | 0.00 |
| 28 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.14 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 |
| 29 | 0.00 | NA | 0.00 | 0.00 | 0.48 | 0.04 | 0.04 | 0.00 | 0.00 | 0.05 | 0.00 | 0.02 |
| 30 | 0.00 | NA | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.09 | 0.00 | 0.00 |
| 31 | 0.00 | NA | 0.00 | NA | 0.00 | NA | 0.00 | 0.00 | NA | 0.00 | NA | 0.00 |
| | Partial Data | Partial Data | Partial Data | | | | | Partial Data | | | | |

## Precipitation

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Monthly Total* | 0.00 | 0.14 | 0.24 | 0.79 | 1.29 | 0.15 | 1.58 | 1.41 | 6.55 | 0.84 | 0.08 | 0.03 |
| *Daily Maximum* | 0.00 | 0.05 | 0.12 | 0.20 | 0.48 | 0.04 | 0.98 | 0.87 | 2.43 | 0.28 | 0.03 | 0.02 |
| | Partial Data | Partial Data | Partial Data | | | | | Partial Data | | | | |

**Annual Summaries for CY13**

Total Inches 13.10

Partial Data

**KEY:** No Data: Bad or missing data due to equipment failures or discontinued operation

### A.2.9 PG78: Gaging Station WALPOC

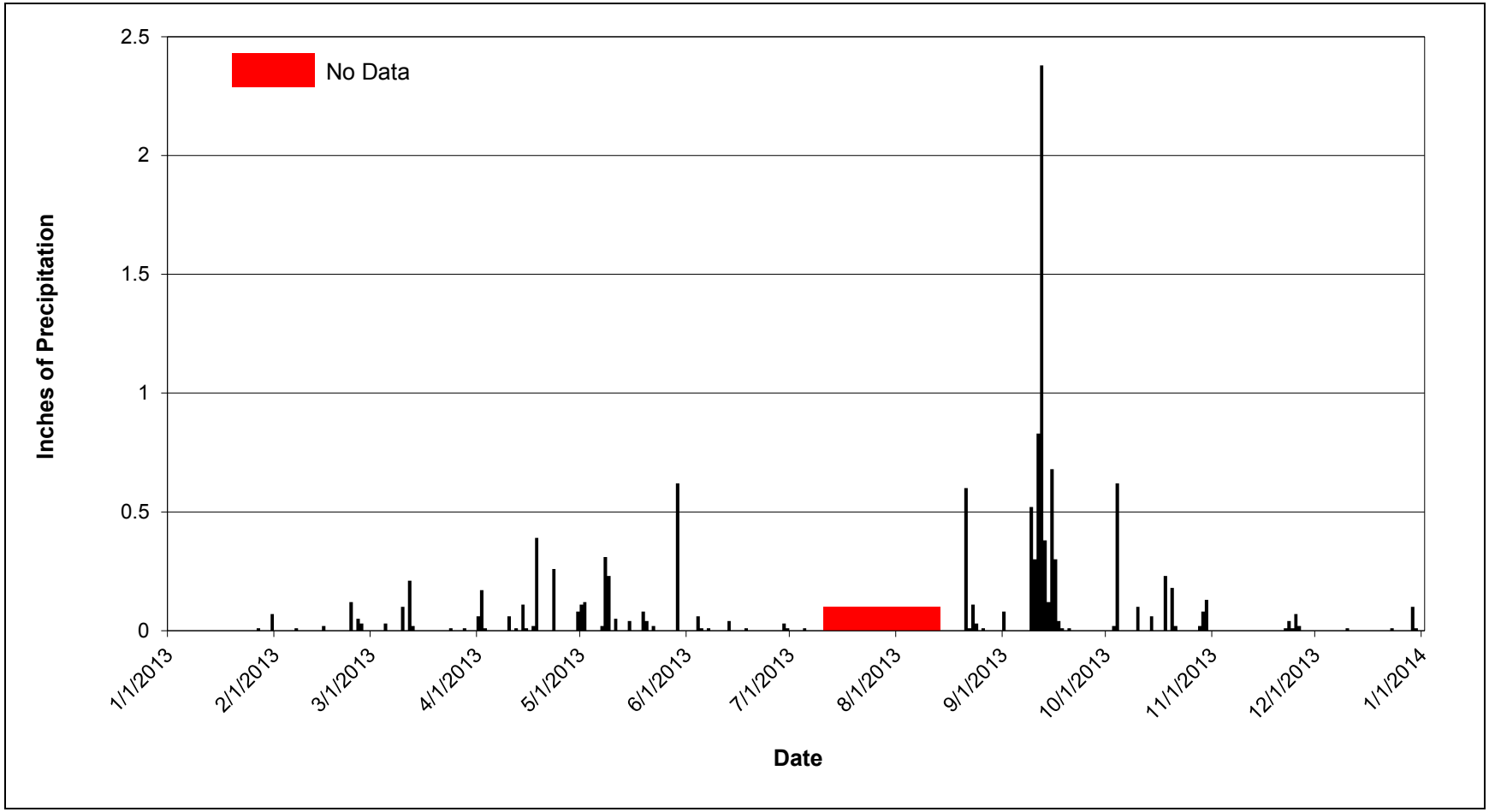



*Figure A-8. CY 2013 Annual Hyetograph at PG78: Gaging Station WALPOC*

*Table A–26. CY 2013 Precipitation Summary for PG78: Gaging Station WALPOC*

**Calendar Year 2013: Daily Total Precipitation Values in Inches**

| Day | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.00 | 0.06 | 0.11 | 0.00 | 0.00 | No Data | 0.08 | 0.00 | 0.00 | 0.00 |
| 2 | 0.00 | 0.00 | 0.00 | 0.17 | 0.12 | 0.00 | 0.00 | No Data | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | No Data | 0.00 | 0.02 | 0.00 | 0.00 |
| 4 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.06 | 0.00 | No Data | 0.00 | 0.62 | 0.00 | 0.00 |
| 5 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.01 | 0.01 | No Data | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | No Data | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | 0.00 | 0.01 | 0.00 | 0.00 | 0.02 | 0.01 | 0.00 | No Data | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | 0.00 | 0.00 | 0.00 | 0.00 | 0.31 | 0.00 | 0.00 | No Data | 0.00 | 0.00 | 0.00 | 0.00 |
| 9 | 0.00 | 0.00 | 0.00 | 0.00 | 0.23 | 0.00 | 0.00 | No Data | 0.52 | 0.00 | 0.00 | 0.00 |
| 10 | 0.00 | 0.00 | 0.10 | 0.06 | 0.00 | 0.00 | 0.00 | No Data | 0.30 | 0.10 | 0.00 | 0.01 |
| 11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.05 | 0.00 | No Data | No Data | 0.83 | 0.00 | 0.00 | 0.00 |
| 12 | 0.00 | 0.00 | 0.21 | 0.01 | 0.00 | 0.00 | No Data | No Data | 2.38 | 0.00 | 0.00 | 0.00 |
| 13 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.04 | No Data | No Data | 0.38 | 0.00 | 0.00 | 0.00 |
| 14 | 0.00 | 0.00 | 0.00 | 0.11 | 0.00 | 0.00 | No Data | 0.00 | 0.12 | 0.06 | 0.00 | 0.00 |
| 15 | 0.00 | 0.02 | 0.00 | 0.01 | 0.04 | 0.00 | No Data | 0.00 | 0.68 | 0.00 | 0.00 | 0.00 |
| 16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | No Data | 0.00 | 0.30 | 0.00 | 0.00 | 0.00 |
| 17 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | No Data | 0.00 | 0.04 | 0.00 | 0.00 | 0.00 |
| 18 | 0.00 | 0.00 | 0.00 | 0.39 | 0.00 | 0.01 | No Data | 0.00 | 0.01 | 0.23 | 0.00 | 0.00 |
| 19 | 0.00 | 0.00 | 0.00 | 0.00 | 0.08 | 0.00 | No Data | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.04 | 0.00 | No Data | 0.00 | 0.01 | 0.18 | 0.00 | 0.00 |
| 21 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | No Data | 0.60 | 0.00 | 0.02 | 0.00 | 0.00 |
| 22 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | No Data | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 |
| 23 | 0.00 | 0.12 | 0.00 | 0.26 | 0.00 | 0.00 | No Data | 0.11 | 0.00 | 0.00 | 0.04 | 0.01 |
| 24 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | No Data | 0.03 | 0.00 | 0.00 | 0.01 | 0.00 |
| 25 | 0.00 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | No Data | 0.00 | 0.00 | 0.00 | 0.07 | 0.00 |
| 26 | 0.00 | 0.03 | 0.00 | 0.00 | 0.00 | 0.00 | No Data | 0.01 | 0.00 | 0.00 | 0.02 | 0.00 |
| 27 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | No Data | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 28 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | No Data | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 |
| 29 | 0.00 | NA | 0.00 | 0.00 | 0.62 | 0.03 | No Data | 0.00 | 0.00 | 0.08 | 0.00 | 0.10 |
| 30 | 0.00 | NA | 0.00 | 0.08 | 0.00 | 0.01 | No Data | 0.00 | 0.00 | 0.13 | 0.00 | 0.01 |
| 31 | 0.07 | NA | 0.00 | NA | 0.00 | NA | No Data | 0.00 | NA | 0.00 | NA | 0.00 |
| | | | | | | | Partial Data | Partial Data | | | | |

**Precipitation**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Monthly Total* | 0.08 | 0.23 | 0.38 | 1.18 | 1.64 | 0.17 | 0.01 | 0.76 | 5.65 | 1.46 | 0.15 | 0.13 |
| *Daily Maximum* | 0.07 | 0.12 | 0.21 | 0.39 | 0.62 | 0.06 | 0.01 | 0.60 | 2.38 | 0.62 | 0.07 | 0.10 |
| | | | | | | | Partial Data | Partial Data | | | | |

**Annual Summaries for CY13**

Total Inches 11.84

Partial Data

**KEY:** No Data: Bad or missing data due to equipment failures or discontinued operation

### A.2.10 PG79: Gaging Station WOMPOC

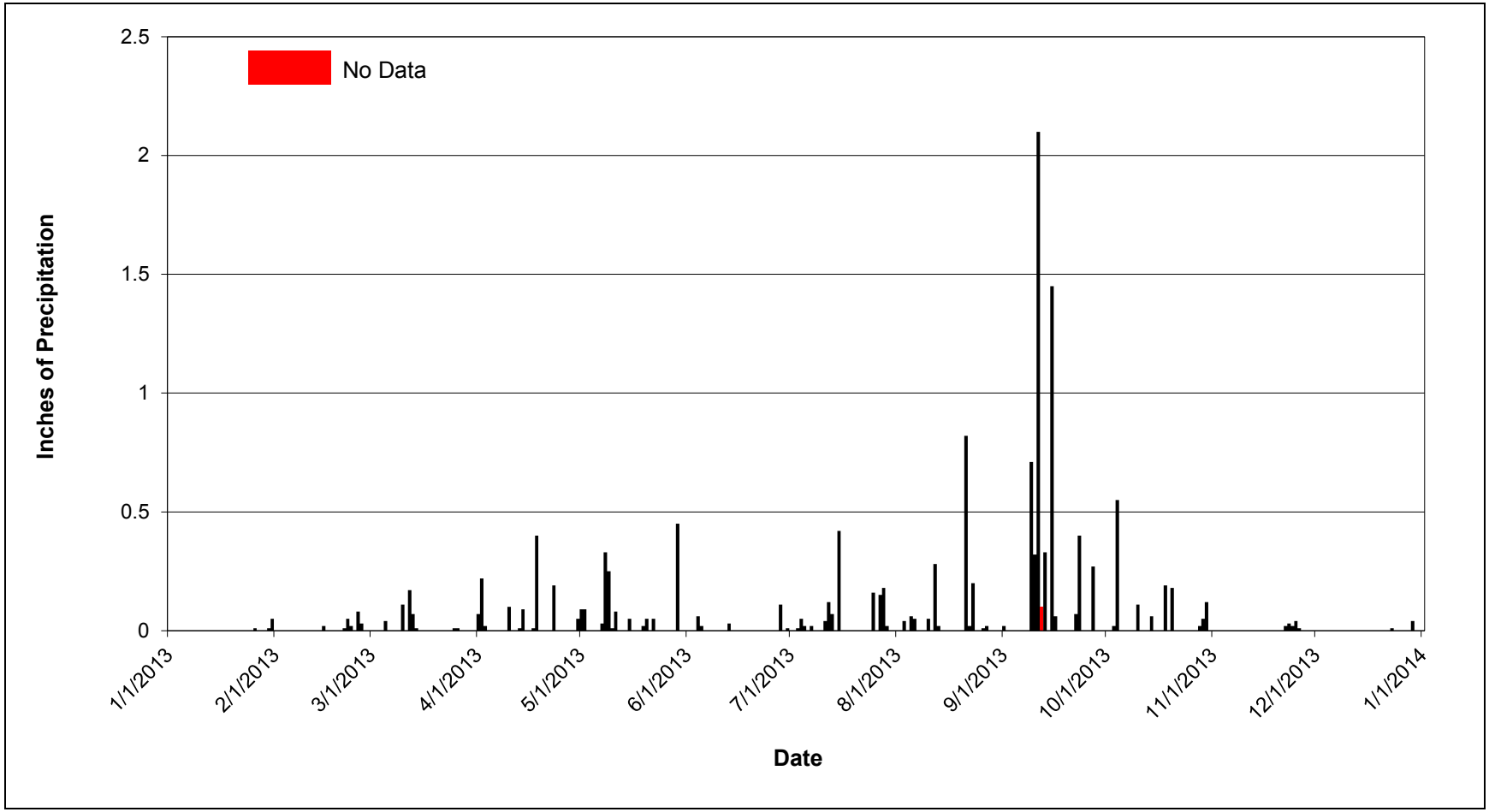



*Figure A-9. CY 2013 Annual Hyetograph at PG79: Gaging Station WOMPOC*

*Table A–27. CY 2013 Precipitation Summary for PG79: Gaging Station WOMPOC*

**Calendar Year 2013: Daily Total Precipitation Values in Inches**

| Day | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.00 | 0.07 | 0.09 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 |
| 2 | 0.00 | 0.00 | 0.00 | 0.22 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.01 | 0.04 | 0.00 | 0.02 | 0.00 | 0.00 |
| 4 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.06 | 0.05 | 0.00 | 0.00 | 0.55 | 0.00 | 0.00 |
| 5 | 0.00 | 0.00 | 0.04 | 0.00 | 0.00 | 0.02 | 0.02 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | 0.00 | 0.00 | 0.00 | 0.00 | 0.33 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9 | 0.00 | 0.00 | 0.00 | 0.00 | 0.25 | 0.00 | 0.00 | 0.00 | 0.71 | 0.00 | 0.00 | 0.00 |
| 10 | 0.00 | 0.00 | 0.11 | 0.10 | 0.01 | 0.00 | 0.00 | 0.05 | 0.32 | 0.11 | 0.00 | 0.00 |
| 11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.08 | 0.00 | 0.04 | 0.00 | 2.10 | 0.00 | 0.00 | 0.00 |
| 12 | 0.00 | 0.00 | 0.17 | 0.00 | 0.00 | 0.00 | 0.12 | 0.28 | No Data | 0.00 | 0.00 | 0.00 |
| 13 | 0.00 | 0.00 | 0.07 | 0.01 | 0.00 | 0.03 | 0.07 | 0.02 | 0.33 | 0.00 | 0.00 | 0.00 |
| 14 | 0.00 | 0.00 | 0.01 | 0.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 |
| 15 | 0.00 | 0.02 | 0.00 | 0.00 | 0.05 | 0.00 | 0.42 | 0.00 | 1.45 | 0.00 | 0.00 | 0.00 |
| 16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.06 | 0.00 | 0.00 | 0.00 |
| 17 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18 | 0.00 | 0.00 | 0.00 | 0.40 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.19 | 0.00 | 0.00 |
| 19 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.18 | 0.00 | 0.00 |
| 21 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.82 | 0.00 | 0.00 | 0.00 | 0.00 |
| 22 | 0.00 | 0.05 | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 | 0.02 | 0.07 | 0.00 | 0.02 | 0.00 |
| 23 | 0.00 | 0.02 | 0.00 | 0.19 | 0.00 | 0.00 | 0.00 | 0.20 | 0.40 | 0.00 | 0.03 | 0.01 |
| 24 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.02 | 0.00 |
| 25 | 0.00 | 0.08 | 0.01 | 0.00 | 0.00 | 0.00 | 0.16 | 0.00 | 0.00 | 0.00 | 0.04 | 0.00 |
| 26 | 0.01 | 0.03 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.01 | 0.00 |
| 27 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.15 | 0.02 | 0.27 | 0.00 | 0.00 | 0.00 |
| 28 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.11 | 0.18 | 0.00 | 0.00 | 0.02 | 0.00 | 0.00 |
| 29 | 0.00 | NA | 0.00 | 0.00 | 0.45 | 0.00 | 0.02 | 0.00 | 0.00 | 0.05 | 0.00 | 0.04 |
| 30 | 0.01 | NA | 0.00 | 0.05 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 | 0.12 | 0.00 | 0.00 |
| 31 | 0.05 | NA | 0.00 | NA | 0.00 | NA | 0.00 | 0.00 | NA | 0.00 | NA | 0.00 |
| | | | | | | | | | Partial Data | | | |

**Precipitation**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Monthly Total* | 0.07 | 0.21 | 0.42 | 1.16 | 1.50 | 0.23 | 1.26 | 1.57 | 5.73 | 1.30 | 0.12 | 0.05 |
| *Daily Maximum* | 0.05 | 0.08 | 0.17 | 0.40 | 0.45 | 0.11 | 0.42 | 0.82 | 2.10 | 0.55 | 0.04 | 0.04 |
| | | | | | | | | | Partial Data | | | |

**Annual Summaries for CY13**

Total Inches 13.62

Partial Data

**KEY:** No Data: Bad or missing data due to equipment failures or discontinued operation

## A.3 Groundwater Level Data for CY 2013

Water level data for 2013 are included for all wells at which manual measurements were collected.

*Table A–28. Groundwater Elevation Data: CY 2013*

| Location Code | Collection Date | Water Level Elevation (ft) | Depth from TOC |
|---|---|---|---|
| 00191 | 1/10/2013 | 5947.44 | 23.04 |
| | 4/11/2013 | 5947.27 | 23.21 |
| | 7/10/2013 | 5953.75 | 16.73 |
| | 10/3/2013 | 5961.84 | 8.64 |
| 00193 | 1/10/2013 | 5756.62 | 11.22 |
| | 4/8/2013 | 5755.53 | 12.31 |
| | 5/2/2013 | 5755.69 | 12.15 |
| | 7/9/2013 | 5756.33 | 11.51 |
| | 10/8/2013 | 5759.06 | 8.78 |
| | 10/23/2013 | 5759.62 | 8.22 |
| 00203 | 1/9/2013 | 5962.15 | 12.23 |
| | 4/11/2013 | 5961.39 | 12.99 |
| | 6/6/2013 | 5967.11 | 7.27 |
| | 7/11/2013 | 5966.42 | 7.96 |
| | 10/8/2013 | 5968.92 | 5.46 |
| 00491 | 1/10/2013 | 5887.56 | 17.41 |
| | 4/8/2013 | 5887.42 | 17.55 |
| | 7/9/2013 | 5888.25 | 16.72 |
| | 10/8/2013 | 5891.21 | 13.76 |
| 00797 | 1/10/2013 | 5923.37 | 17.63 |
| | 4/8/2013 | 5924.94 | 16.06 |
| | 5/2/2013 | 5921.5 | 19.50 |
| | 7/9/2013 | 5924.3 | 16.70 |
| | 10/8/2013 | 5925.72 | 15.28 |
| | 10/24/2013 | 5925.71 | 15.29 |
| 00897 | 1/10/2013 | 5937.5 | |
| | 4/11/2013 | 5940.65 | 26.95 |
| | 7/10/2013 | 5946.75 | 20.85 |
| | 10/1/2013 | 5949.2 | 18.40 |
| 00997 | 1/10/2013 | 5788.79 | 13.11 |
| | 4/11/2013 | 5793.38 | 8.52 |
| | 5/7/2013 | 5794.78 | 7.12 |
| | 7/10/2013 | 5792.29 | 9.61 |
| | 10/1/2013 | 5794.75 | 7.15 |
| | 11/26/2013 | 5794.9 | 7.00 |

*Table A−28 (continued). Groundwater Elevation Data: CY 2013*

| Location Code | Collection Date | Water Level Elevation (ft) | Depth from TOC |
|---|---|---|---|
| 1786 | 1/10/2013 | 5863.37 | 6.20 |
| | 4/11/2013 | 5863.89 | 5.68 |
| | 7/10/2013 | 5863.16 | 6.41 |
| | 10/3/2013 | 5867.22 | 2.35 |
| 3687 | 1/10/2013 | 5911.33 | 39.78 |
| | 4/11/2013 | 5910.7 | 40.41 |
| | 7/10/2013 | 5911.2 | 39.91 |
| | 10/3/2013 | 5914.73 | 36.38 |
| 3991 | 1/10/2013 | 5900.39 | 36.48 |
| | 4/11/2013 | 5900.2 | 36.67 |
| | 7/10/2013 | 5900.37 | 36.50 |
| | 10/3/2013 | 5901.08 | 35.79 |
| 4087 | 1/8/2013 | 5882.59 | 2.02 |
| | 4/11/2013 | 5882.75 | 1.86 |
| | 5/22/2013 | 5882.4 | 2.21 |
| | 7/11/2013 | 5879.48 | 5.13 |
| | 10/7/2013 | 5882.66 | 1.95 |
| | 11/12/2013 | 5882.54 | 2.07 |
| 04091 | 1/10/2013 | 5892.54 | 37.60 |
| | 4/11/2013 | 5892.46 | 37.68 |
| | 5/15/2013 | 5892.43 | 37.71 |
| | 7/10/2013 | 5892.41 | 37.73 |
| | 10/3/2013 | 5893.49 | 36.65 |
| | 11/20/2013 | 5892.99 | 37.15 |
| 05691 | 1/10/2013 | 5914.73 | 34.26 |
| | 4/11/2013 | 5914.13 | 34.86 |
| | 7/10/2013 | 5915.98 | 33.01 |
| | 10/3/2013 | 5920.08 | 28.91 |
| 07391 | 1/10/2013 | 5941.14 | 9.47 |
| | 4/8/2013 | 5941.56 | 9.05 |
| | 7/9/2013 | 5942.36 | 8.25 |
| | 10/8/2013 | 5943.88 | 6.73 |
| | 10/24/2013 | 5944.23 | 6.38 |
| 10304 | 1/10/2013 | 5810.55 | 6.25 |
| | 4/8/2013 | 5810.59 | 6.21 |
| | 5/3/2013 | 5810.89 | 5.91 |
| | 7/9/2013 | 5809.57 | 7.23 |
| | 10/8/2013 | 5809.56 | 7.24 |

*Table A−28 (continued). Groundwater Elevation Data: CY 2013*

| Location Code | Collection Date | Water Level Elevation (ft) | Depth from TOC |
|---|---|---|---|
| 10594 | 1/10/2013 | 5811.67 | 9.28 |
| | 4/11/2013 | 5815.09 | 5.86 |
| | 6/4/2013 | 5814.76 | 6.19 |
| | 7/10/2013 | 5811.45 | 9.50 |
| | 10/3/2013 | 5815.2 | 5.75 |
| | 11/1/2013 | 5814.93 | 6.02 |
| 11104 | 1/10/2013 | 5916.18 | 7.72 |
| | 4/8/2013 | 5916.35 | 7.55 |
| | 5/22/2013 | 5916.32 | 7.58 |
| | 7/9/2013 | 5915.18 | 8.72 |
| | 7/9/2013 | 5915.18 | 8.72 |
| | 10/8/2013 | 5916 | 7.90 |
| | 11/5/2013 | 5915.96 | 7.94 |
| 11502 | 1/8/2013 | 5993.17 | 21.24 |
| | 4/8/2013 | 5995.13 | 19.28 |
| | 5/22/2013 | 5997.46 | 16.95 |
| | 7/9/2013 | 5996.3 | 18.11 |
| | 10/8/2013 | 5998.9 | 15.51 |
| | 11/6/2013 | 5996.51 | 17.90 |
| 15699 | 1/10/2013 | 5907.29 | 11.71 |
| | 4/11/2013 | 5909.68 | 9.32 |
| | 5/7/2013 | 5912.35 | 6.65 |
| | 7/10/2013 | 5912.89 | 6.11 |
| | 10/1/2013 | 5913.93 | 5.07 |
| | 10/15/2013 | 5911.5 | 7.50 |
| 18199 | 1/9/2013 | 5970.08 | 17.51 |
| | 4/11/2013 | 5970.33 | 17.26 |
| | 5/14/2013 | 5978.54 | 9.05 |
| | 7/11/2013 | 5976.18 | 11.41 |
| | 10/8/2013 | 5978.01 | 9.58 |
| | 11/1/2013 | 5976.61 | 10.98 |
| 20205 | 1/9/2013 | 5927.36 | 12.15 |
| | 4/11/2013 | 5928.03 | 11.48 |
| | 5/15/2013 | 5929.99 | 9.52 |
| | 7/11/2013 | 5929.36 | 10.15 |
| | 10/8/2013 | 5930.94 | 8.57 |
| | 11/4/2013 | 5930.67 | 8.84 |

*Table A−28 (continued). Groundwater Elevation Data: CY 2013*

| Location Code | Collection Date | Water Level Elevation (ft) | Depth from TOC |
|---|---|---|---|
| 20505 | 1/9/2013 | 5927.23 | 14.31 |
| | 4/11/2013 | 5925.34 | 16.20 |
| | 5/15/2013 | 5931.53 | 10.01 |
| | 7/11/2013 | 5933.83 | 7.71 |
| | 10/8/2013 | 5937.26 | 4.28 |
| | 11/4/2013 | 5936.27 | 5.27 |
| 20705 | 1/9/2013 | 5925.33 | 17.87 |
| | 4/11/2013 | 5924.55 | 18.65 |
| | 5/15/2013 | 5931.4 | 11.80 |
| | 7/11/2013 | 5930.91 | 12.29 |
| | 10/8/2013 | 5937.87 | 5.33 |
| | 11/4/2013 | 5936.49 | 6.71 |
| 20902 | 1/9/2013 | 5940.94 | 8.92 |
| | 4/11/2013 | 5940.37 | 9.49 |
| | 5/16/2013 | 5945.63 | 4.23 |
| | 7/11/2013 | 5944.74 | 5.12 |
| | 10/8/2013 | 5947.19 | 2.67 |
| 21002 | 1/9/2013 | 5944.27 | 17.00 |
| | 4/11/2013 | 5944.94 | 16.33 |
| | 7/11/2013 | 5948.46 | 12.81 |
| | 10/8/2013 | 5953.52 | 7.75 |
| 21305 | 1/9/2013 | 5950.75 | 15.91 |
| | 4/11/2013 | 5951.23 | 15.43 |
| | 7/11/2013 | 5955.8 | 10.86 |
| | 10/8/2013 | 5959.73 | 6.93 |
| 21505 | 1/9/2013 | 5964.14 | 9.41 |
| | 4/11/2013 | 5966.49 | 7.06 |
| | 7/11/2013 | 5963.26 | 10.29 |
| | 10/8/2013 | 5968.92 | 4.63 |
| 21605 | 1/9/2013 | 5964.85 | 11.41 |
| | 4/11/2013 | 5966.34 | 9.92 |
| | 7/11/2013 | 5969.41 | 6.85 |
| | 10/8/2013 | 5973.29 | 2.97 |
| 22205 | 1/9/2013 | 5915.89 | 18.51 |
| | 4/11/2013 | 5915.48 | 18.92 |
| | 6/6/2013 | 5915.19 | 19.21 |
| | 7/11/2013 | 5913.52 | 20.88 |
| | 10/8/2013 | 5919.32 | 15.08 |

*Table A−28 (continued). Groundwater Elevation Data: CY 2013*

| Location Code | Collection Date | Water Level Elevation (ft) | Depth from TOC |
|---|---|---|---|
| 22996 | 1/9/2013 | 5977.19 | 11.31 |
| | 4/11/2013 | 5981.7 | 6.80 |
| | 7/11/2013 | 5980.97 | 7.53 |
| | 10/8/2013 | 5983.79 | 4.71 |
| 23296 | 1/10/2013 | 5855.01 | 5.86 |
| | 4/11/2013 | 5855.36 | 5.51 |
| | 5/7/2013 | 5855.58 | 5.29 |
| | 7/10/2013 | 5854.39 | 6.48 |
| | 10/1/2013 | 5855.95 | 4.92 |
| | 11/26/2013 | 5855.94 | 4.93 |
| 30002 | 1/9/2013 | 5917.67 | 13.21 |
| | 4/11/2013 | 5917.68 | 13.20 |
| | 5/15/2013 | 5928.76 | 2.12 |
| | 7/11/2013 | 5925.67 | 5.21 |
| | 10/8/2013 | 5928.38 | 2.50 |
| | 11/4/2013 | 5928.8 | 2.08 |
| 30900 | 1/8/2013 | 5990.67 | 16.09 |
| | 4/11/2013 | 5993.47 | 13.29 |
| | 7/11/2013 | 5999.47 | 7.29 |
| | 10/7/2013 | 6004.16 | 2.60 |
| 33502 | 1/8/2013 | 6008.3 | 11.21 |
| | 4/11/2013 | 6011.49 | 8.02 |
| | 7/11/2013 | 6012.35 | 7.16 |
| | 10/3/2013 | 6015.7 | 3.81 |
| | 10/22/2013 | 6014.63 | 4.88 |
| 33604 | 1/8/2013 | 6004.85 | 11.15 |
| | 4/11/2013 | 6005.34 | 10.66 |
| | 7/11/2013 | 6009.39 | 6.61 |
| | 10/3/2013 | 6011.57 | 4.43 |
| | 10/22/2013 | 6009.86 | 6.14 |
| 33711 | 1/8/2013 | 5994.87 | 23.15 |
| | 4/11/2013 | 5994.83 | 23.19 |
| | 5/14/2013 | 6003.67 | 14.35 |
| | 7/11/2013 | 6002.12 | 15.90 |
| | 10/3/2013 | 6007.11 | 10.91 |
| | 10/22/2013 | 6005.74 | 12.28 |
| 33905 | 1/9/2013 | 5987.61 | 19.81 |
| | 4/11/2013 | 5990.8 | 16.62 |
| | 7/11/2013 | 5991.43 | 15.99 |
| | 10/8/2013 | 5997.21 | 10.21 |

*Table A−28 (continued). Groundwater Elevation Data: CY 2013*

| Location Code | Collection Date | Water Level Elevation (ft) | Depth from TOC |
|---|---|---|---|
| 37105 | 1/8/2013 | 6001.09 | 13.05 |
| | 4/11/2013 | 6002.85 | 11.29 |
| | 7/11/2013 | 6005.35 | 8.79 |
| | 10/3/2013 | 6008.3 | 5.84 |
| 37405 | 1/8/2013 | 5983 | 26.71 |
| | 4/11/2013 | 5982.54 | 27.17 |
| | 5/14/2013 | 5986.66 | 23.05 |
| | 7/11/2013 | 5986.15 | 23.56 |
| | 10/3/2013 | 5990.56 | 19.15 |
| | 10/22/2013 | 5990.53 | 19.18 |
| 37505 | 1/8/2013 | 5992.76 | 19.06 |
| | 4/11/2013 | 5990.88 | 20.94 |
| | 5/15/2013 | 5999.47 | 12.35 |
| | 7/11/2013 | 5998.14 | 13.68 |
| | 10/3/2013 | 6000.16 | 11.66 |
| | 10/22/2013 | 5999.74 | 12.08 |
| 37591 | 1/10/2013 | 5978.46 | 14.99 |
| | 4/8/2013 | 5978.4 | 15.05 |
| | 7/9/2013 | 5983.71 | 9.74 |
| | 10/8/2013 | 5986.89 | 6.56 |
| 37691 | 1/10/2013 | 5966.79 | 18.45 |
| | 4/8/2013 | 5966.74 | 18.50 |
| | 7/9/2013 | 5966.92 | 18.32 |
| | 10/8/2013 | 5974.09 | 11.15 |
| 37705 | 1/8/2013 | 5970.35 | 38.99 |
| | 4/11/2013 | 5970.32 | 39.02 |
| | 5/15/2013 | 5970.41 | 38.93 |
| | 7/11/2013 | 5972.81 | 36.53 |
| | 10/3/2013 | 5975.4 | 33.94 |
| | 10/23/2013 | 5975.46 | 33.88 |
| 39605 | 1/10/2013 | 5991.83 | 16.70 |
| | 4/8/2013 | 5991.22 | 17.31 |
| | 7/9/2013 | 5997.25 | 11.28 |
| | 10/8/2013 | 5999.38 | 9.15 |
| 40005 | 1/8/2013 | 6005.02 | 33.31 |
| | 4/8/2013 | 6005.64 | 32.69 |
| | 7/9/2013 | 6009.03 | 29.30 |
| | 10/8/2013 | 6012.48 | 25.85 |
| | 10/24/2013 | 6011.73 | 26.60 |

*Table A−28 (continued). Groundwater Elevation Data: CY 2013*

| Location Code | Collection Date | Water Level Elevation (ft) | Depth from TOC |
|---|---|---|---|
| 40205 | 1/8/2013 | 6003.22 | 32.54 |
| | 4/8/2013 | 6004.17 | 31.59 |
| | 7/9/2013 | 6004.89 | 30.87 |
| | 10/8/2013 | 6008.35 | 27.41 |
| 40305 | 1/8/2013 | 6002.54 | 22.01 |
| | 4/8/2013 | 6006.19 | 18.36 |
| | 5/22/2013 | 6010.13 | 14.42 |
| | 7/9/2013 | 6006.74 | 17.81 |
| | 10/8/2013 | 6011.96 | 12.59 |
| | 10/24/2013 | 6010.18 | 14.37 |
| 42505 | 1/9/2013 | 5928.68 | 11.21 |
| | 1/9/2013 | 5928.68 | 11.21 |
| | 4/11/2013 | 5929.64 | 10.25 |
| | 5/16/2013 | 5930.32 | 9.57 |
| | 7/11/2013 | 5930.21 | 9.68 |
| | 7/11/2013 | 5930.21 | 9.68 |
| | 10/8/2013 | 5933.77 | 6.12 |
| | 11/4/2013 | 5933.44 | 6.45 |
| 45608 | 1/10/2013 | 5953.068 | 0.45 |
| | 4/11/2013 | 5952.308 | 1.21 |
| | 5/7/2013 | 5952.168 | 1.35 |
| | 7/10/2013 | 5952.768 | 0.75 |
| | 10/1/2013 | 5951.648 | 1.87 |
| | 10/15/2013 | 5952.018 | 1.50 |
| 50299 | 1/10/2013 | 5916.01 | 10.07 |
| | 4/8/2013 | 5915.29 | 10.79 |
| | 7/9/2013 | 5917.41 | 8.67 |
| | 10/8/2013 | 5922.91 | 3.17 |
| 51605 | 1/10/2013 | 5832.95 | 9.16 |
| | 4/11/2013 | 5835.33 | 6.78 |
| | 6/4/2013 | 5836.35 | 5.76 |
| | 7/10/2013 | 5834.45 | 7.66 |
| | 10/3/2013 | 5836.25 | 5.86 |
| 52505 | 1/9/2013 | 5941.28 | 4.51 |
| | 4/11/2013 | 5941.49 | 4.30 |
| | 5/16/2013 | 5942.21 | 3.58 |
| | 7/11/2013 | 5939.96 | 5.83 |
| | 10/8/2013 | 5942.25 | 3.54 |
| | 11/4/2013 | 5942 | 3.79 |

*Table A−28 (continued). Groundwater Elevation Data: CY 2013*

| Location Code | Collection Date | Water Level Elevation (ft) | Depth from TOC |
|---|---|---|---|
| 55905 | 1/9/2013 | 5980.64 | 16.81 |
| | 4/11/2013 | 5982.77 | 14.68 |
| | 7/11/2013 | 5983.05 | 14.40 |
| | 10/8/2013 | 5986.04 | 11.41 |
| 56305 | 1/9/2013 | 5985.06 | 15.13 |
| | 4/11/2013 | 5988.64 | 11.55 |
| | 7/11/2013 | 5989.71 | 10.48 |
| | 10/8/2013 | 5993.42 | 6.77 |
| 70099 | 1/10/2013 | 5879.76 | 17.39 |
| | 4/11/2013 | 5879.33 | 17.82 |
| | 6/5/2013 | 5884.67 | 12.48 |
| | 7/10/2013 | 5880.99 | 16.16 |
| | 10/3/2013 | 5880.84 | 16.31 |
| | 10/30/2013 | 5880.9 | 16.25 |
| 70193 | 1/8/2013 | 5976.04 | 15.96 |
| | 2/20/2013 | 5971.63 | 20.37 |
| | 4/11/2013 | 5977.1 | 14.90 |
| | 5/20/2013 | 5983.29 | 8.71 |
| | 7/11/2013 | 5979.51 | 12.49 |
| | 9/4/2013 | 5978.28 | 13.72 |
| | 10/7/2013 | 5984.11 | 7.89 |
| | 11/13/2013 | 5980.81 | 11.19 |
| 70393 | 1/8/2013 | 5984.91 | 15.18 |
| | 2/19/2013 | 5984.02 | 16.07 |
| | 4/11/2013 | 5987.17 | 12.92 |
| | 5/21/2013 | 5996.38 | 3.71 |
| | 7/11/2013 | 5991.52 | 8.57 |
| | 9/4/2013 | 5989.27 | 10.82 |
| | 10/7/2013 | 5997.18 | 2.91 |
| | 11/13/2013 | 5994 | 6.09 |
| 70693 | 1/8/2013 | 5970.7 | 22.00 |
| | 2/19/2013 | 5970.22 | 22.48 |
| | 4/11/2013 | 5974.22 | 18.48 |
| | 5/21/2013 | 5986.49 | 6.21 |
| | 7/11/2013 | 5976.64 | 16.06 |
| | 9/4/2013 | 5975.4 | 17.30 |
| | 10/7/2013 | 5988.29 | 4.41 |
| | 11/13/2013 | 5979.36 | 13.34 |

*Table A−28 (continued). Groundwater Elevation Data: CY 2013*

| Location Code | Collection Date | Water Level Elevation (ft) | Depth from TOC |
|---|---|---|---|
| 70705 | 1/9/2013 | 5980.63 | 12.91 |
| | 4/11/2013 | 5982.05 | 11.49 |
| | 7/11/2013 | 5983.67 | 9.87 |
| | 10/8/2013 | 5985.53 | 8.01 |
| 73005 | 1/8/2013 | 5917.97 | 22.14 |
| | 2/20/2013 | 5917.66 | 22.45 |
| | 4/11/2013 | 5917.95 | 22.16 |
| | 5/22/2013 | 5918.9 | 21.21 |
| | 7/11/2013 | 5918.1 | 22.01 |
| | 9/5/2013 | 5918.59 | 21.52 |
| | 10/7/2013 | 5918.29 | 21.82 |
| | 11/12/2013 | 5918.98 | 21.13 |
| 73105 | 1/8/2013 | 5917.7 | 10.85 |
| | 2/20/2013 | 5916.96 | 11.59 |
| | 4/11/2013 | 5918.91 | 9.64 |
| | 5/22/2013 | 5919.32 | 9.23 |
| | 7/11/2013 | 5917.94 | 10.61 |
| | 9/4/2013 | 5917.85 | 10.70 |
| | 10/7/2013 | 5919.72 | 8.83 |
| | 11/12/2013 | 5919.68 | 8.87 |
| 73205 | 1/8/2013 | 5922.96 | 16.95 |
| | 2/20/2013 | 5922.06 | 17.85 |
| | 4/11/2013 | 5922.16 | 17.75 |
| | 5/22/2013 | 5923.91 | 16.00 |
| | 7/11/2013 | 5923.64 | 16.27 |
| | 9/4/2013 | 5923.88 | 16.03 |
| | 10/7/2013 | 5925.56 | 14.35 |
| | 11/12/2013 | 5925.21 | 14.70 |
| 79102 | 1/9/2013 | 5947.91 | 21.10 |
| | 4/11/2013 | 5947.9 | 21.11 |
| | 7/11/2013 | 5949.32 | 19.69 |
| | 10/8/2013 | 5952.42 | 16.59 |
| | 10/29/2013 | 5950.94 | 18.07 |
| 79202 | 1/9/2013 | 5942.954 | 28.31 |
| | 4/11/2013 | 5942.654 | 28.61 |
| | 7/11/2013 | 5945.524 | 25.74 |
| | 10/8/2013 | 5949.884 | 21.38 |

*Table A−28 (continued). Groundwater Elevation Data: CY 2013*

| Location Code | Collection Date | Water Level Elevation (ft) | Depth from TOC |
|---|---|---|---|
| 79302 | 1/9/2013 | 5941.62 | 18.95 |
| | 4/11/2013 | 5940.76 | 19.81 |
| | 7/11/2013 | 5944.16 | 16.41 |
| | 10/8/2013 | 5950 | 10.57 |
| | 10/29/2013 | 5948.61 | 11.96 |
| 79402 | 1/9/2013 | 5952.88 | 8.73 |
| | 4/11/2013 | 5954.97 | 6.64 |
| | 7/11/2013 | 5954.95 | 6.66 |
| | 10/8/2013 | 5958.44 | 3.17 |
| 79502 | 1/9/2013 | 5961.13 | 9.81 |
| | 4/11/2013 | 5962.11 | 8.83 |
| | 7/11/2013 | 5961.78 | 9.16 |
| | 10/8/2013 | 5964.02 | 6.92 |
| | 10/29/2013 | 5963.11 | 7.83 |
| 79605 | 1/9/2013 | 5953.36 | 11.31 |
| | 4/11/2013 | 5952.92 | 11.75 |
| | 7/11/2013 | 5957.09 | 7.58 |
| | 10/8/2013 | 5960.82 | 3.85 |
| 80005 | 1/10/2013 | 5950.76 | 9.43 |
| | 3/7/2013 | 5951.52 | 8.67 |
| | 4/8/2013 | 5952.32 | 7.87 |
| | 5/22/2013 | 5953.05 | 7.14 |
| | 7/9/2013 | 5951.71 | 8.48 |
| | 7/9/2013 | 5951.71 | 8.48 |
| | 9/5/2013 | 5951.36 | 8.83 |
| | 10/8/2013 | 5953.24 | 6.95 |
| | 11/6/2013 | 5952.94 | 7.25 |
| 80105 | 1/10/2013 | 5939.1 | 2.87 |
| | 3/7/2013 | 5936.9 | 5.07 |
| | 4/8/2013 | 5936.3 | 5.67 |
| | 5/22/2013 | 5936.35 | 5.62 |
| | 7/9/2013 | 5937.22 | 4.75 |
| | 7/9/2013 | 5937.22 | 4.75 |
| | 9/5/2013 | 5939.35 | 2.62 |
| | 10/8/2013 | 5940.84 | 1.13 |
| | 11/6/2013 | 5940.77 | 1.20 |

*Table A−28 (continued). Groundwater Elevation Data: CY 2013*

| Location Code | Collection Date | Water Level Elevation (ft) | Depth from TOC |
|---|---|---|---|
| 80205 | 1/10/2013 | 5931.81 | 9.86 |
| | 3/7/2013 | 5932.02 | 9.65 |
| | 4/8/2013 | 5932.49 | 9.18 |
| | 5/22/2013 | 5933.05 | 8.62 |
| | 7/9/2013 | 5932.51 | 9.16 |
| | 7/9/2013 | 5932.51 | 9.16 |
| | 9/5/2013 | 5932.18 | 9.49 |
| | 10/8/2013 | 5932.44 | 9.23 |
| | 11/6/2013 | 5932.52 | 9.15 |
| 88104 | 1/10/2013 | 5948.3 | 13.79 |
| | 4/8/2013 | 5948.91 | 13.18 |
| | 5/2/2013 | 5948.46 | 13.63 |
| | 7/9/2013 | 5948.9 | 13.19 |
| | 10/8/2013 | 5949.07 | 13.02 |
| | 10/24/2013 | 5950.15 | 11.94 |
| 88205 | 1/10/2013 | 5966.9 | 8.95 |
| | 4/8/2013 | 5966.4 | 9.45 |
| | 7/9/2013 | 5968.47 | 7.38 |
| | 10/8/2013 | 5970.81 | 5.04 |
| 89104 | 1/10/2013 | 5848.86 | 9.35 |
| | 4/8/2013 | 5852.29 | 5.92 |
| | 5/3/2013 | 5850.85 | 7.36 |
| | 7/9/2013 | 5851.71 | 6.50 |
| | 10/8/2013 | 5852.93 | 5.28 |
| | 10/25/2013 | 5853.53 | 4.68 |
| 90299 | 1/10/2013 | 5802.63 | |
| | 4/8/2013 | 5803.69 | 21.53 |
| | 5/2/2013 | 5802.63 | |
| | 7/9/2013 | 5803.67 | 21.55 |
| | 10/8/2013 | 5802.63 | |
| 90399 | 1/10/2013 | 5822.08 | 18.55 |
| | 4/8/2013 | 5821.71 | 18.92 |
| | 5/2/2013 | 5822.53 | 18.10 |
| | 7/9/2013 | 5821.2 | 19.43 |
| | 10/8/2013 | 5826.14 | 14.49 |
| | 10/23/2013 | 5824.68 | 15.95 |
| 90402 | 1/10/2013 | 5937.54 | 16.06 |
| | 4/8/2013 | 5938.05 | 15.55 |
| | 7/9/2013 | 5945.18 | 8.42 |
| | 10/8/2013 | 5948.48 | 5.12 |

*Table A−28 (continued). Groundwater Elevation Data: CY 2013*

| Location Code | Collection Date | Water Level Elevation (ft) | Depth from TOC |
|---|---|---|---|
| 90804 | 1/10/2013 | 5851.4 | 43.69 |
| | 4/8/2013 | 5851 | 44.09 |
| | 7/9/2013 | 5850.65 | 44.44 |
| | 10/8/2013 | 5851.4 | 43.69 |
| 91105 | 1/10/2013 | 5945.03 | 10.10 |
| | 4/11/2013 | 5945.02 | 10.11 |
| | 5/7/2013 | 5947.33 | 7.80 |
| | 7/10/2013 | 5947.19 | 7.94 |
| | 10/1/2013 | 5948.67 | 6.46 |
| | 10/15/2013 | 5949.2 | 5.93 |
| 91203 | 1/10/2013 | 5931.25 | 8.51 |
| | 4/11/2013 | 5931.89 | 7.87 |
| | 5/14/2013 | 5935.41 | 4.35 |
| | 7/10/2013 | 5934.11 | 5.65 |
| | 10/1/2013 | 5936.73 | 3.03 |
| | 10/15/2013 | 5936.43 | 3.33 |
| 91305 | 1/10/2013 | 5925.17 | 6.35 |
| | 4/11/2013 | 5926.49 | 5.03 |
| | 5/14/2013 | 5927.54 | 3.98 |
| | 7/10/2013 | 5926.59 | 4.93 |
| | 10/1/2013 | 5927.81 | 3.71 |
| | 10/16/2013 | 5927.74 | 3.78 |
| 95099 | 1/10/2013 | 5849.32 | 14.00 |
| | 4/11/2013 | 5849.04 | 14.28 |
| | 5/7/2013 | 5847.01 | 16.31 |
| | 7/10/2013 | 5848.95 | 14.37 |
| | 10/1/2013 | 5849.72 | 13.60 |
| | 11/26/2013 | 5849.73 | 13.59 |
| 95199 | 1/10/2013 | 5869.99 | 11.91 |
| | 4/11/2013 | 5869.72 | 12.18 |
| | 5/7/2013 | 5870.09 | 11.81 |
| | 7/10/2013 | 5869.1 | 12.80 |
| | 10/1/2013 | 5871.23 | 10.67 |
| | 11/26/2013 | 5872.31 | 9.59 |
| 95299 | 1/10/2013 | 5886.8 | |
| | 4/11/2013 | 5886.8 | |
| | 7/10/2013 | 5886.8 | |
| | 10/1/2013 | 5886.8 | |
| | 11/26/2013 | 5886.8 | |

*Table A−28 (continued). Groundwater Elevation Data: CY 2013*

| Location Code | Collection Date | Water Level Elevation (ft) | Depth from TOC |
|---|---|---|---|
| 99305 | 1/9/2013 | 5927.54 | 12.00 |
| | 4/11/2013 | 5926.34 | 13.20 |
| | 5/7/2013 | 5925.26 | 14.28 |
| | 7/11/2013 | 5928.04 | 11.50 |
| | 10/8/2013 | 5929.78 | 9.76 |
| | 10/16/2013 | 5929.64 | 9.90 |
| 99405 | 1/9/2013 | 5928.25 | 6.91 |
| | 4/11/2013 | 5928.13 | 7.03 |
| | 5/7/2013 | 5926.35 | 8.81 |
| | 7/11/2013 | 5929.12 | 6.04 |
| | 10/8/2013 | 5929.87 | 5.29 |
| | 10/16/2013 | 5929.76 | 5.40 |
| 891WEL | 1/10/2013 | 5915.19 | 11.61 |
| | 4/8/2013 | 5915.43 | 11.37 |
| | 7/9/2013 | 5915.99 | 10.81 |
| | 10/8/2013 | 5916.39 | 10.41 |
| B206989 | 1/8/2013 | 5875.61 | 8.71 |
| | 4/11/2013 | 5876.7 | 7.62 |
| | 5/22/2013 | 5876.47 | 7.85 |
| | 7/11/2013 | 5875.54 | 8.78 |
| | 10/7/2013 | 5876.22 | 8.10 |
| | 11/12/2013 | 5876.53 | 7.79 |
| B210489 | 1/10/2013 | 5854.61 | 4.10 |
| | 4/11/2013 | 5854.88 | 3.83 |
| | 6/4/2013 | 5854.35 | 4.36 |
| | 7/10/2013 | 5852.66 | 6.05 |
| | 10/3/2013 | 5856 | 2.71 |
| P114389 | 1/8/2013 | 5984.5 | 8.67 |
| | 4/11/2013 | 5985.18 | 7.99 |
| | 7/11/2013 | 5984.24 | 8.93 |
| | 10/3/2013 | 5985.66 | 7.51 |
| P114689 | 1/9/2013 | 5991.54 | 14.22 |
| | 4/11/2013 | 5997.18 | 8.58 |
| | 7/11/2013 | 5997.61 | 8.15 |
| | 10/8/2013 | 6001.08 | 4.68 |
| P115589 | 1/9/2013 | 6003.62 | 12.15 |
| | 4/11/2013 | 6008.91 | 6.86 |
| | 7/11/2013 | 6009.2 | 6.57 |
| | 10/8/2013 | 6013.87 | 1.90 |

*Table A−28 (continued). Groundwater Elevation Data: CY 2013*

| Location Code | Collection Date | Water Level Elevation (ft) | Depth from TOC |
|---|---|---|---|
| P208989 | 1/9/2013 | 5947.61 | 16.95 |
| | 4/11/2013 | 5948.58 | 15.98 |
| | 7/11/2013 | 5950.61 | 13.95 |
| | 10/8/2013 | 5953.09 | 11.47 |
| P210089 | 1/10/2013 | 5885.91 | 14.49 |
| | 4/11/2013 | 5886.19 | 14.21 |
| | 6/5/2013 | 5895.09 | 5.31 |
| | 7/10/2013 | 5891.13 | 9.27 |
| | 10/3/2013 | 5893.74 | 6.66 |
| | 10/30/2013 | 5893.2 | 7.20 |
| P210189 | 1/9/2013 | 5965.36 | 17.12 |
| | 4/11/2013 | 5965.6 | 16.88 |
| | 6/6/2013 | 5971.57 | 10.91 |
| | 7/11/2013 | 5970.55 | 11.93 |
| | 10/8/2013 | 5972.5 | 9.98 |
| P416589 | 1/10/2013 | 6009.1 | |
| | 3/7/2013 | 6009.1 | |
| | 4/8/2013 | 6009.76 | 33.05 |
| | 5/22/2013 | 6017.1 | 25.71 |
| | 7/9/2013 | 6015.14 | 27.67 |
| | 7/9/2013 | 6015.14 | 27.67 |
| | 9/4/2013 | 6013.87 | 28.94 |
| | 10/8/2013 | 6021.41 | 21.40 |
| | 11/5/2013 | 6018.41 | 24.40 |
| P416889 | 1/8/2013 | 5998.19 | 20.60 |
| | 4/8/2013 | 5998.65 | 20.14 |
| | 7/9/2013 | 6001.9 | 16.89 |
| | 10/8/2013 | 6006.38 | 12.41 |
| P419689 | 1/8/2013 | 5999.8 | 23.62 |
| | 4/8/2013 | 6001.36 | 22.06 |
| | 7/9/2013 | 6003.28 | 20.14 |
| | 10/8/2013 | 6008.35 | 15.07 |

## A.4 Groundwater Hydrographs

Hydrographs were constructed by first assembling all 2013 water level data for the RFLMA wells and other groundwater locations existing through 2013. These data were then reviewed and prepared for display by merging them with water level data compiled for the *Annual Report of Site Surveillance and Maintenance Activities at the Rocky Flats, Colorado, Site Calendar Year 2012* (LMS/RFS/S09641). The resulting hydrographs show water levels for current wells together with historic water levels for their predecessors, as applicable.

Data were adjusted as described in Table A–29 below.

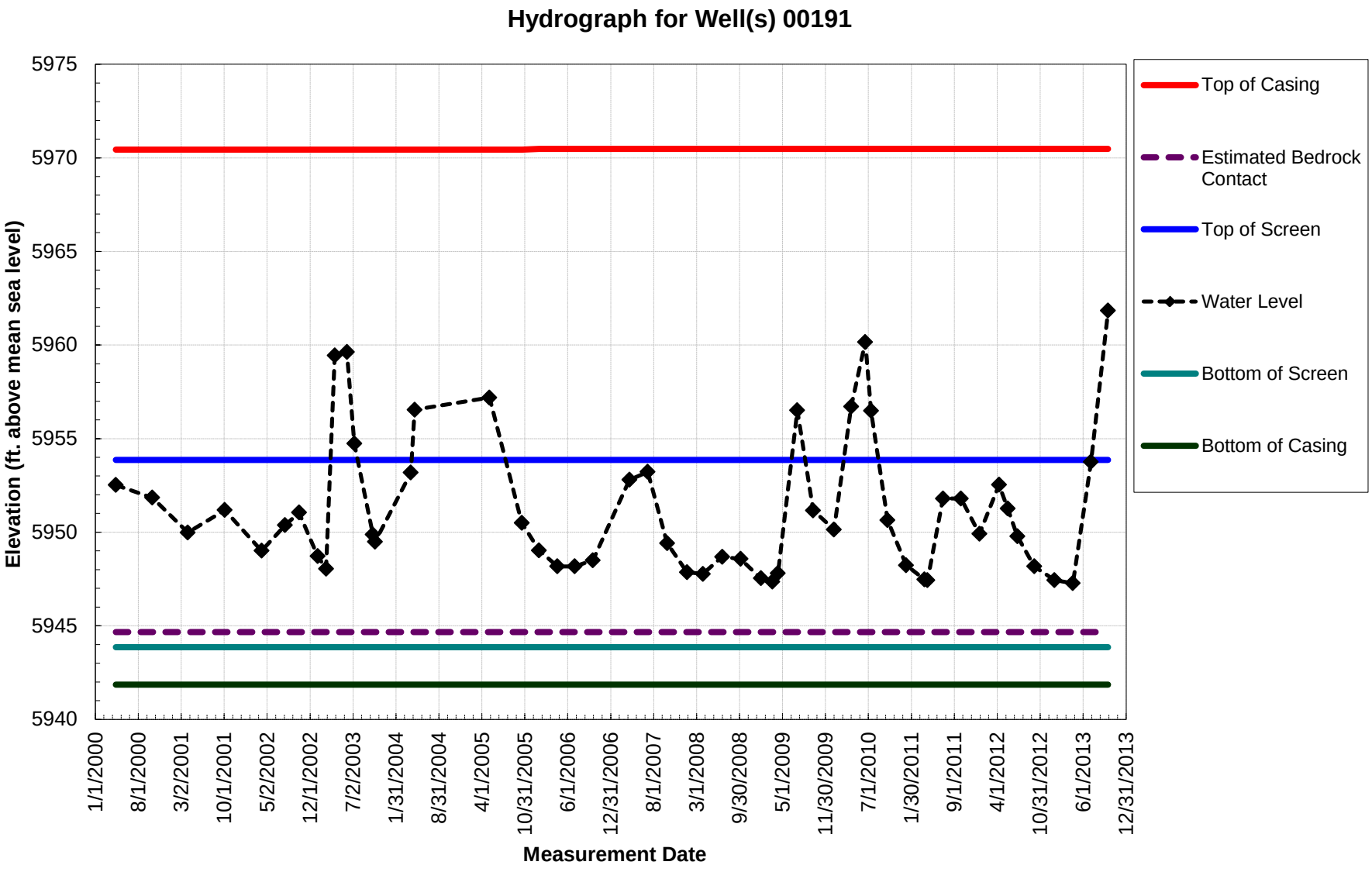
*Table A–29. Adjustments to Groundwater Level Data for Hydrograph Generation*

| Original Entry | Converted To | Rationale |
|---|---|---|
| Blank or N/A* | Calculated well TD | Water level is below the top of screen or pump and is therefore inaccessible for measurement. |
| Water level below calculated TD[a] | Record deleted | Calculated TDs are based on measurements made during well construction, which may not be as accurate as those made during water level measurement. However, the latter show variability from one measurement to another. Calculated TDs were therefore selected to represent the bottom of the well. Because some water level records indicated a water level significantly deeper than the calculated TD, all were considered spurious data and were removed from the dataset. |
| Data for wells that had already been replaced* | Record deleted | Several wells replacements were installed before the original wells were abandoned. As soon as the replacement was deemed appropriate for use, the original well was removed from the program. Any water level measurements collected from the original on or after that date were removed from the hydrograph dataset. |
| Multiple entries on same day* | Redundant records deleted | On occasion, the water level in a well was measured more than once in the same day. Although usually the water levels were identical or within a few hundredths of a foot, the later water level measurements were deleted to clean up the dataset and resulting hydrographs. |

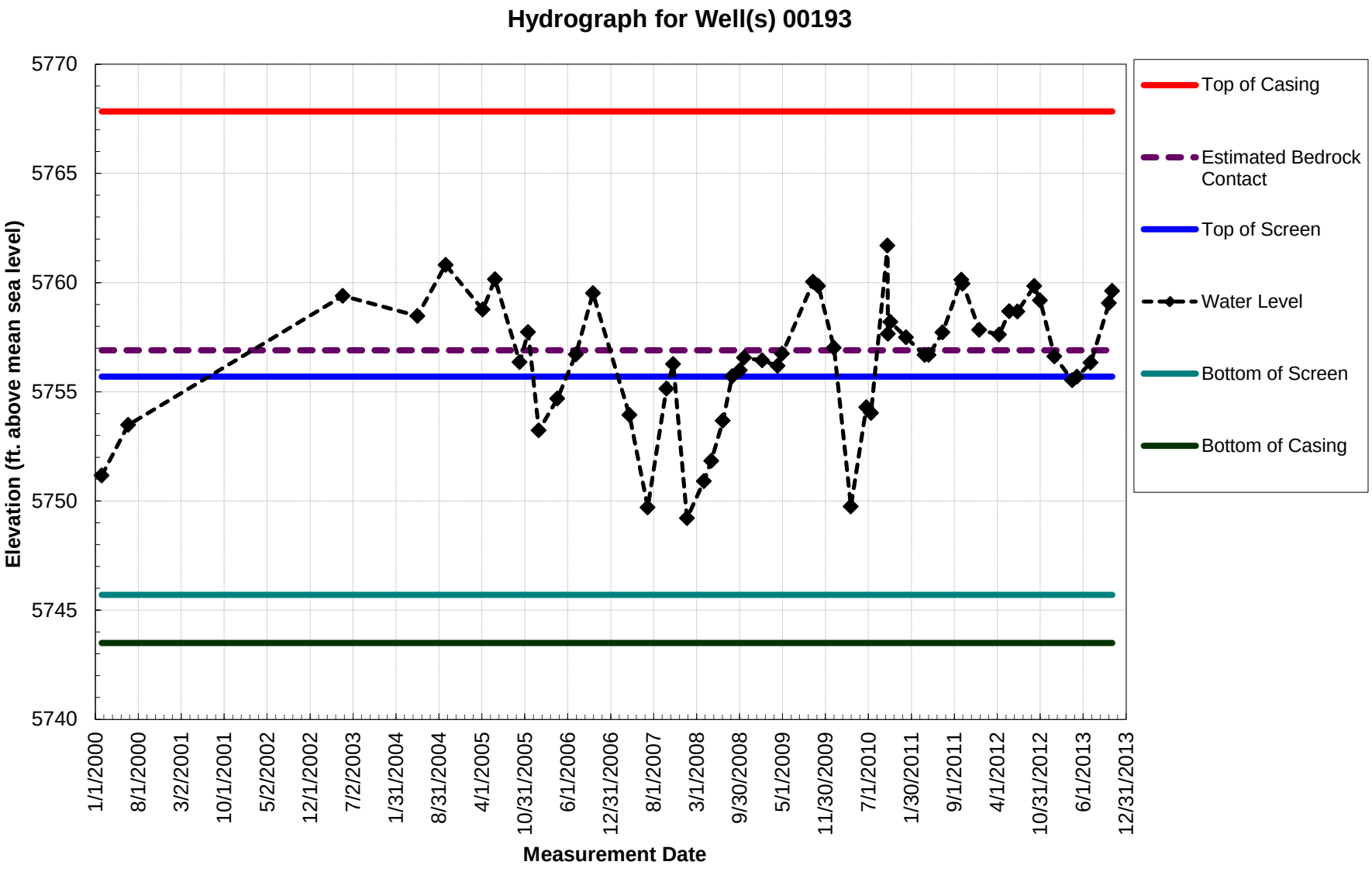
TD = total depth of well.
"Technically dry" is the condition in which all water within a well is within the (non-perforated) sump below the base of the screened interval, and therefore does not reflect and is isolated from the local groundwater.
[a] results were adjusted for the *Rocky Flats Site Annual Report of Site Surveillance and Maintenance Activities Calendar Year 2005* (DOE-LM/GJ1210-2006) and needed no additional adjustment for the current report. See the 2005 report for additional explanation.

### A.4.1 Hydrographs for Manually Collected Water Level Data

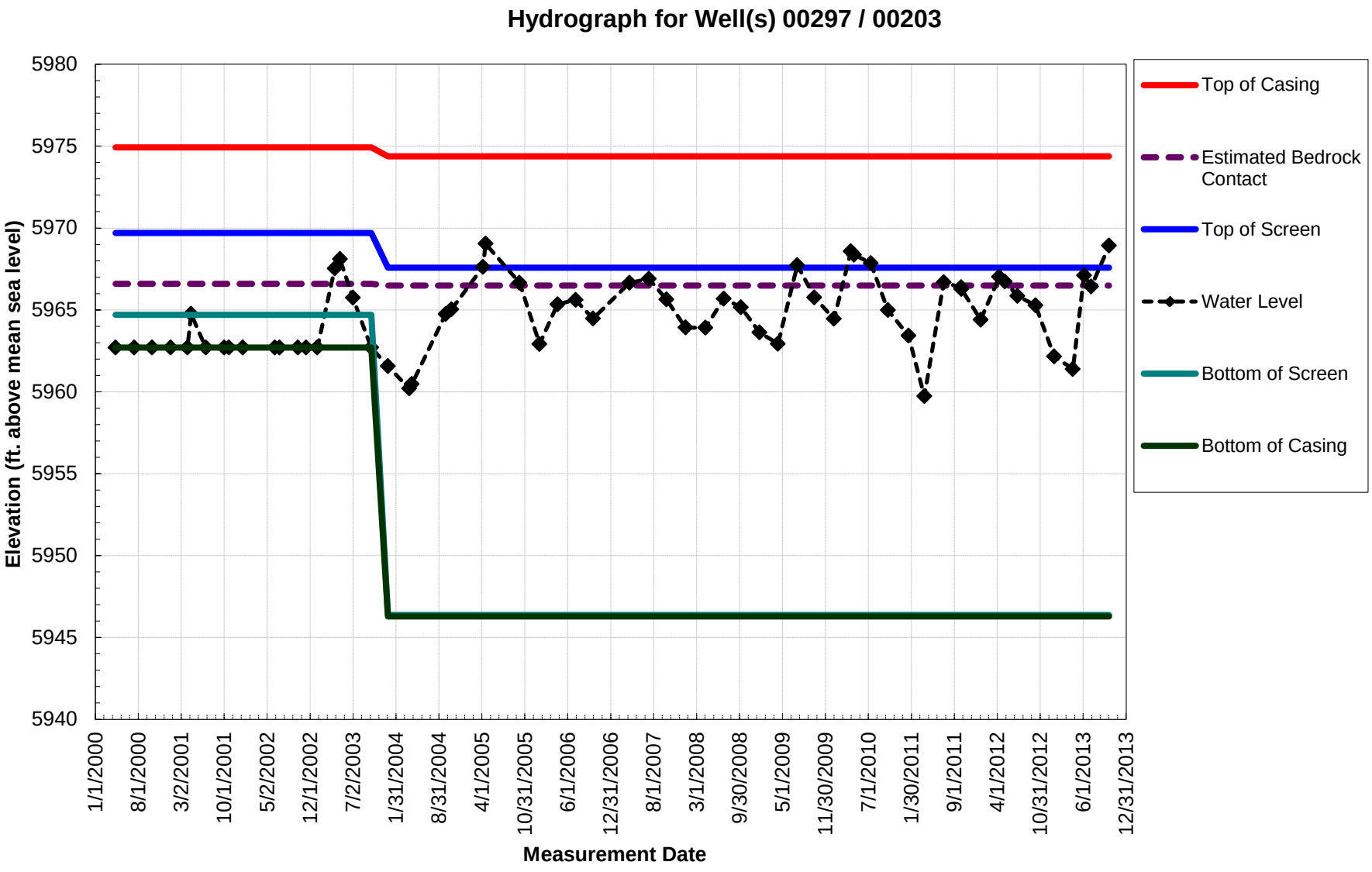
The following hydrographs were generated using 2013 water level data collected manually.



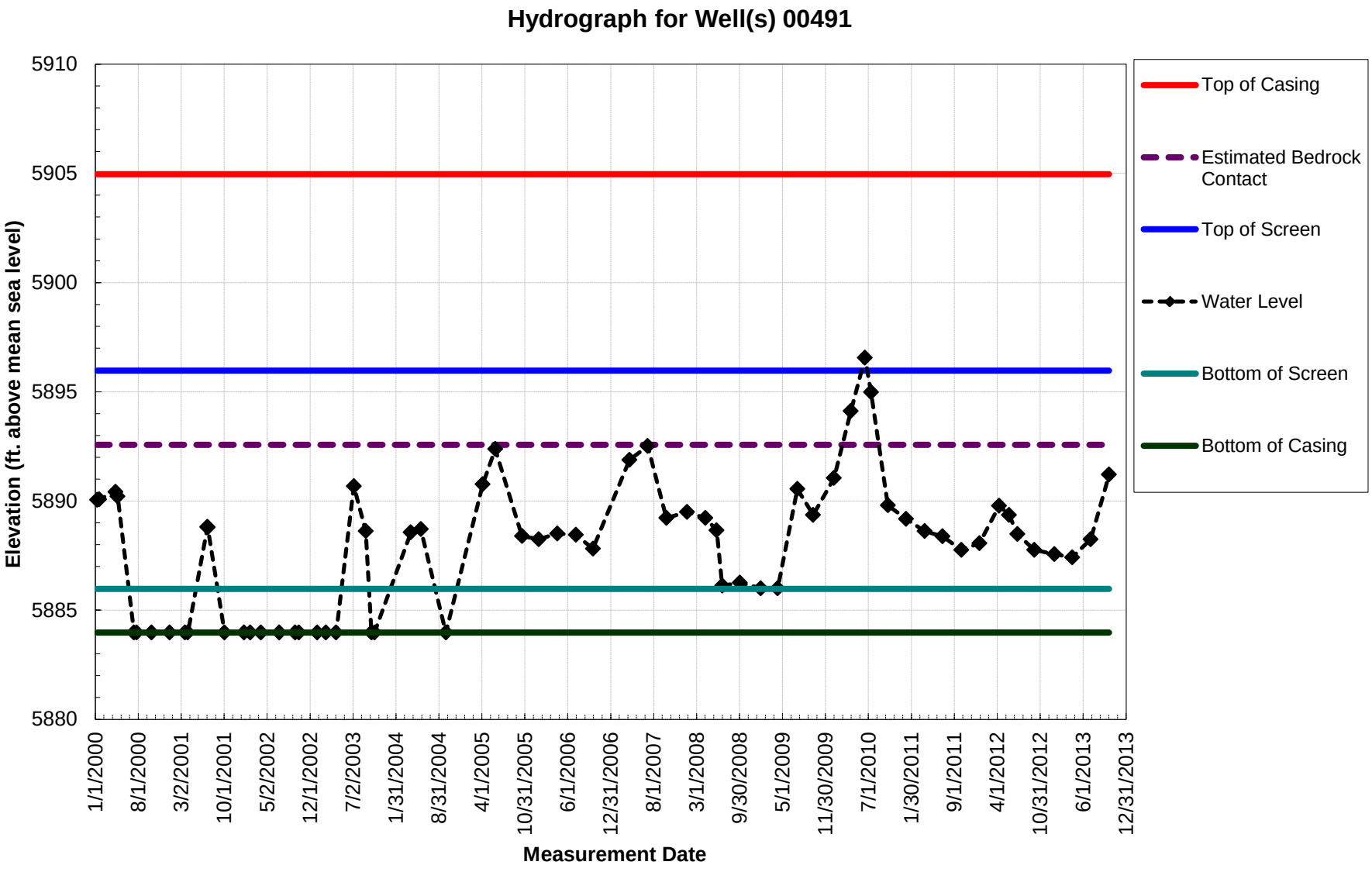

*From: Calendar Year 2013 Annual Report for the Rocky Flats Site, Appendices. (See report text for additional information.)*



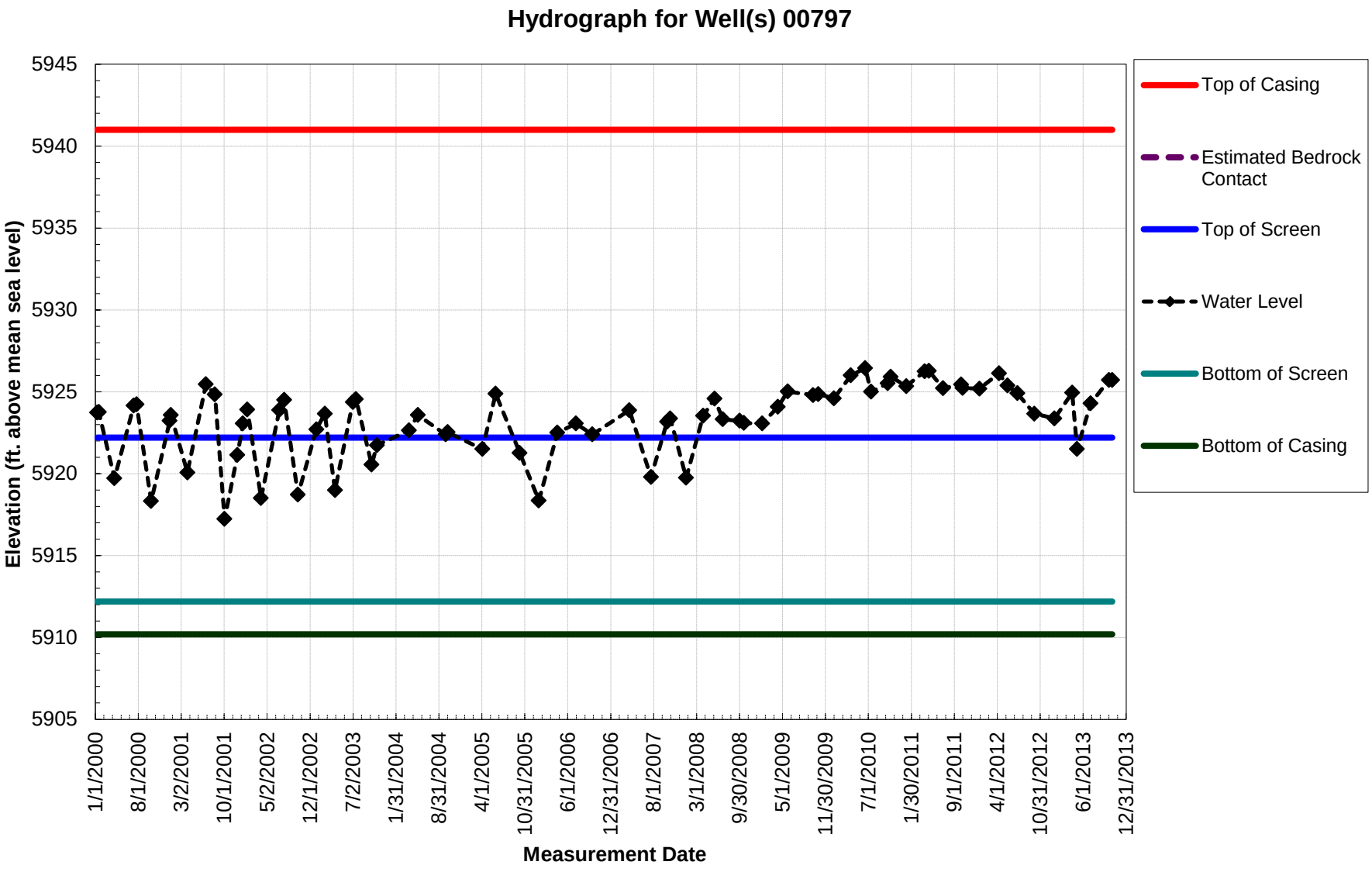

*From: Calendar Year 2013 Annual Report for the Rocky Flats Site, Appendices. (See report text for additional information.)*



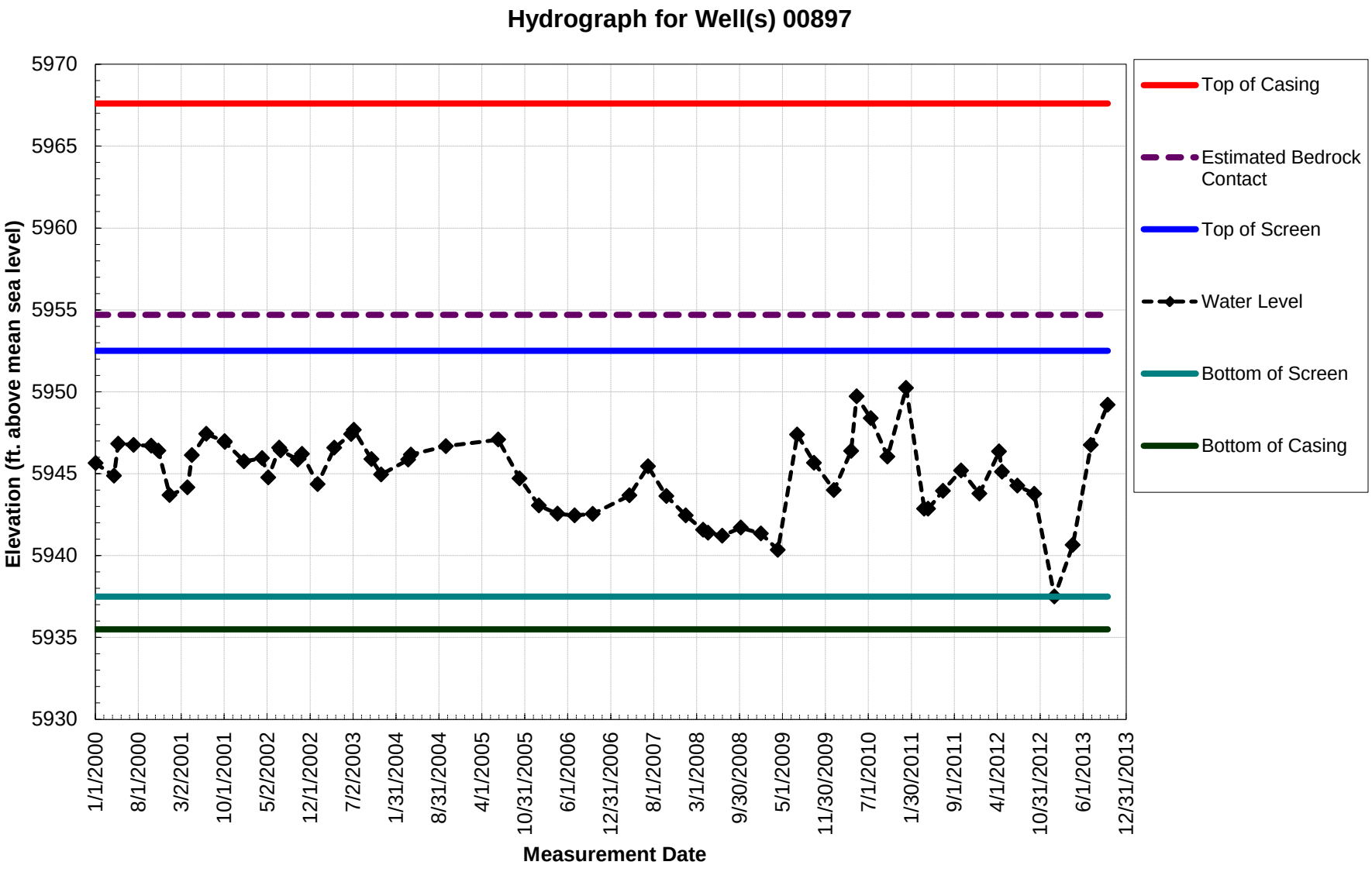

*From: Calendar Year 2013 Annual Report for the Rocky Flats Site, Appendices. (See report text for additional information.)*



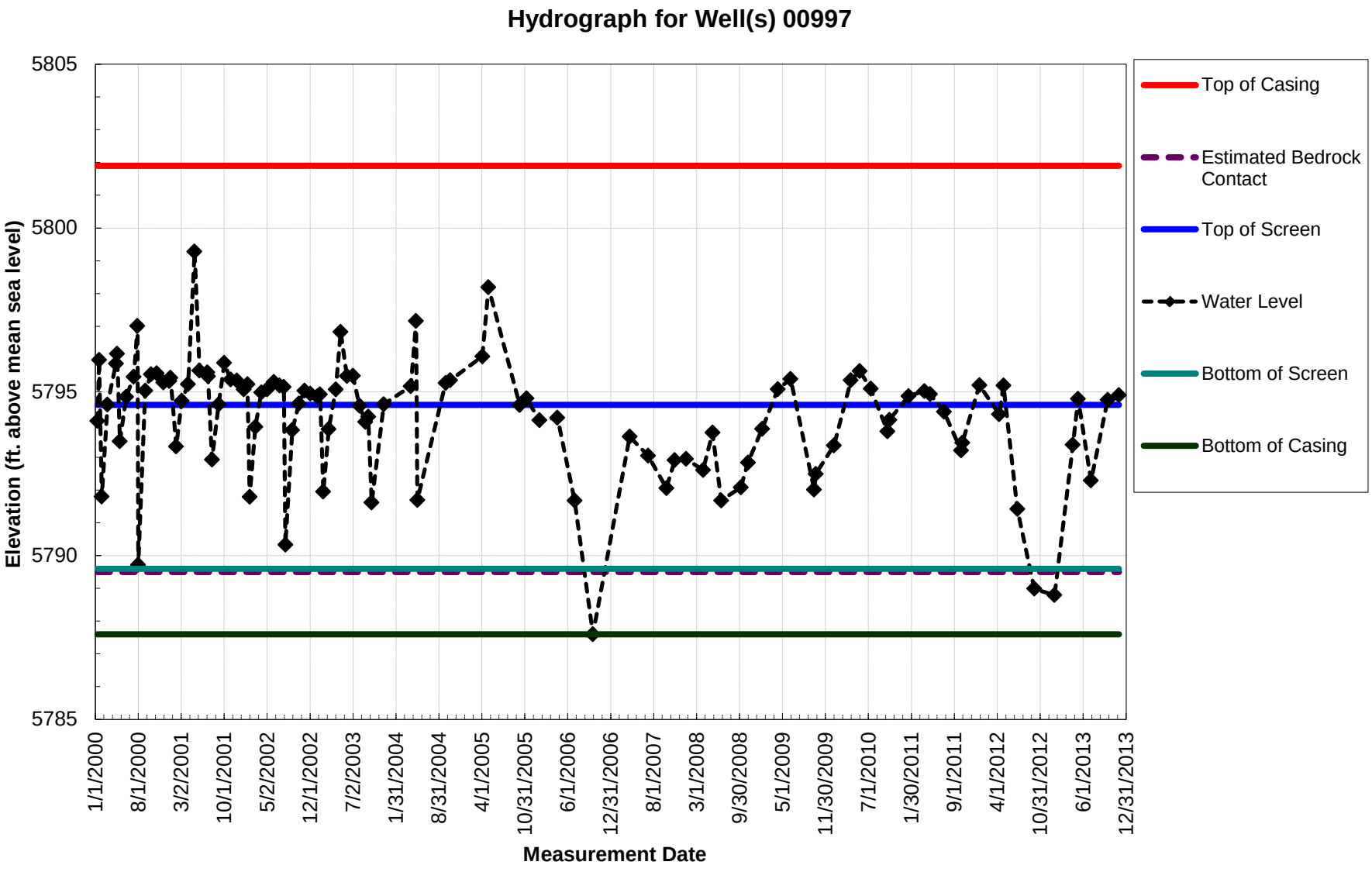

*From: Calendar Year 2013 Annual Report for the Rocky Flats Site, Appendices. (See report text for additional information.)*



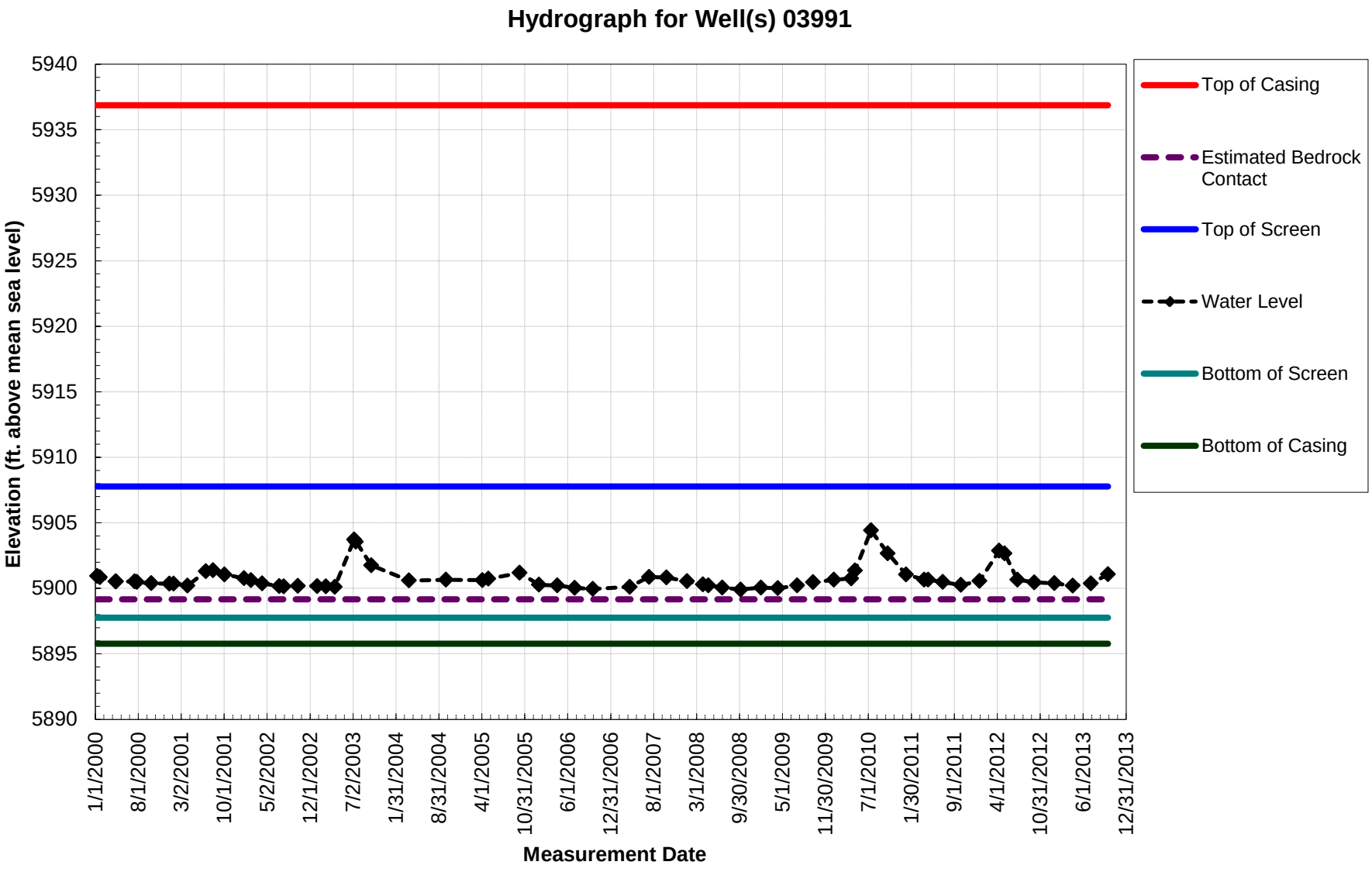

*From: Calendar Year 2013 Annual Report for the Rocky Flats Site, Appendices. (See report text for additional information.)*




*From: Calendar Year 2013 Annual Report for the Rocky Flats Site, Appendices. (See report text for additional information.)*




*From: Calendar Year 2013 Annual Report for the Rocky Flats Site, Appendices. (See report text for additional information.)*

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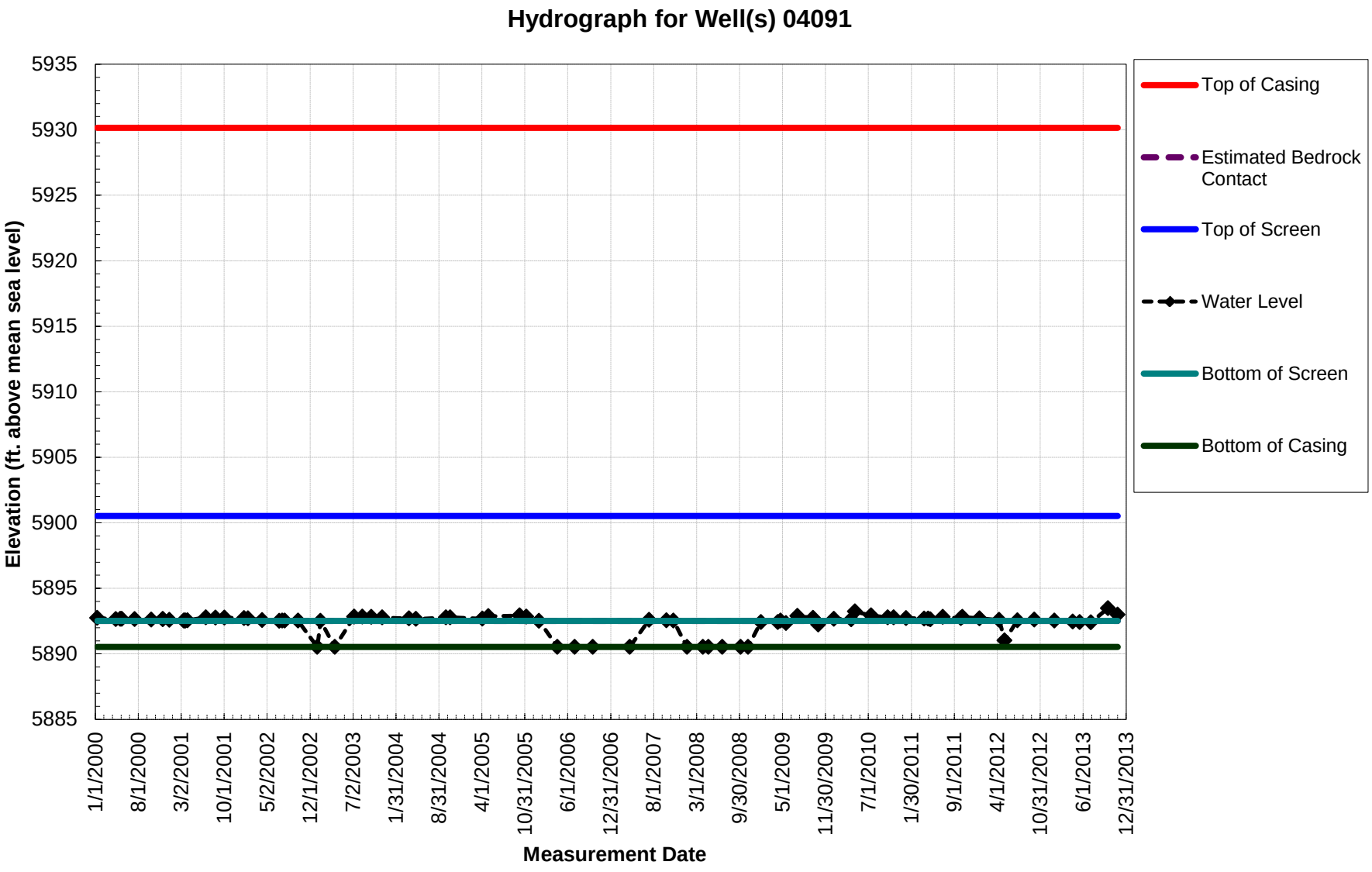


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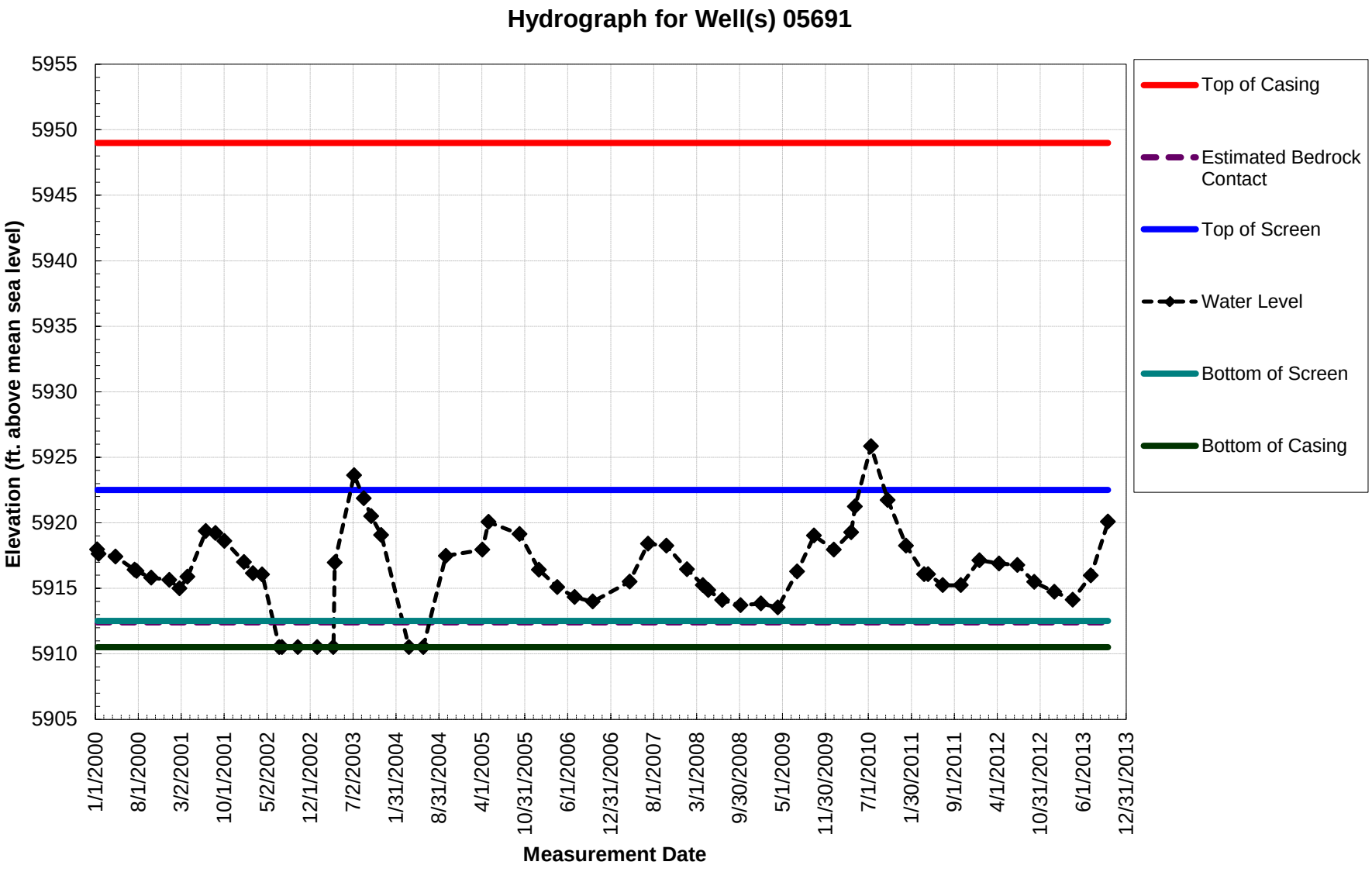


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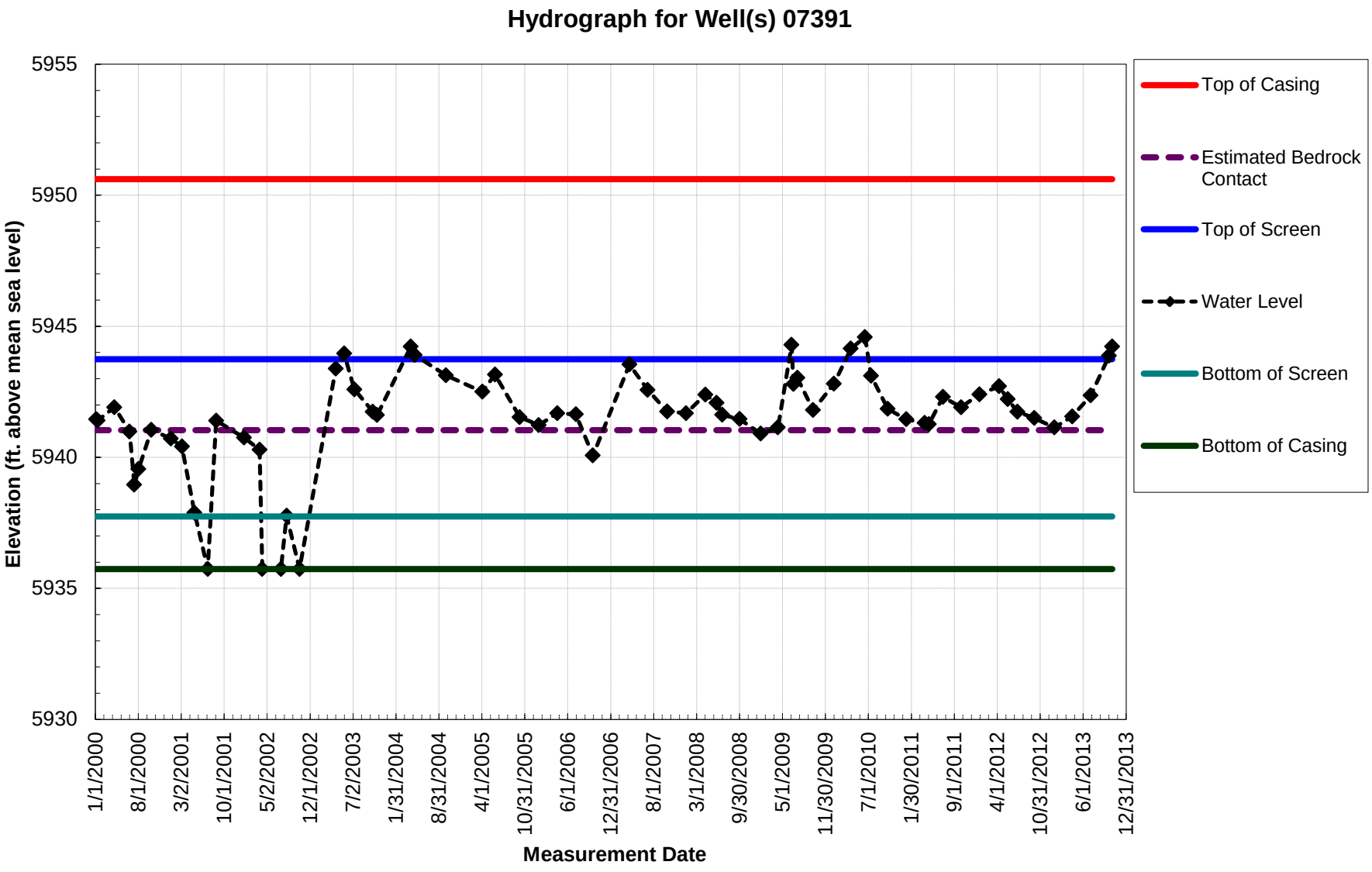


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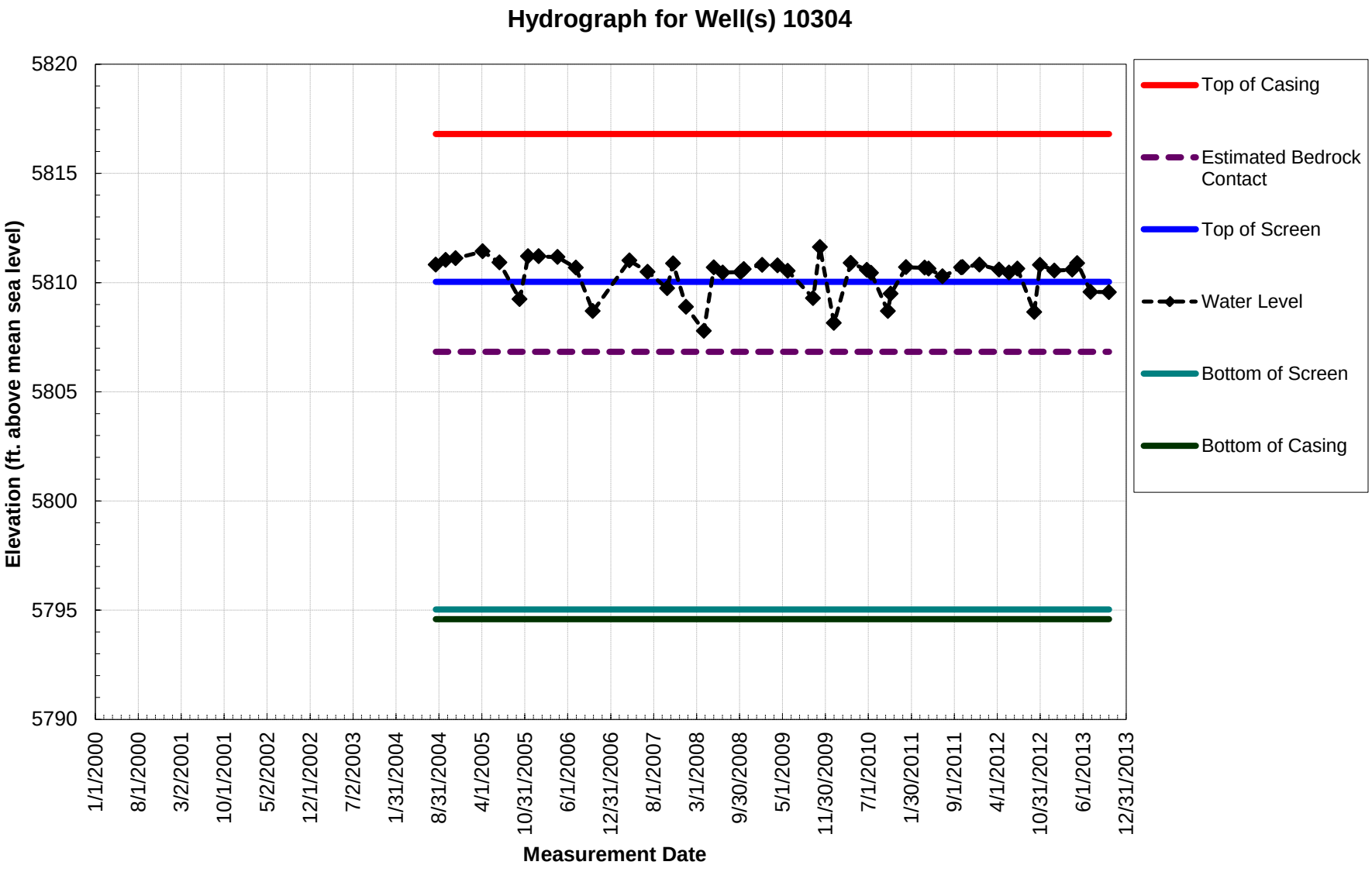
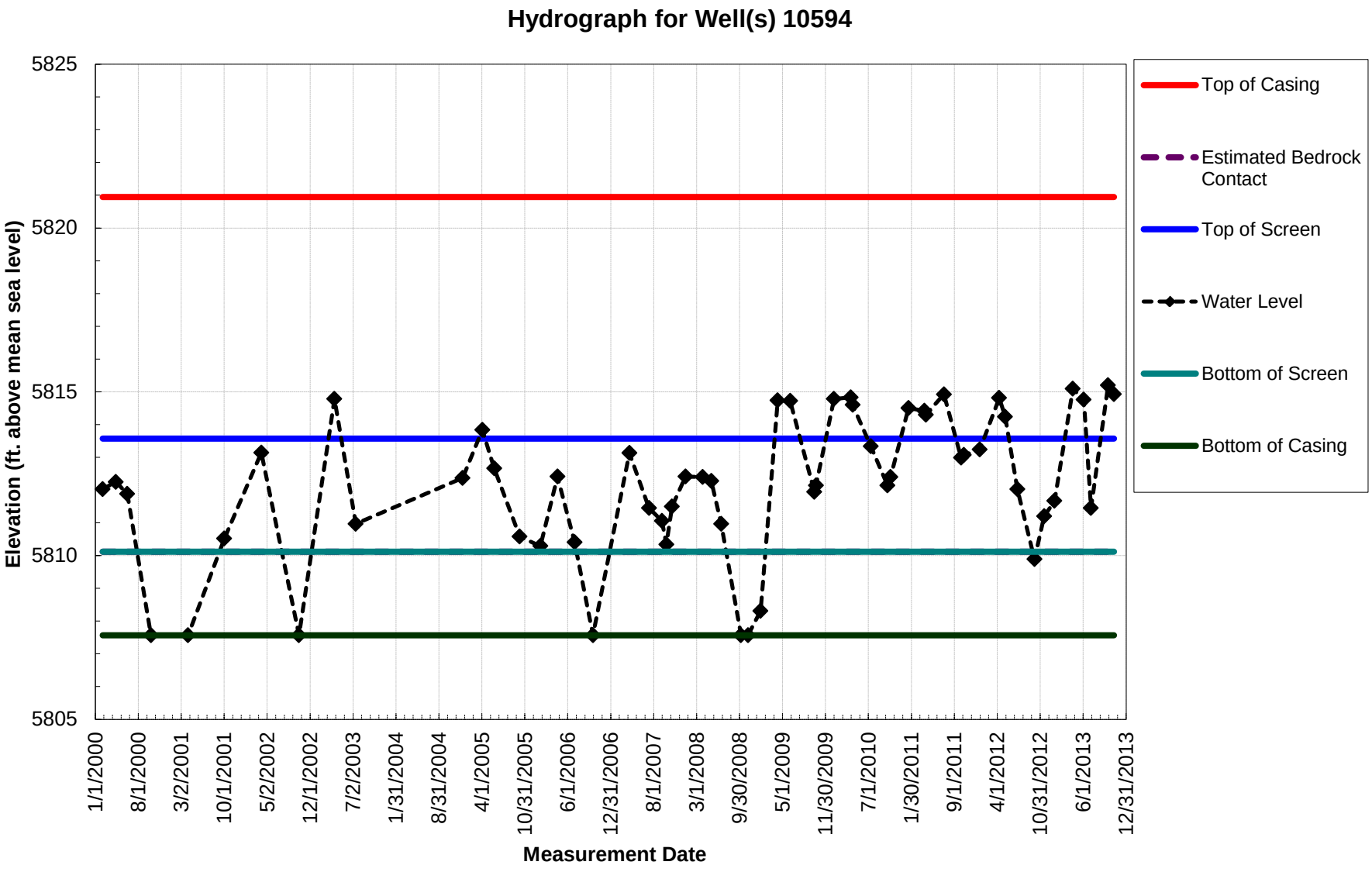



*From: Calendar Year 2013 Annual Report for the Rocky Flats Site, Appendices. (See report text for additional information.)*

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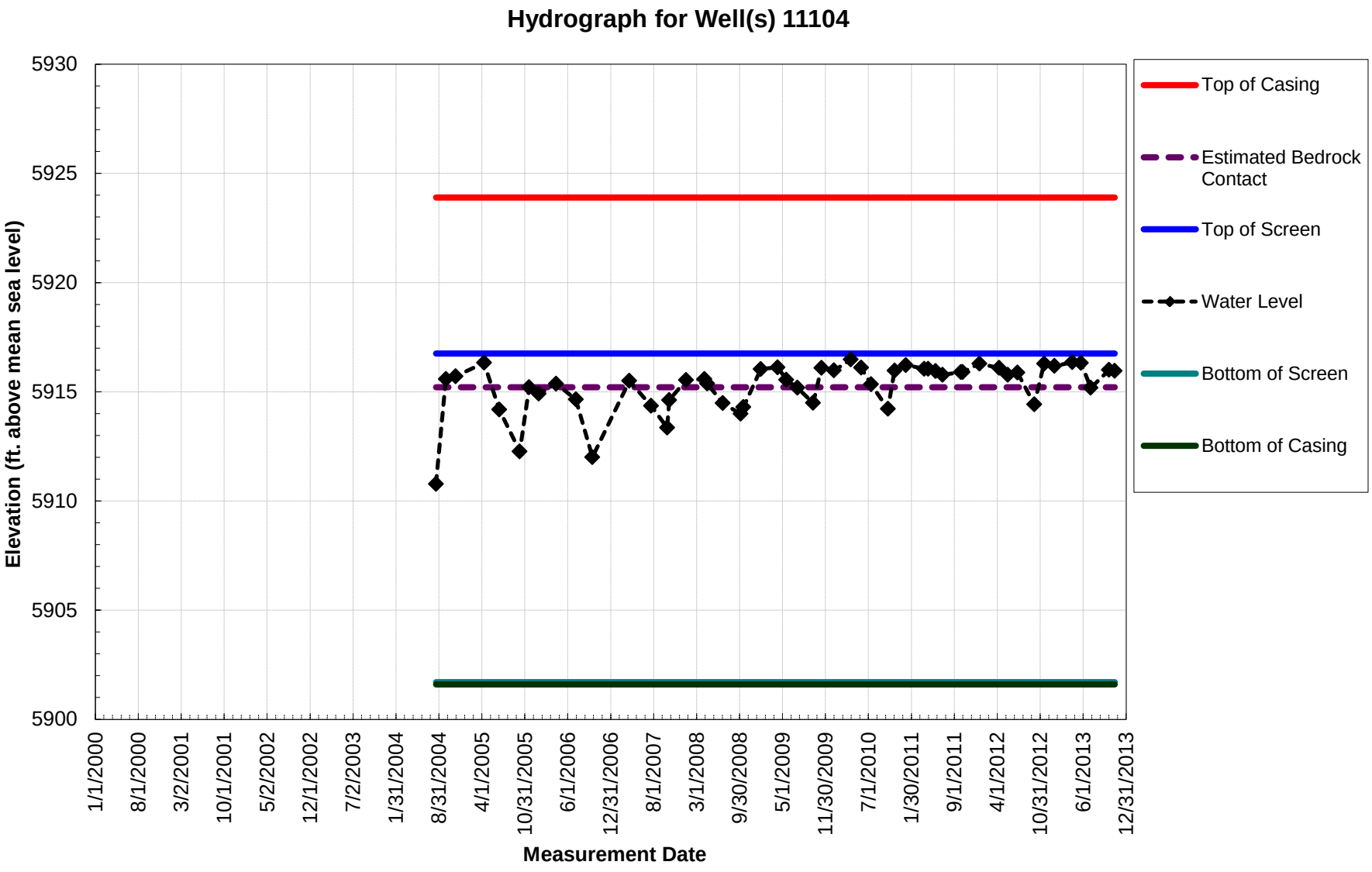


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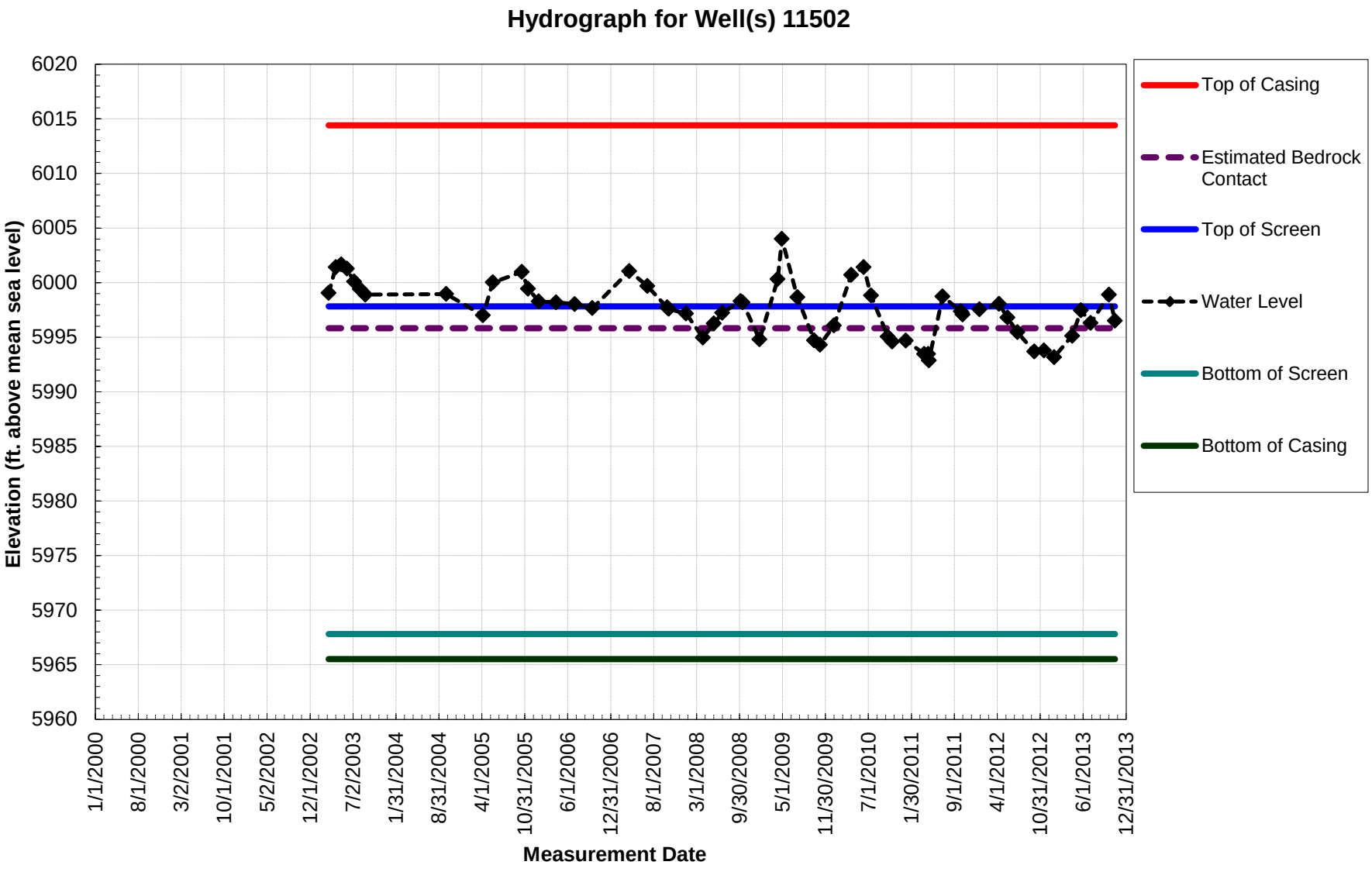
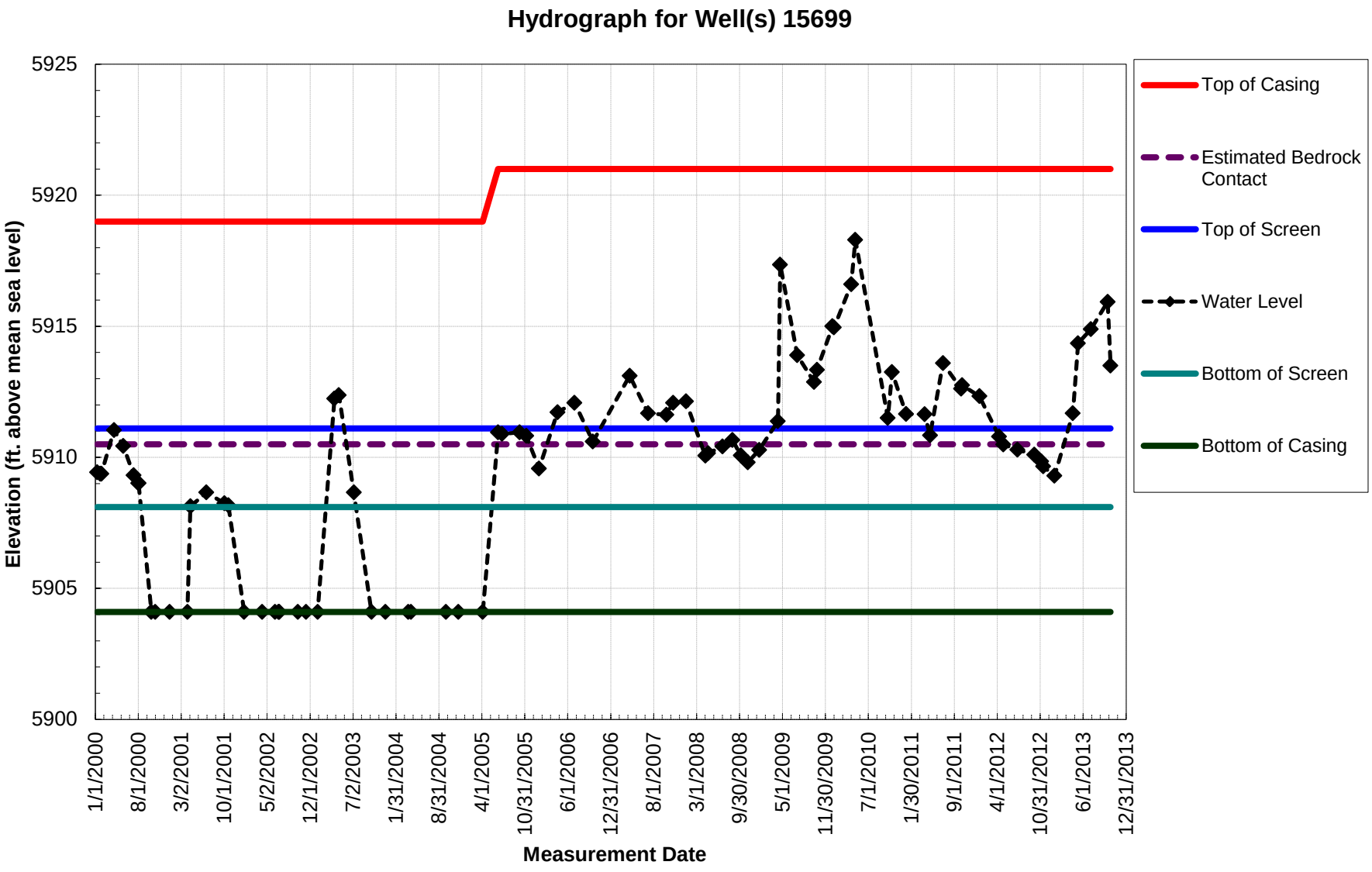



*From: Calendar Year 2013 Annual Report for the Rocky Flats Site, Appendices. (See report text for additional information.)*

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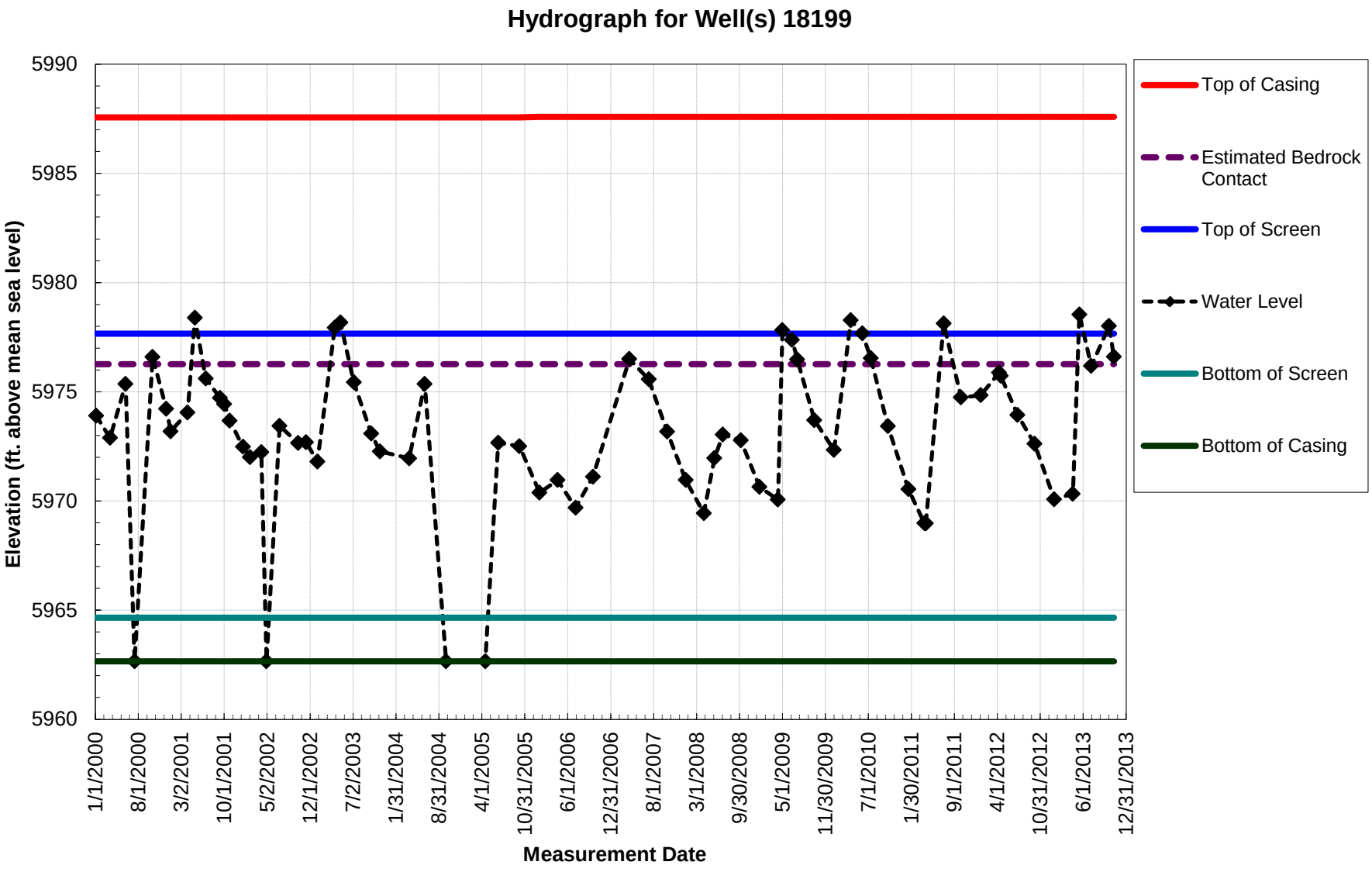


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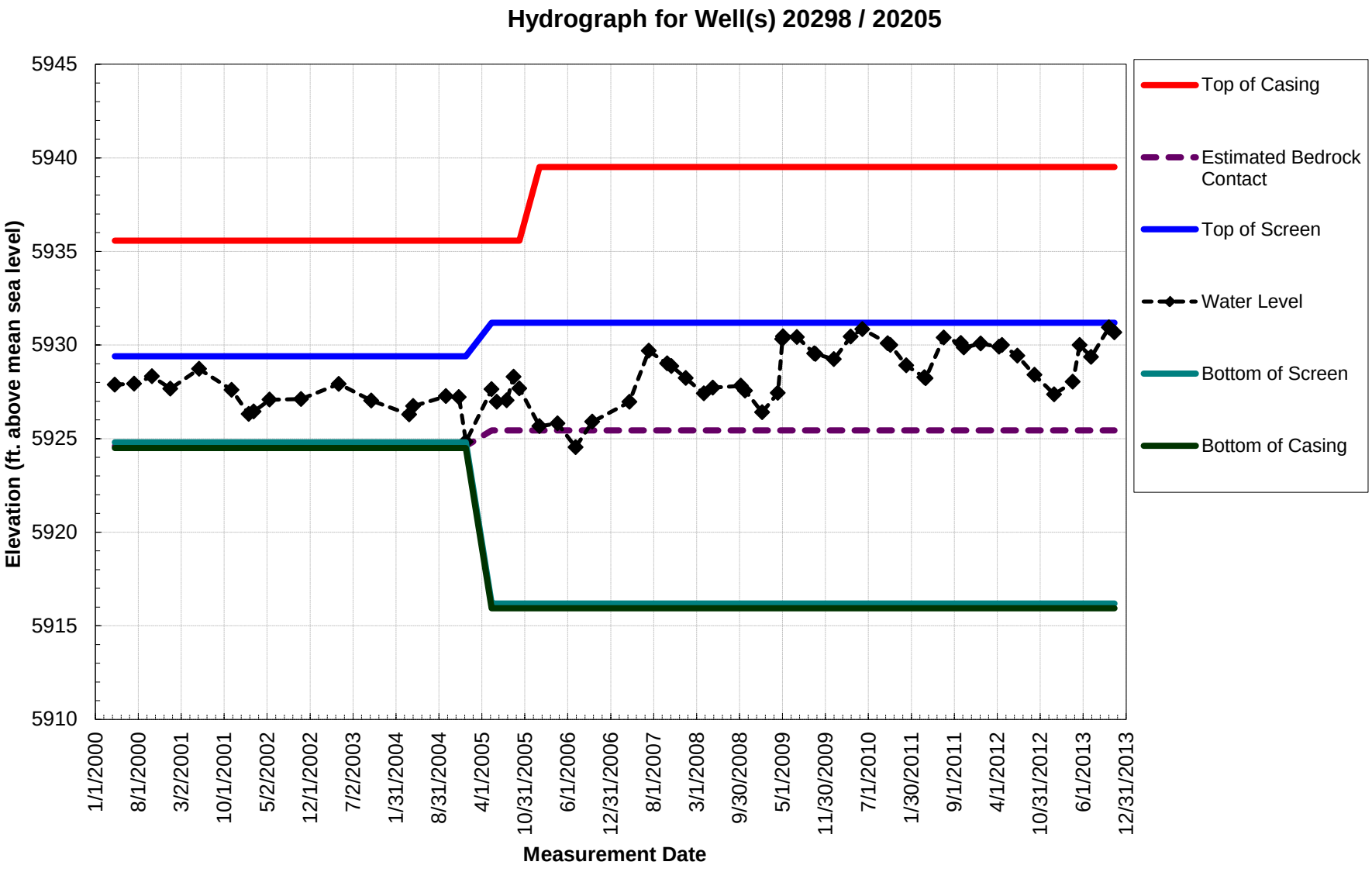


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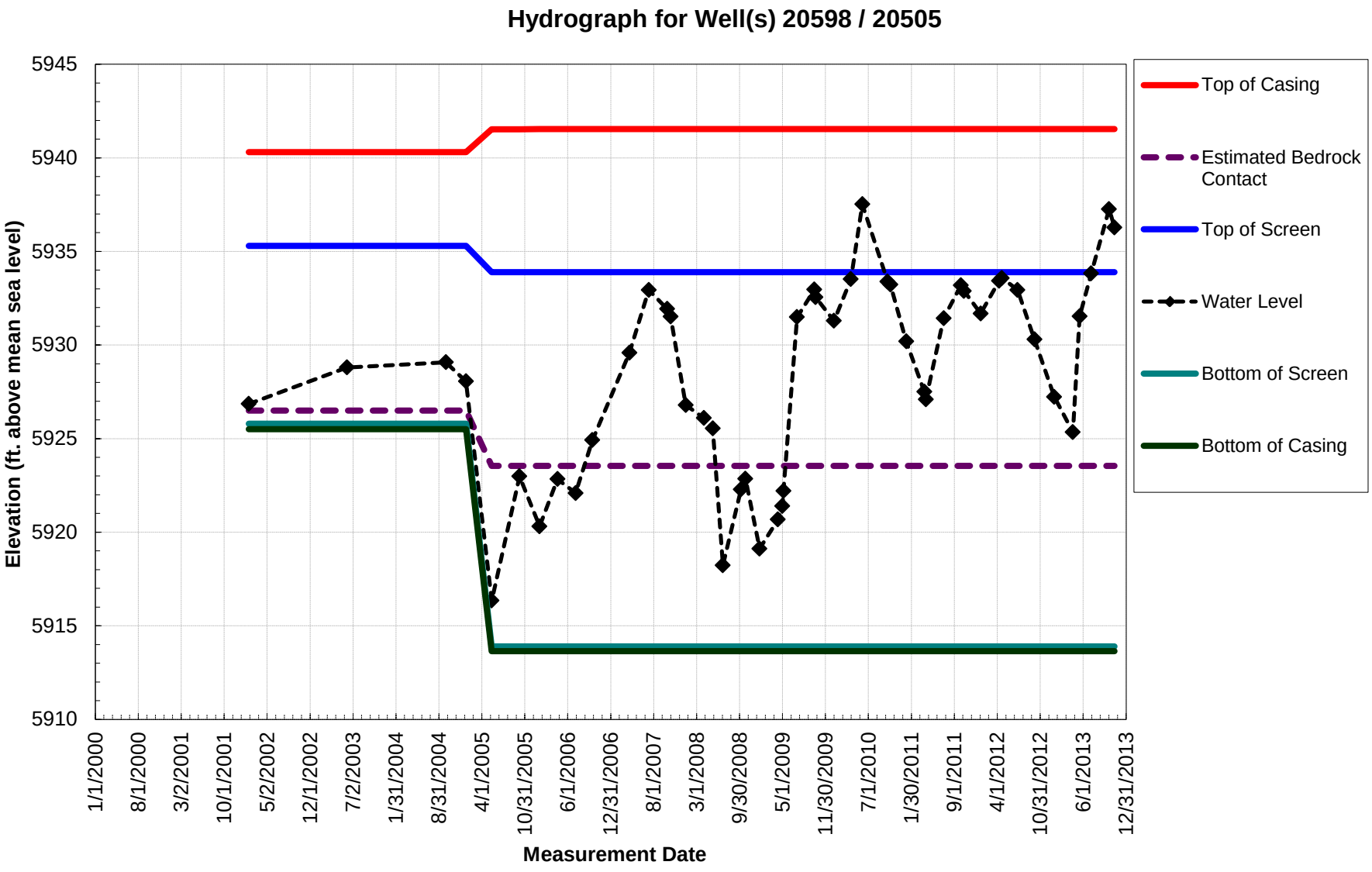


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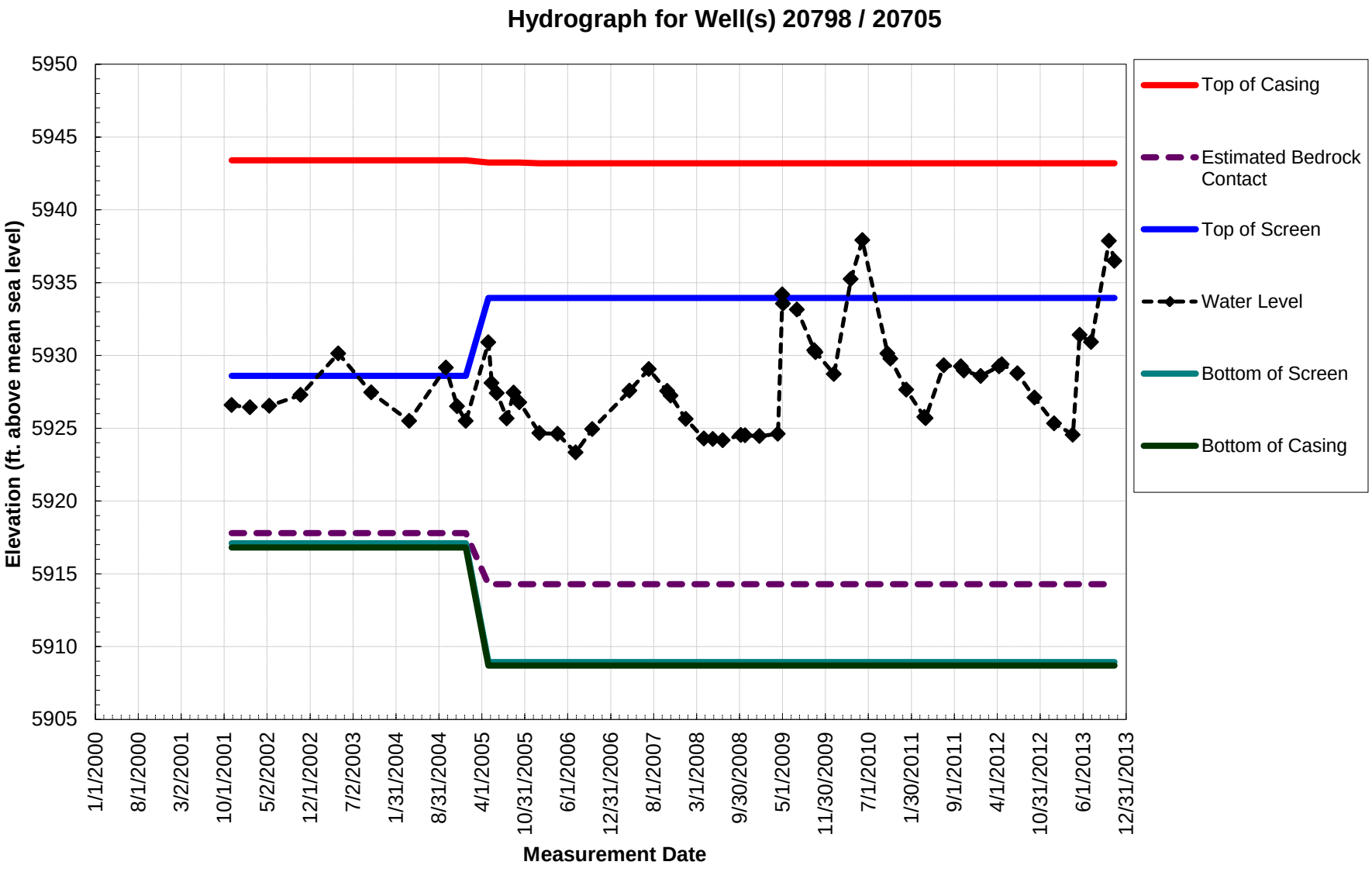


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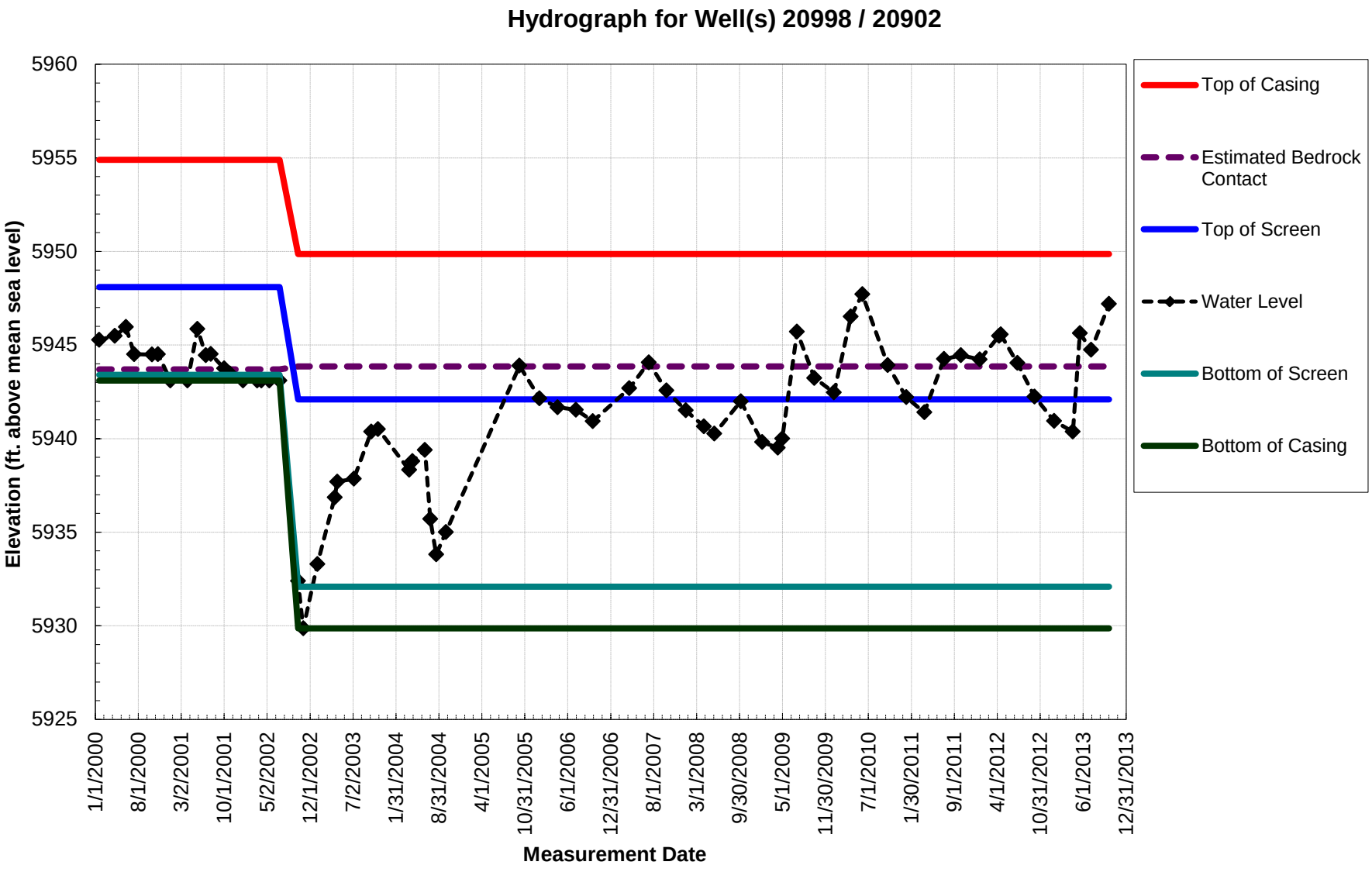


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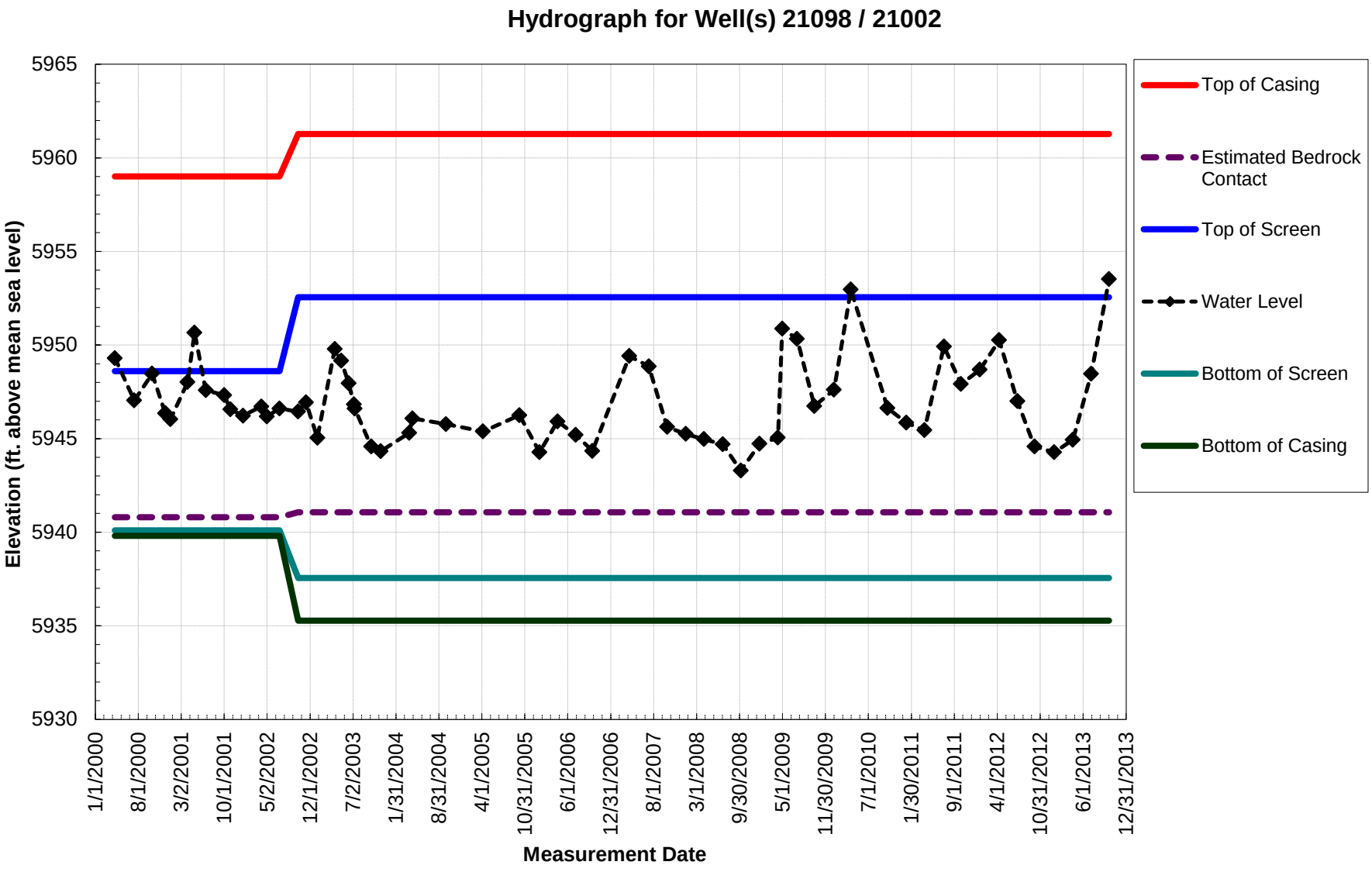


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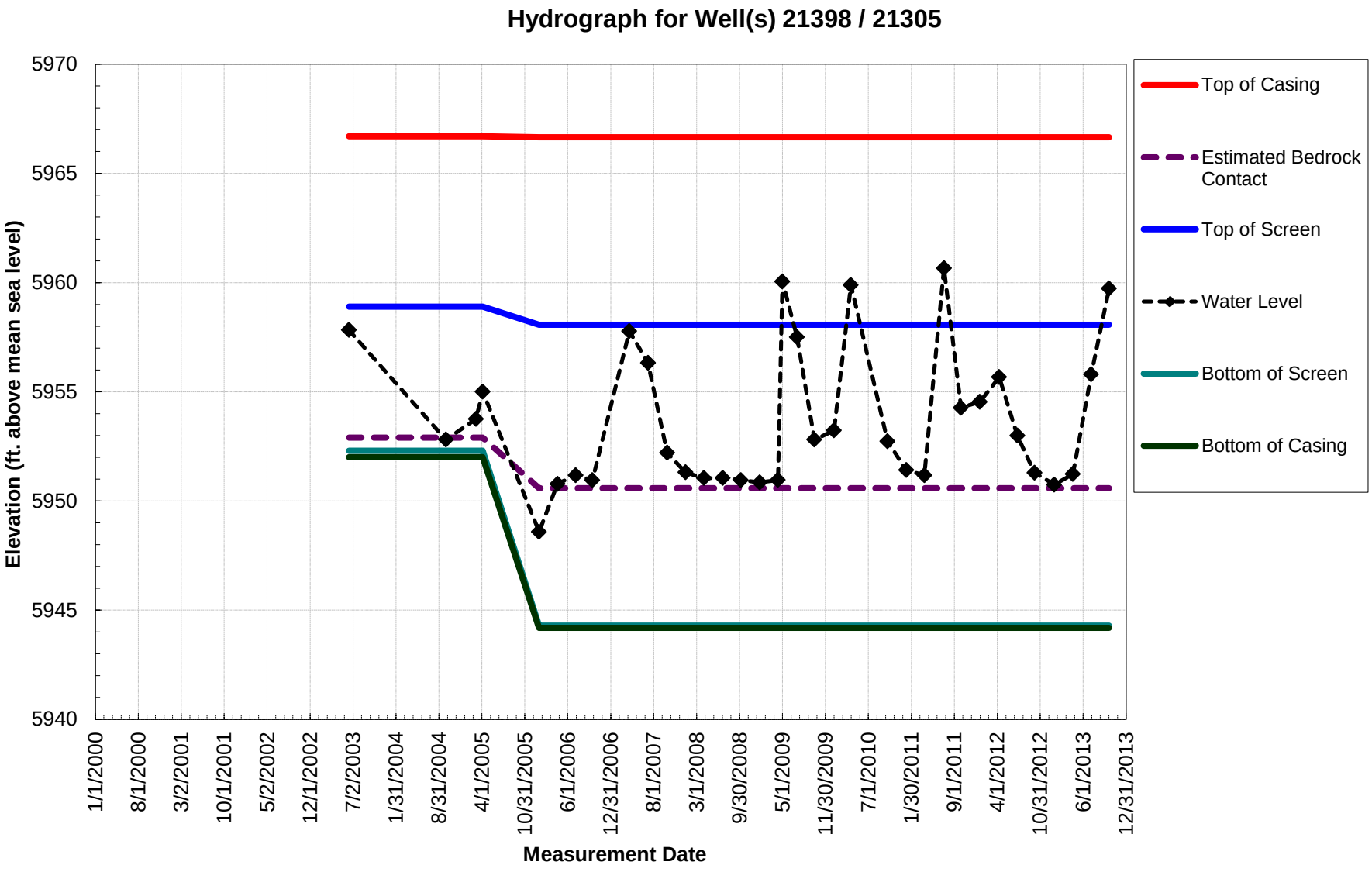


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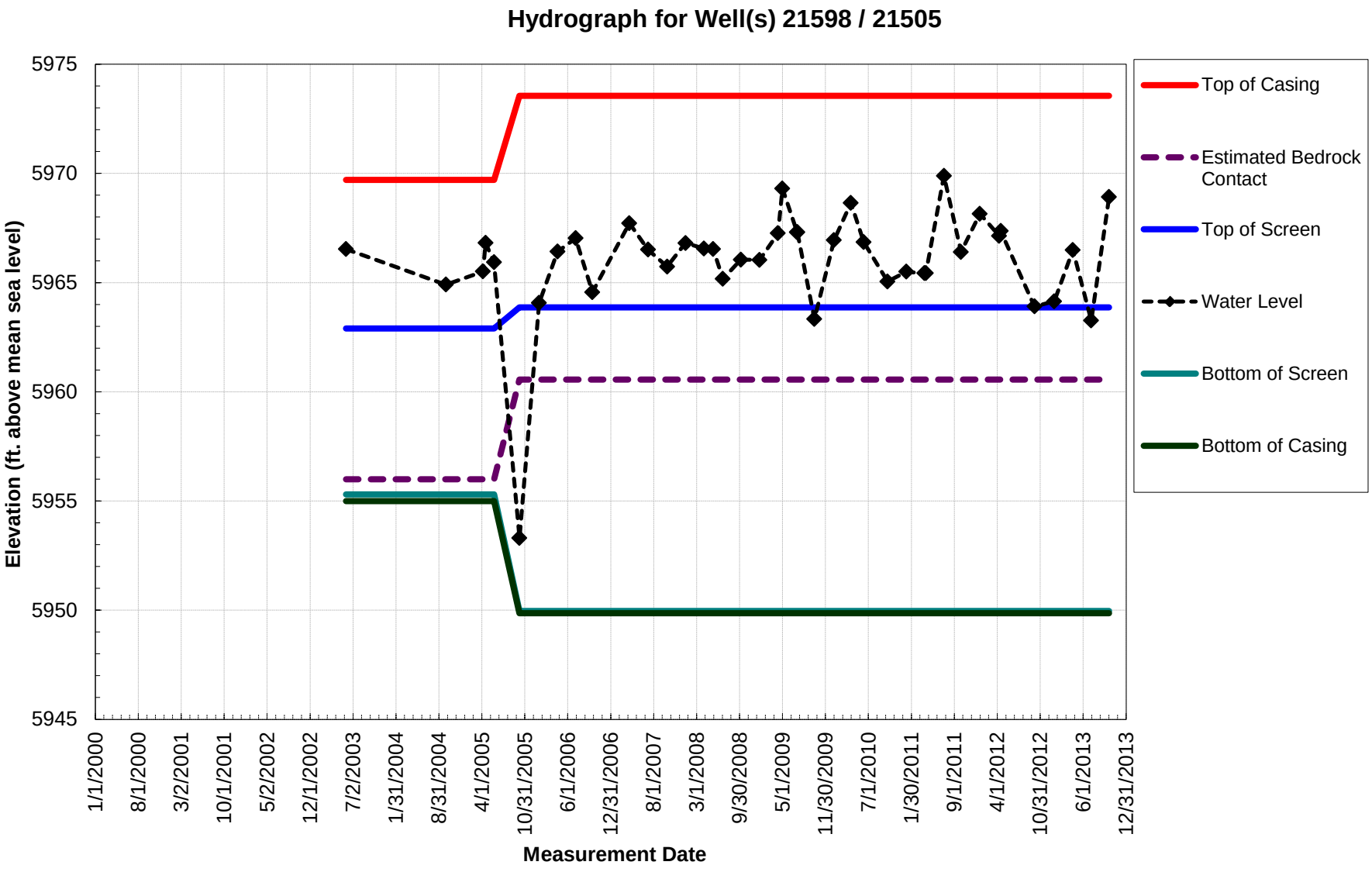


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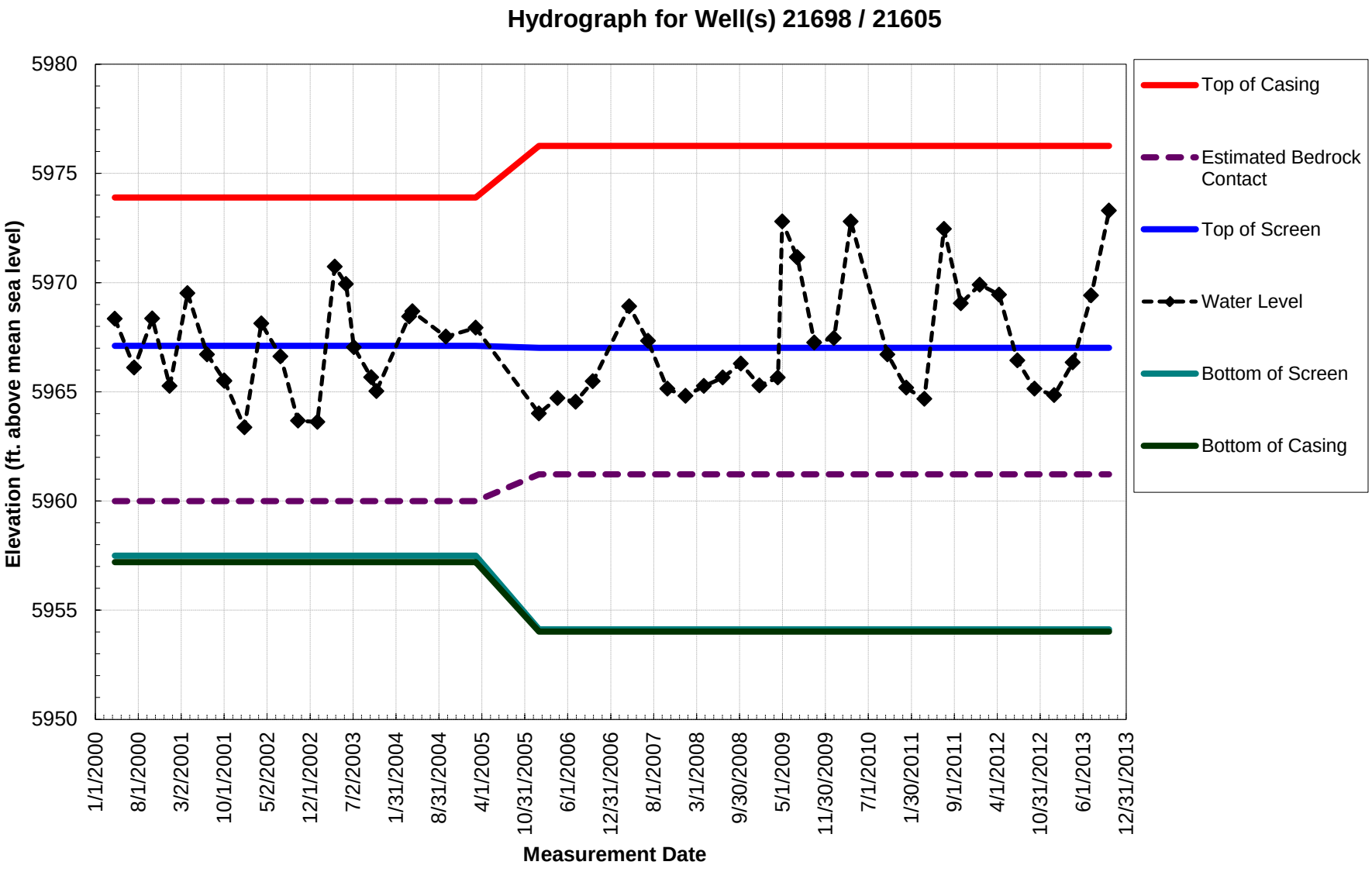


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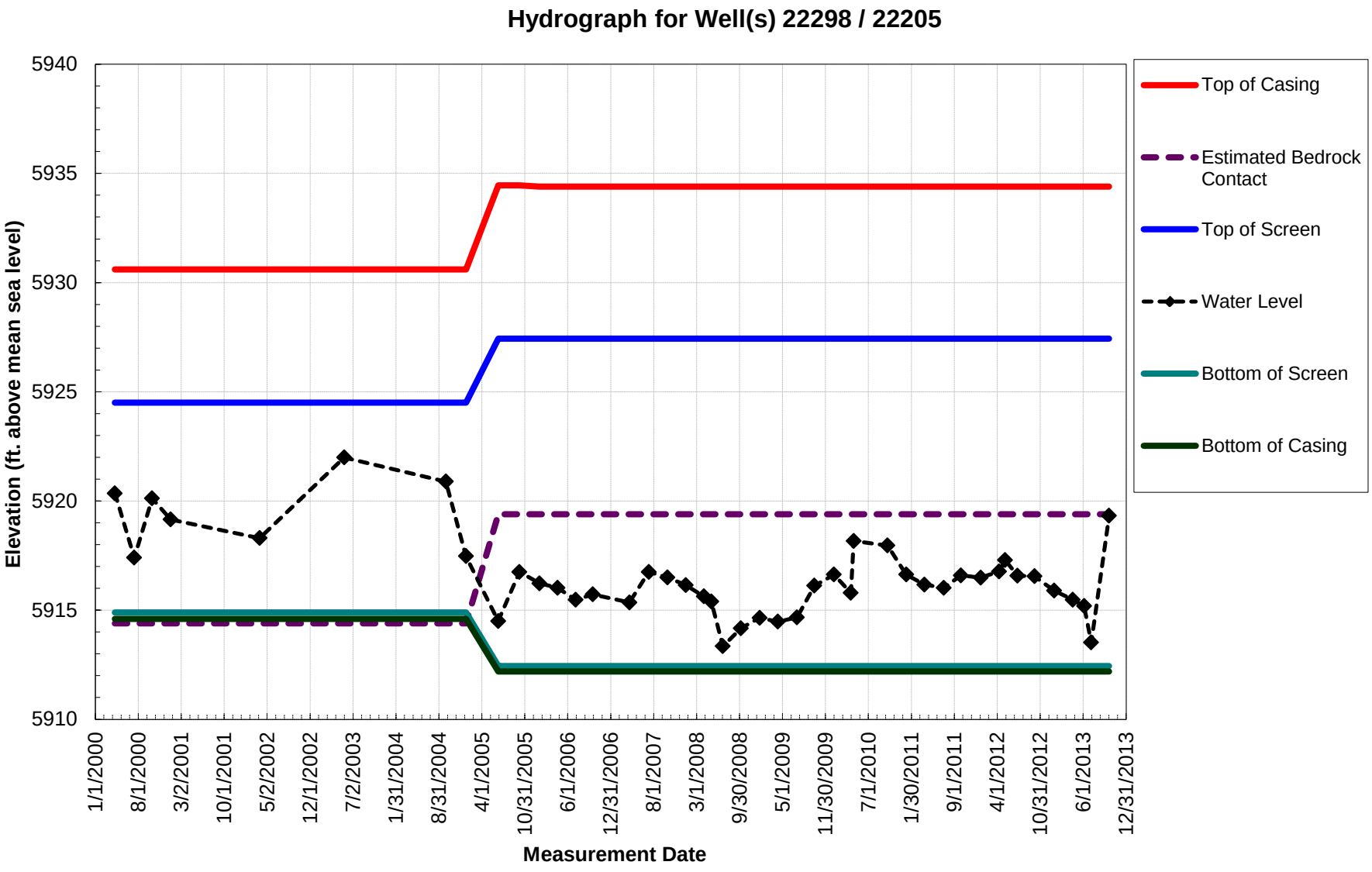


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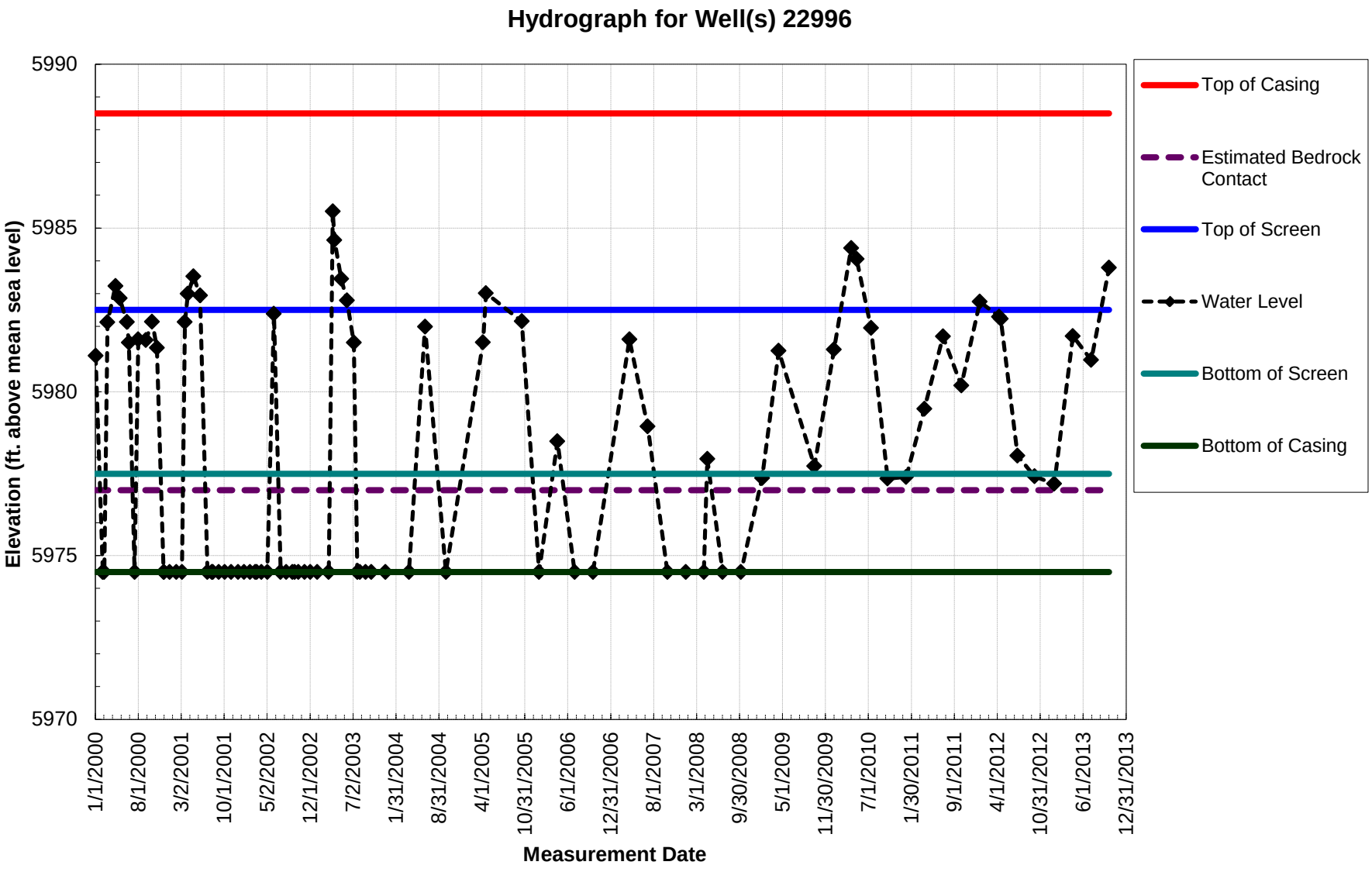


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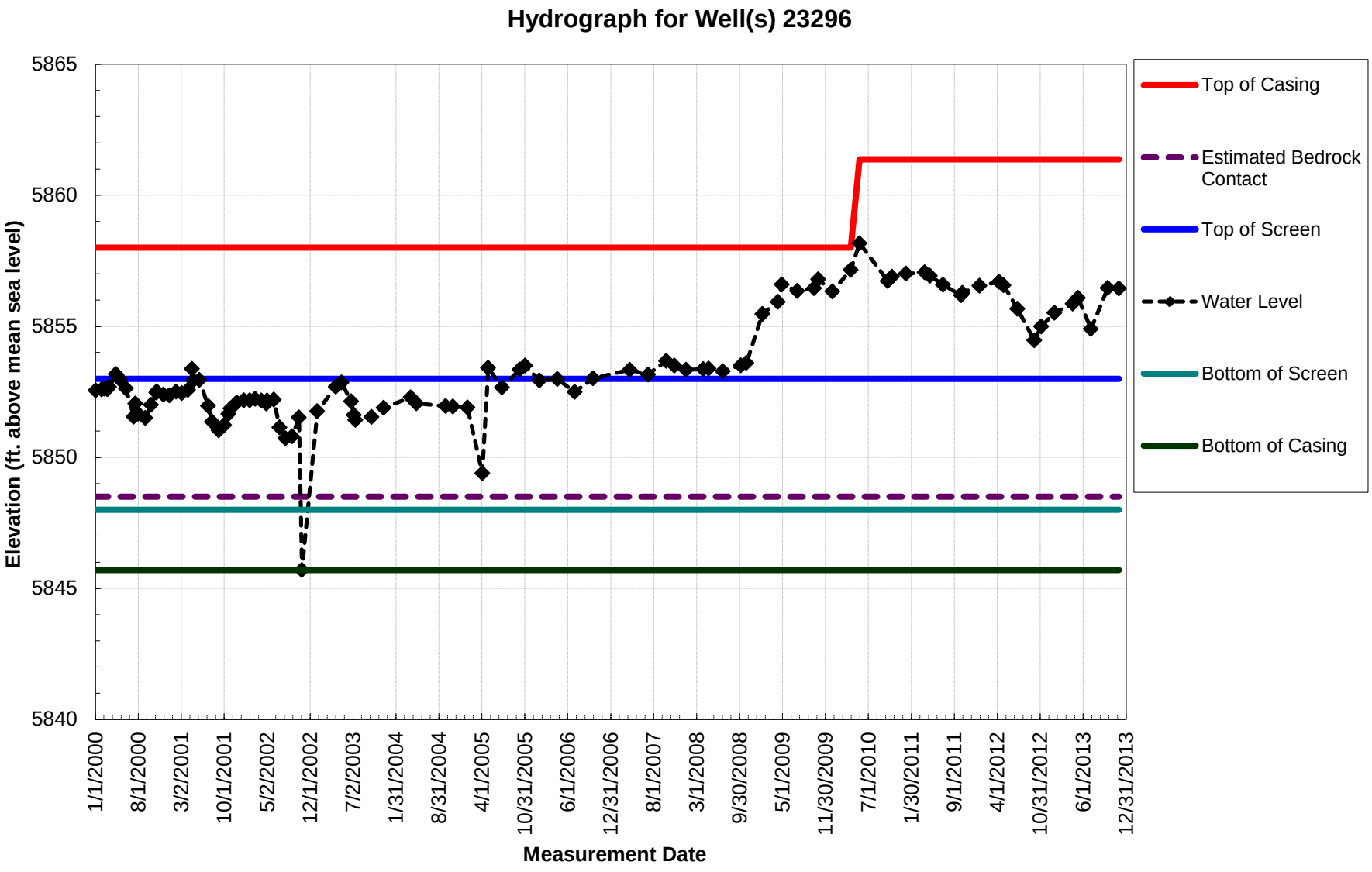


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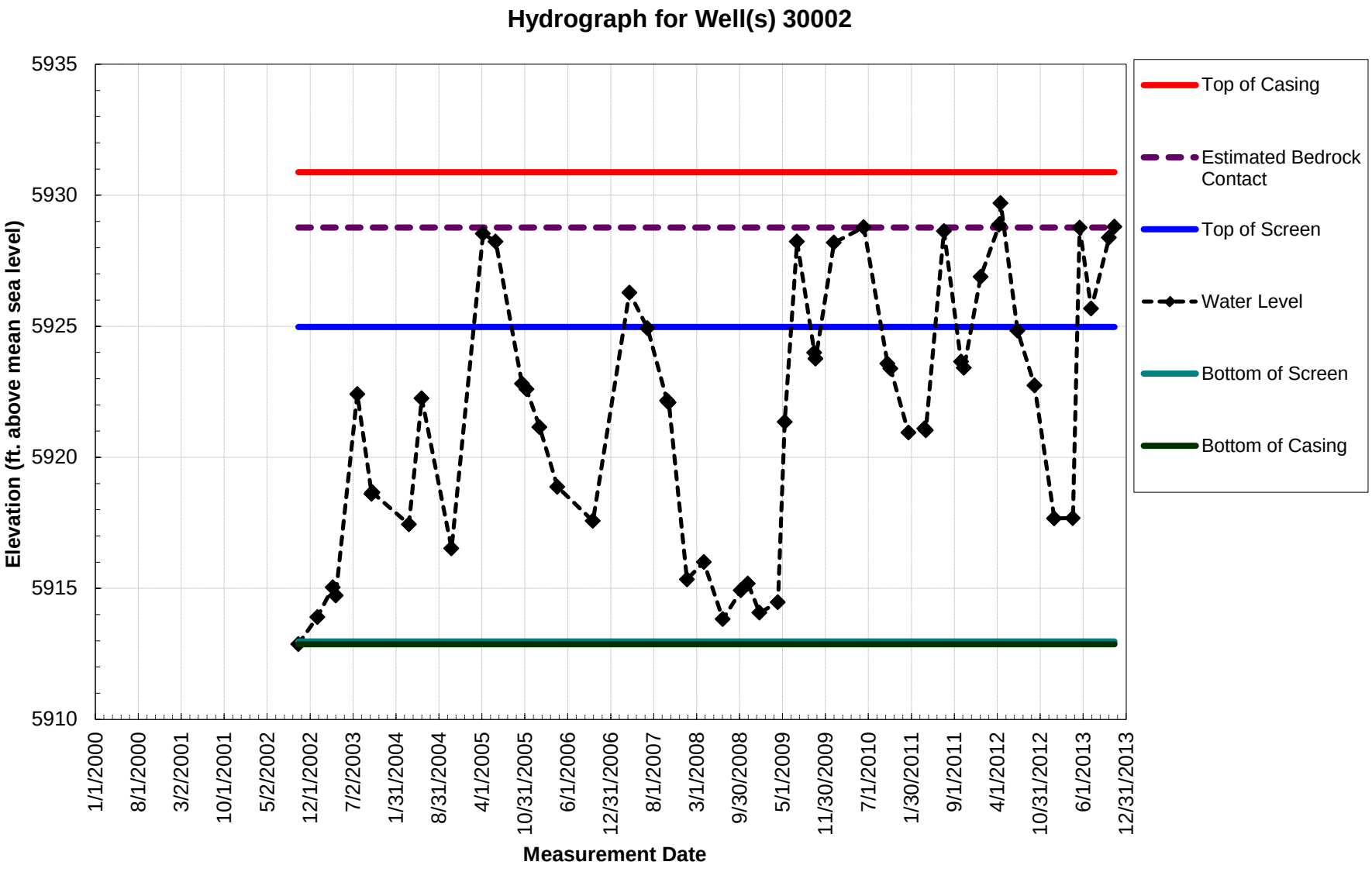


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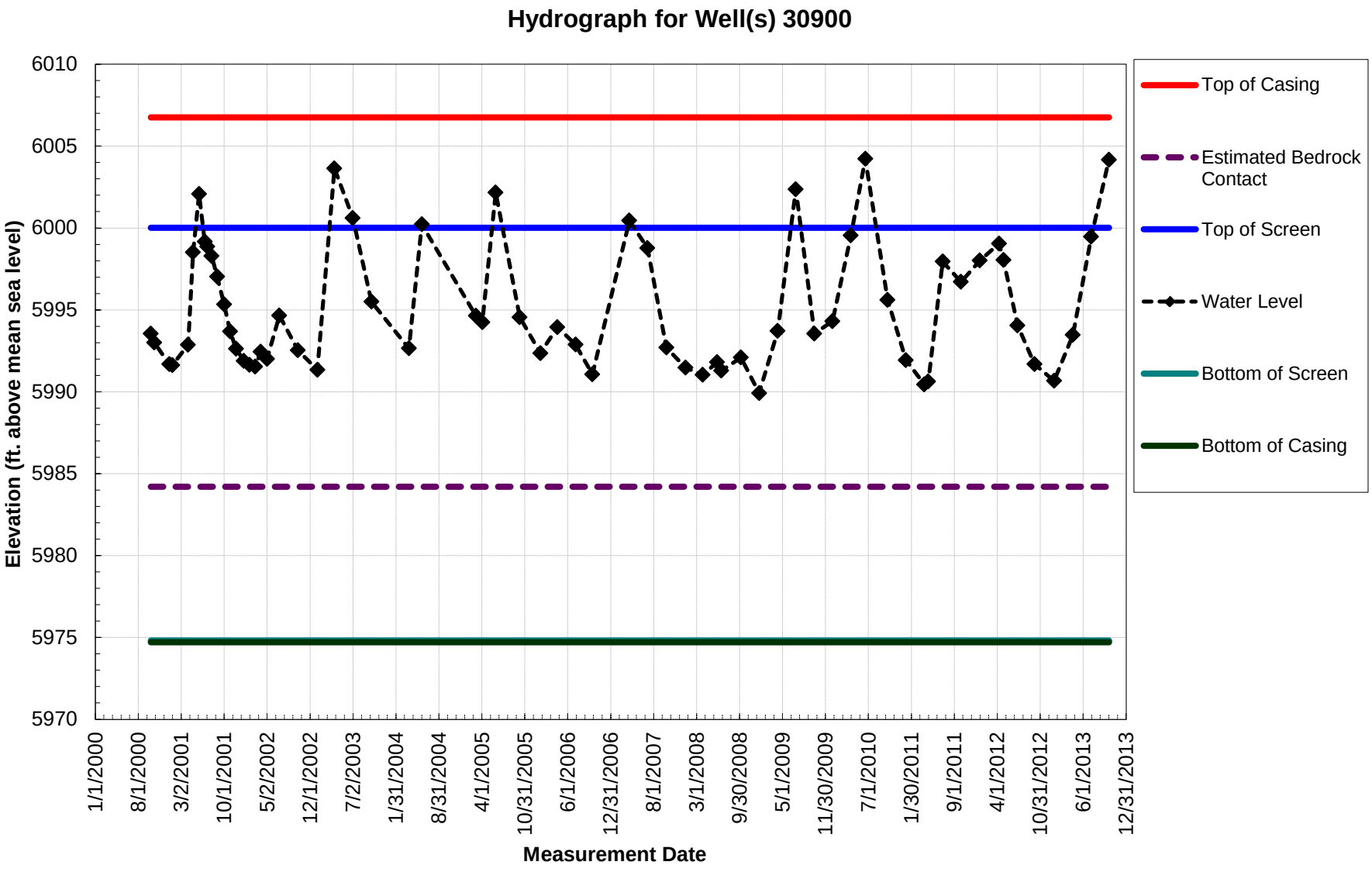


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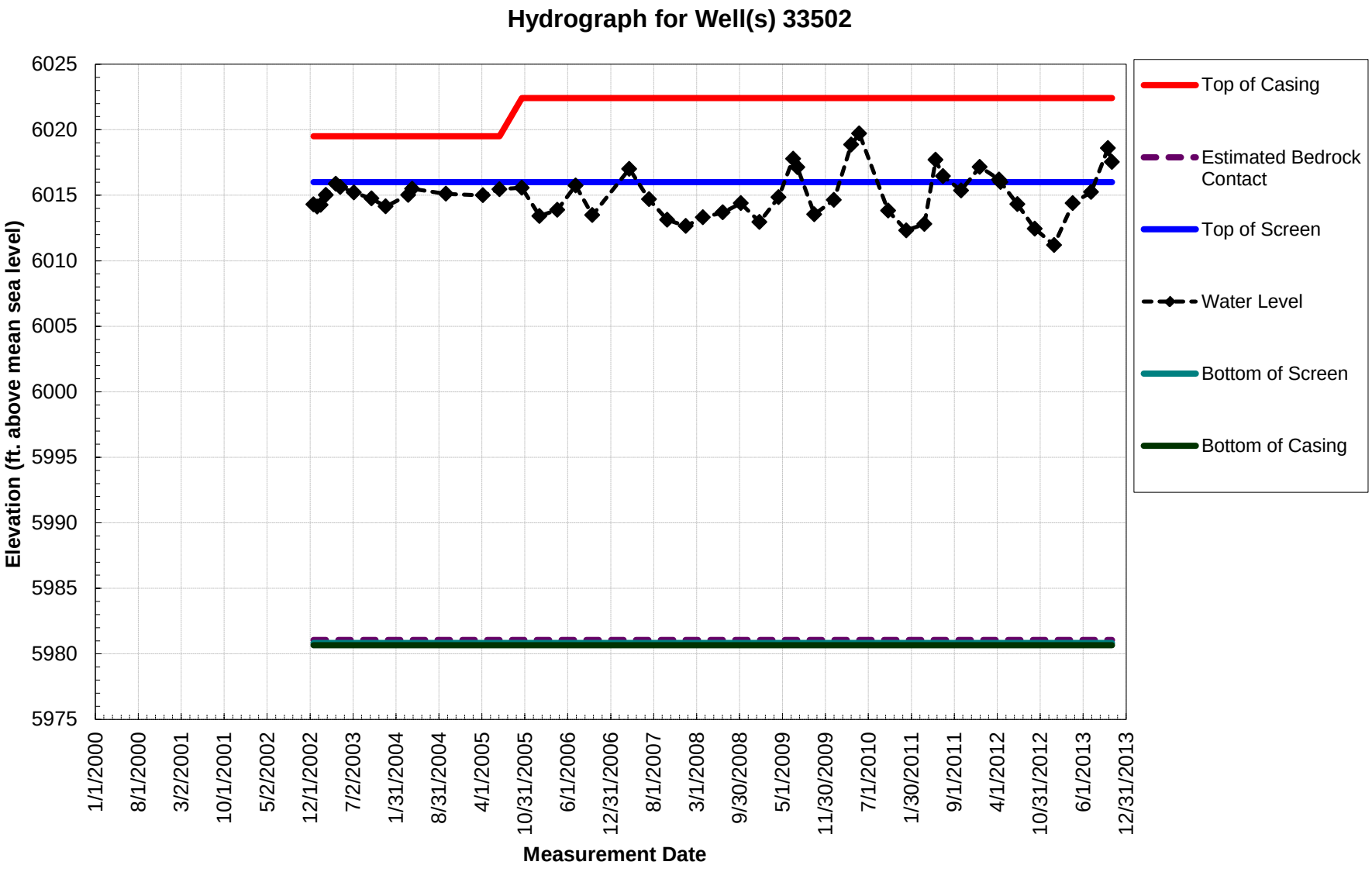


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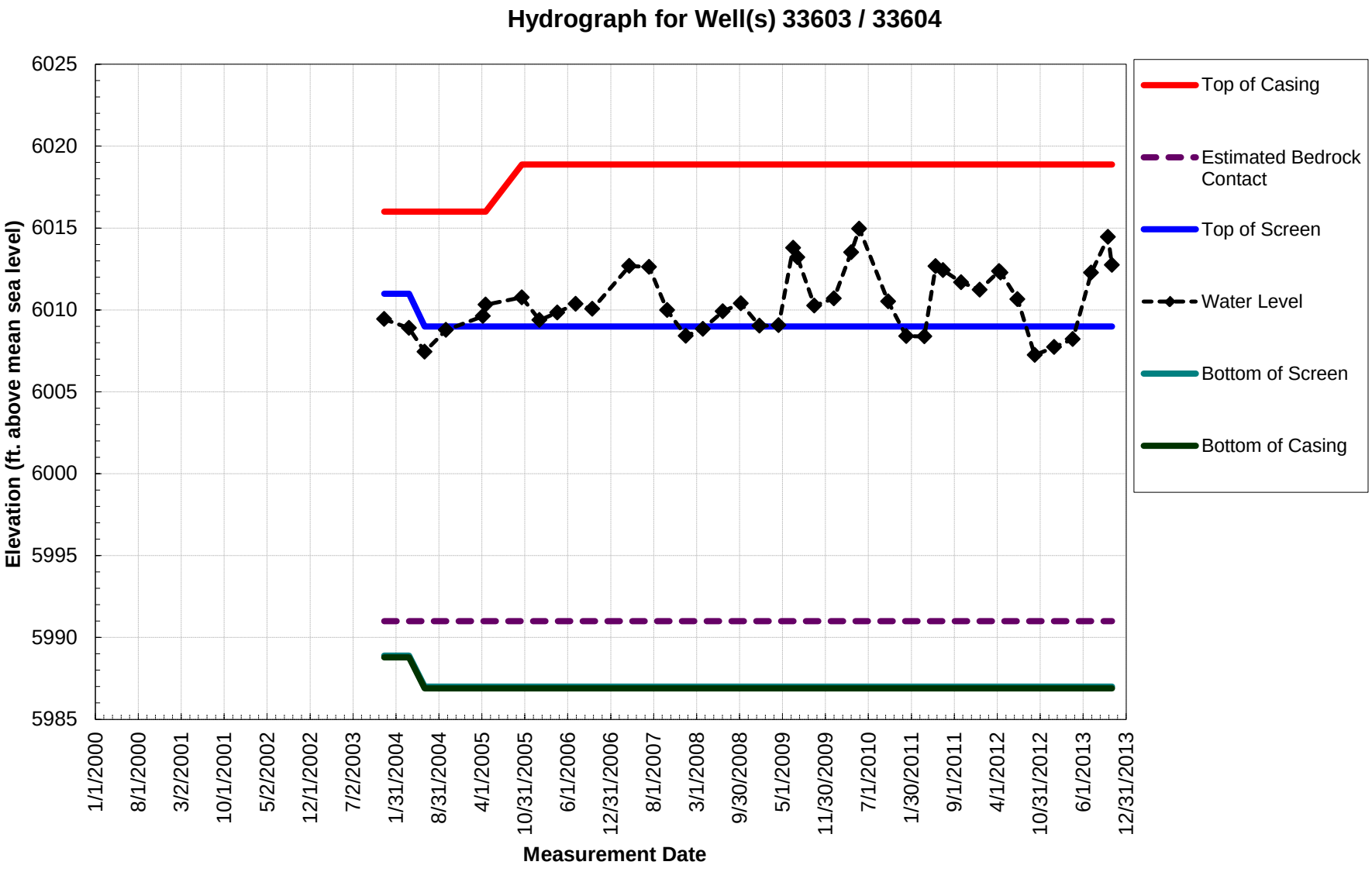


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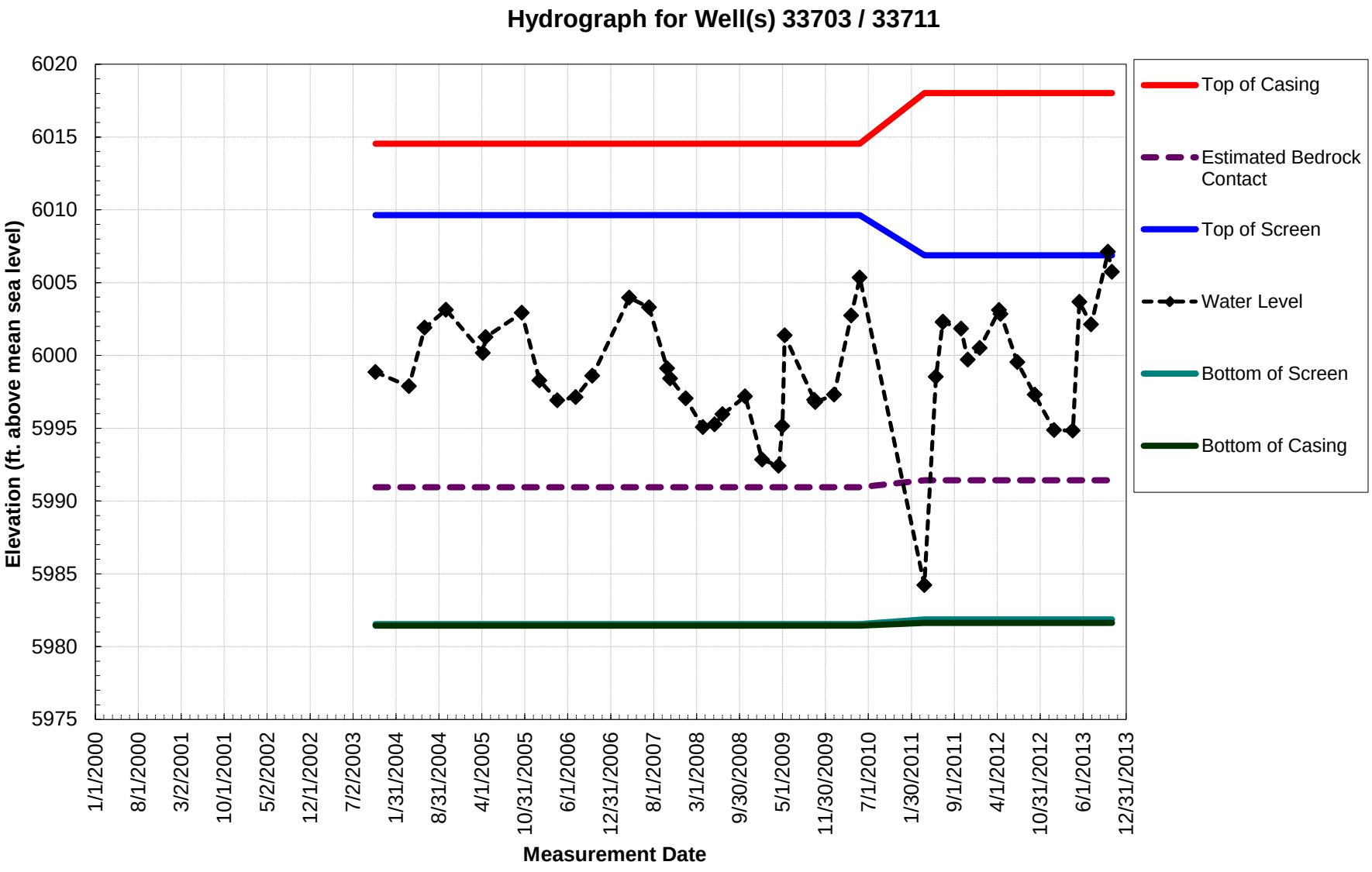


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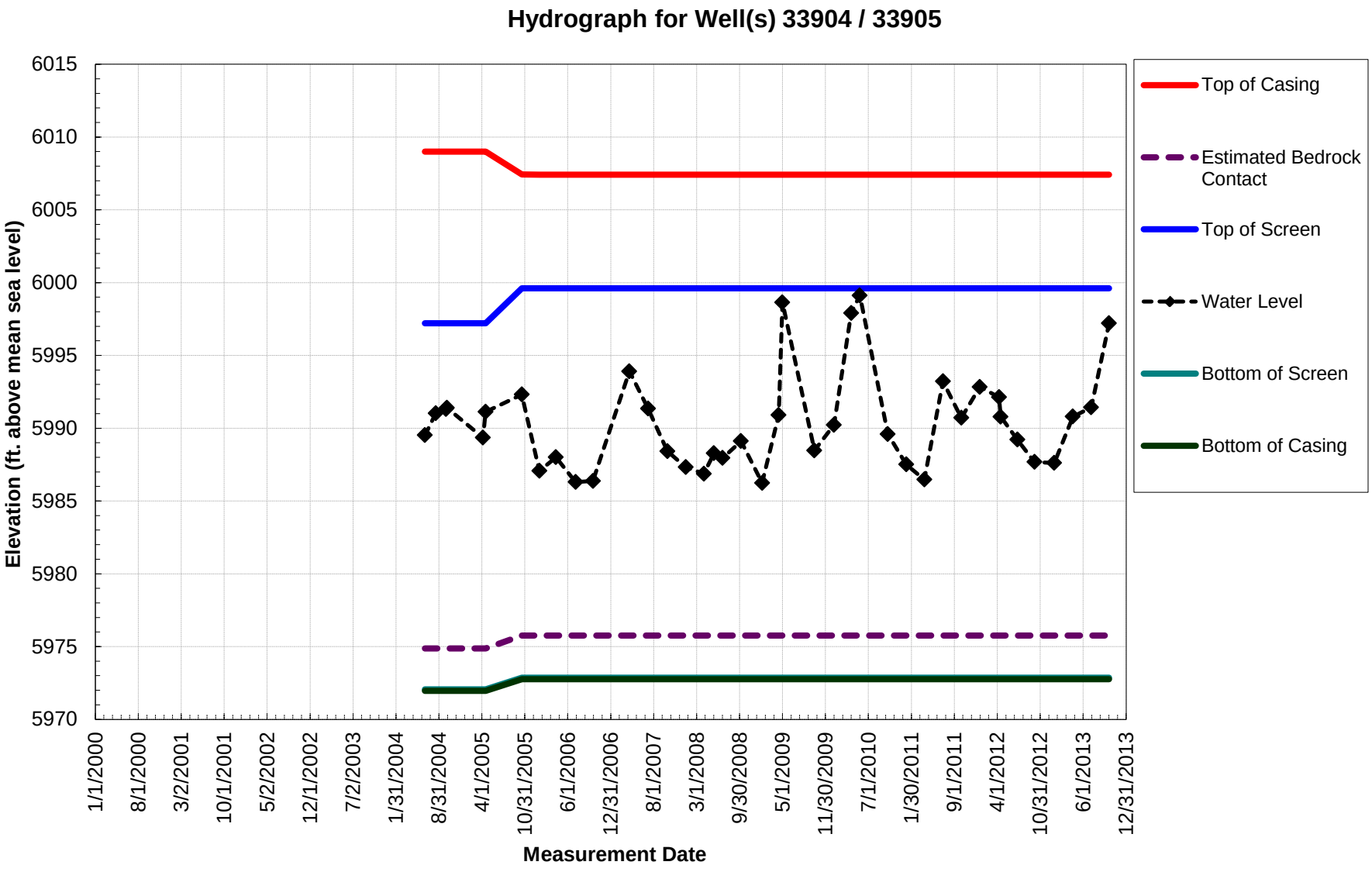


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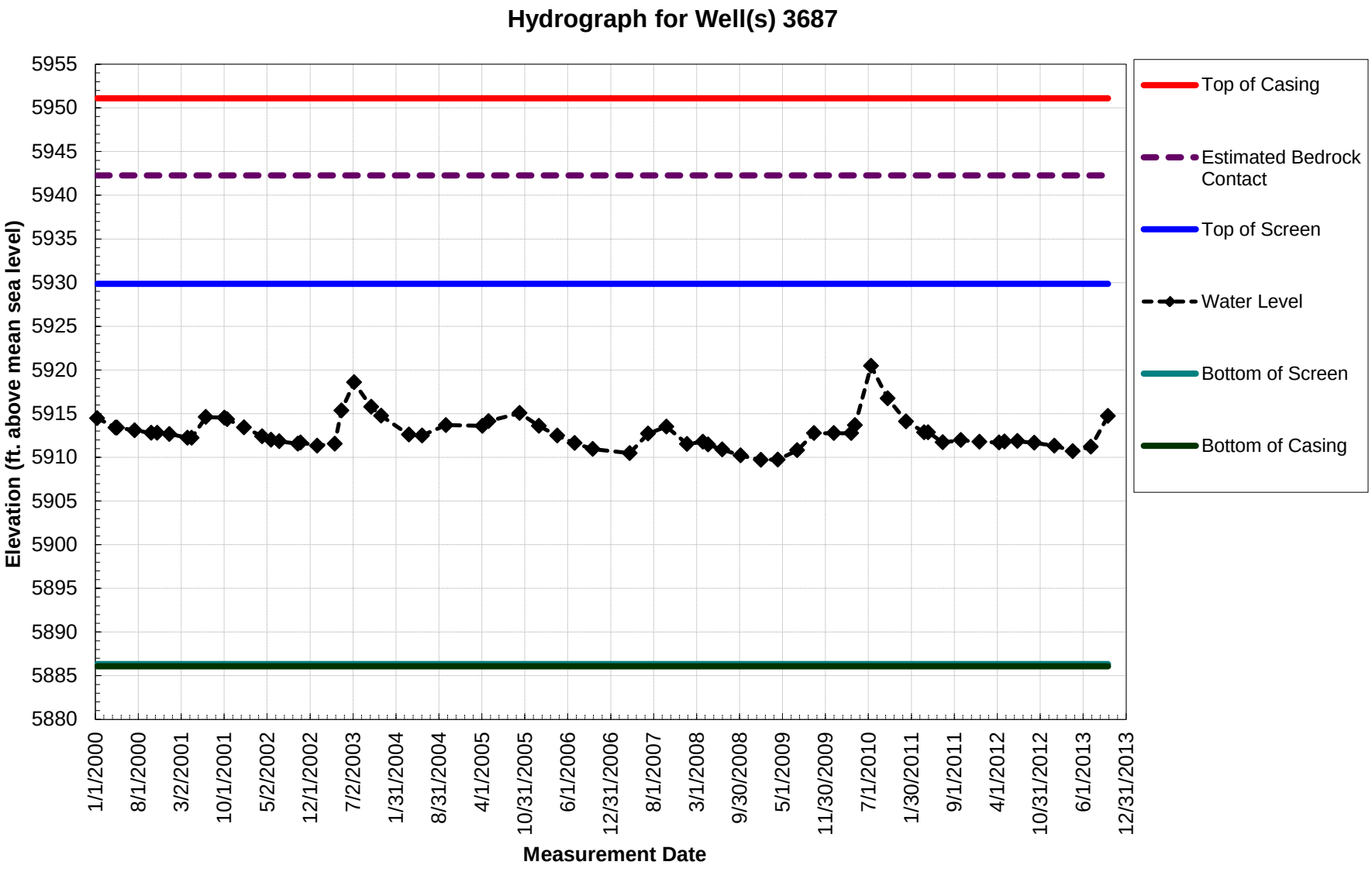


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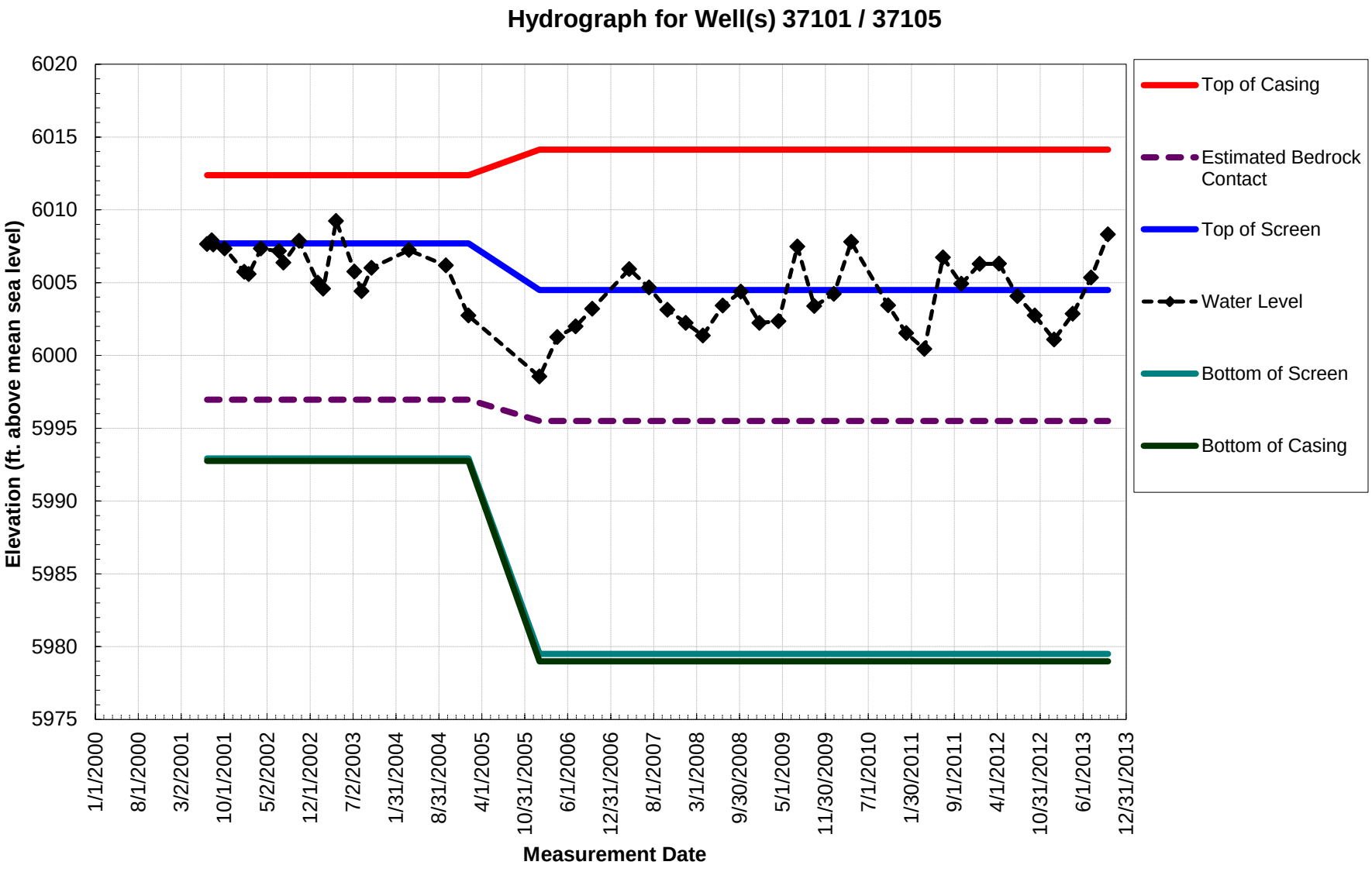


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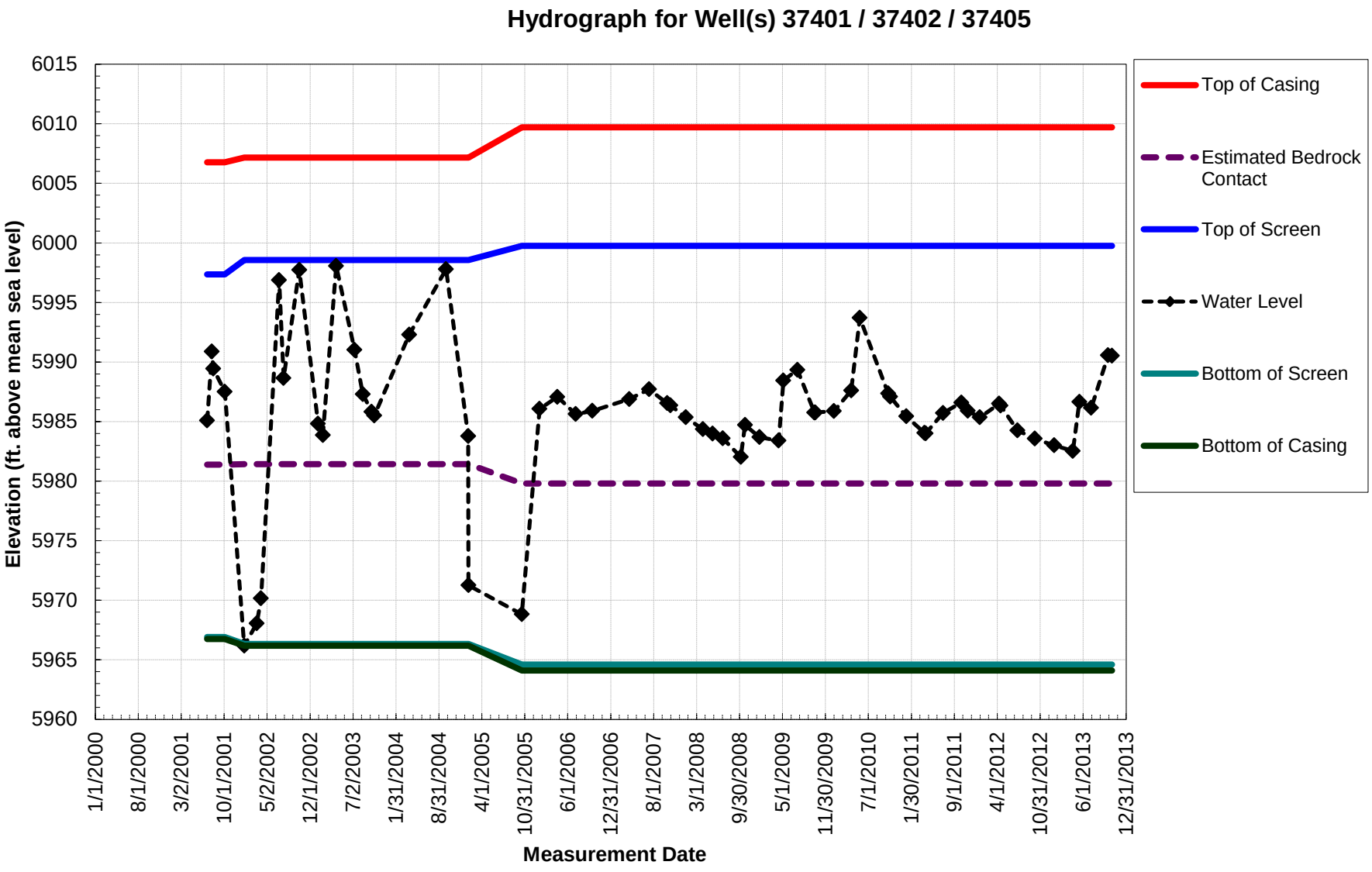


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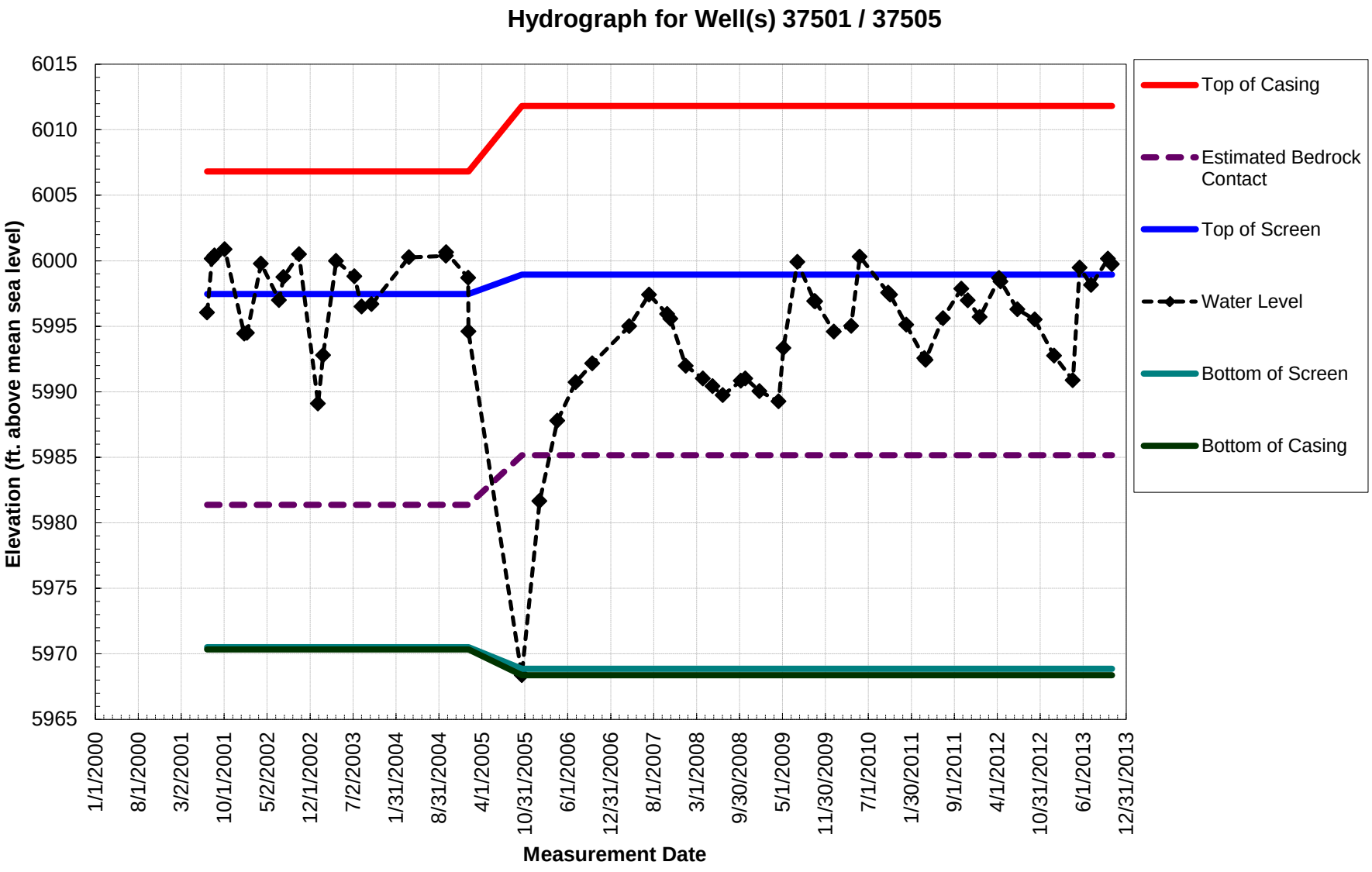


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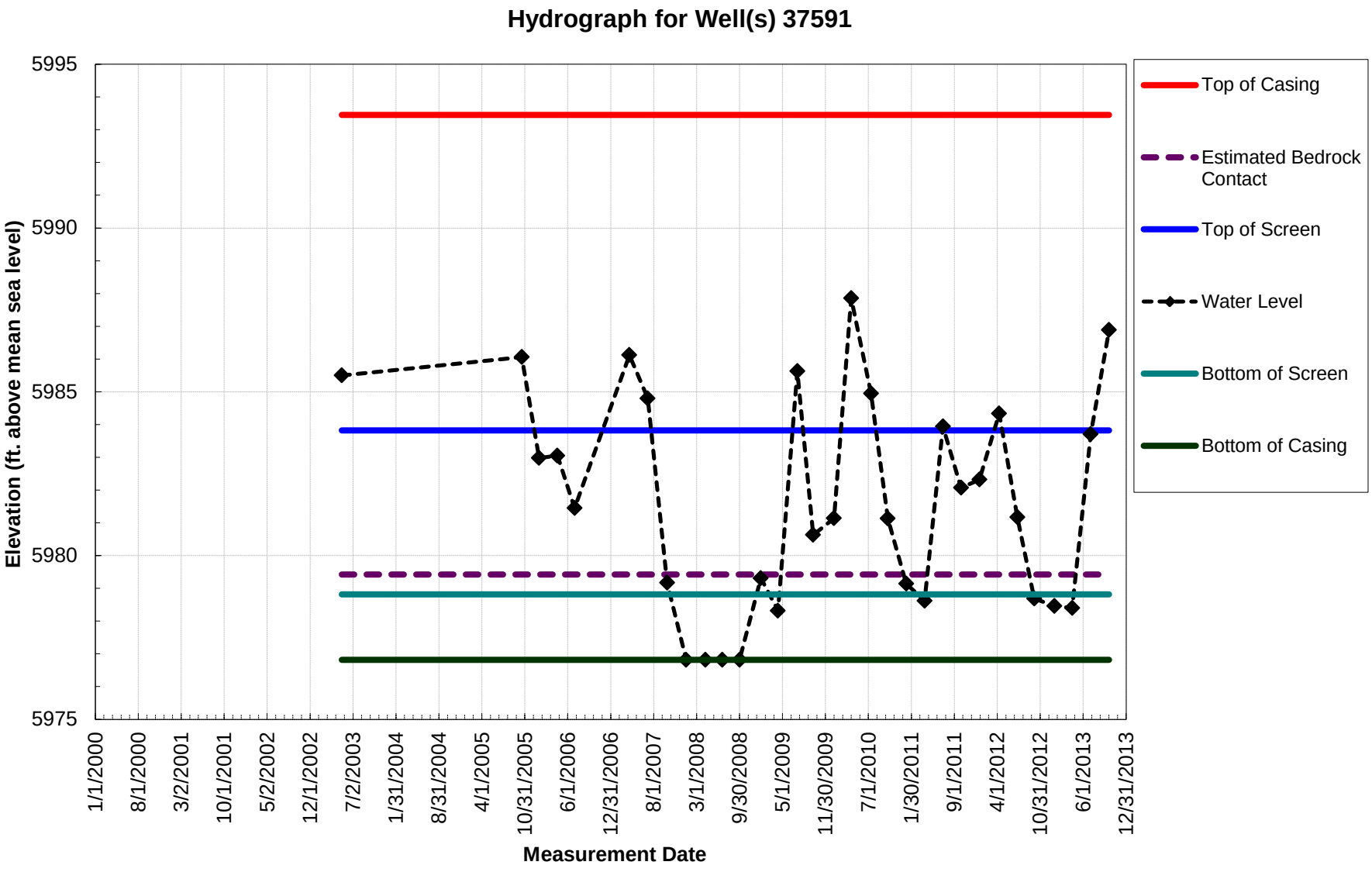


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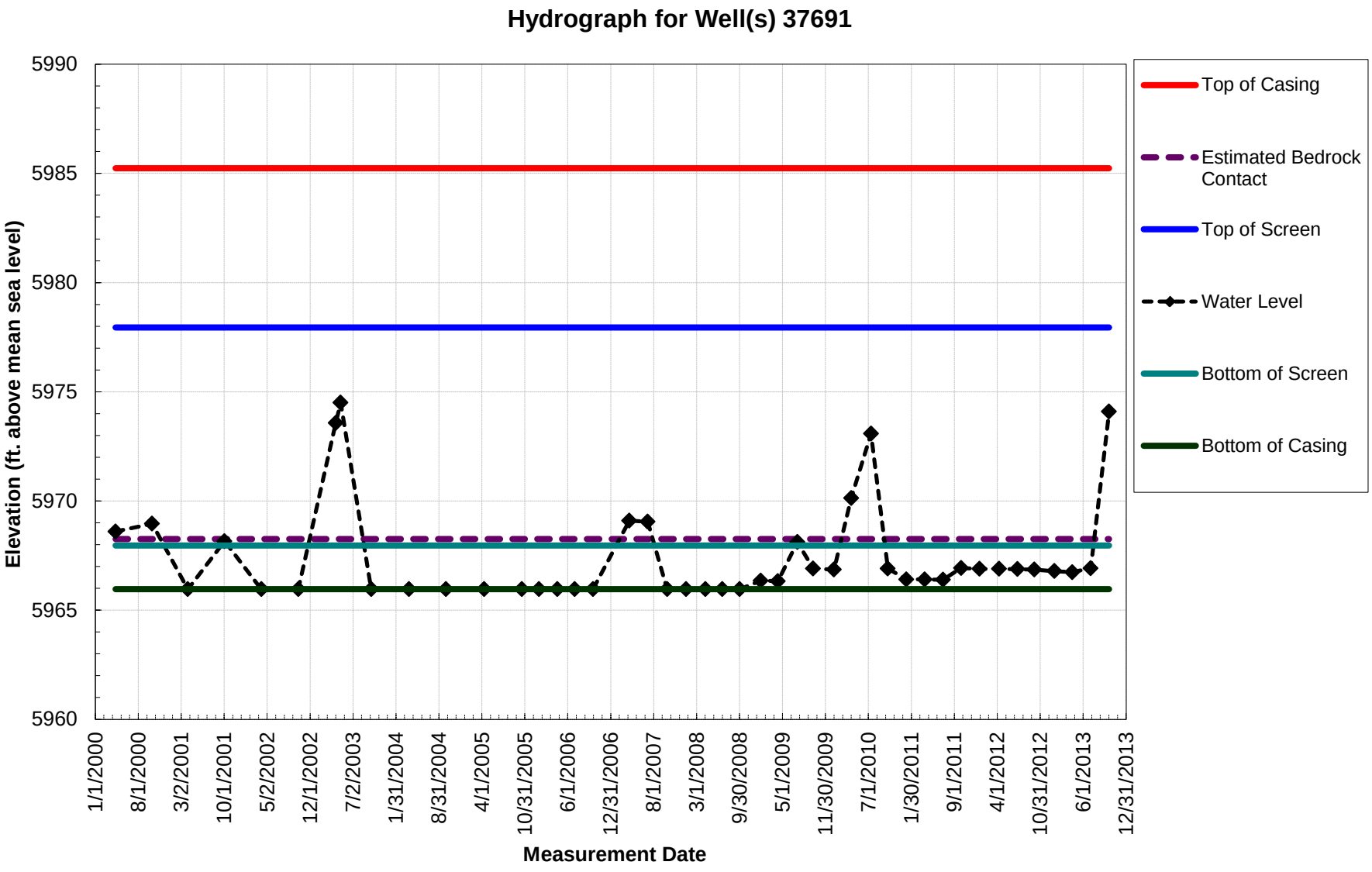


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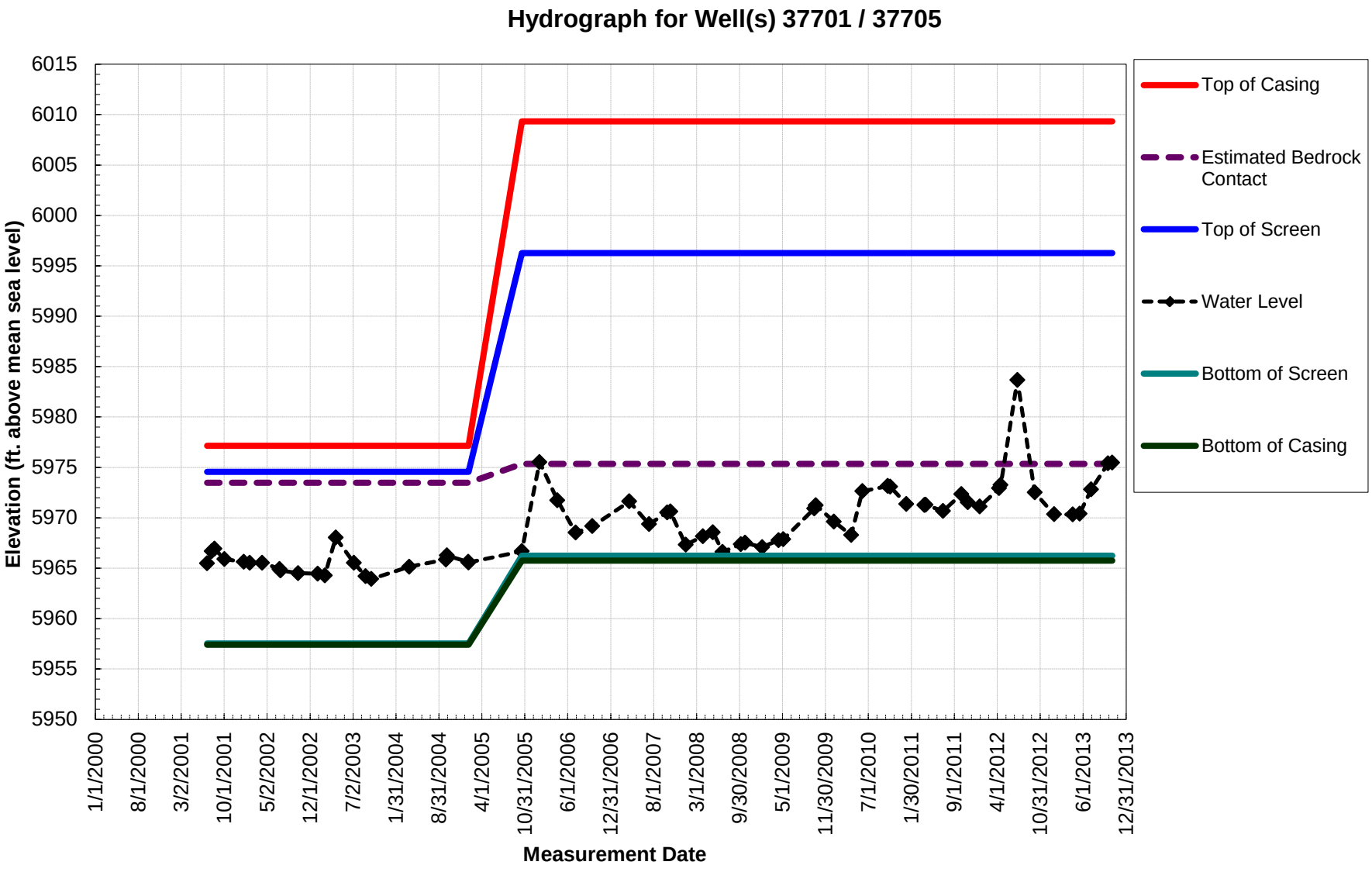


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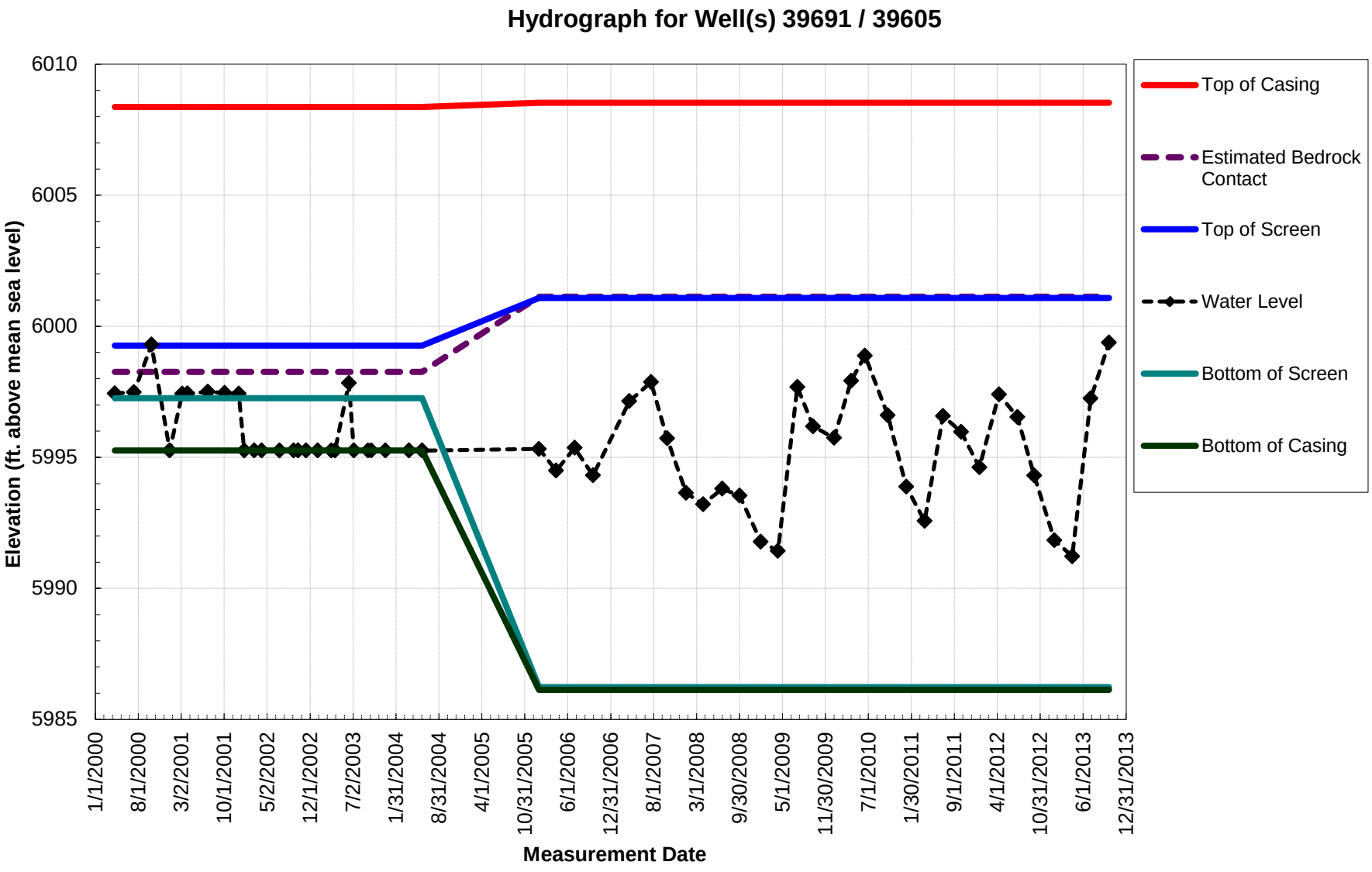


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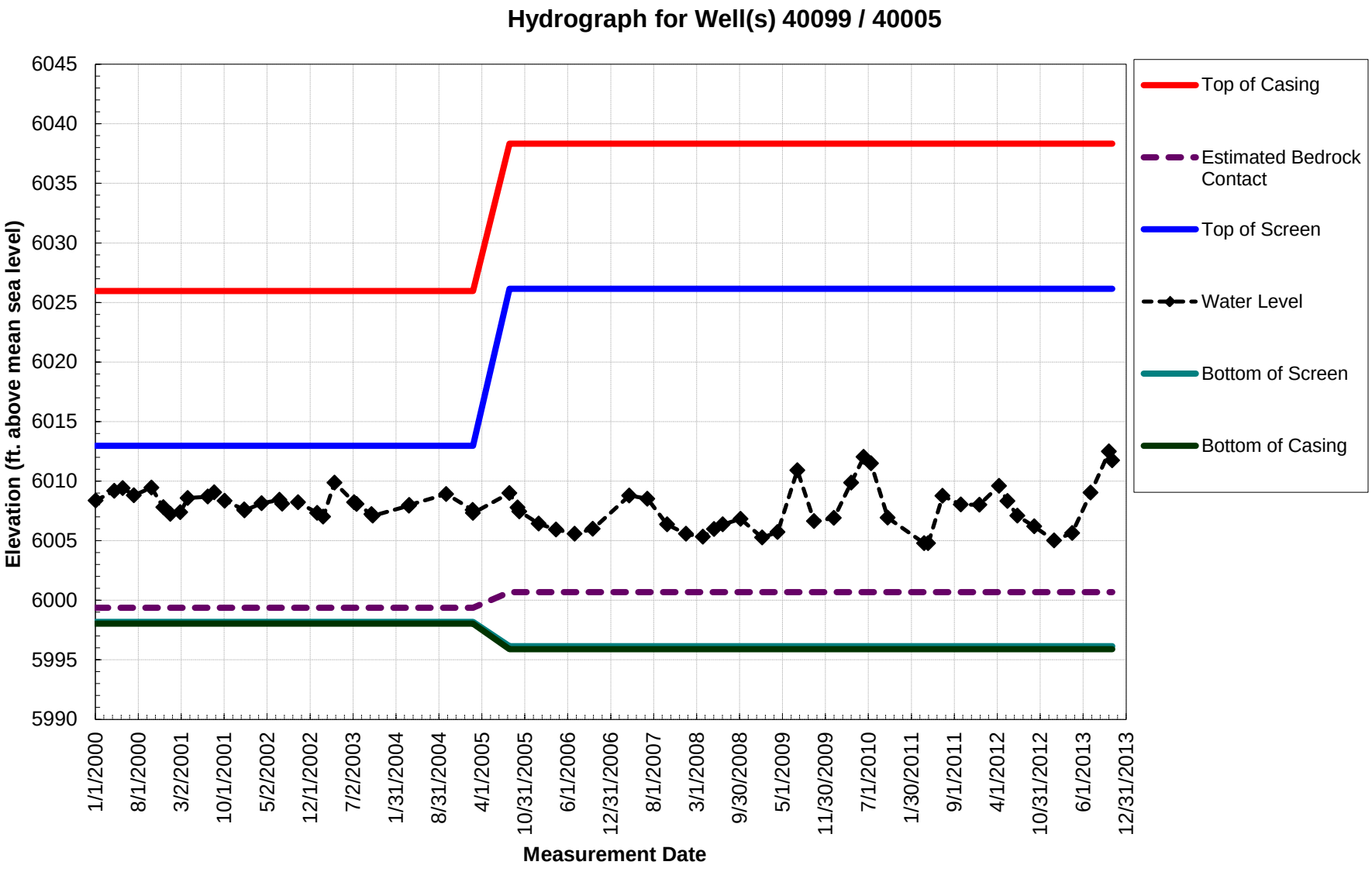


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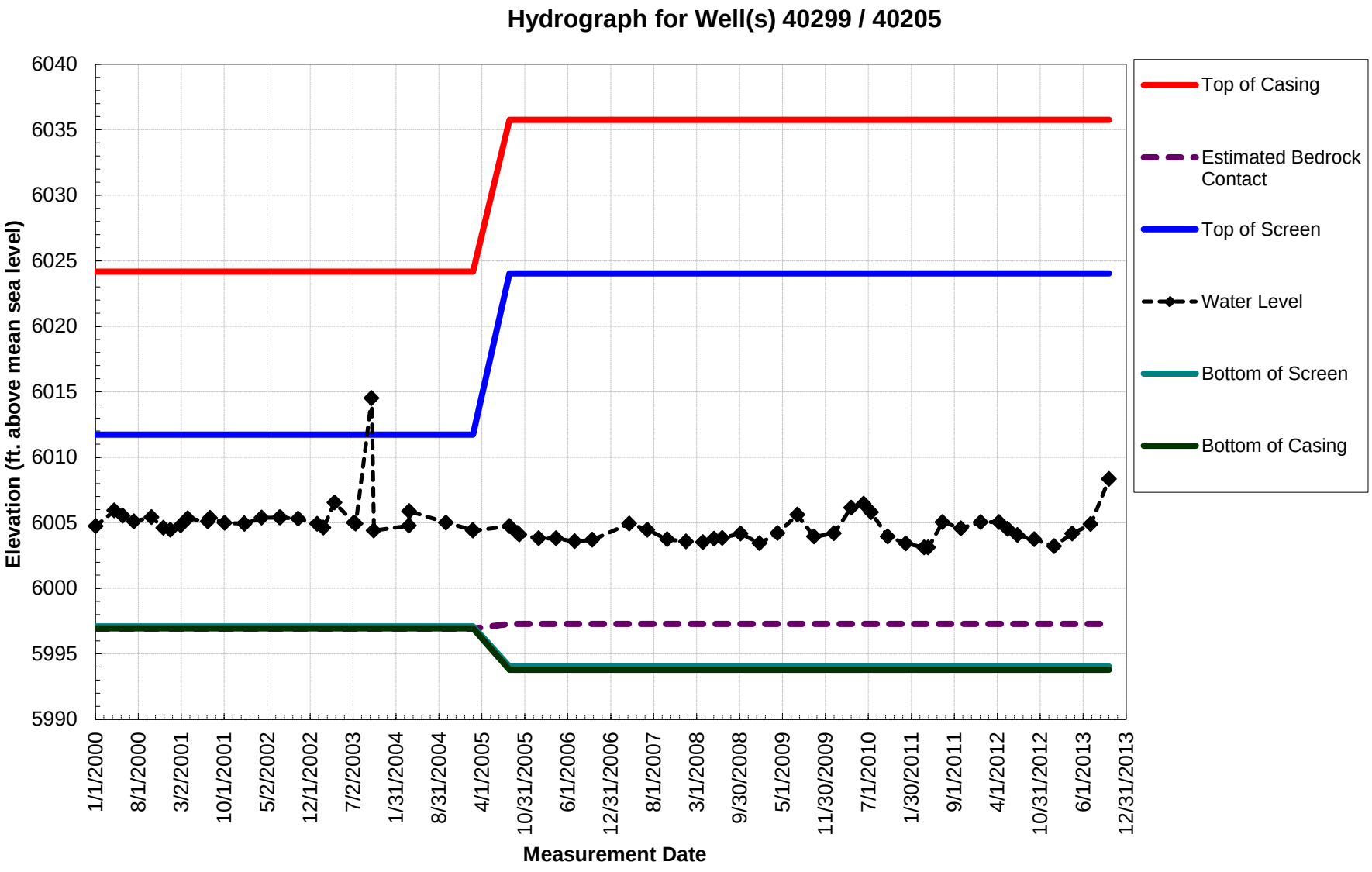


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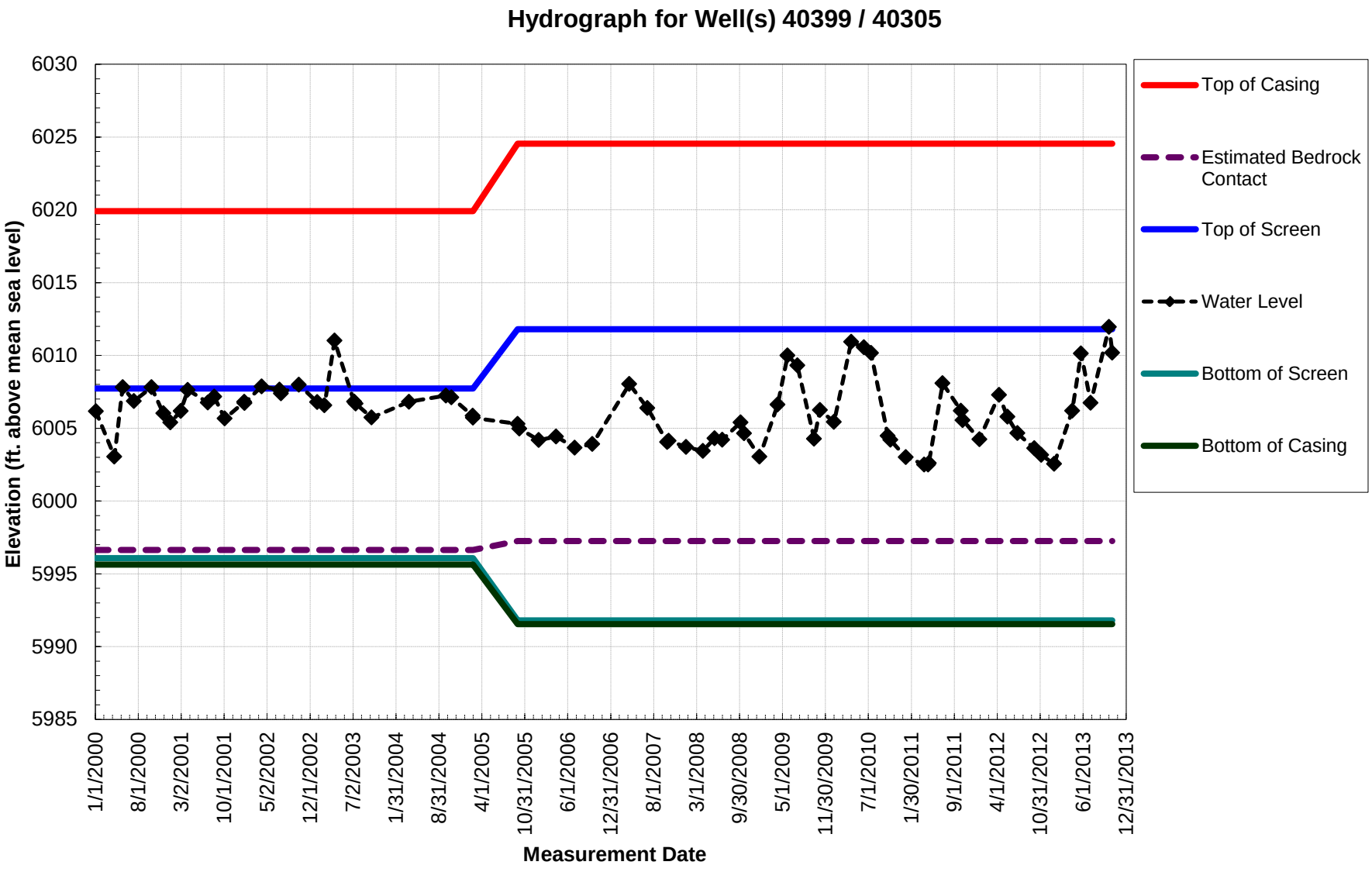


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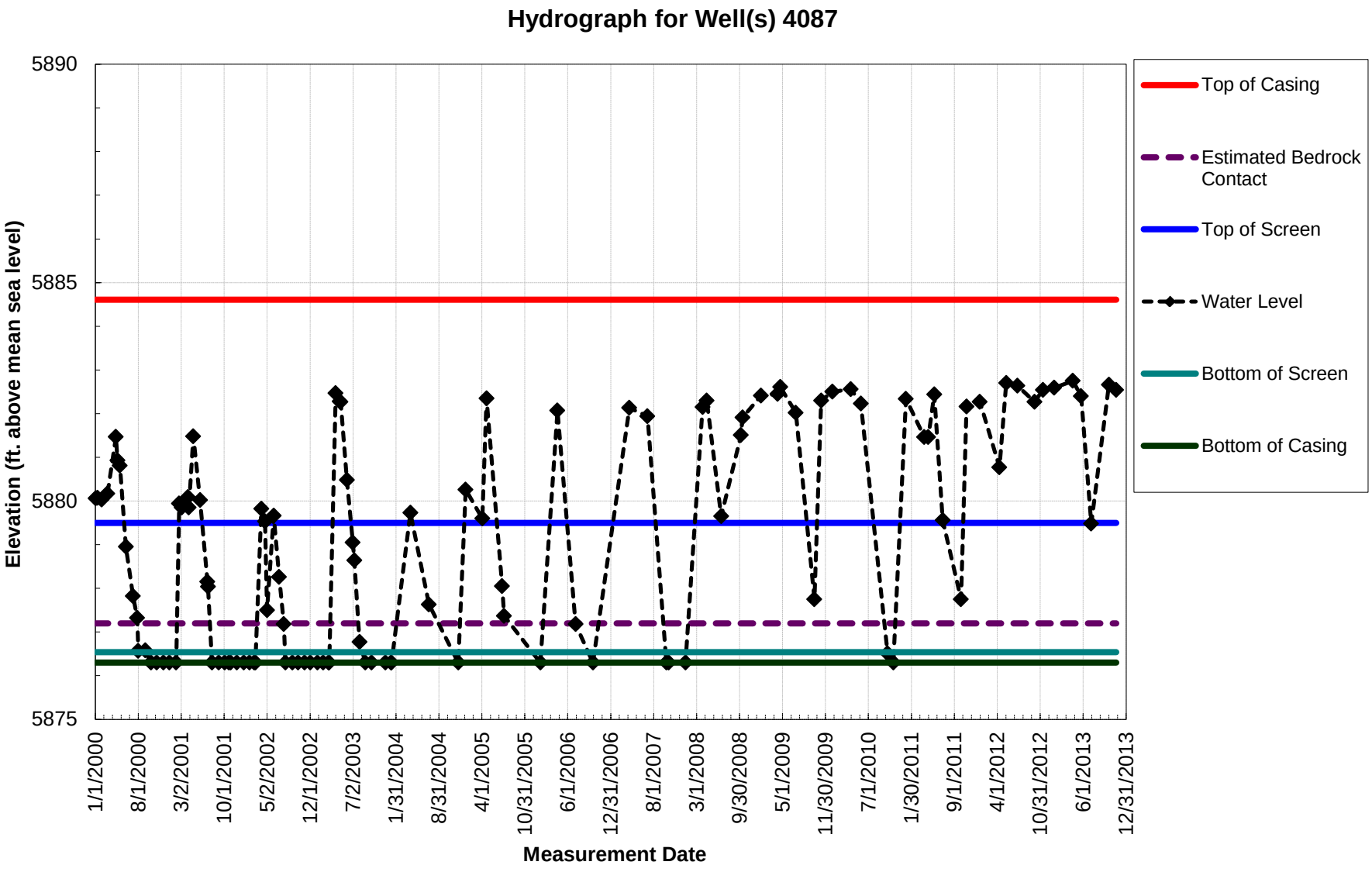


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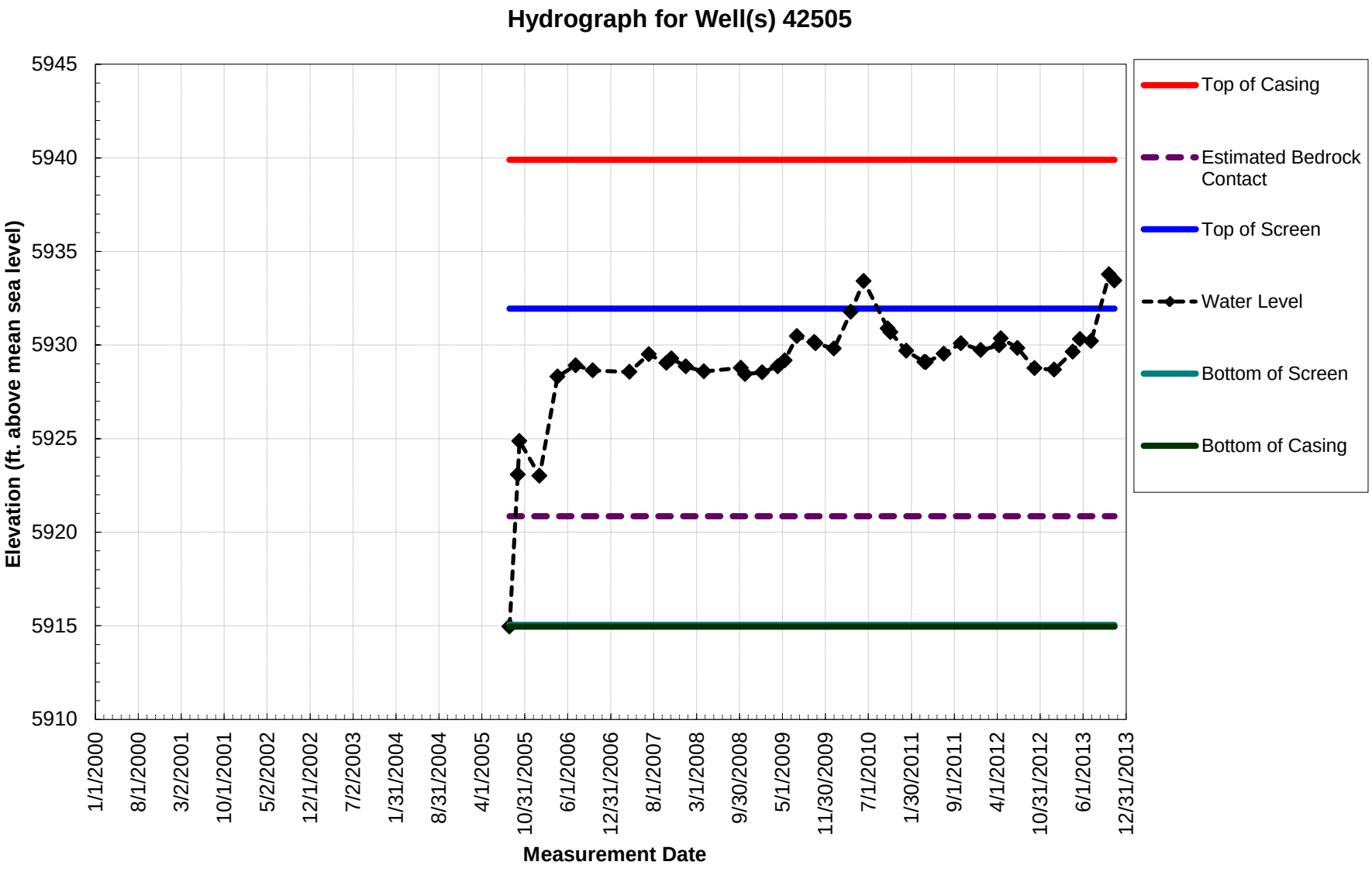


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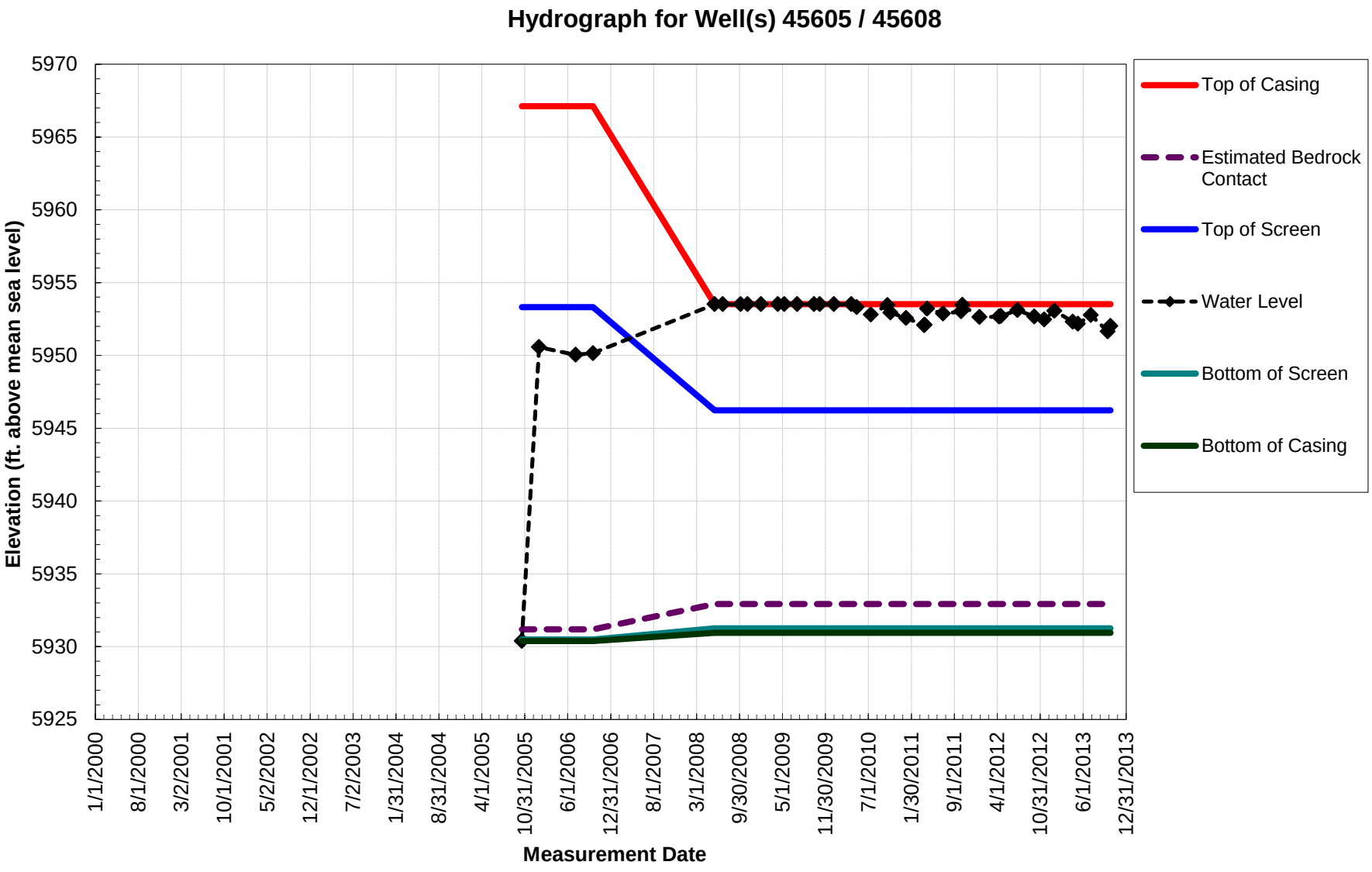


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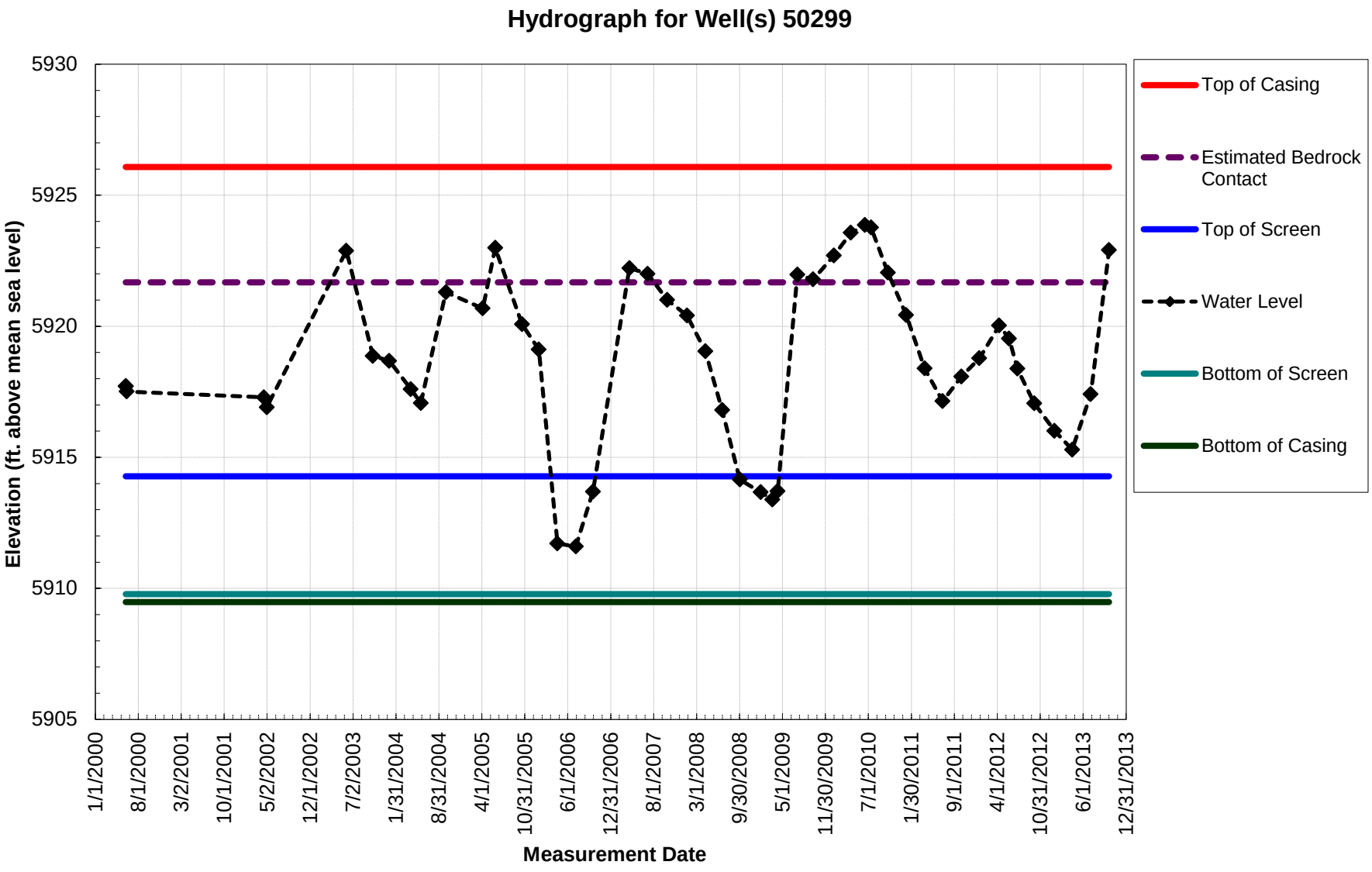


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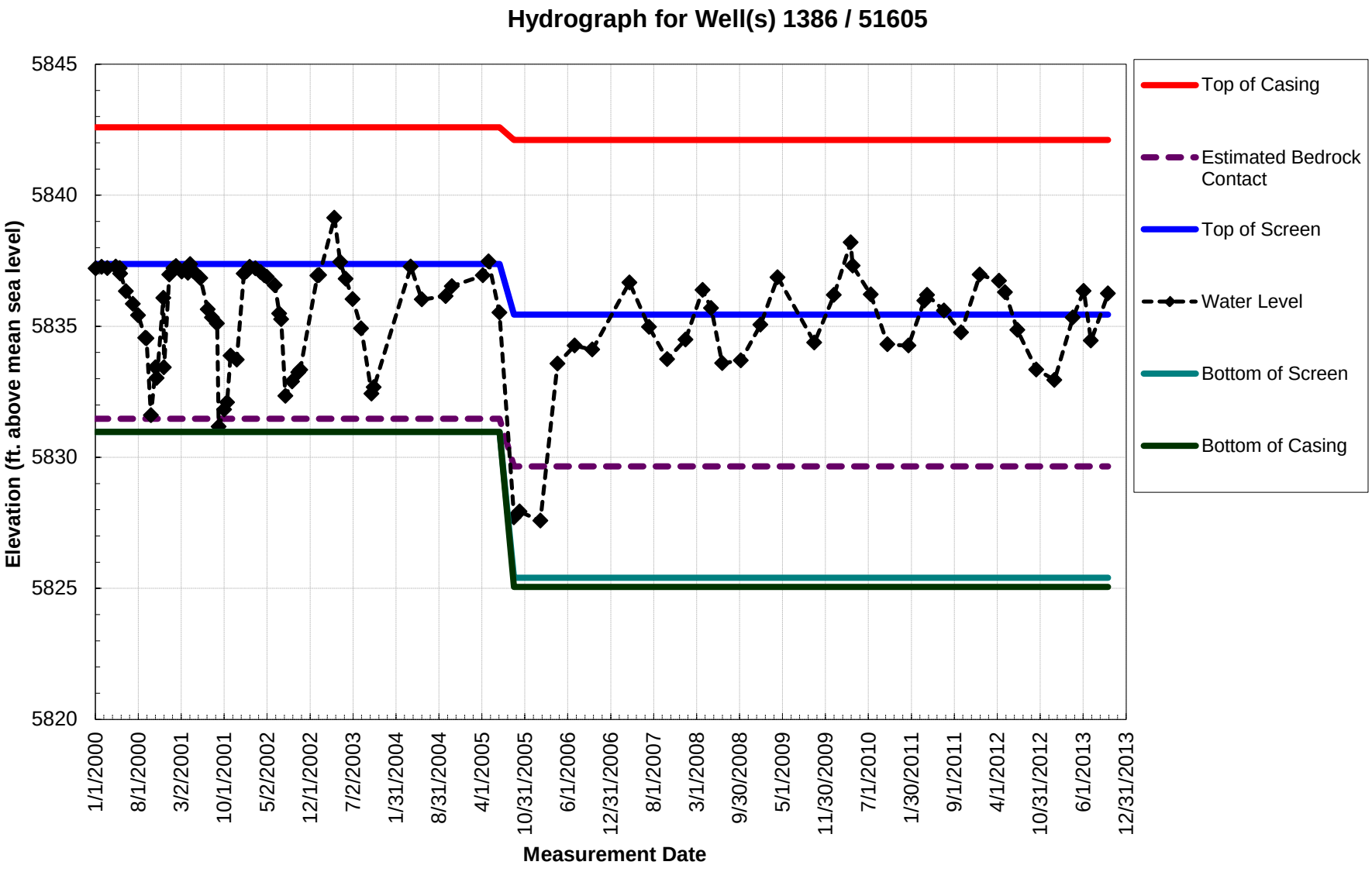


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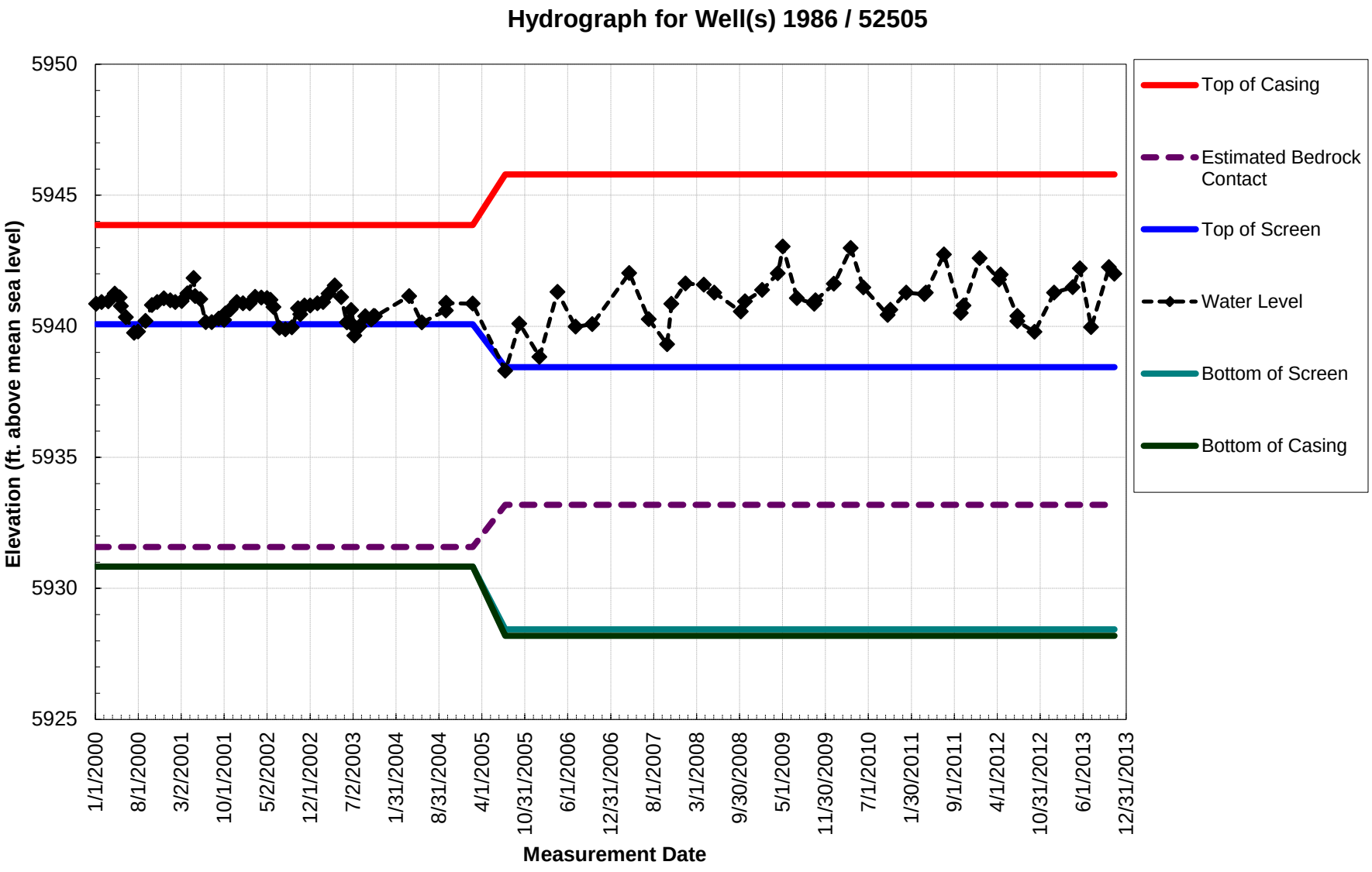


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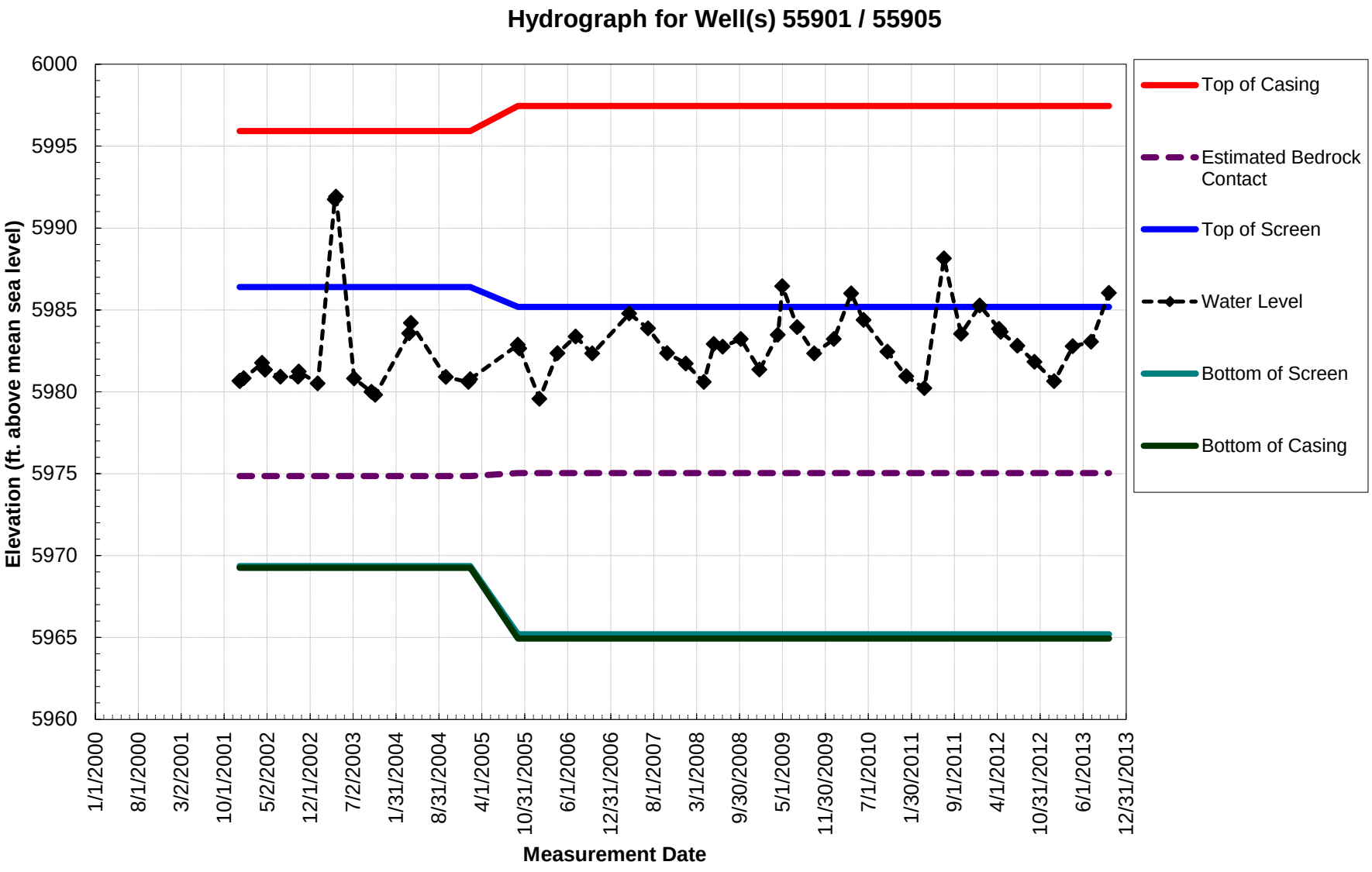


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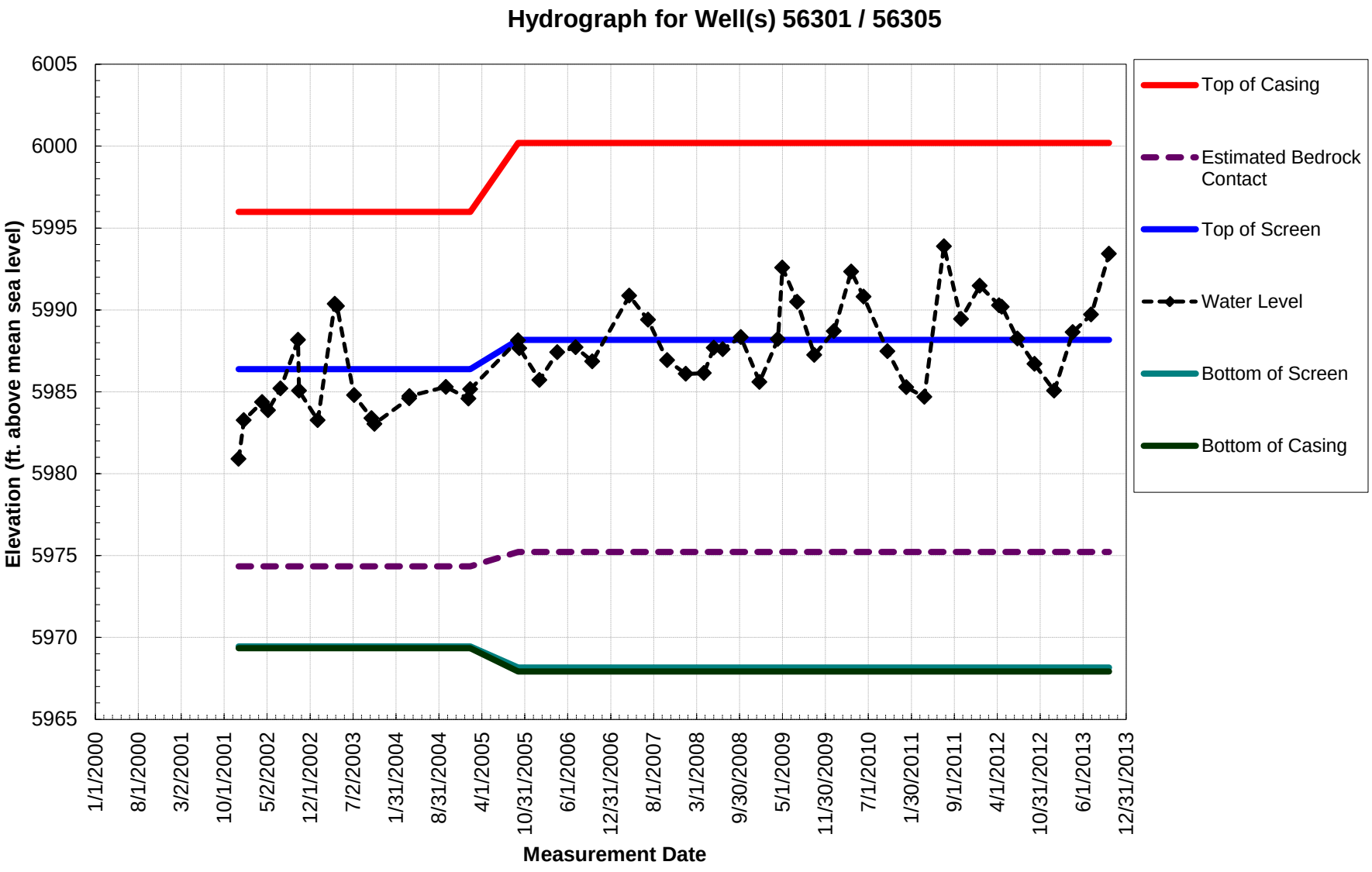


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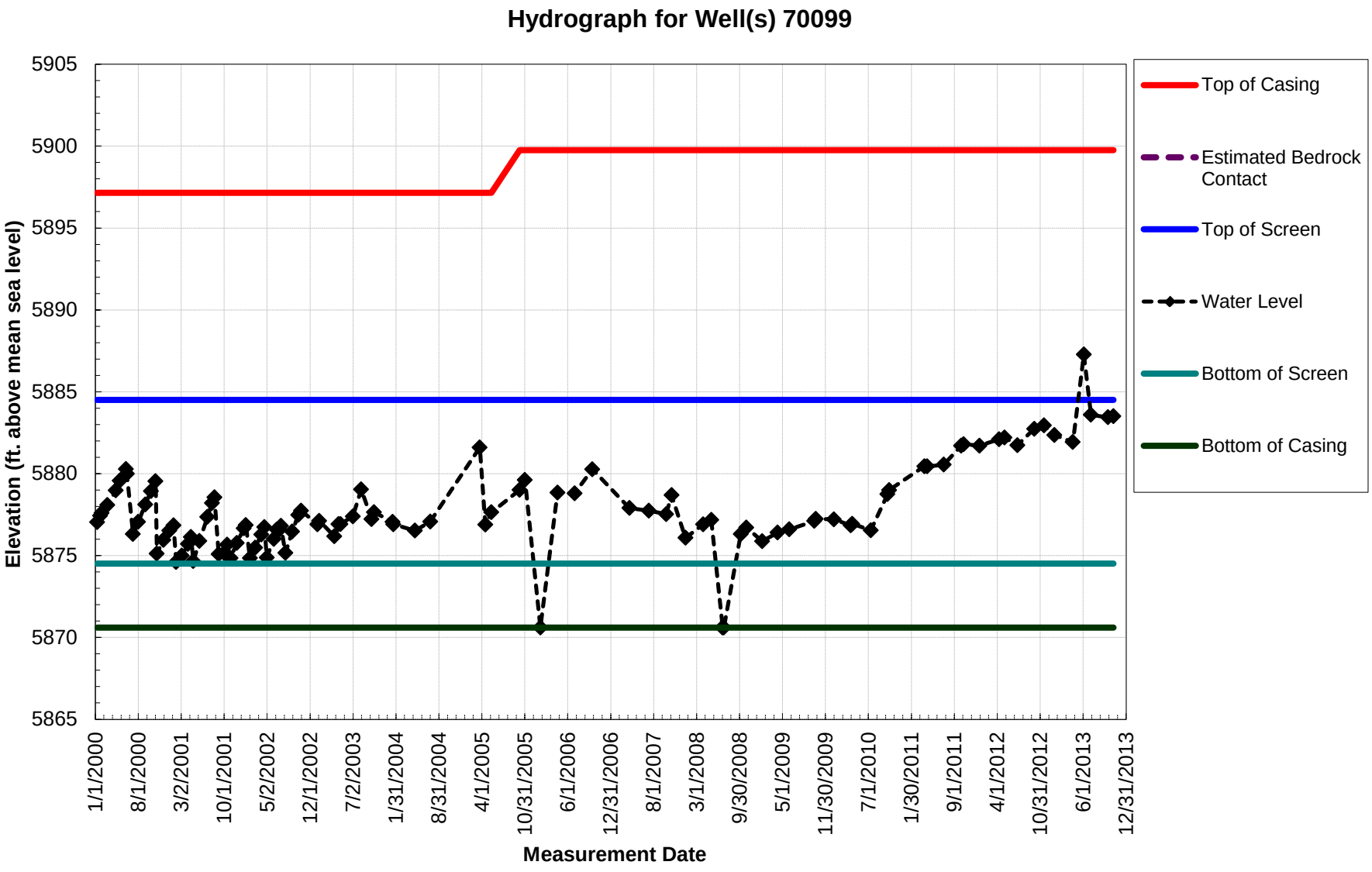


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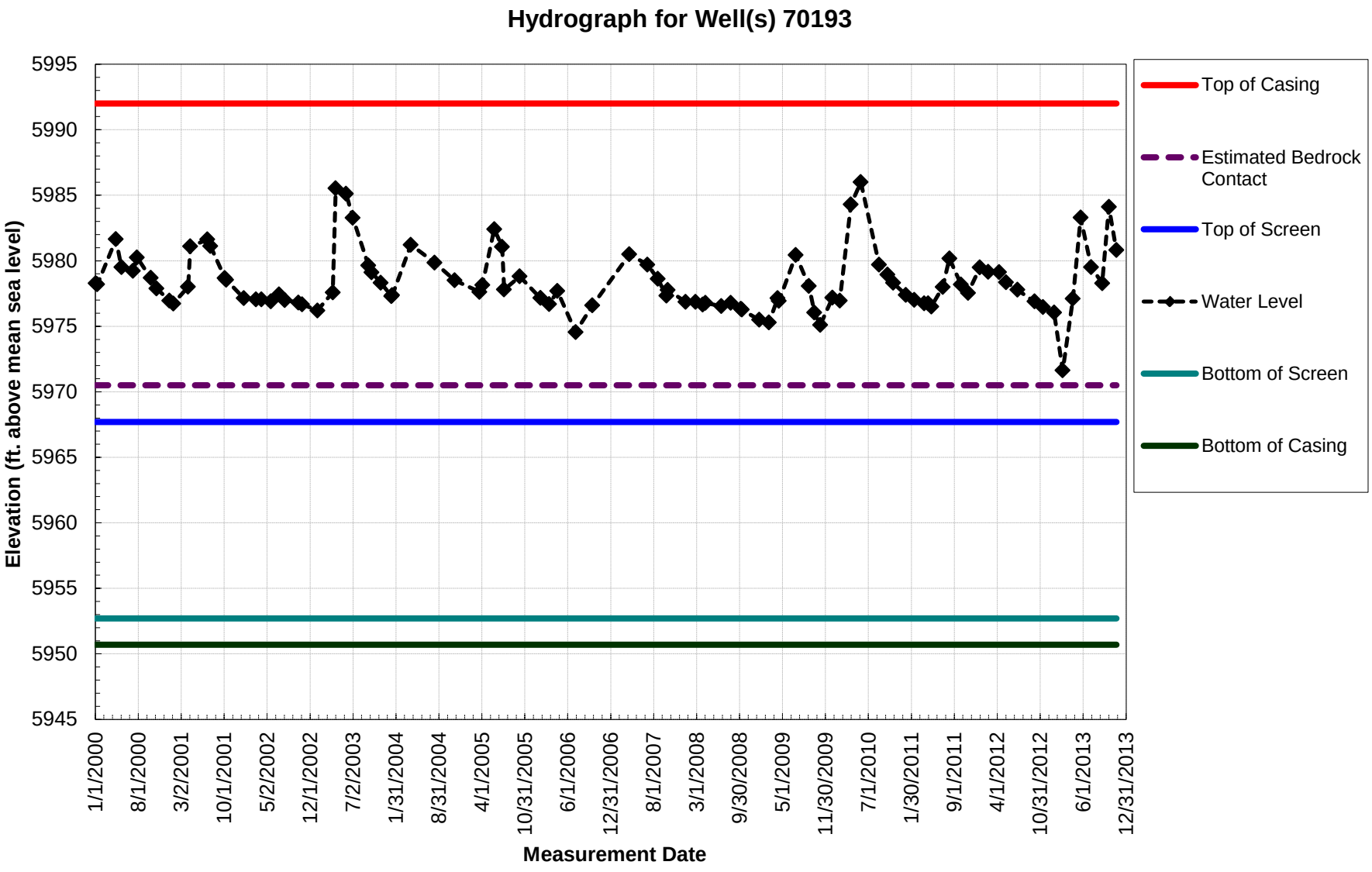


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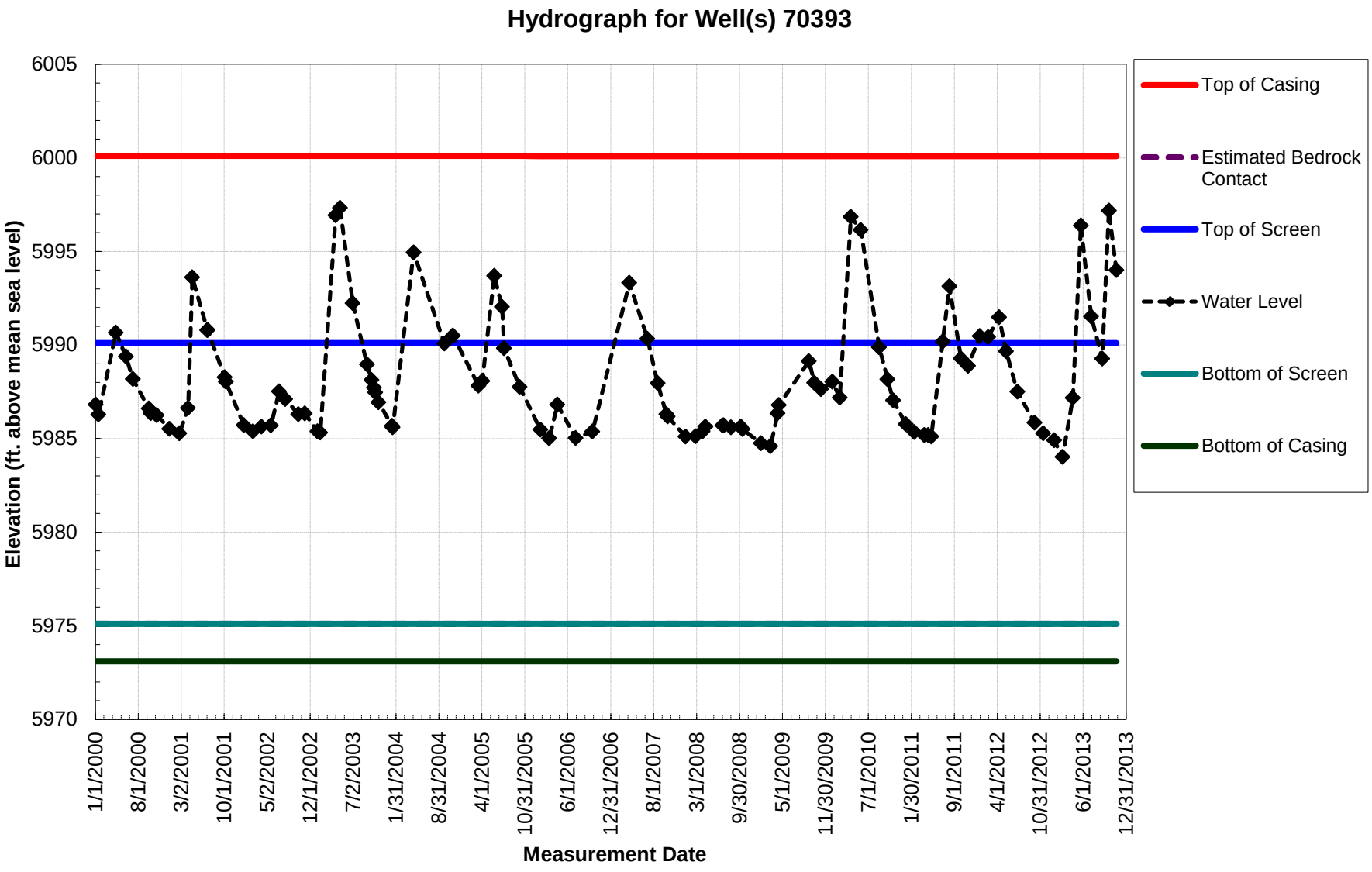


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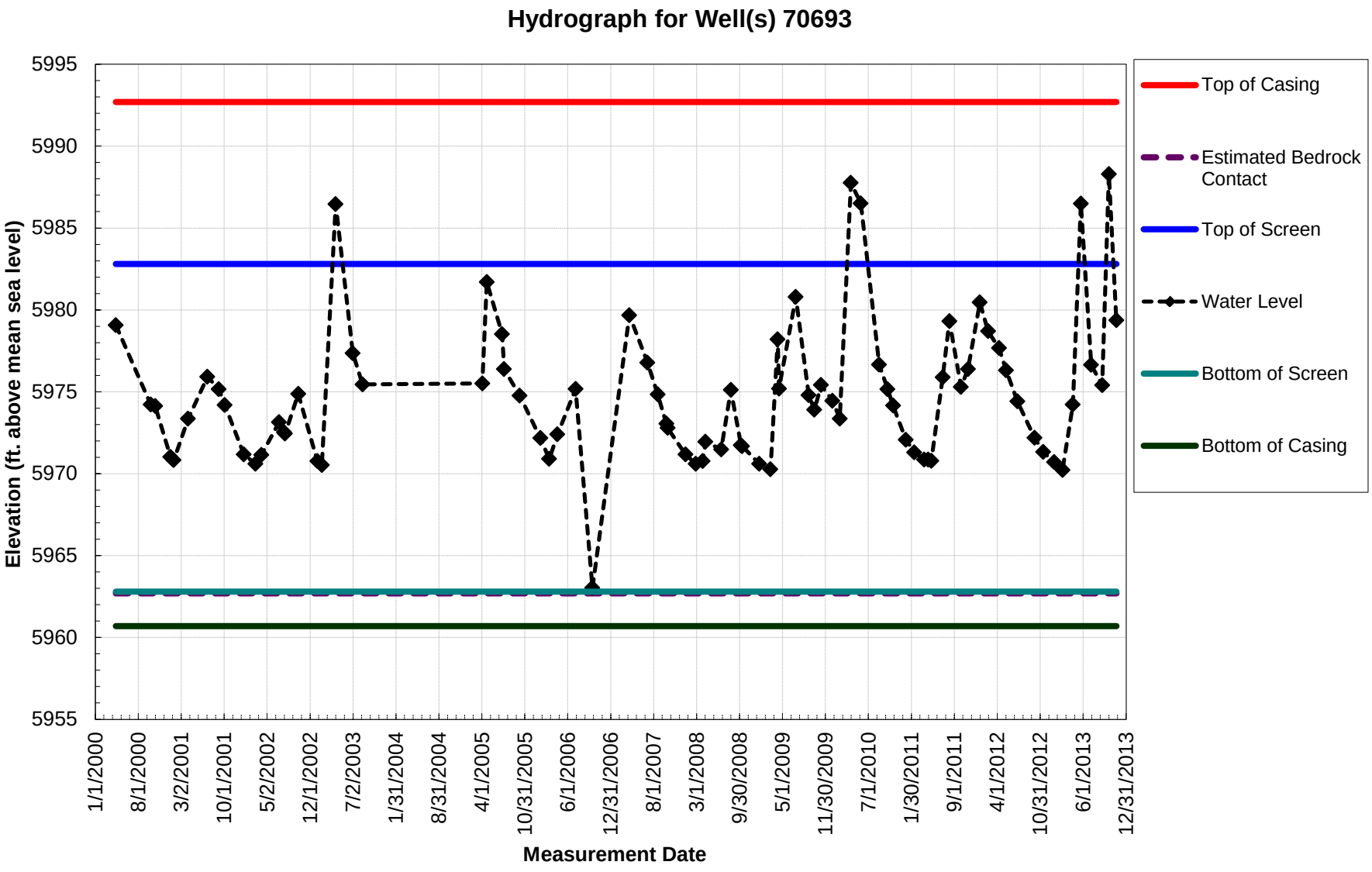


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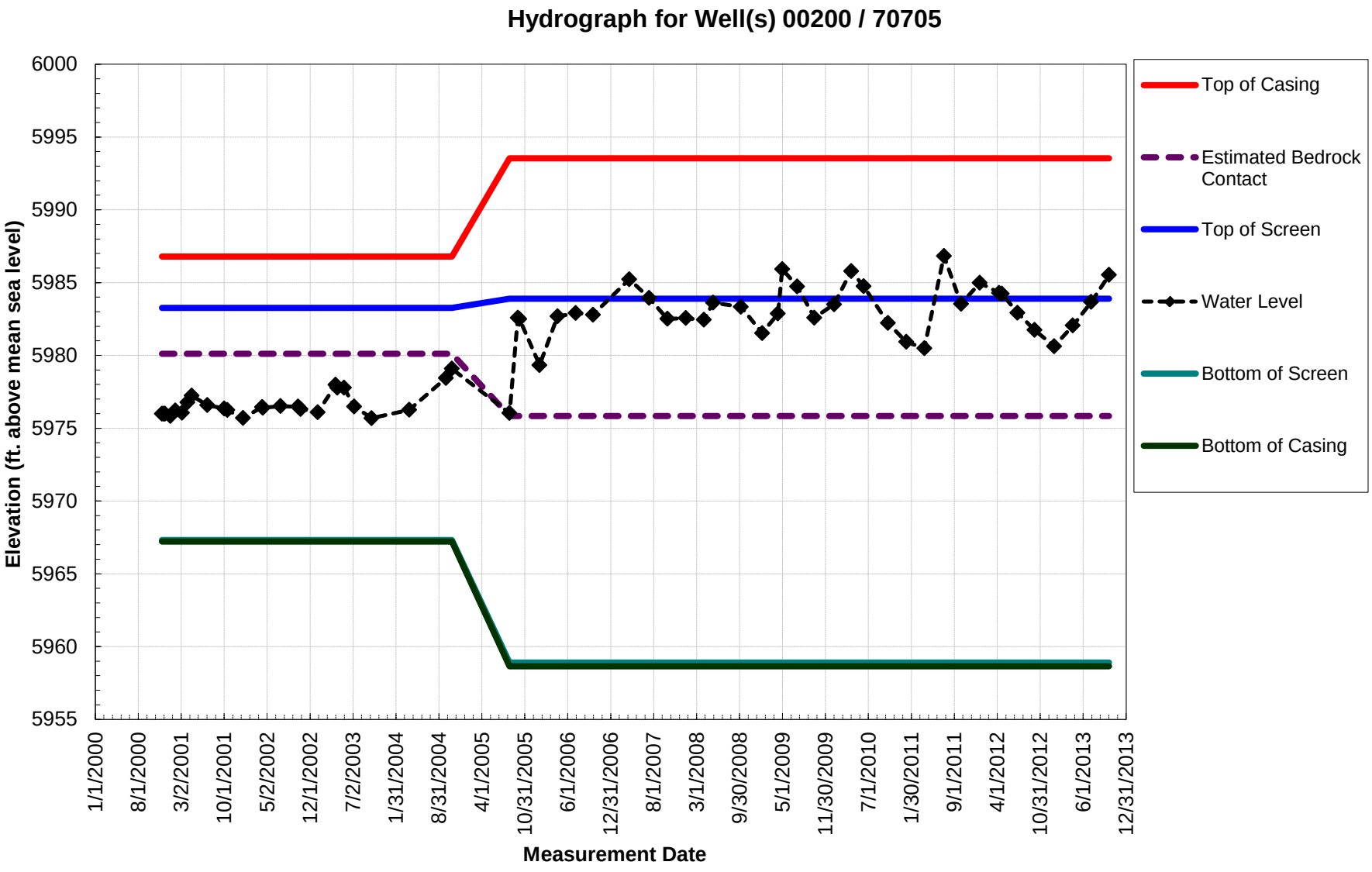


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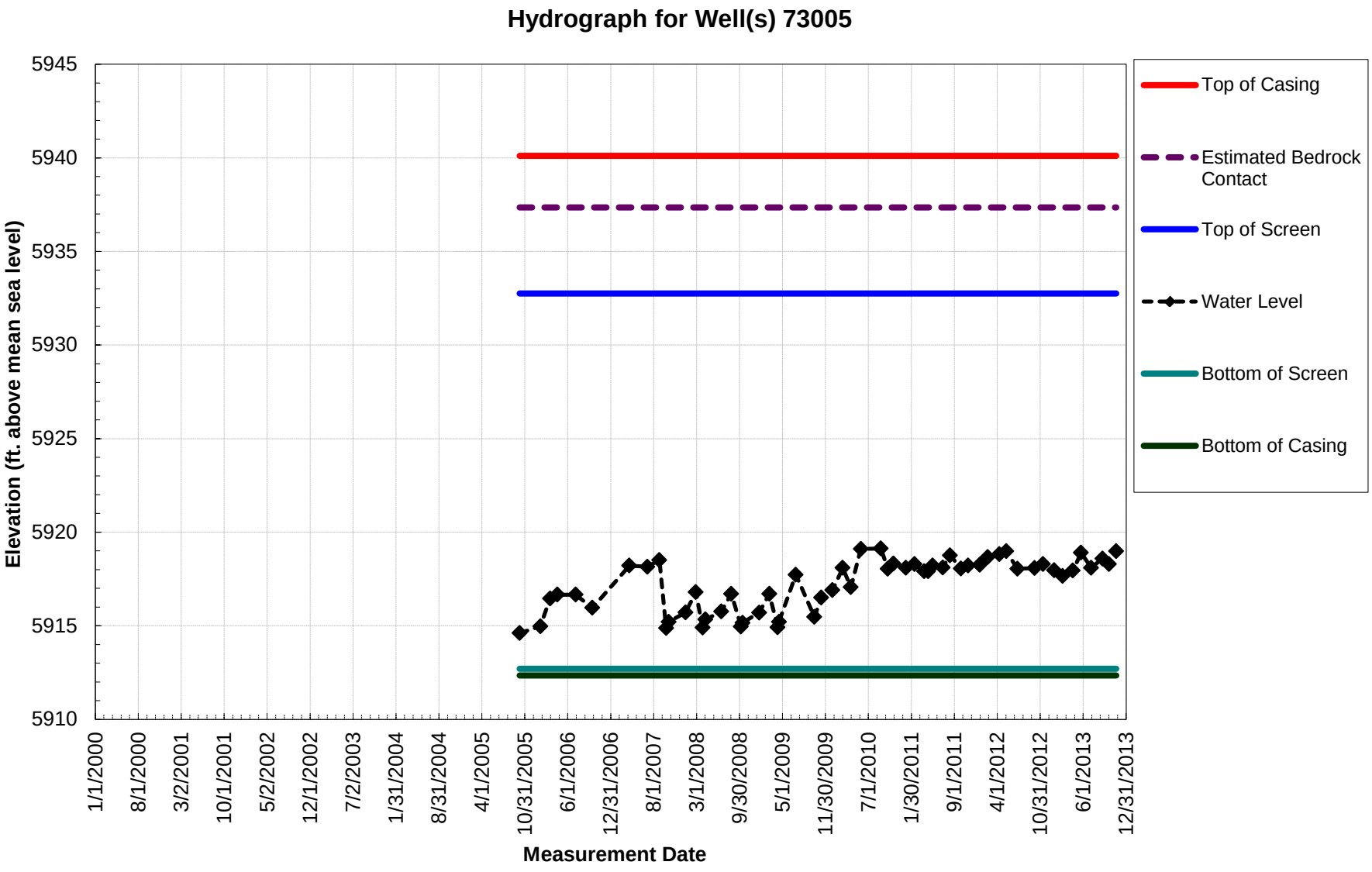


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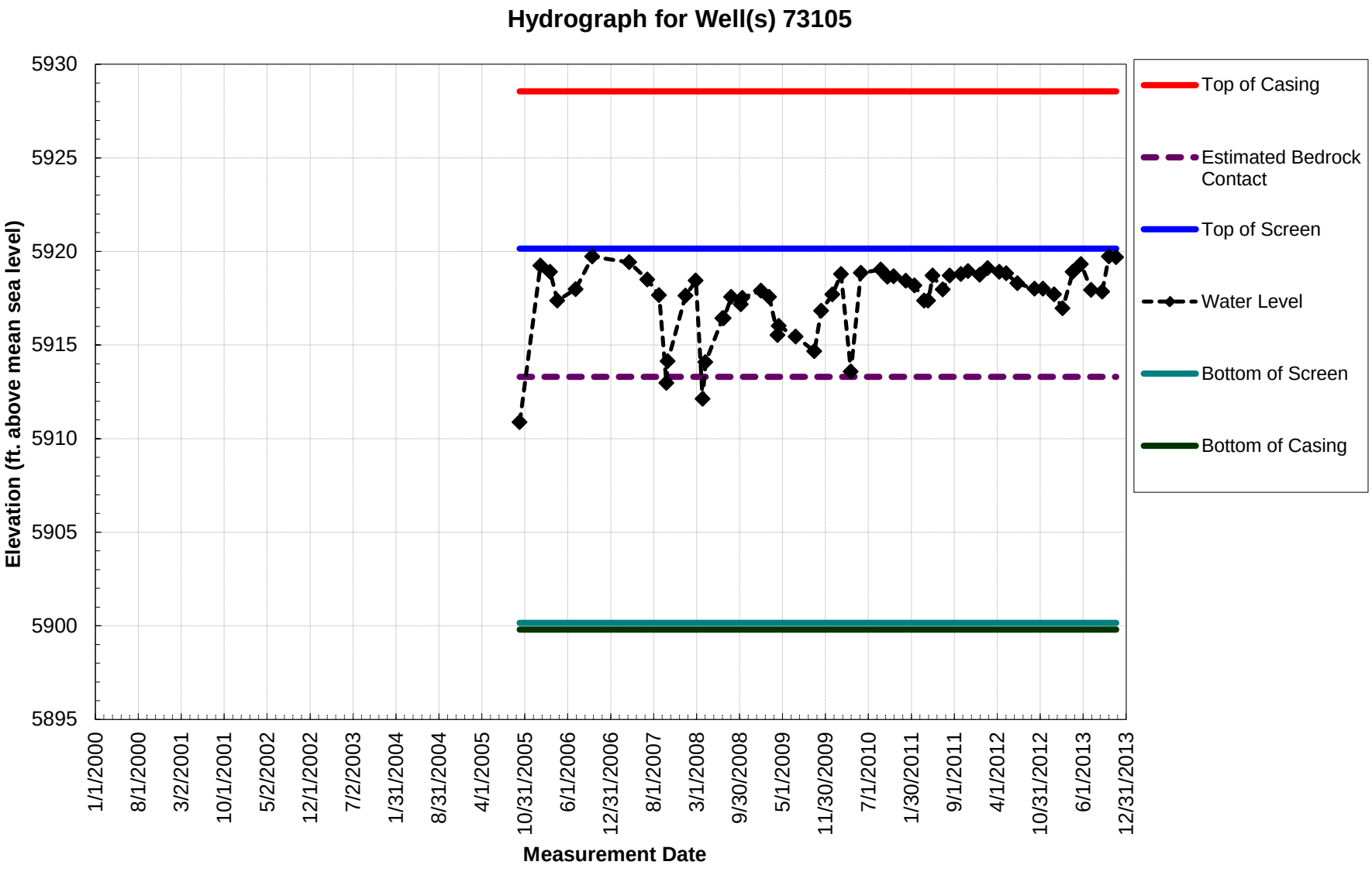


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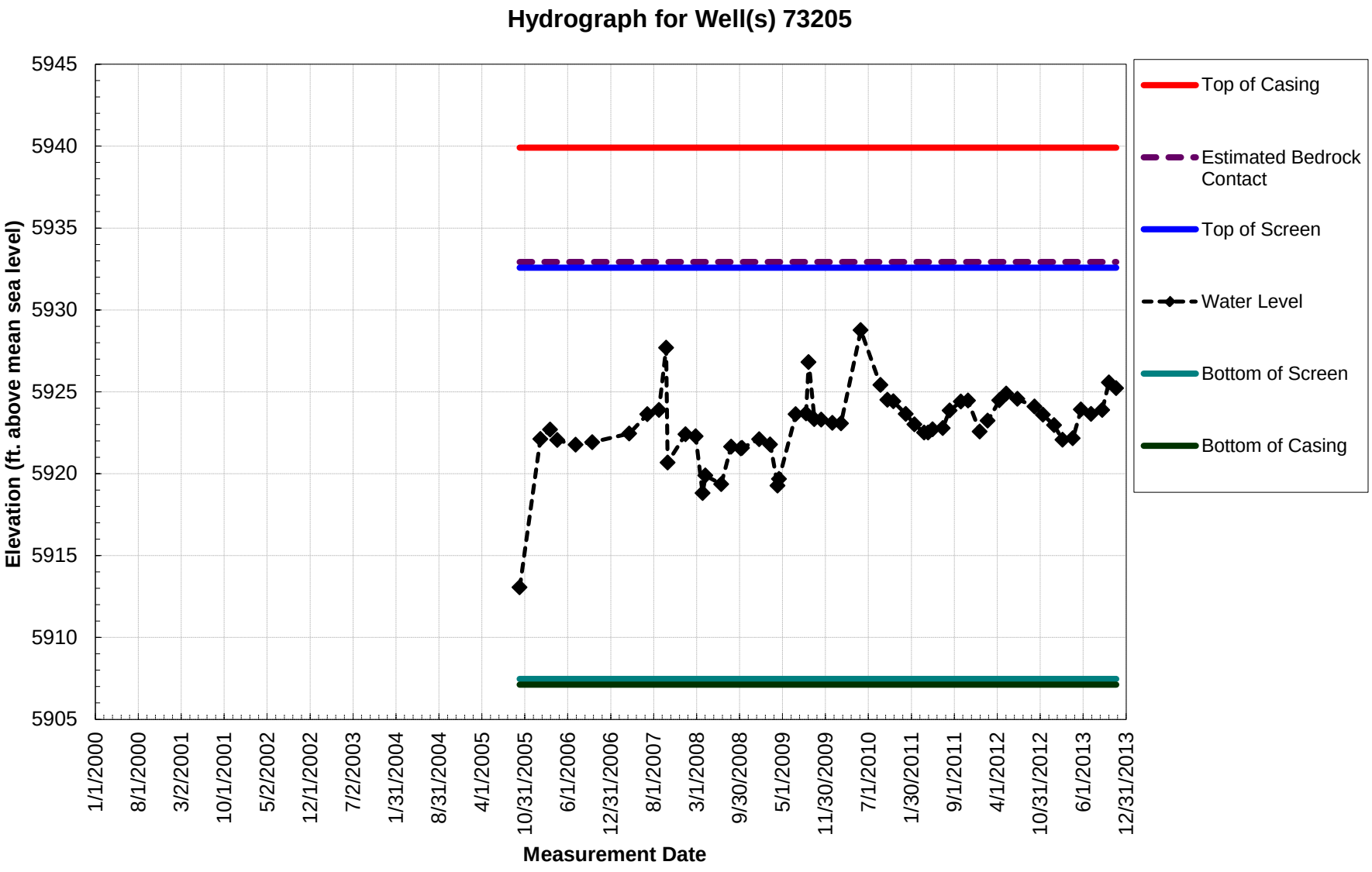


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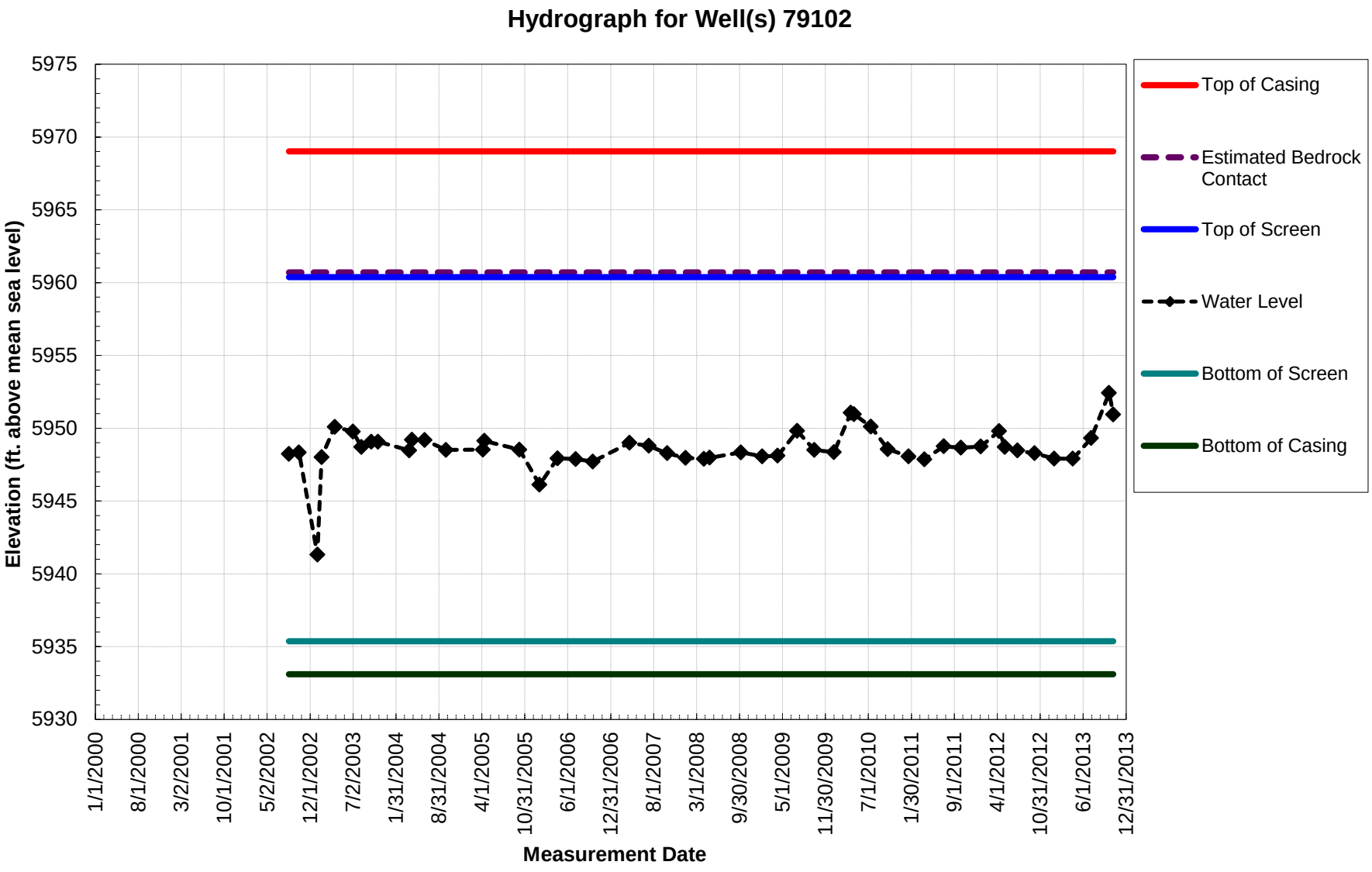


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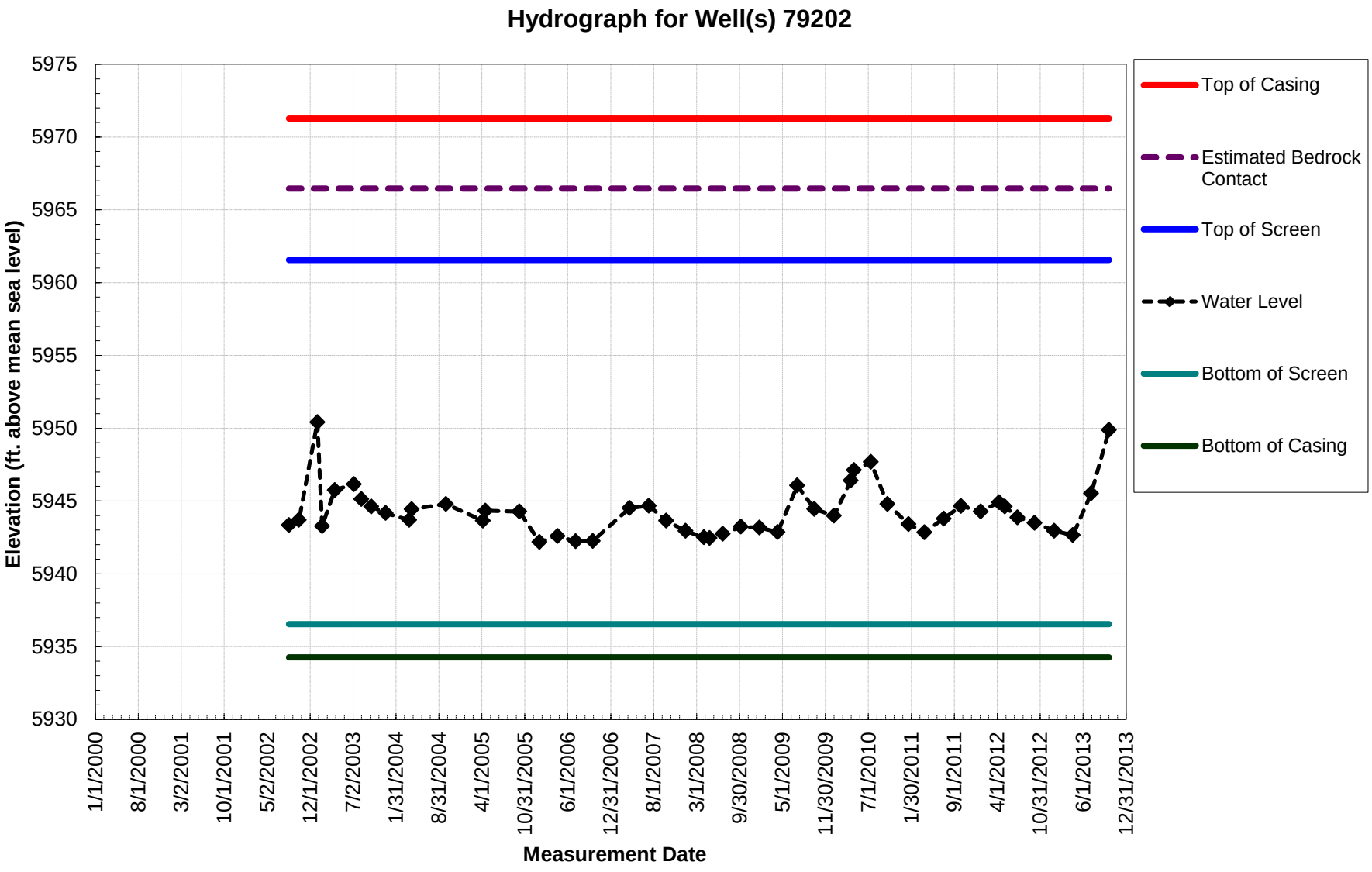


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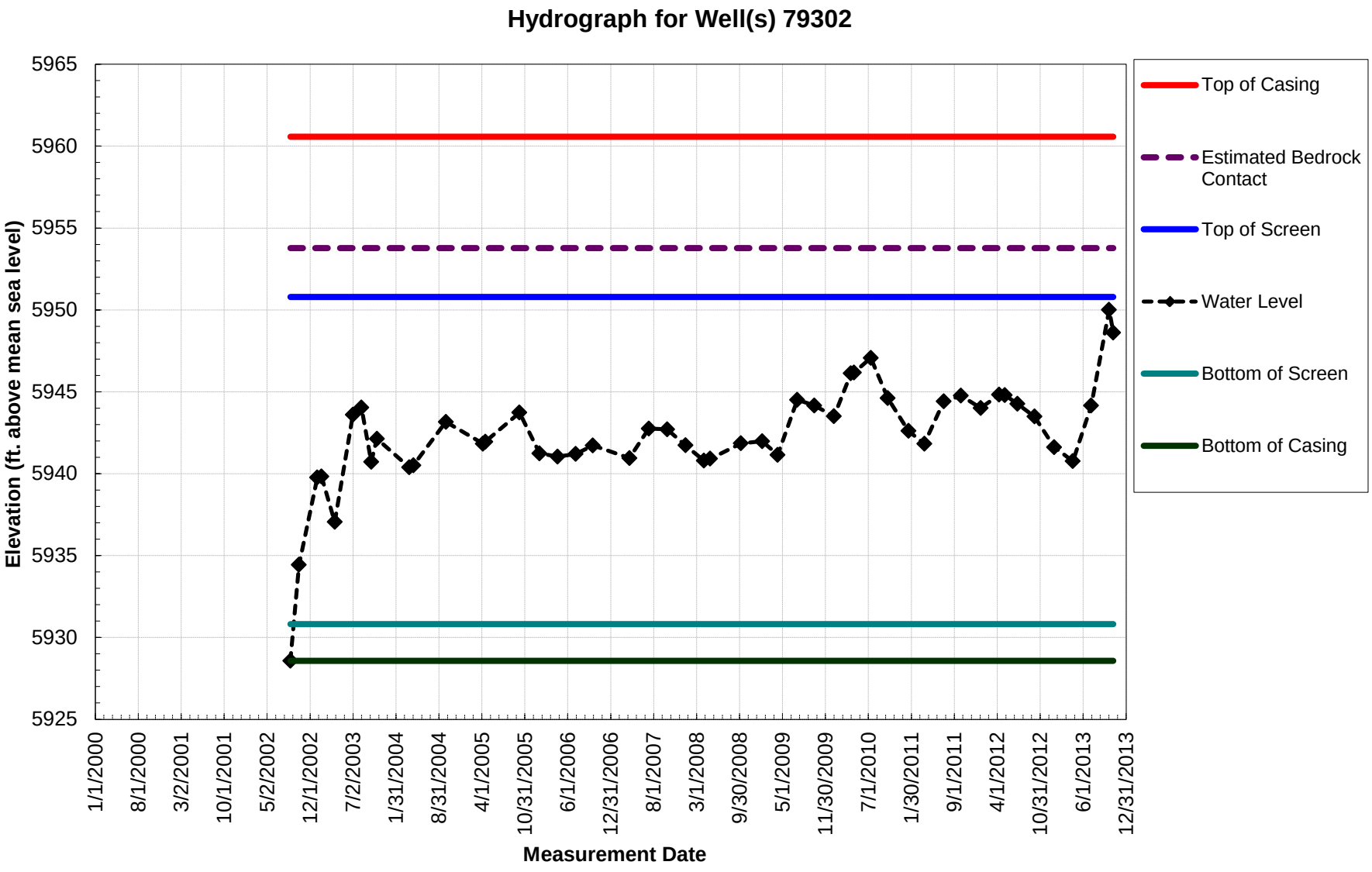


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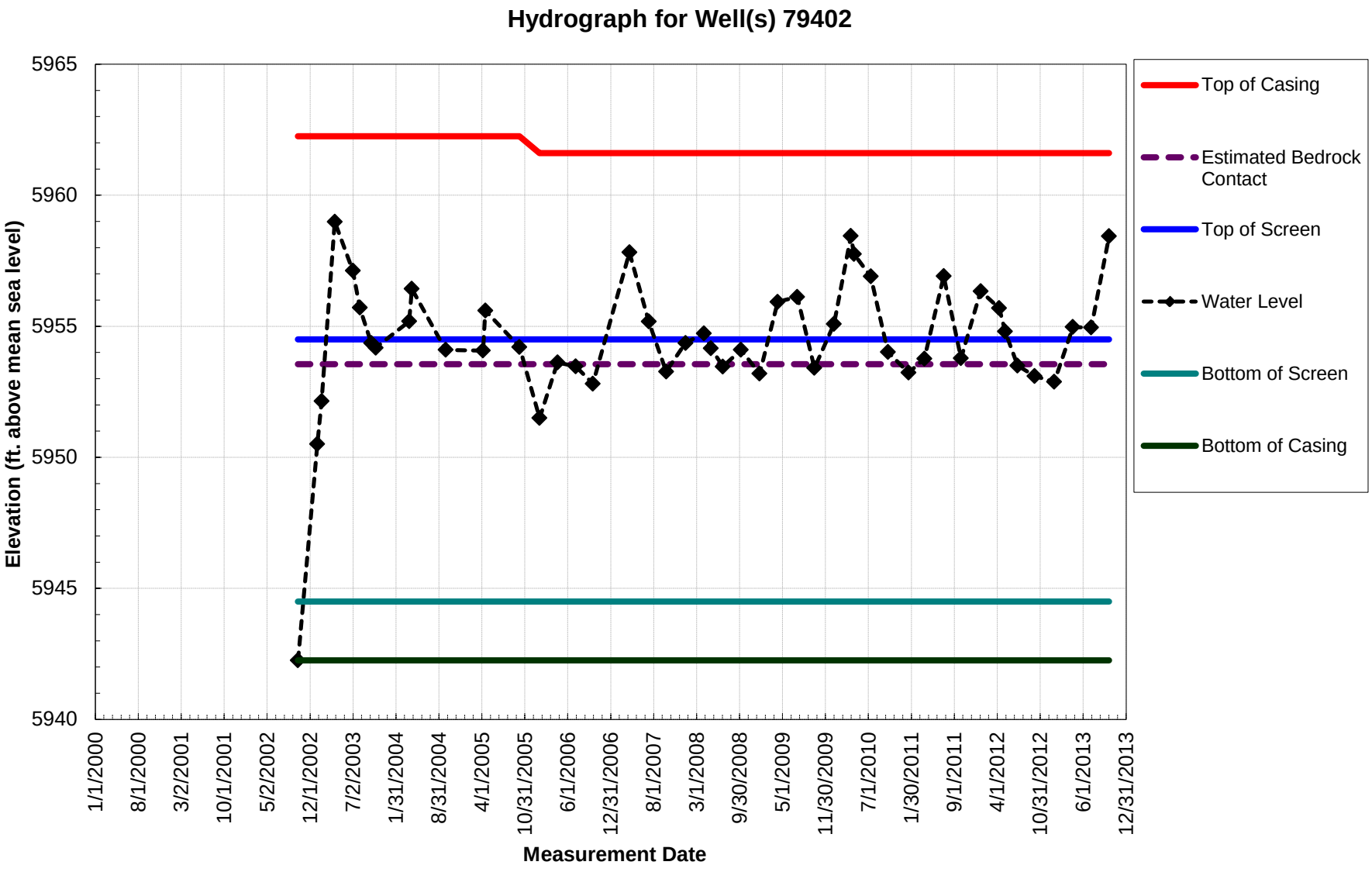


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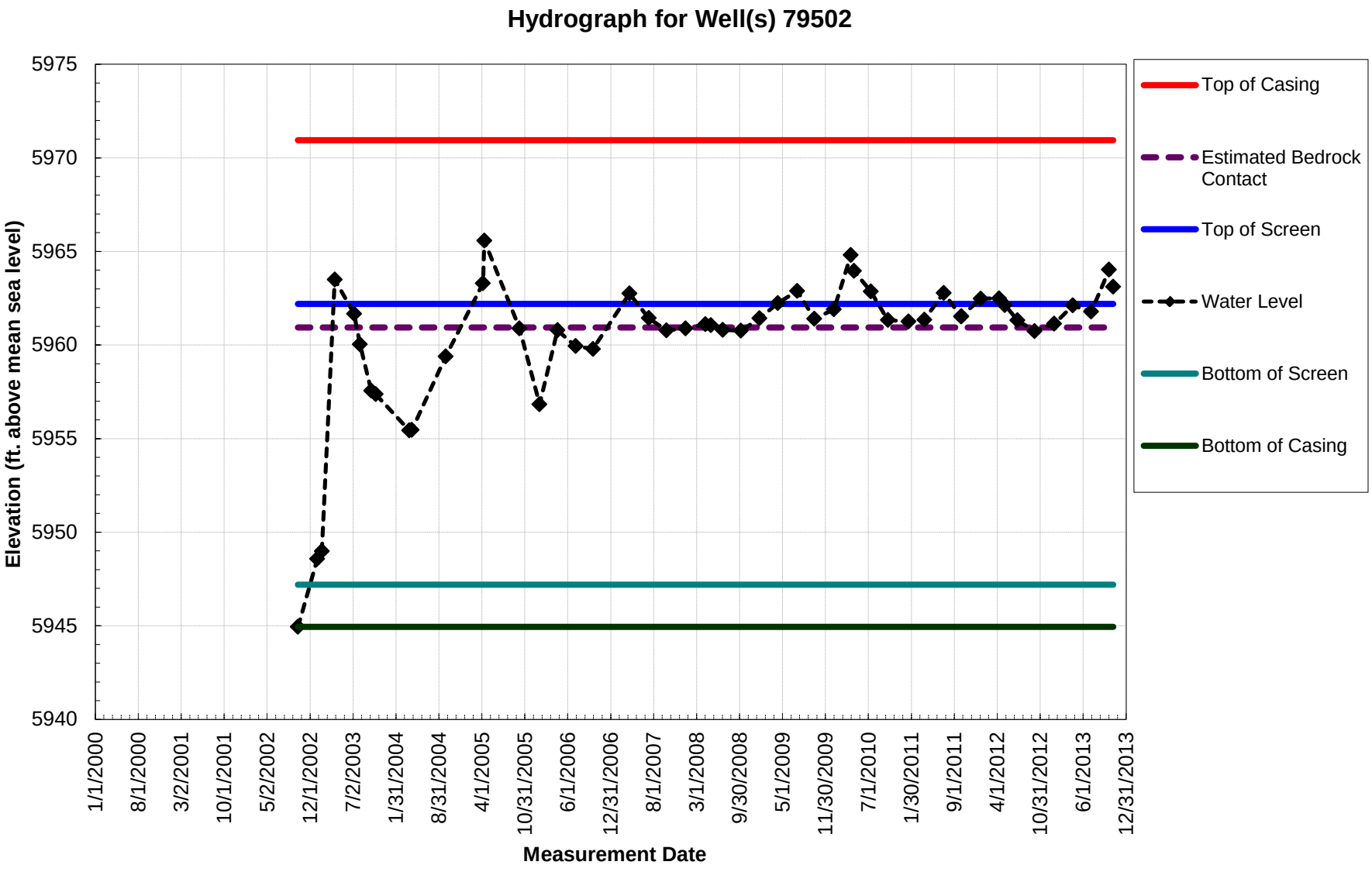


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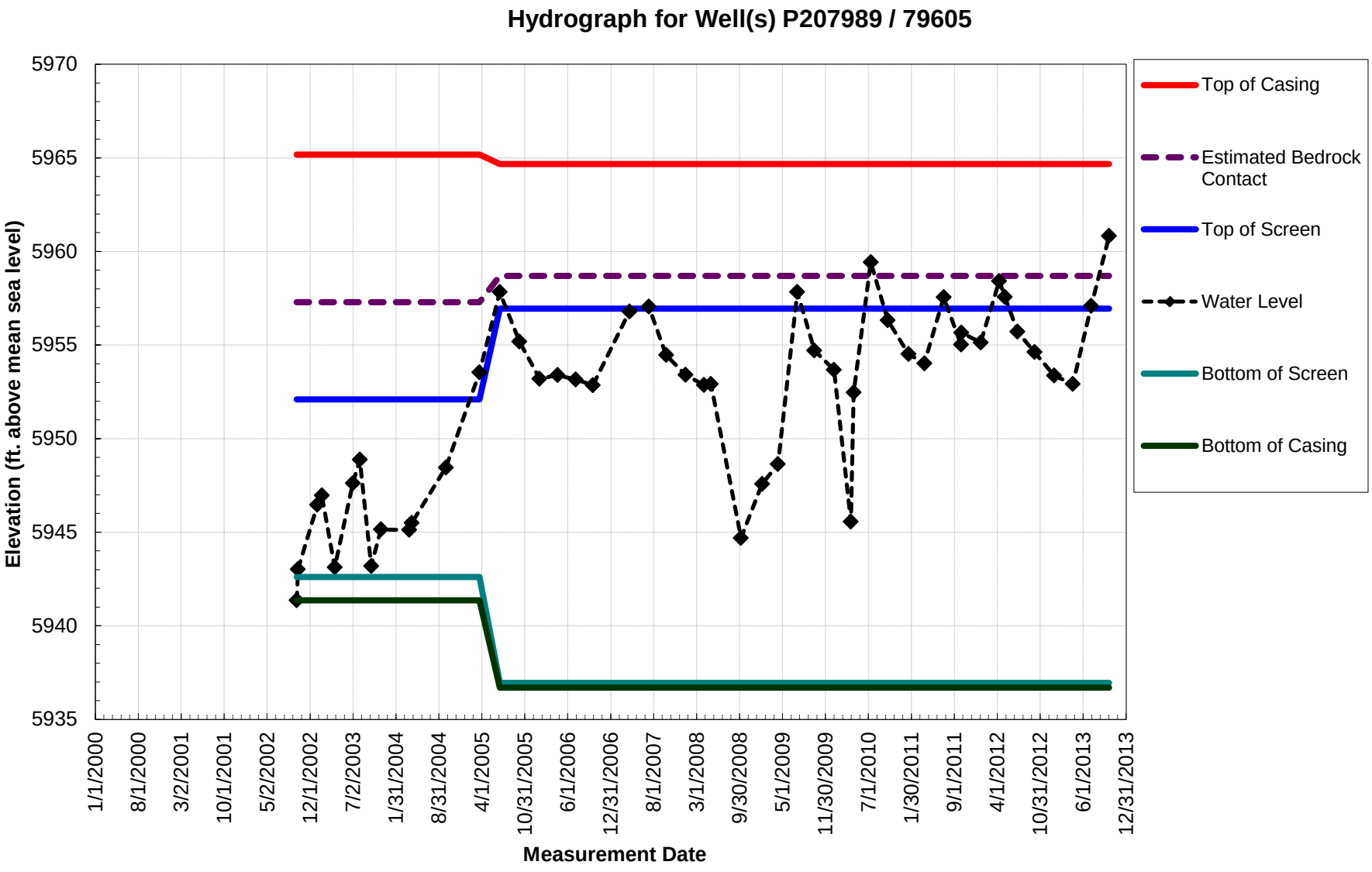


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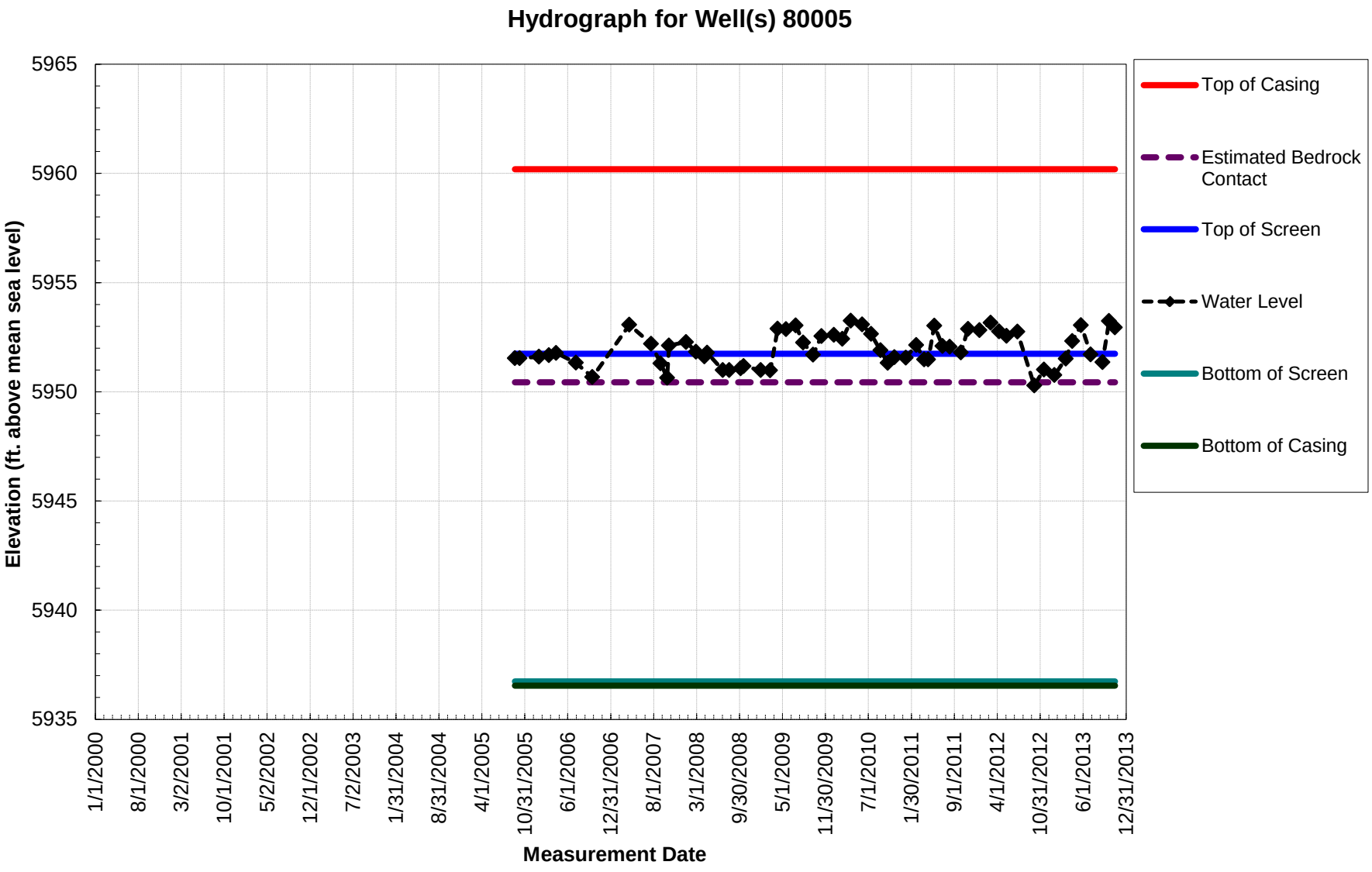


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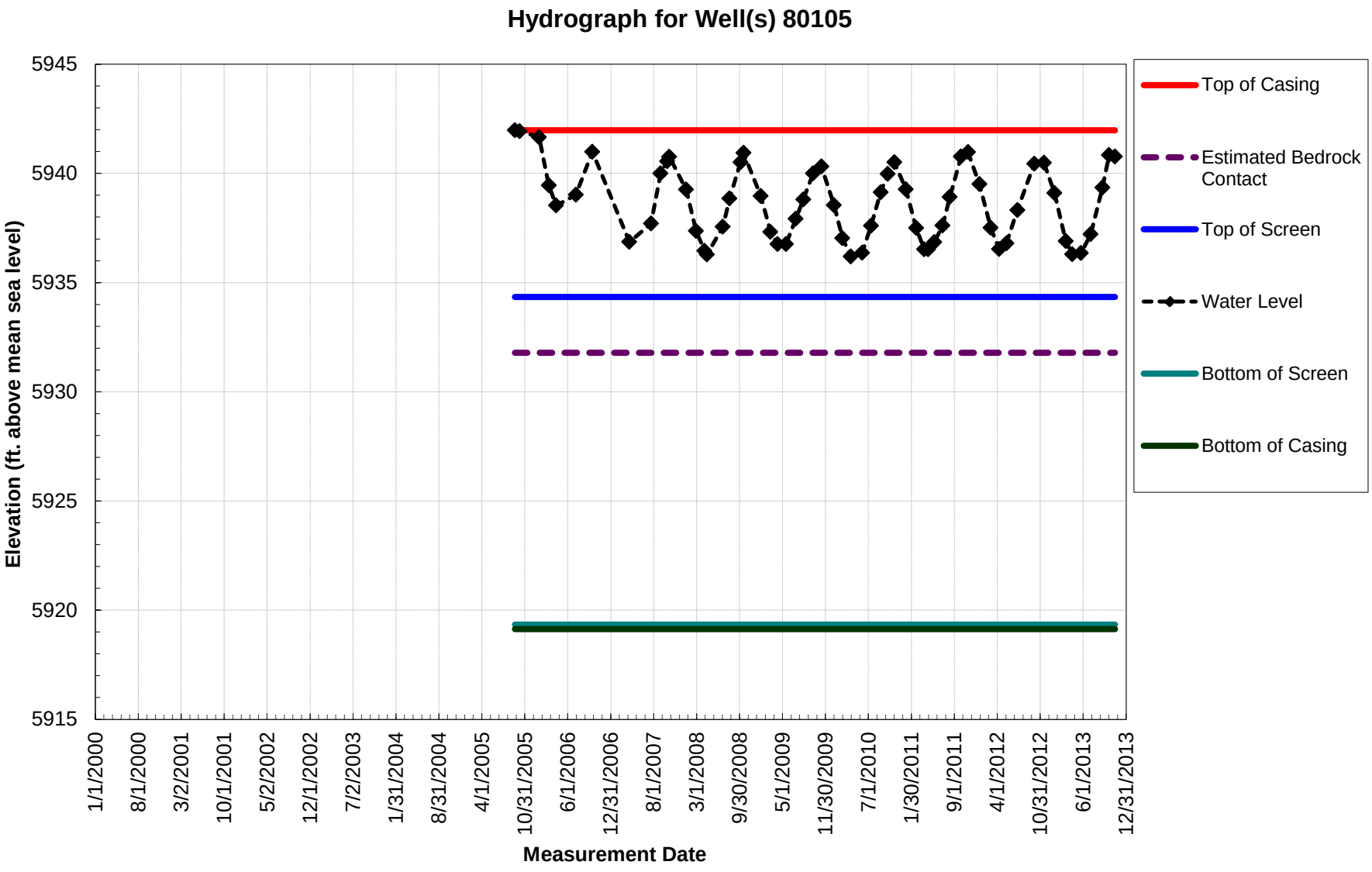


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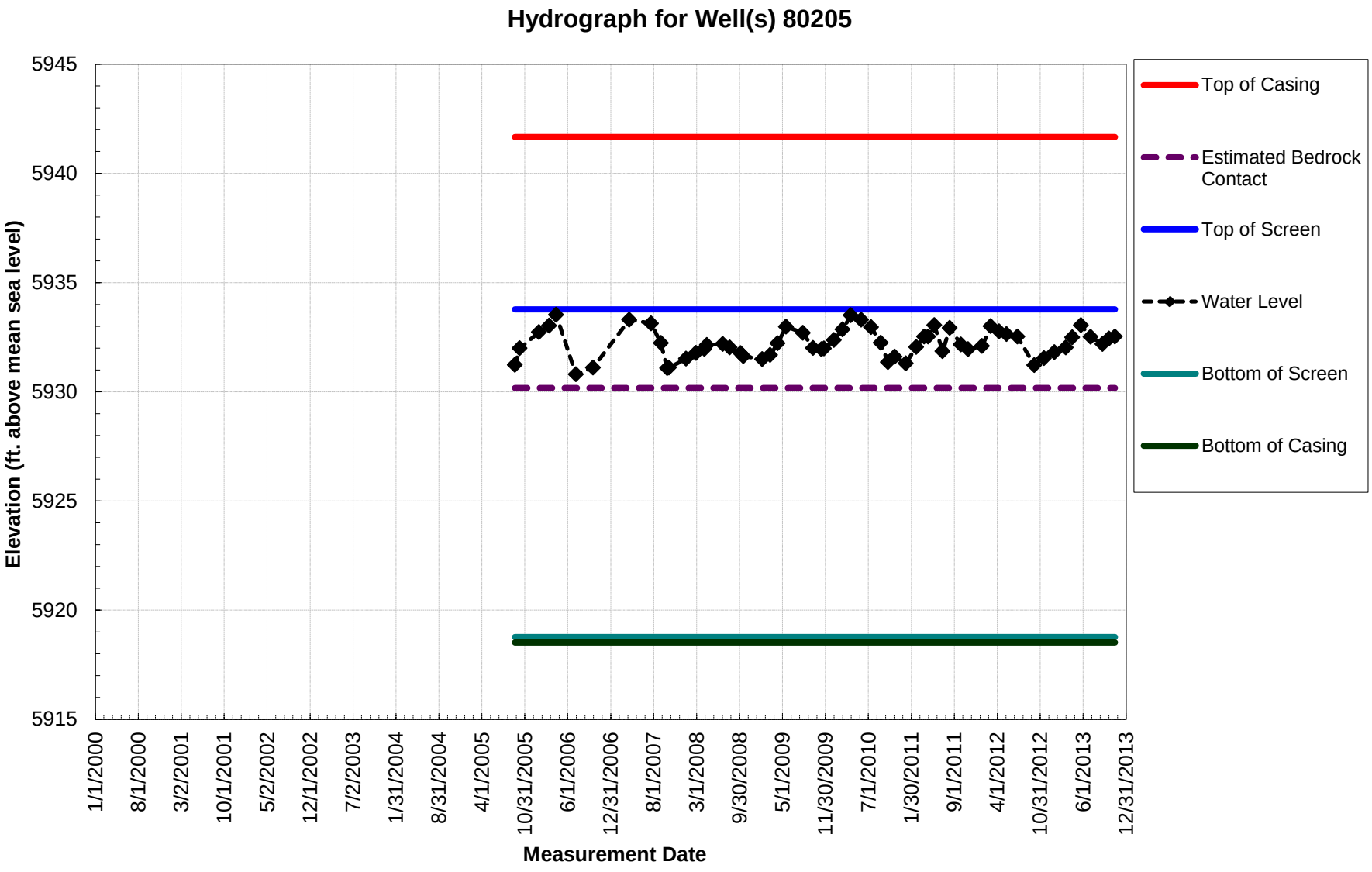


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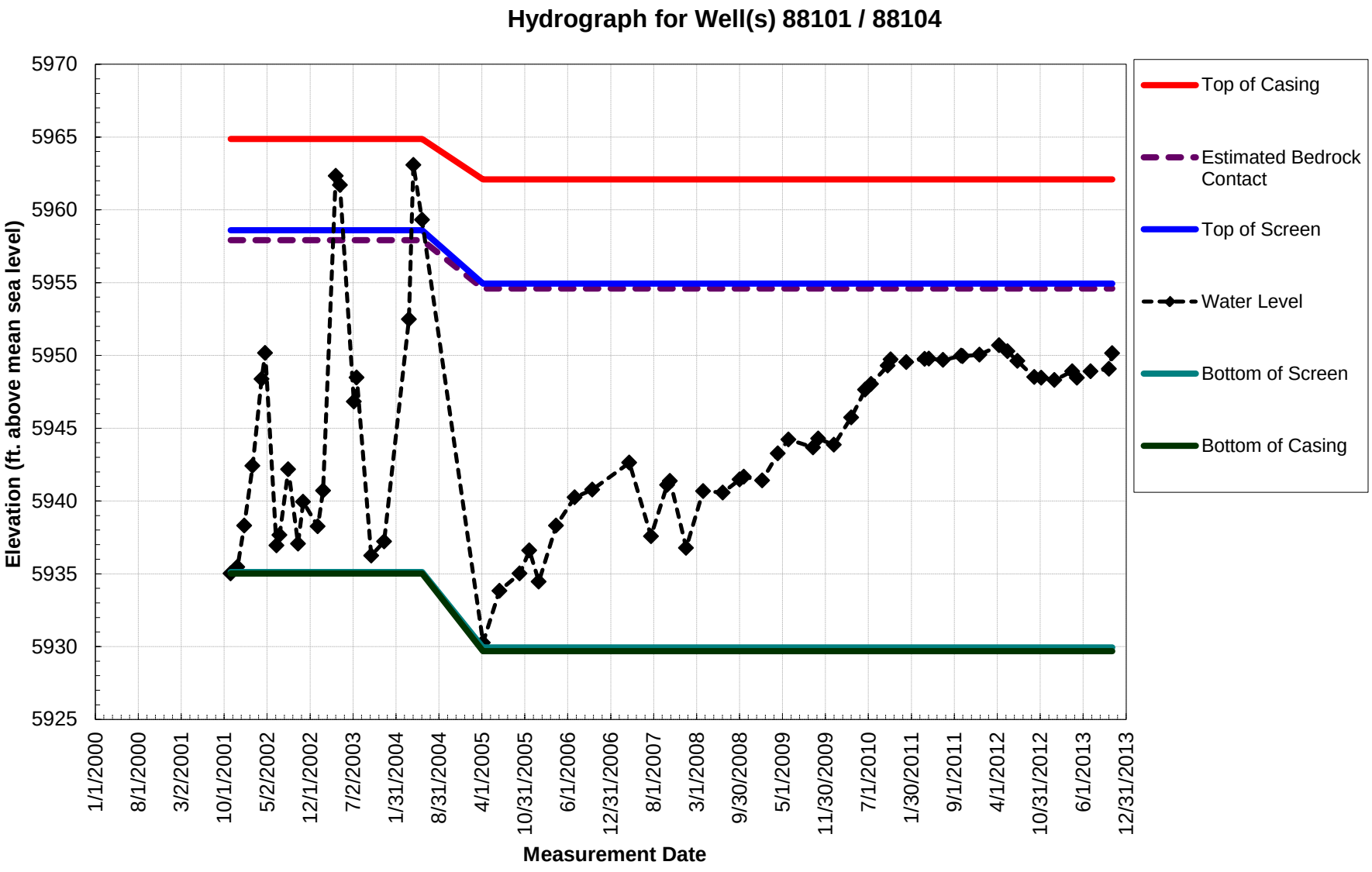


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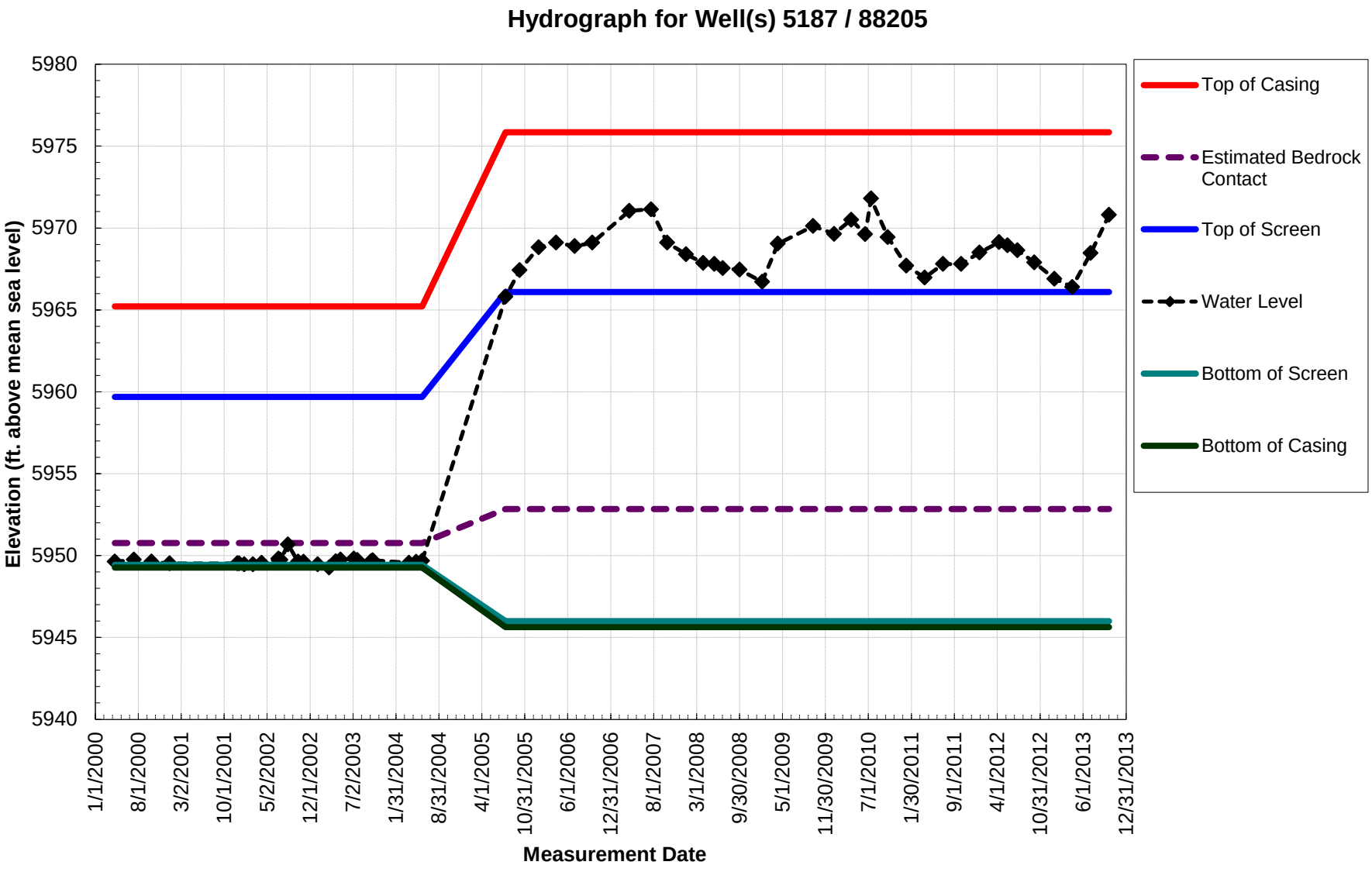


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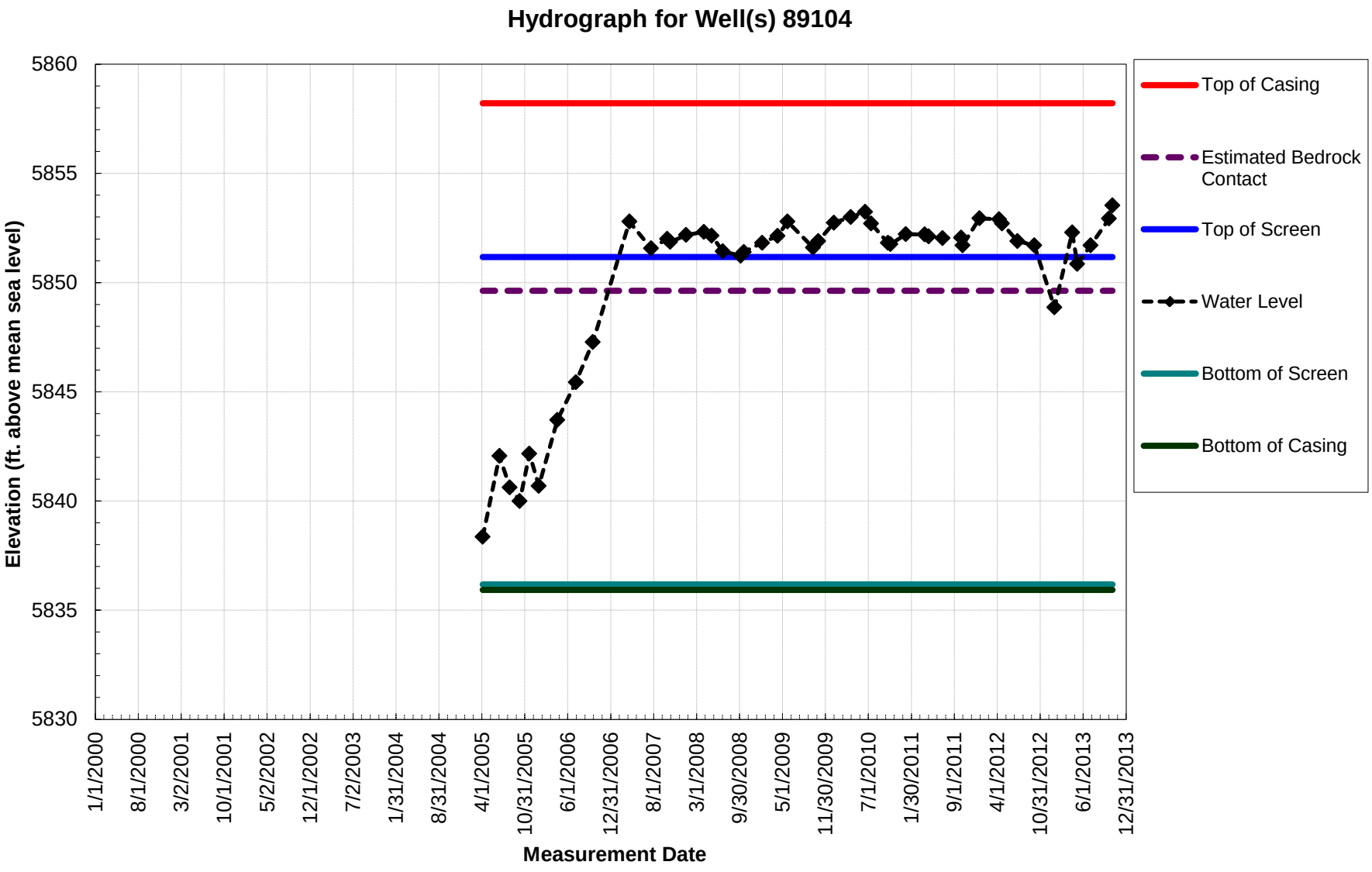


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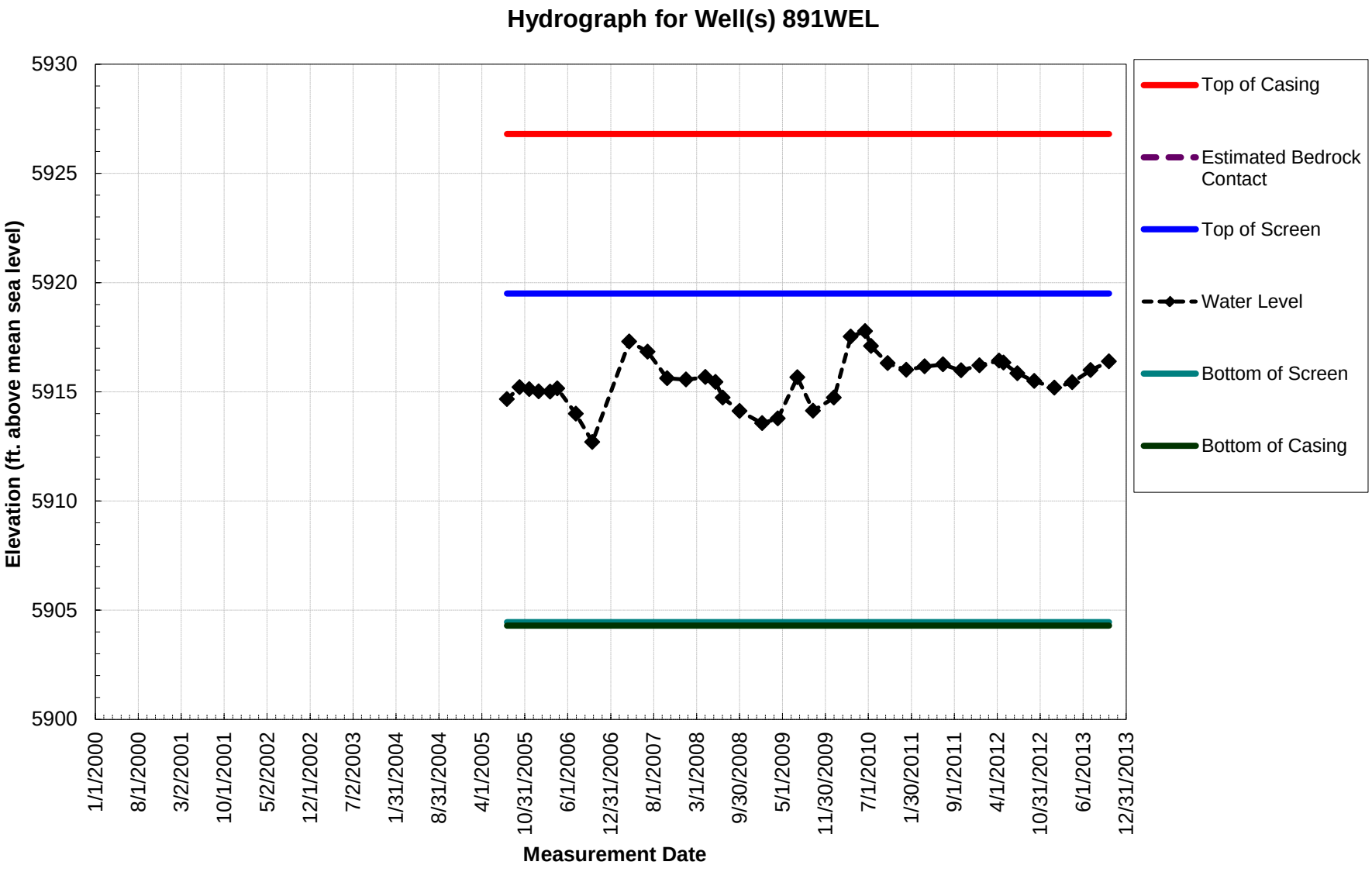


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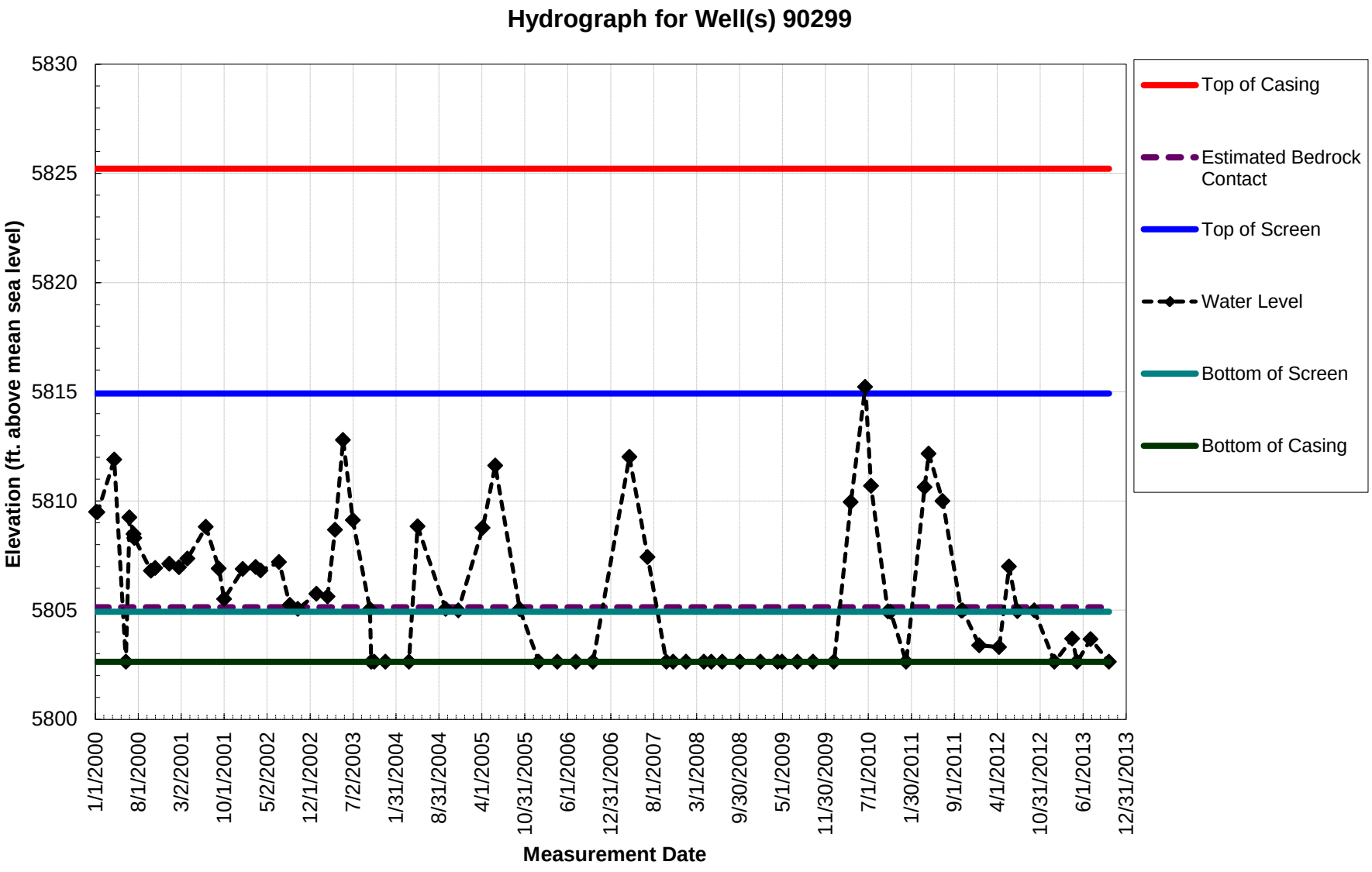


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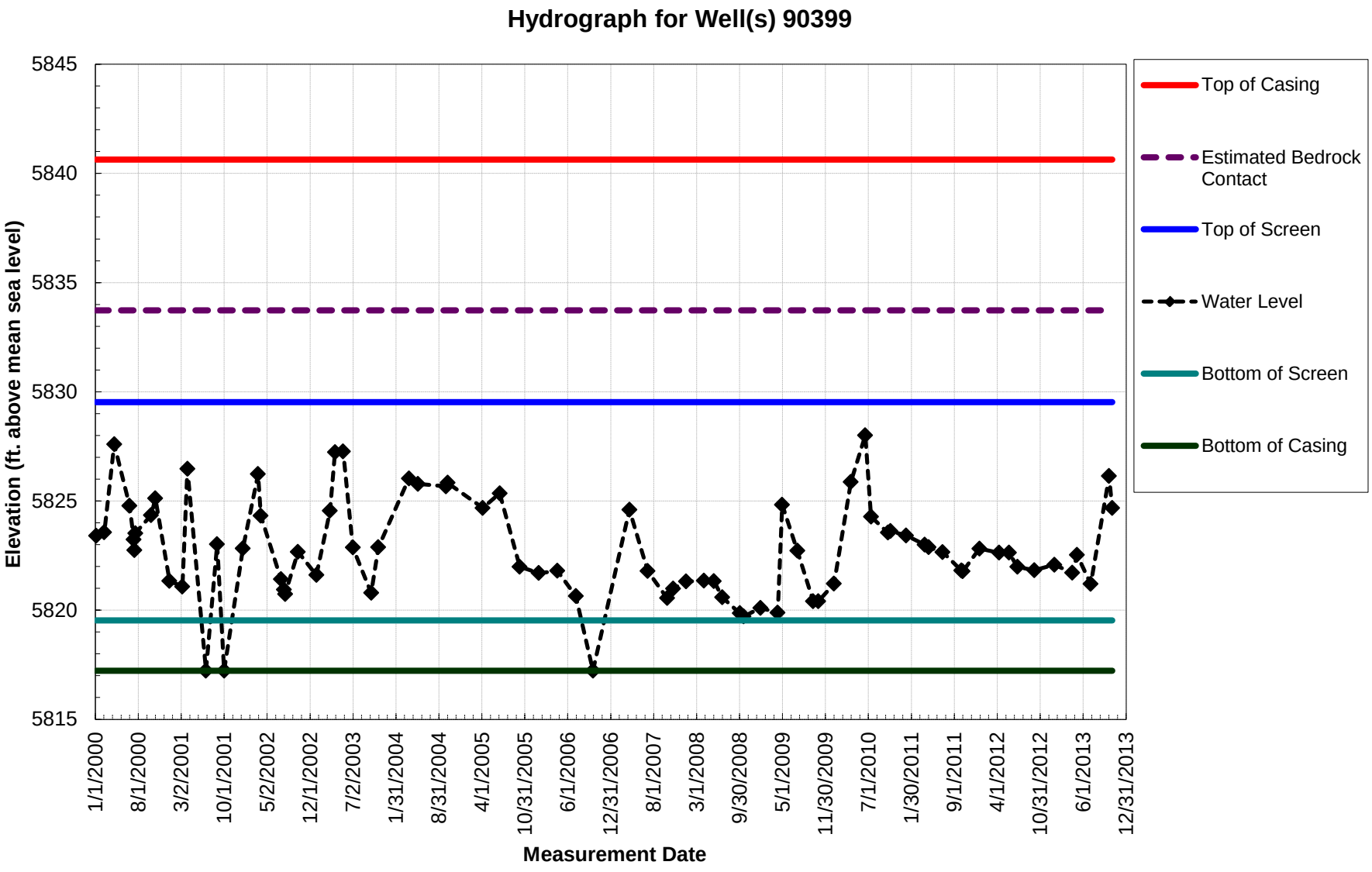


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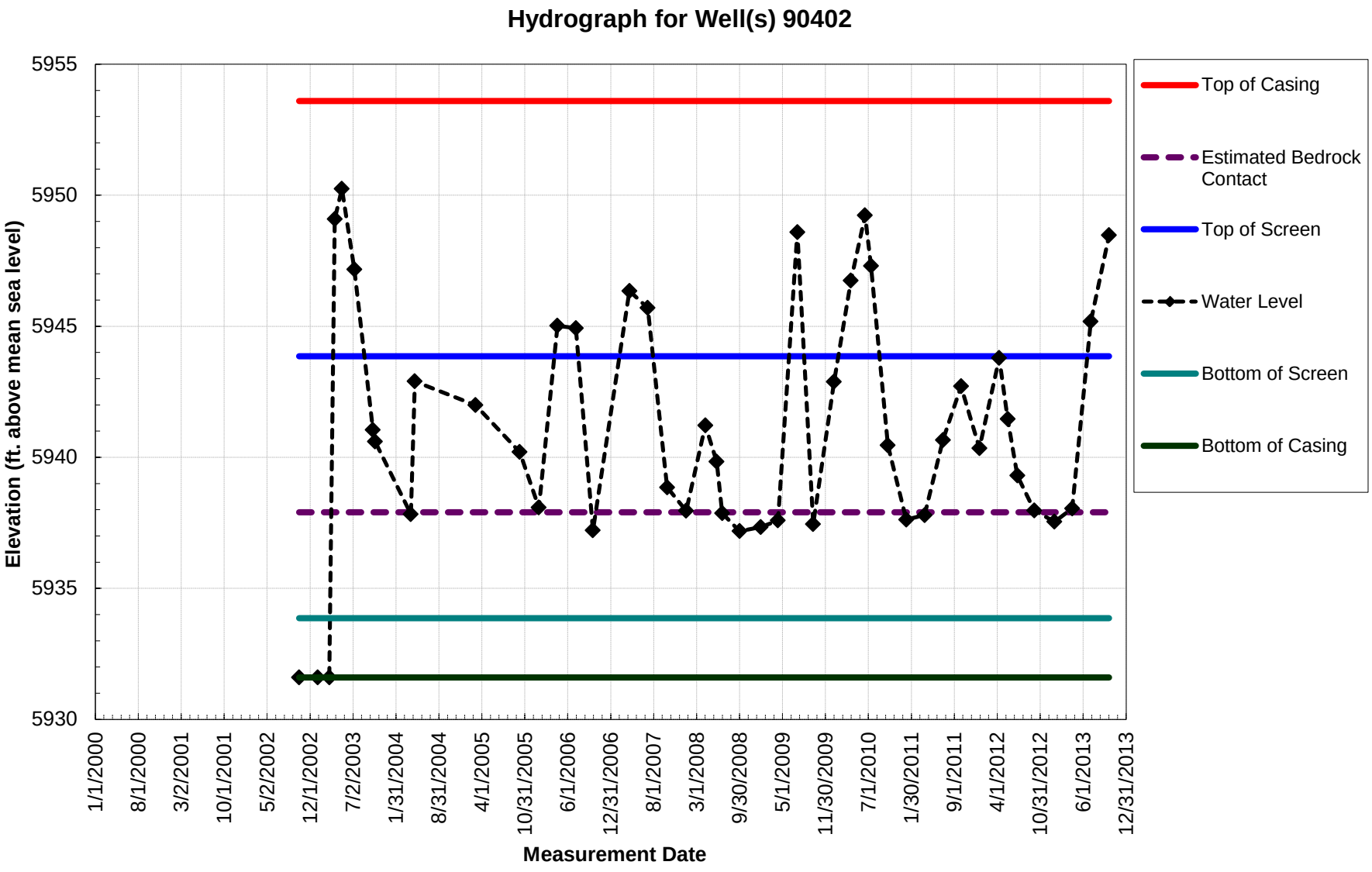


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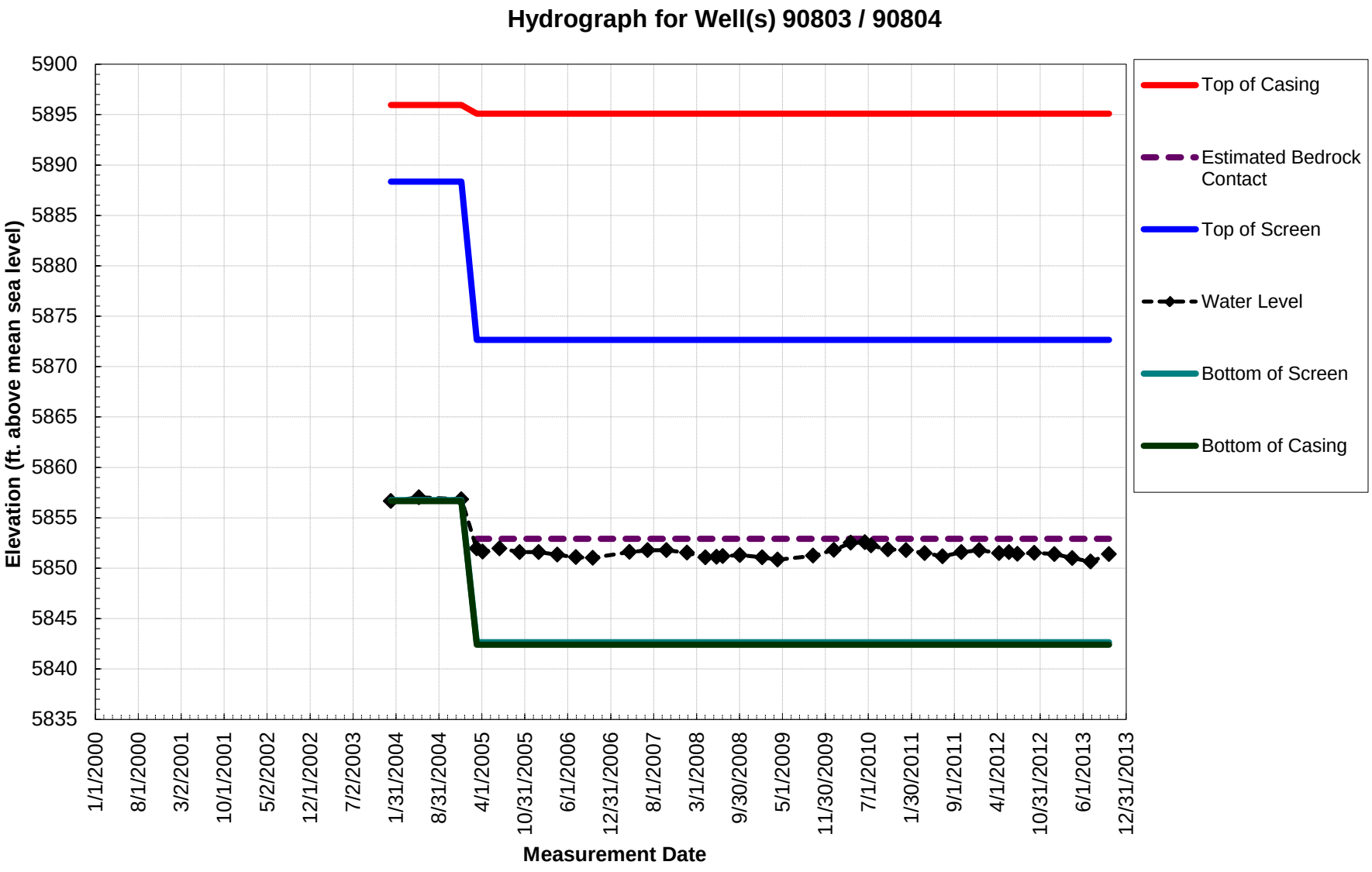


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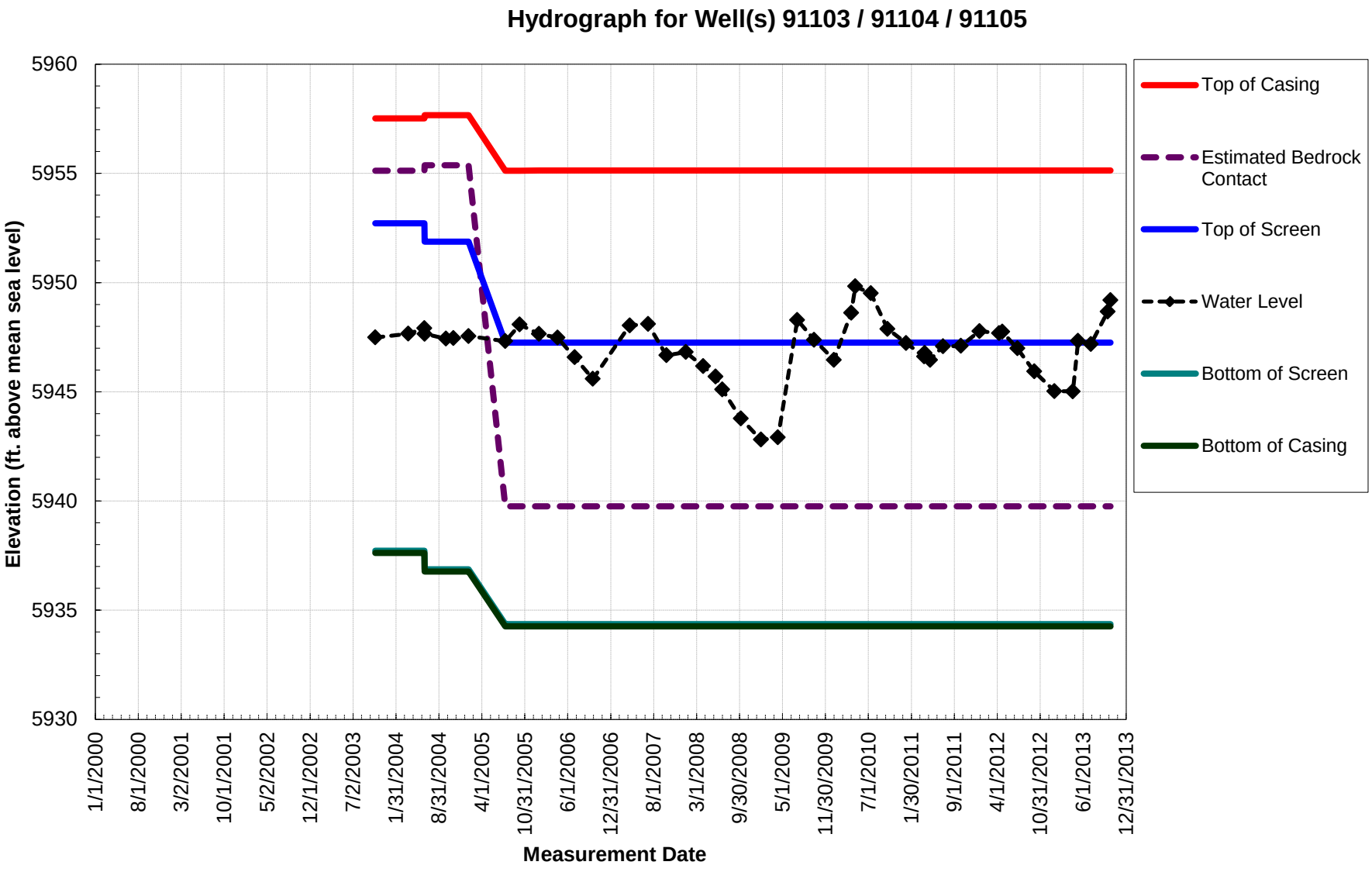


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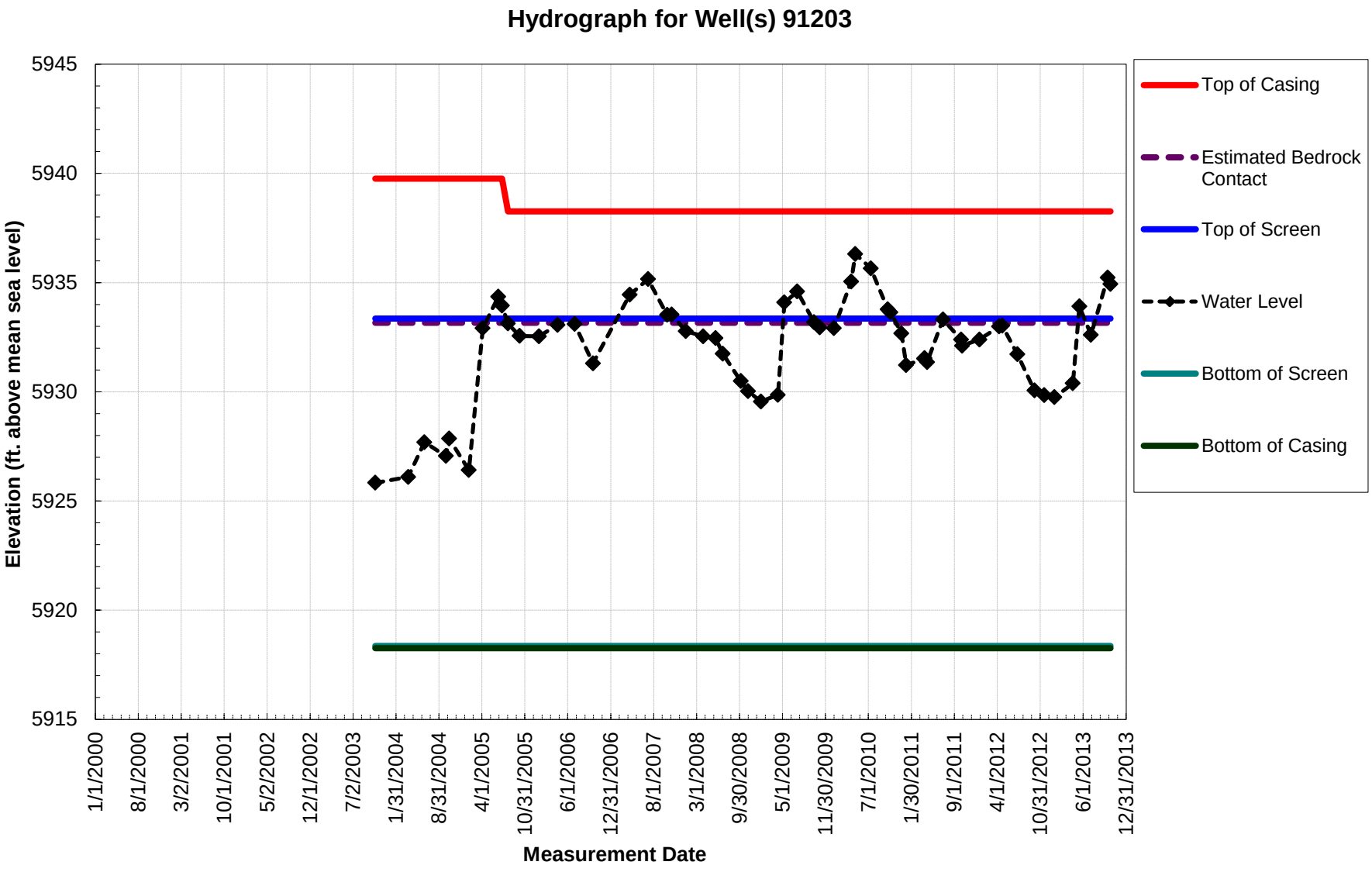


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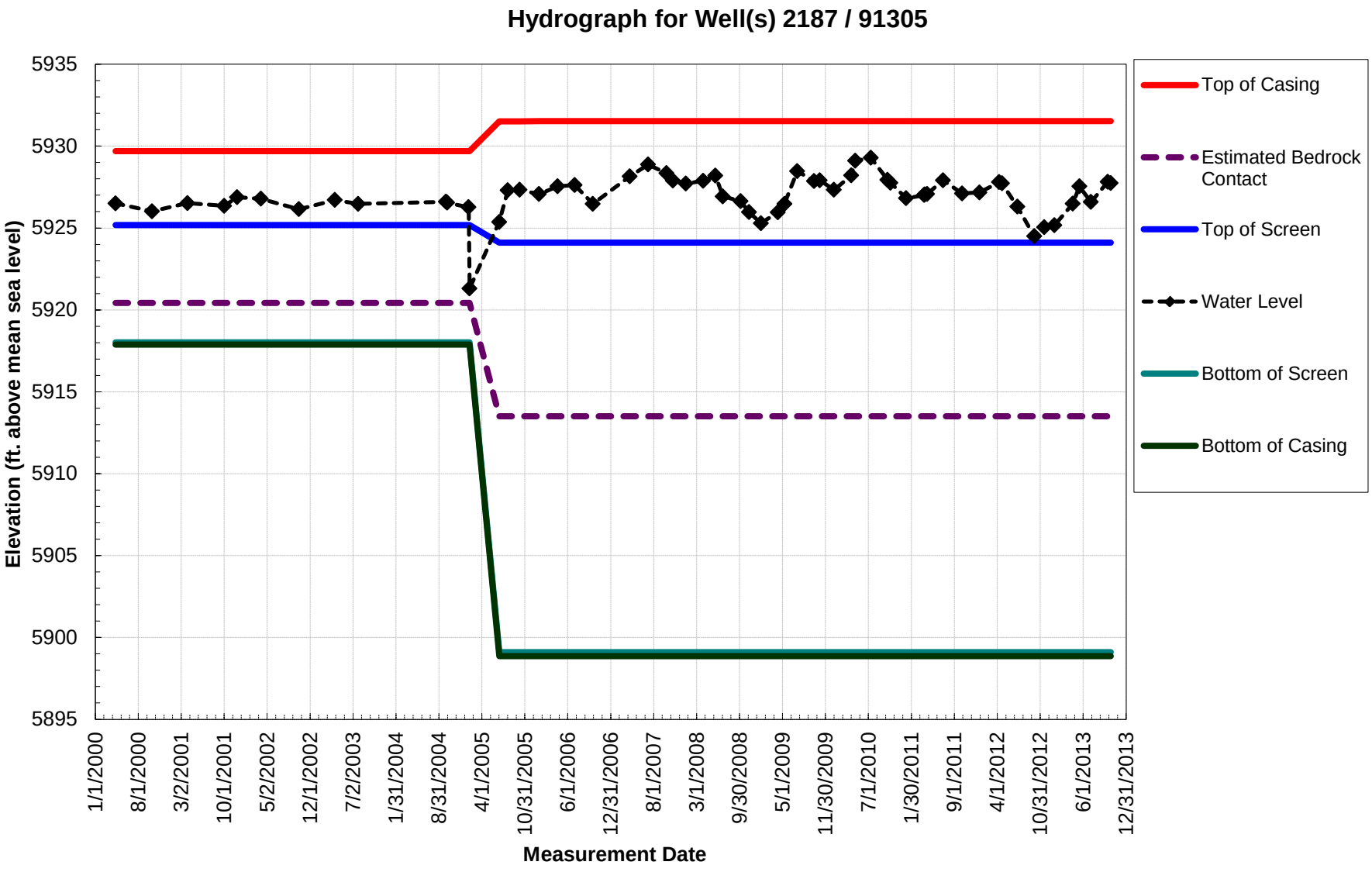


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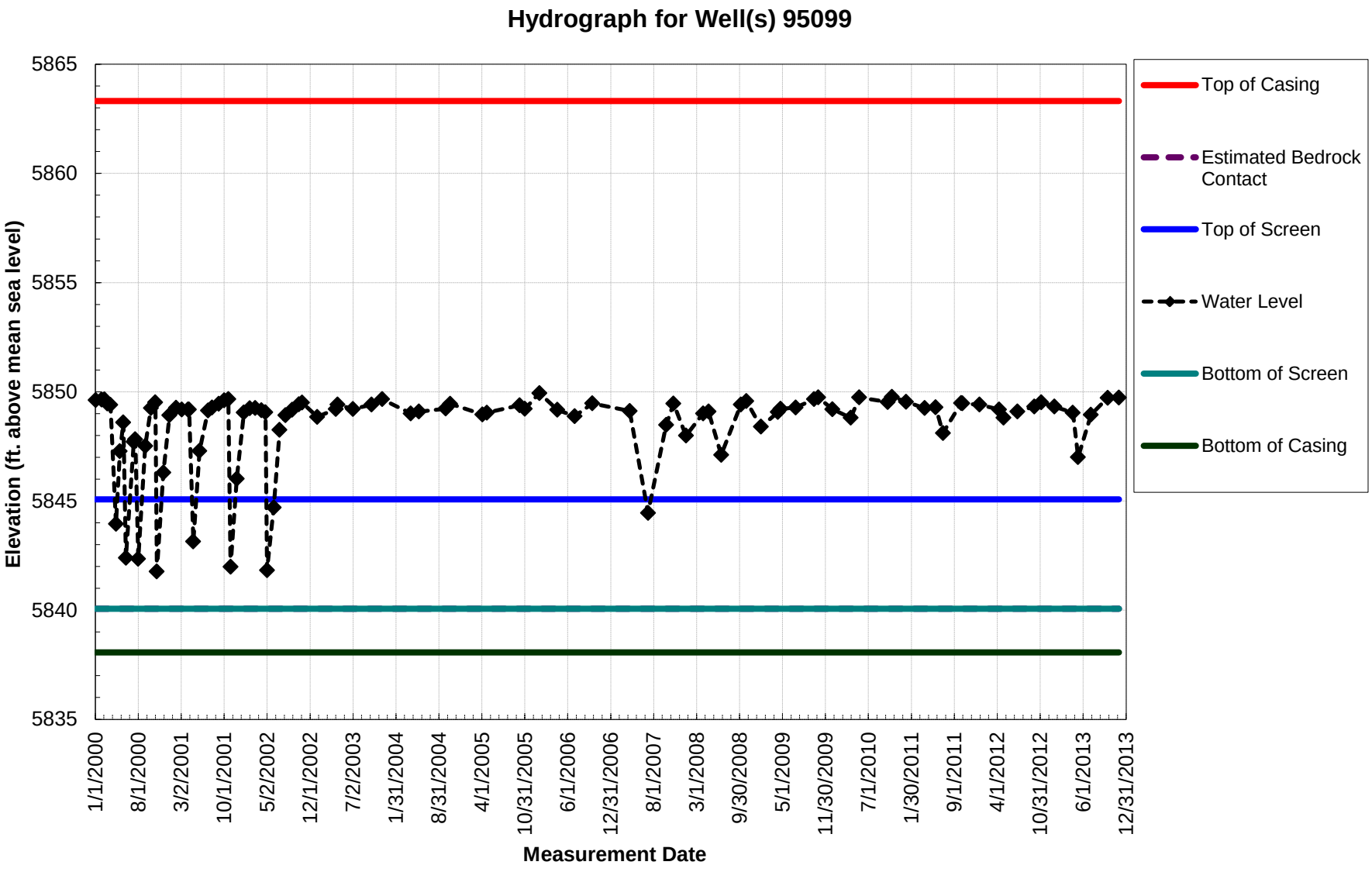


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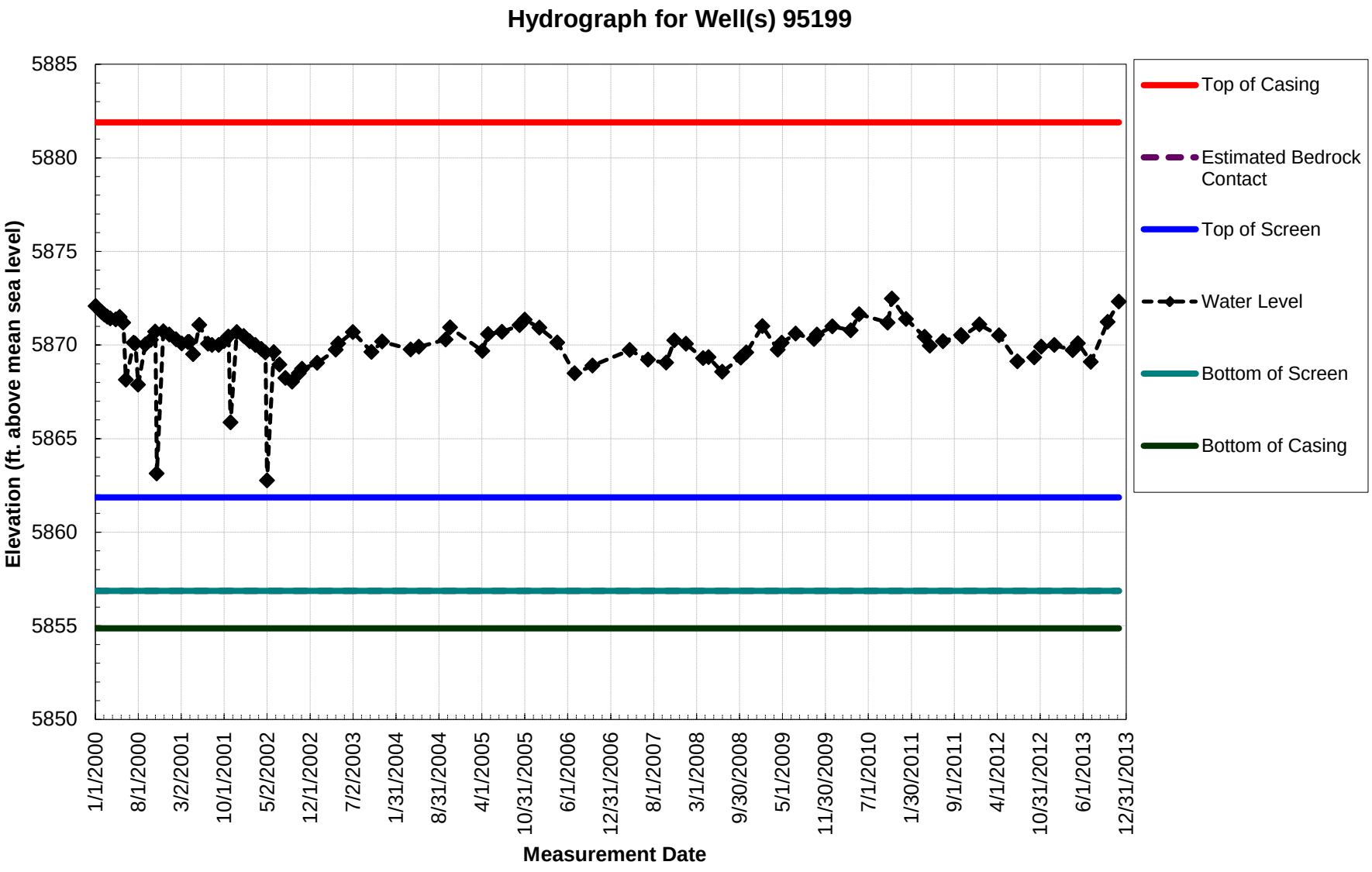


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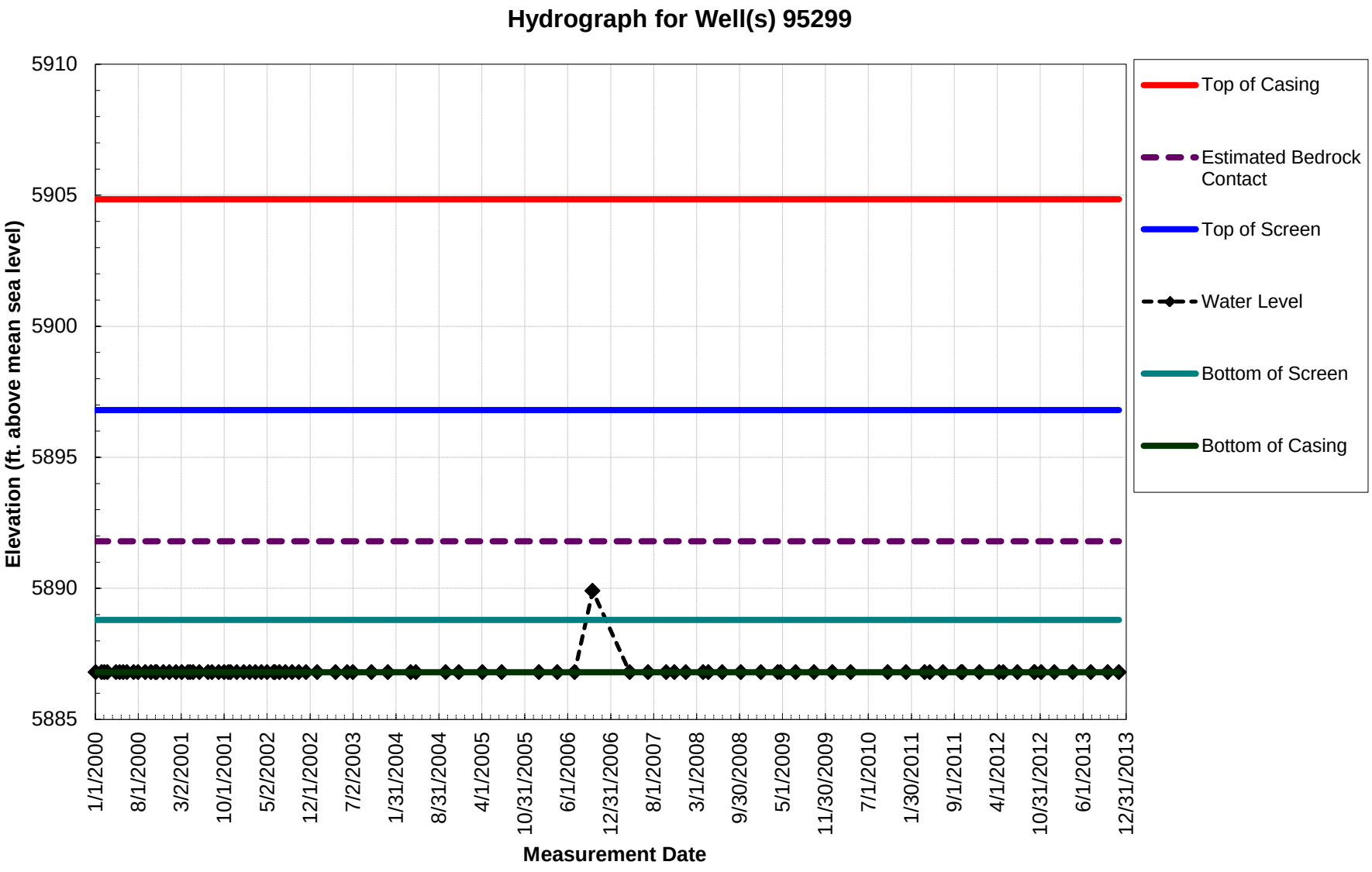


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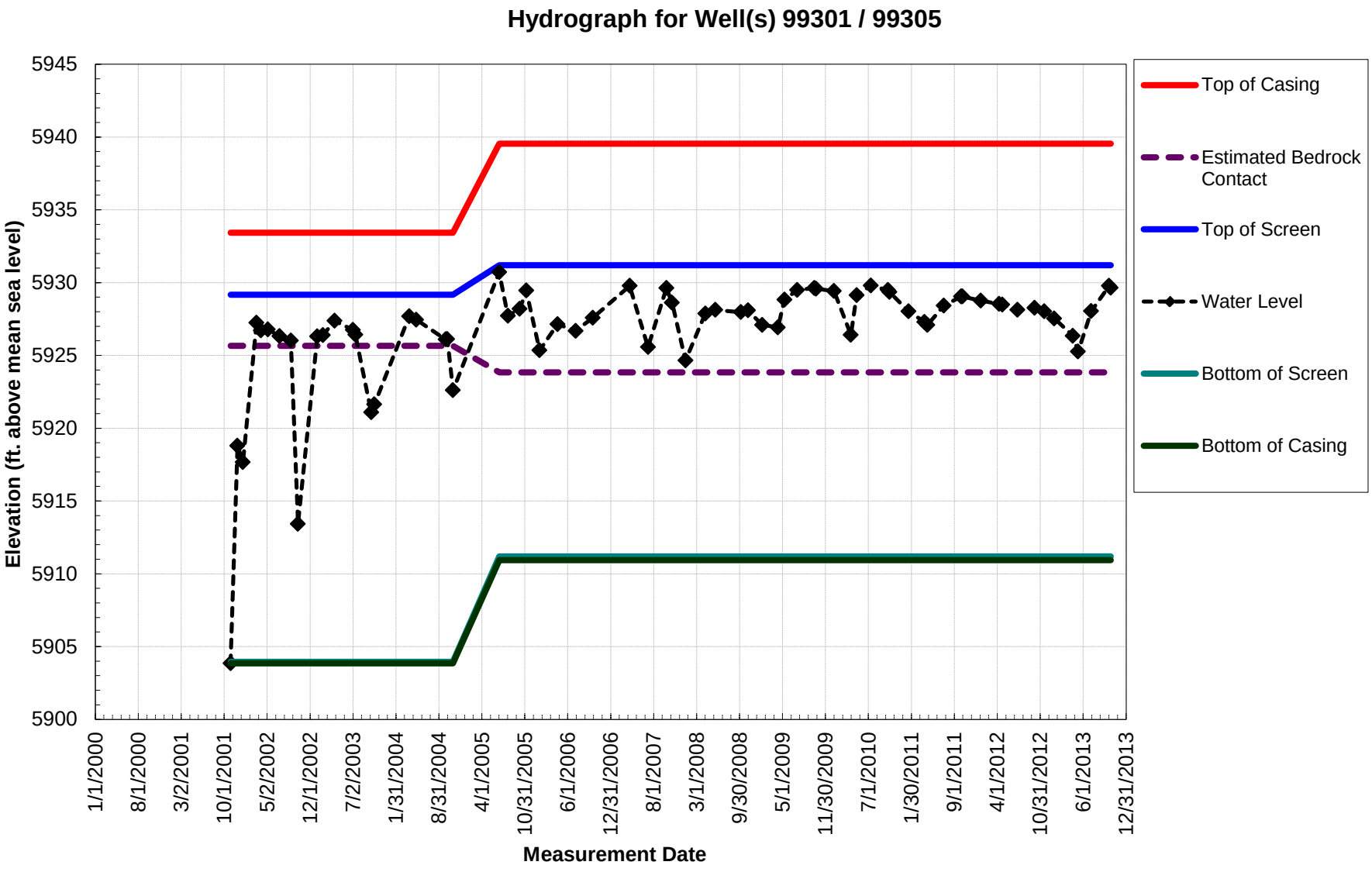


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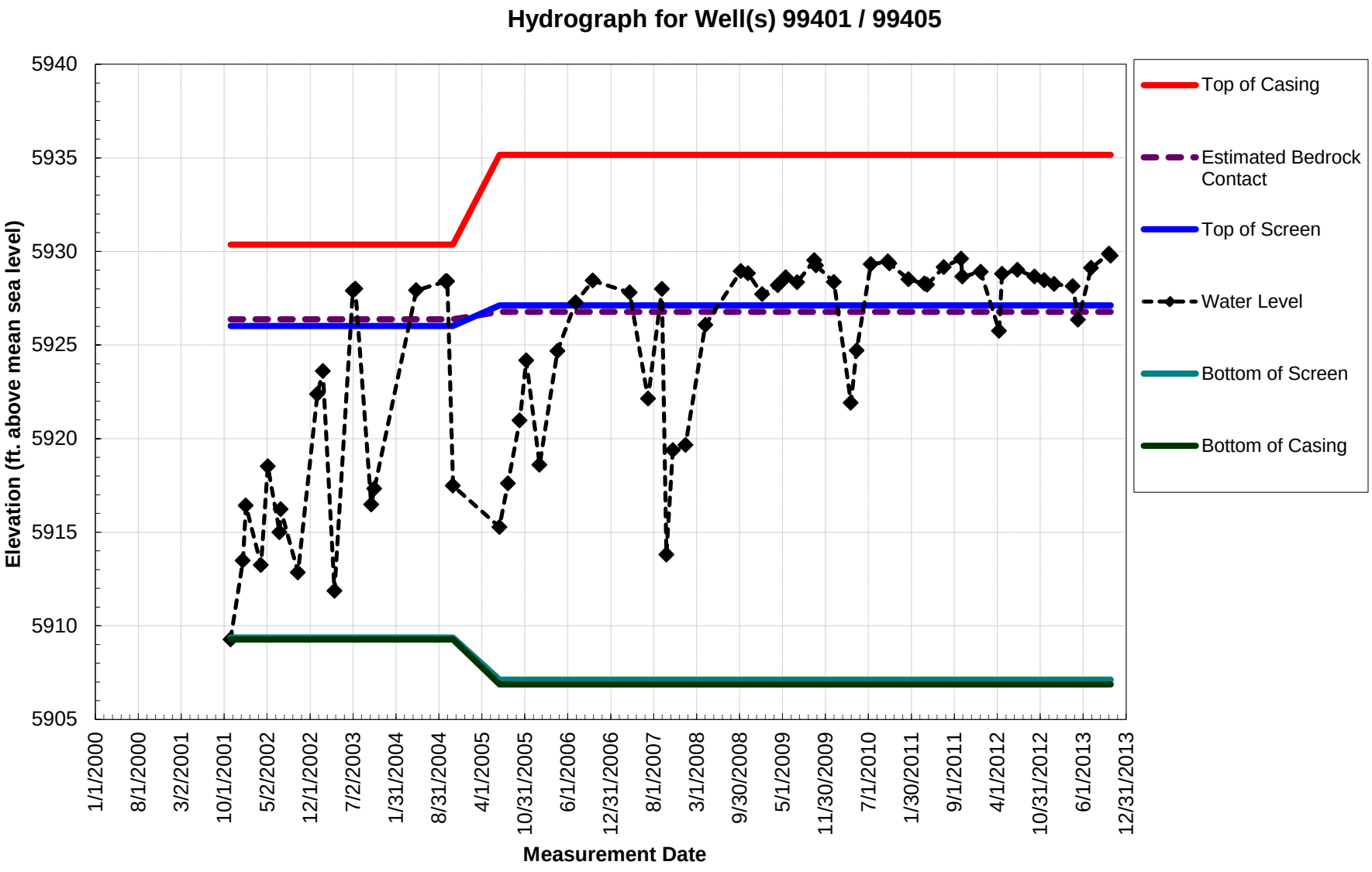


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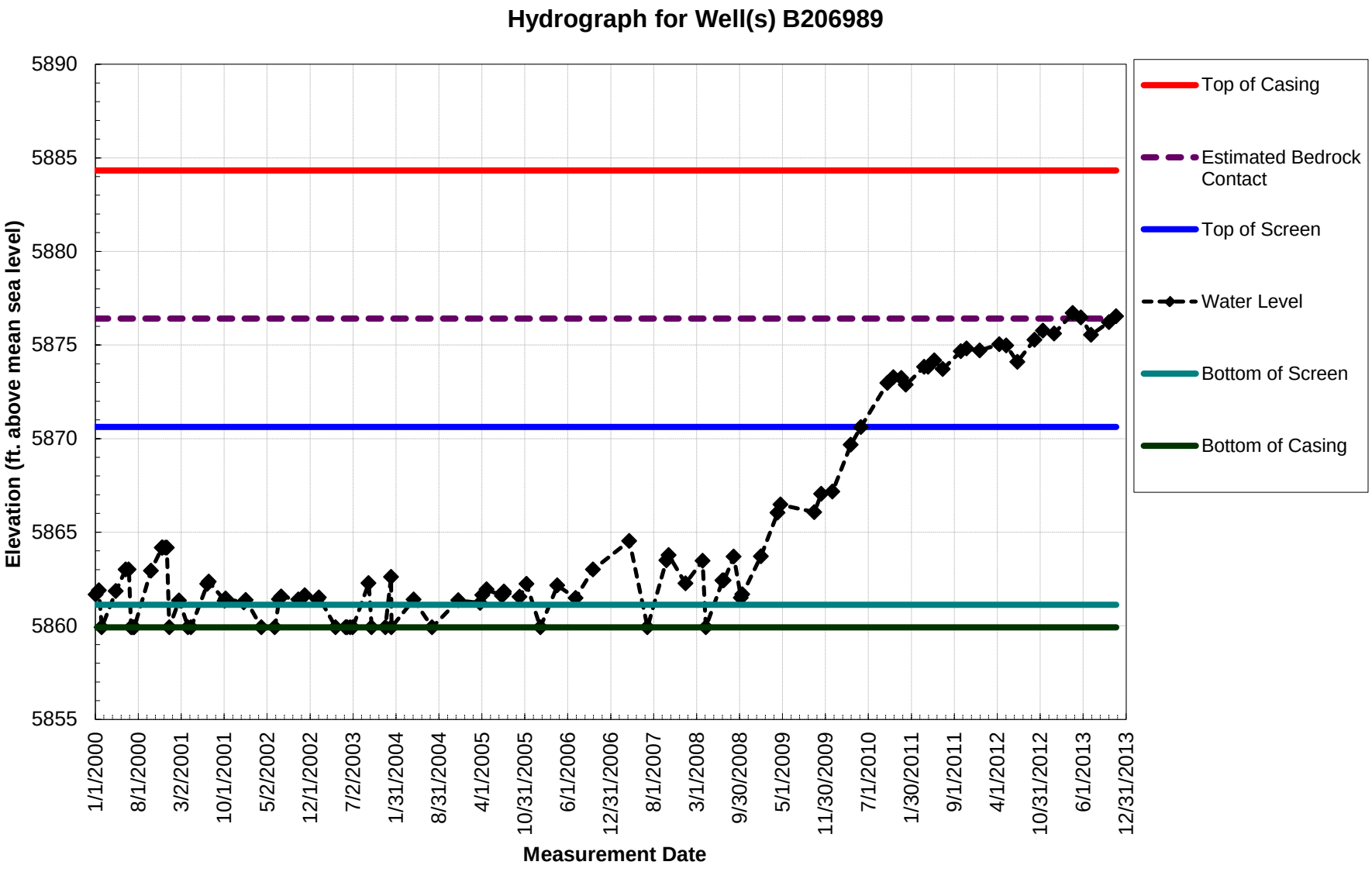


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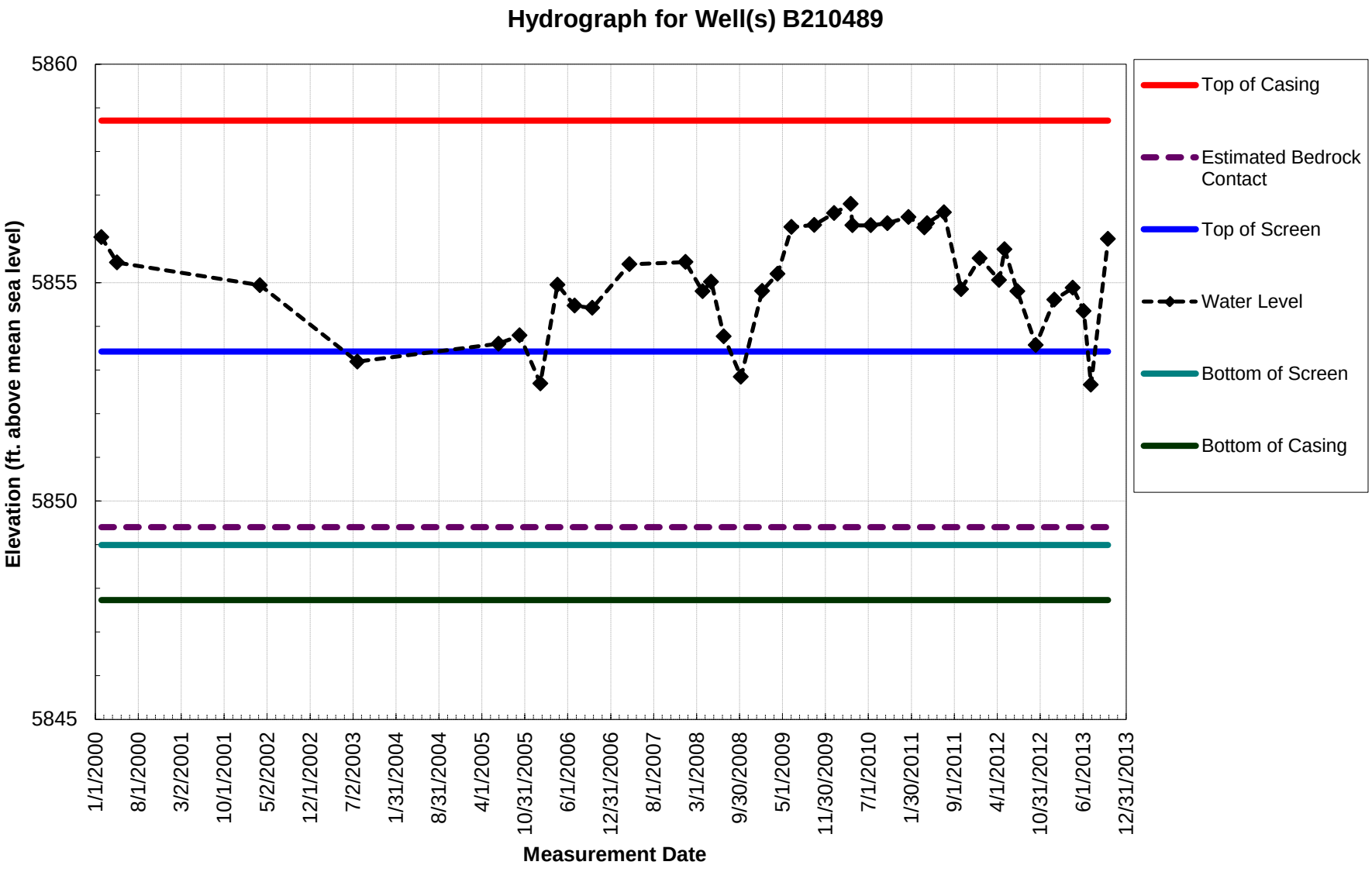


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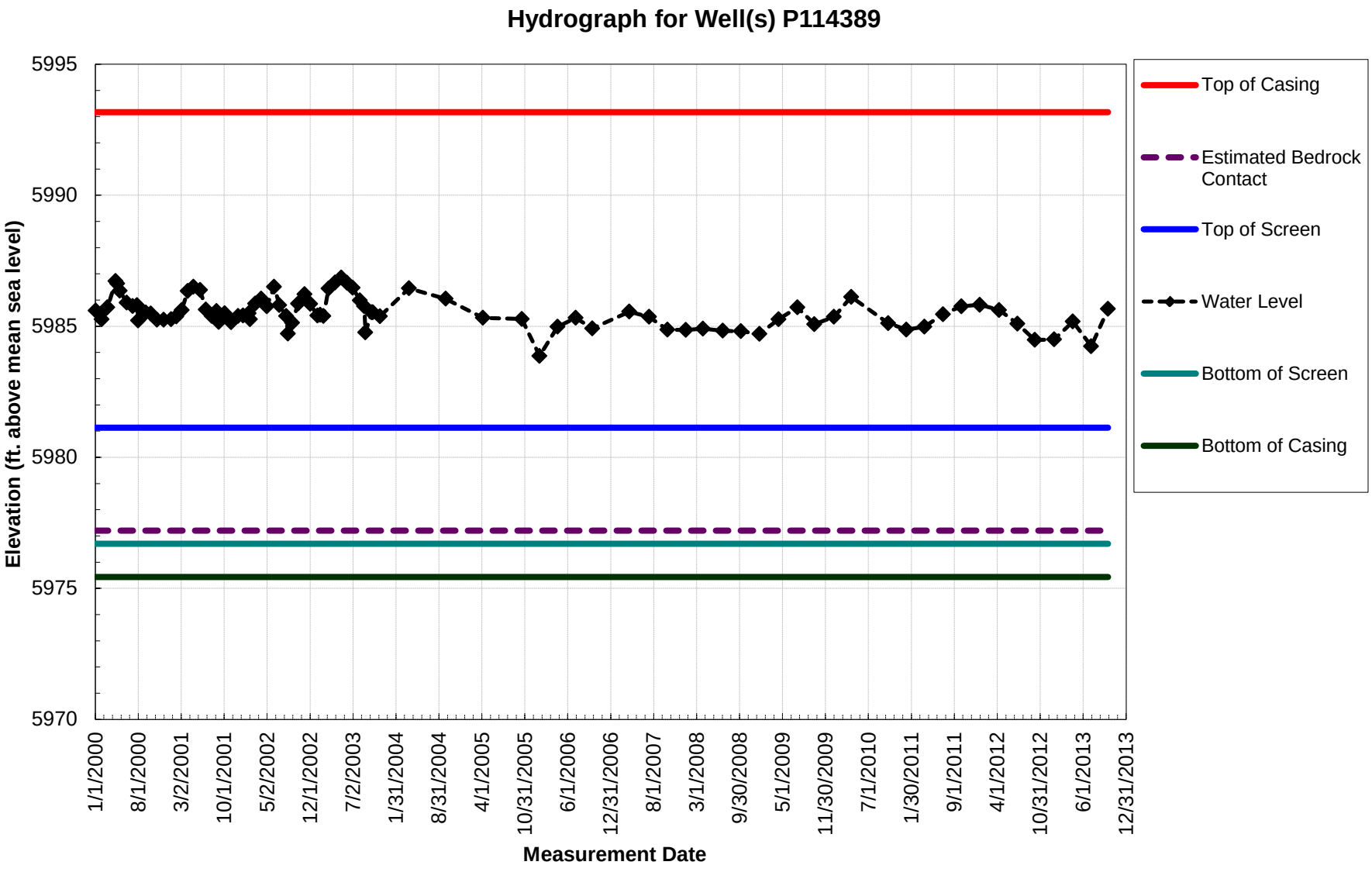


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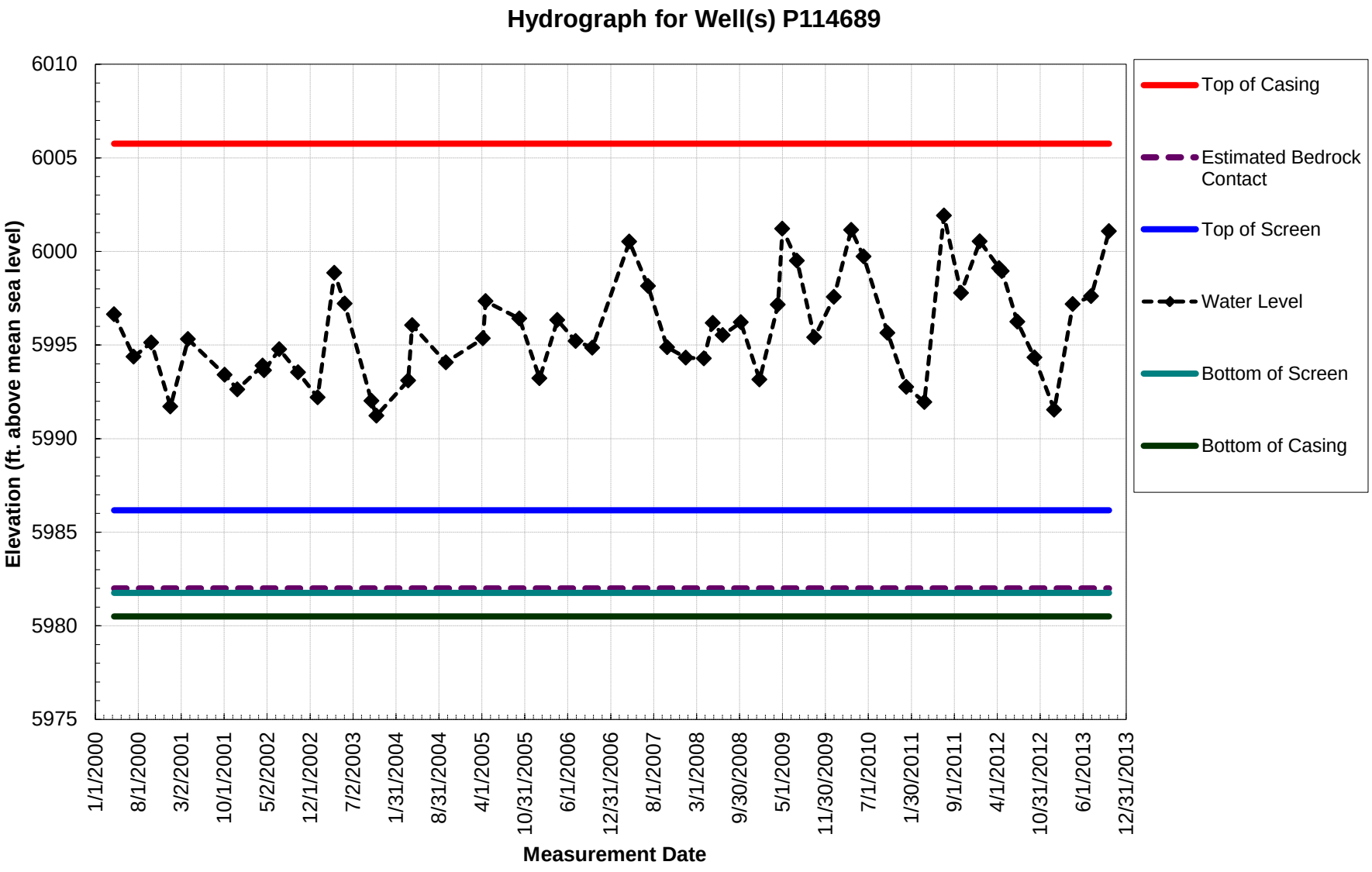


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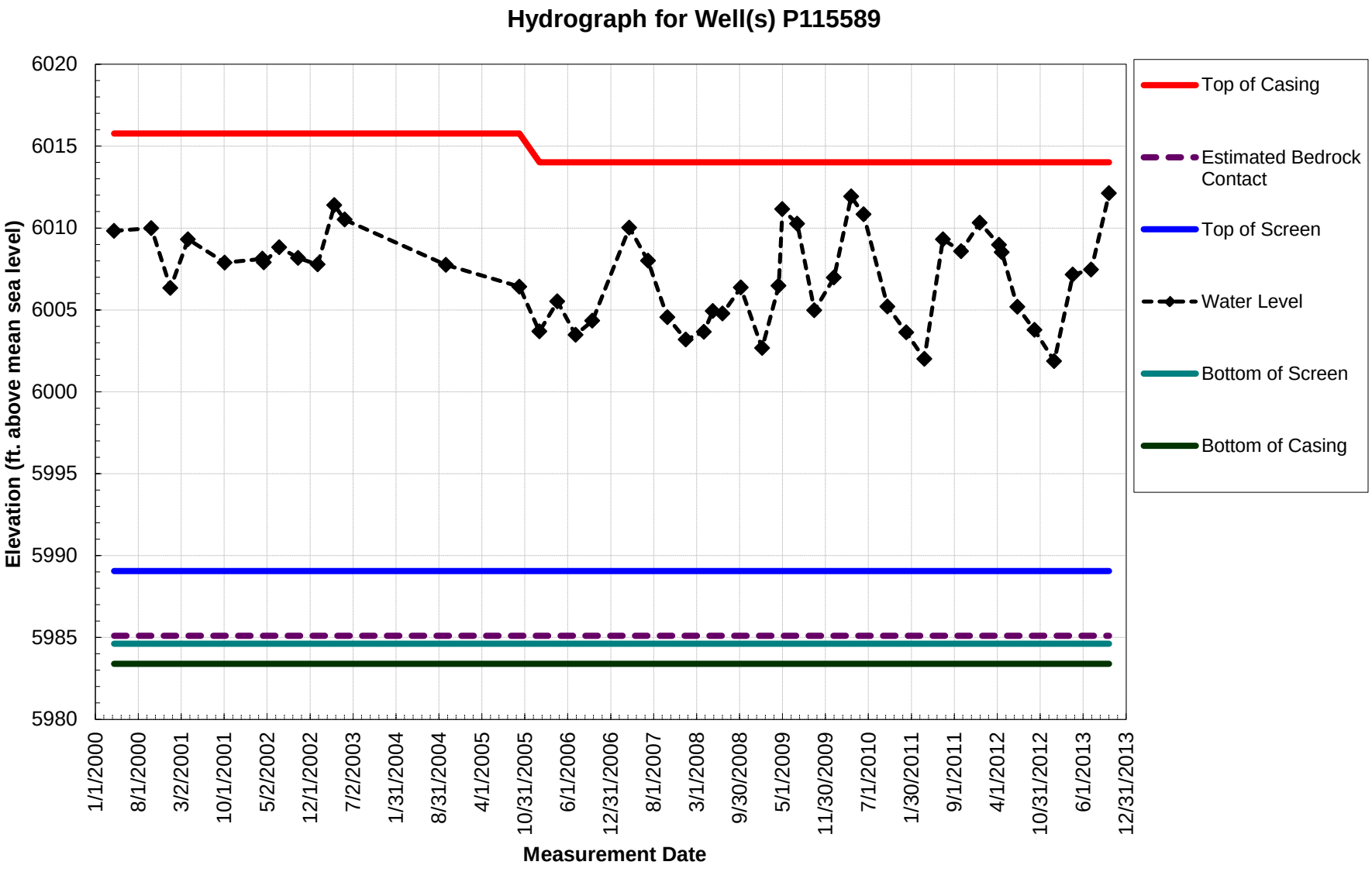


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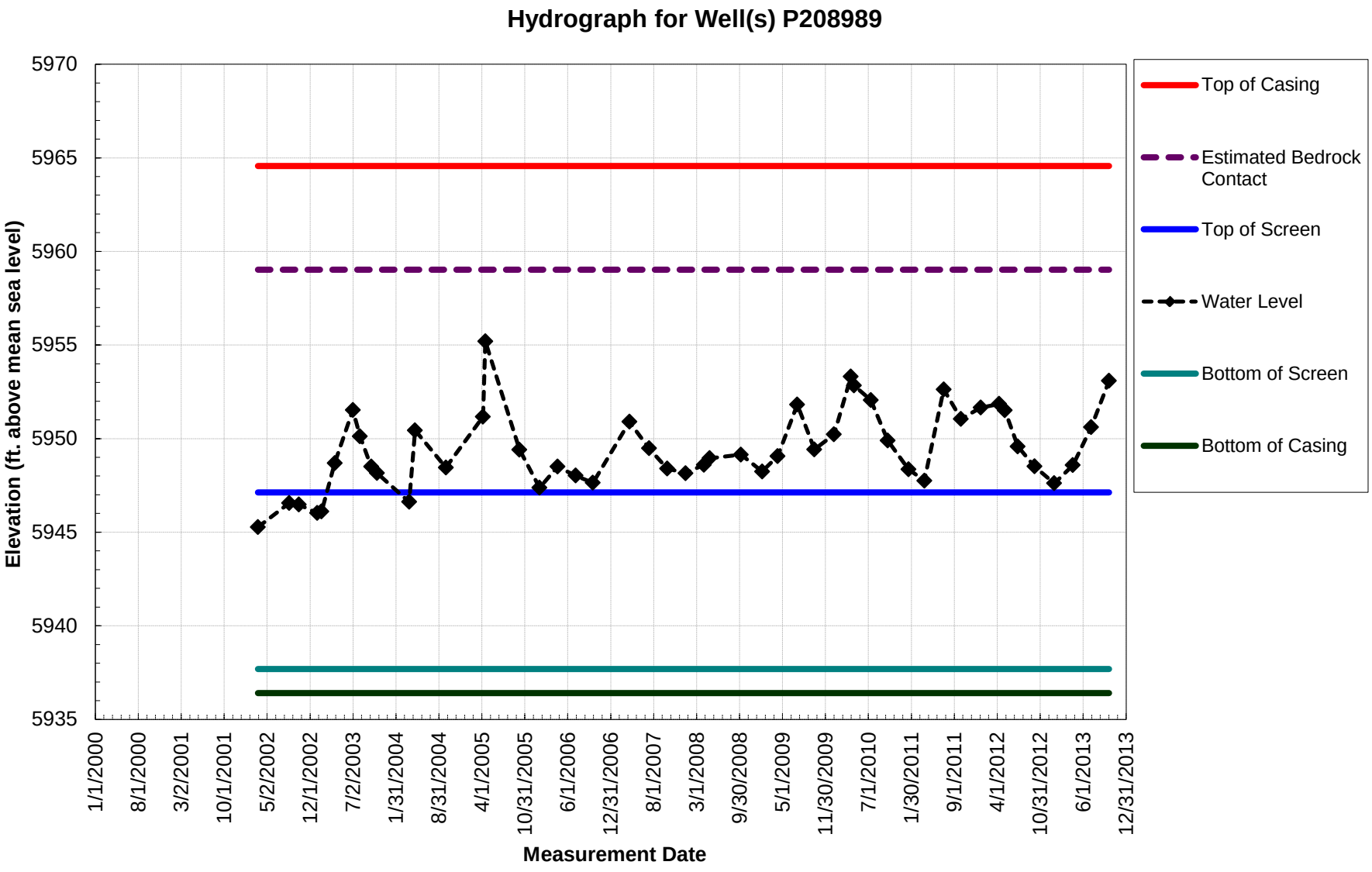


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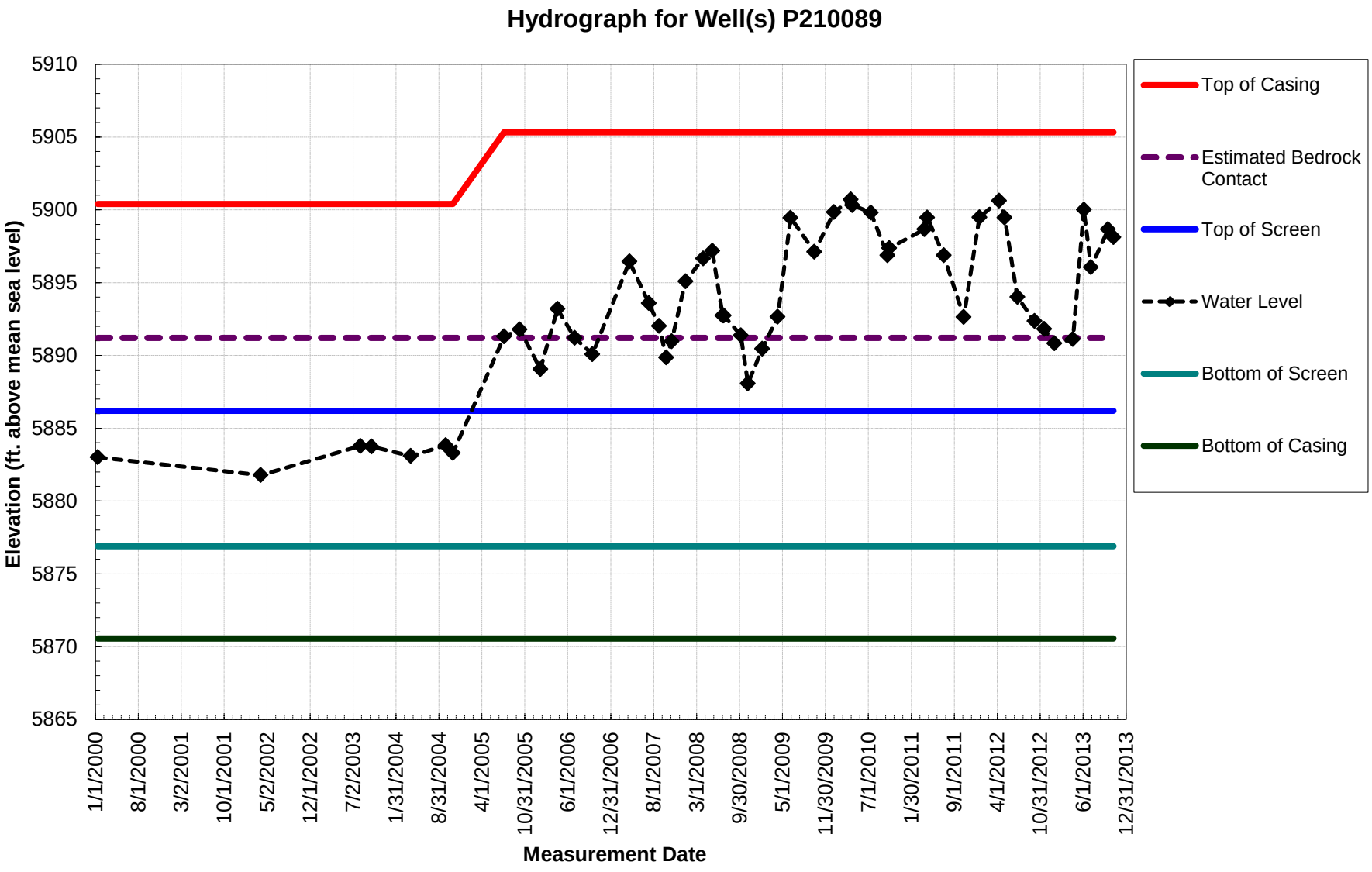


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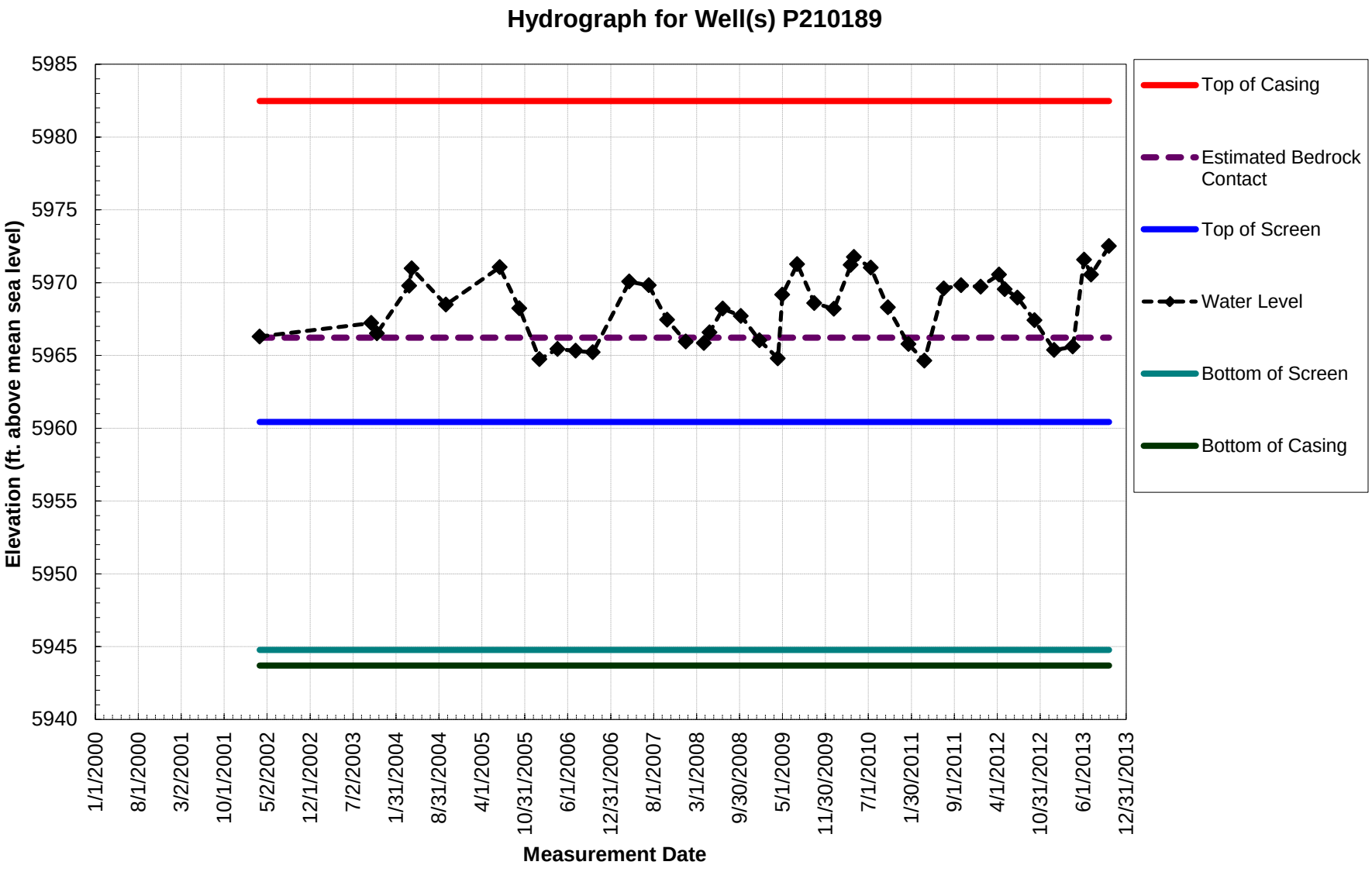


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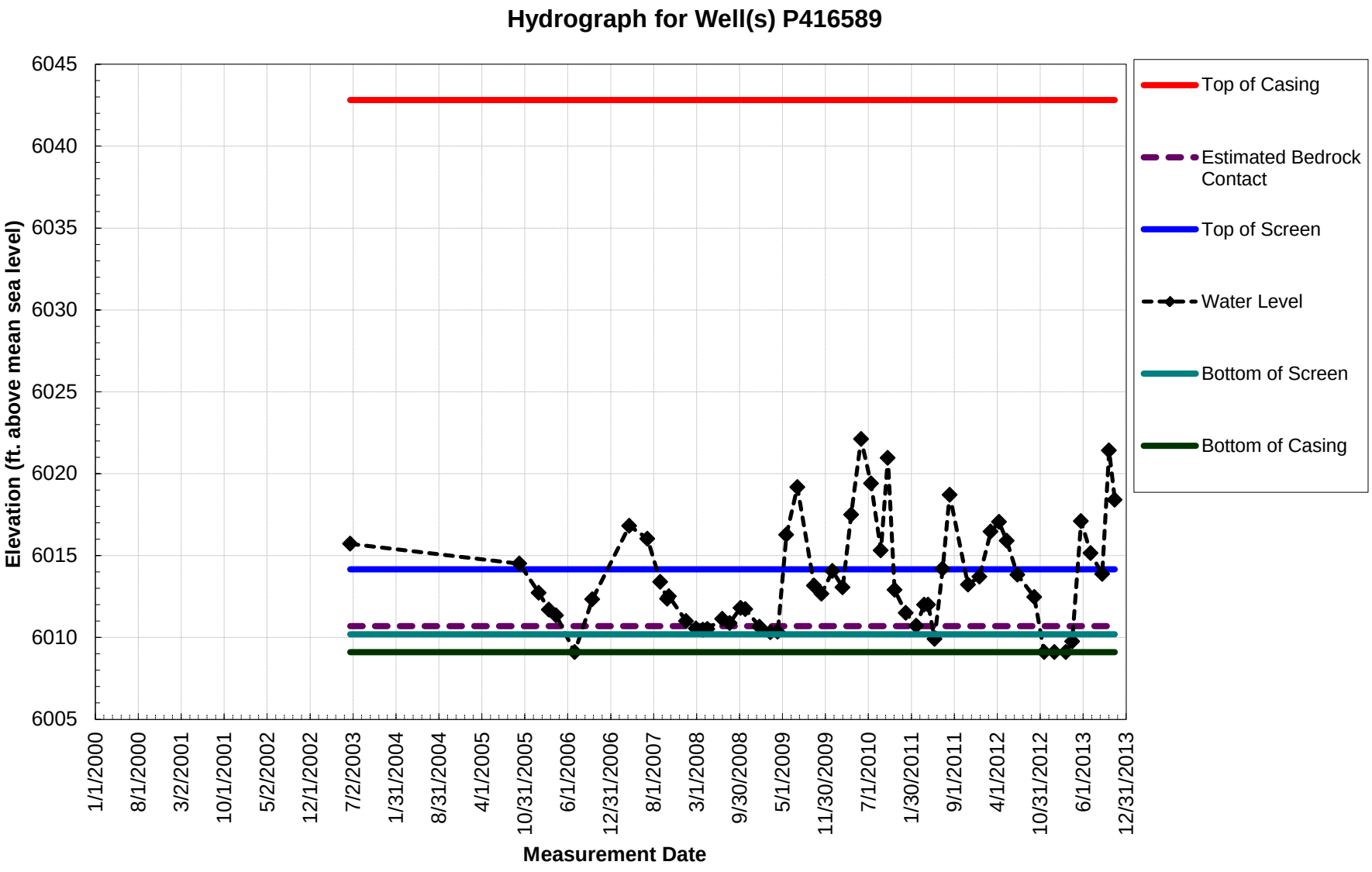


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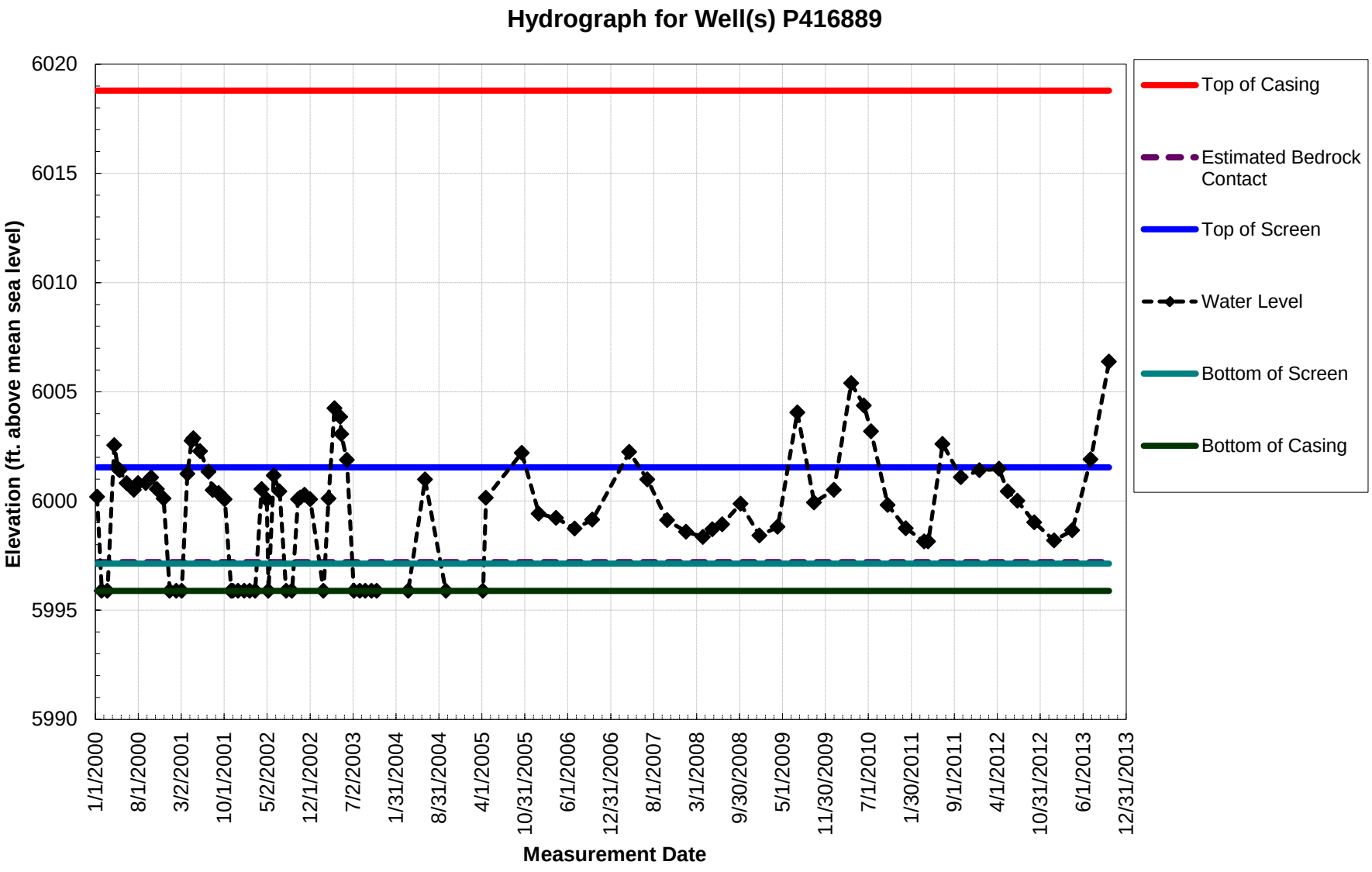


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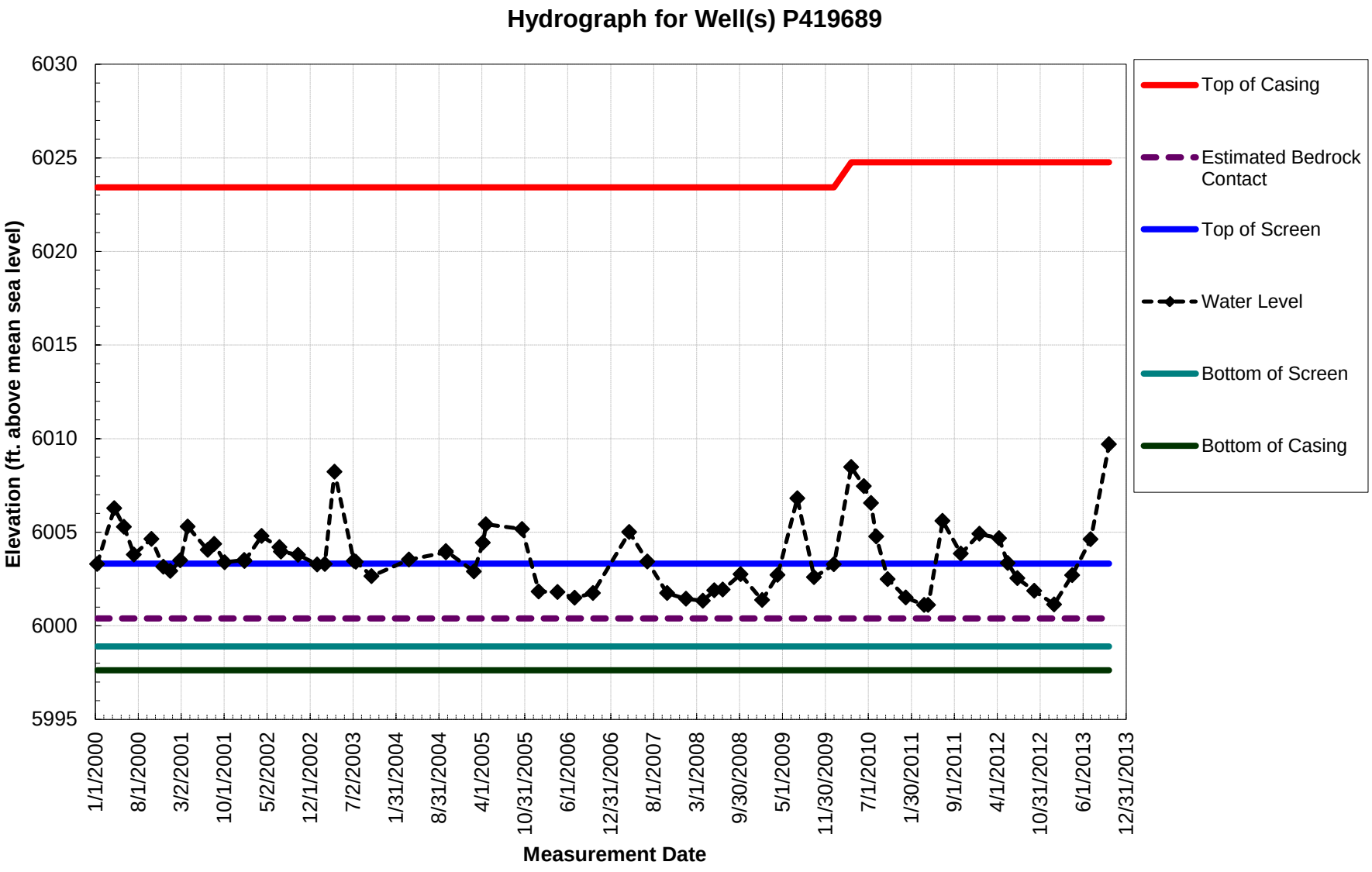


*From: Calendar Year 2013 Annual Report for the Rocky Flats Site, Appendices. (See report text for additional information.)*

Appendix B: Water-Quality Data


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# Appendix B: Water-Quality Data

## B.1 Surface-Water Analytical Data Evaluation Methods

### B.1.1 Automated Surface Water Sample Collection

The majority of surface water sampling at the Site is accomplished through the use of automated samplers. These samplers operate in an unattended mode, collecting flow-paced composite samples continuously. The following list of assumptions regarding automated sampling acknowledges that monitoring under potential Site conditions may not be possible:

- For computation in regulatory reporting, the sample date for a multi-day composite sample will be the date that the composite sample was started. Although this will give the impression that multi-week samples are being reported months late, this convention is consistent with other Site data. There may be situations where high flows result in the collection of more than one composite sample for a particular date.
- Successful completion of a flow-paced composite sample is determined by several factors that are evaluated by the sampling team. These include, but are not limited to, the required sample volume for analysis (see nonsufficient quantity [NSQ] discussion below), equipment failures, off-normal conditions (e.g., emergencies, severe weather, or other *force majeure*), or health and safety concerns.
- If sample accumulation is terminated for cause, and sample volume is inadequate for routine laboratory analyses, then no analyses are required, and the sample will not be used in the data evaluation. For example, routine laboratory analysis for plutonium and americium currently require 3.0 liters (L). Therefore, samples of less than 3.0 L may be discarded (if necessary) and not used in the data evaluation, but the sample collection must be reported. This requirement may be referred to as the NSQ requirement regarding insufficient quantity of sample.
- Where there is no significant flow, there may be no composite samples completed within an evaluation period (see NSQ above). However, flow-paced sampling will continue during dry periods, even though flows may be so low that it may take longer than the target evaluation period to fill the composite sample container.
- If no samples are collected during an evaluation interval due to a low- or no-flow condition, then no sample result will be available for use in the evaluation of calculated values, and no such calculated value will be reported for that period.
- Samples collected for RFLMA monitoring must be reported, even if they are not analyzed, and the reason for not analyzing (e.g., NSQ) must also be reported.

### B.1.2 Evaluation Using 30-Day Averages

Evaluation of analytical data using 30-day averages is currently performed for POC monitoring locations as specified in RFLMA. The method is as follows:

- Calculations are performed using daily time steps. The 30-day average for a particular day is calculated using a “window” of time that includes the previous 30 days that had both flow and analytical measurements. Therefore, for a location with continuous flow and complete analytical results, 365 (366 in a leap year) 30-day average values are calculated annually. For a location that flows intermittently, the 30-day window includes the previous 30 days

with greater-than-zero flow. Therefore, the 30-day average at an intermittently flowing location will include more than 30 *calendar* days.

- When no analytical result or measured flow value is available for a particular day, then no 30-day average is calculated for that day. No analytical result may be available either due to NSQ for analysis (Section B.1.1) or a failed laboratory analysis. Flow measurement may be missing due to equipment failures or adverse weather conditions (e.g., winter freezing).
- When a negative radionuclide result (e.g., −0.002 pCi/L) is returned from the laboratory due to blank correction, then a value of 0.0 pCi/L is used for calculation purposes. When a nondetect result is returned from the laboratory for metals and water quality parameter analyses, then one-half the detection limit is used for calculation purposes.
- When a field sample result has a corresponding duplicate or reanalysis ("re-run"), **AND** *neither* result is greater than the applicable water quality standard, **THEN** the analytical result used in calculations is the arithmetic average of the individual analytical results.
- When a field sample result has a corresponding duplicate or reanalysis ("re-run"), **AND** *either* result is greater than the applicable water quality standard, **THEN** an evaluation of the data pair is performed to determine the representativeness of the individual sample results.[1] The method for determining representativeness is given below.

#### B.1.2.1 Determining Representativeness for Non-Radionuclide Results

1. The RPD for the data pair is calculated:

$$RPD(\%) = \frac{|R_1 - R_2|}{(R_1 + R_2)/2} * 100$$

*where* (Equation B-1)

$R_1 = value\ of\ initial\ result$

$R_2 = value\ of\ duplicate\ result$

2a. **IF** the RPD is greater than or equal to 100 percent ([higher result] ≥ 3x [lower result]), **THEN** the results will be determined to be nonrepresentative. The results will not be used for the calculation of 30-day averages, and no 30-day average values will be computed for the days during which the sample was collected.

2b. **IF** the RPD is less than 100 percent ([higher result] < 3x [lower result]), **THEN** the results will be determined to be sufficiently representative. The arithmetic average of the results will be used for the calculation of 30-day average values.

[1] Significant differences in values for a data pair are an indication of potential problems with sample preparation and/or analysis. Under these circumstances, an applicable value to be used for the calculation of 30-day averages cannot be determined with sufficient confidence to make compliance decisions. As such, an evaluation is required to assess the representativeness of the sample and its usability for compliance decisions.

### B.1.2.2 Determining Representativeness for Radionuclides

1. The DER for the data pair is calculated:

$$DER = \frac{|R_1 - R_2|}{\sqrt{(2\sigma_{R1})^2 + (2\sigma_{R2})^2}}$$

*where*

$R_1 = value\ of\ initial\ result$ (Equation B-2)

$R_2 = value\ of\ duplicate\ result$

$2\sigma_{R1} = 2\ sigma\ error\ of\ initial\ result$

$2\sigma_{R2} = 2\ sigma\ error\ of\ duplicate\ result$

2a. **IF** the DER is greater than or equal to 5, **THEN** the results will be determined to be nonrepresentative. The results will not be used for the calculation of 30-day averages, and no 30-day average values will be computed for the days during which the sample was collected.

2b. **IF** the DER is less than 5, **THEN** the results will be determined to be sufficiently representative. The arithmetic average of the results will be used for the calculation of 30-day average values.

### B.1.2.3 Calculation of 30-Day Average

- Each calendar day is assigned the activity or concentration (e.g. analytical result in pCi/L or µg/L) of the composite sample that was in progress at the end of that day (specifically, at 23:59:59).
- In the event that more than one composite sample was collected during a single day due to high flows, the results for each composite sample will be volume-weighted to calculate an appropriate single concentration or activity value to be applied to the day. The equation can be given as follows:

$$Volume - Weighted\ \mathrm{Re}sult = \frac{(R_0 * V_0) + (R_1 * V_1) + (R_2 * V_2)}{V_0 + V_1 + V_2}$$

*where*

$R_0 = value\ of\ first\ composite\ period$

$R_1 = value\ of\ second\ composite\ period$ (Equation B-3)

$R_2 = value\ of\ third\ composite\ period$

$V_0 = streamflow\ volume\ during\ first\ composite$

$V_1 = streamflow\ volume\ during\ second\ composite$

$V_2 = streamflow\ volume\ during\ third\ composite$

An example is as follows where a particular day (5/10 in this example) was covered by three composite samples:

| Composite | Period of Collection | Analytical Result (µg/L) | Streamflow Volume During Collection (L) |
|---|---|---|---|
| #1 | 5/5 9:10–5/10 8:45 | 1.0 | 1.5E6 |
| #2 | 5/10 8:45–5/10 15:00 | 3.0 | 2.0E6 |
| #3 | 5/10 15:00–5/15 7:40 | 2.0 | 0.5E6 |

Therefore, the volume-weighted result to apply to 5/10 is as follows:

$$Volume - Weighted\ Result = \frac{(1.0 * 1.5) + (3.0 * 2.0) + (2.0 * 0.5)}{(1.5 + 2.0 + 0.5)} = 2.125\ \mu g / L \qquad \text{(Equation B-4)}$$

- Each calendar day has an associated surface water volume (liters) that was measured by the flow meter. The flow record may contain estimated values for certain conditions.[2]
- The daily surface water volume is then multiplied by the corresponding activity/concentration to calculate a load (in pCi, mg, or µg) for each day.
- The sum of the daily loads (pCi, mg, or µg) for the preceding 30 days (with both flow and an analytical result) is divided by the sum of the daily surface water volumes (liters) for the preceding 30 days (with both flow and an analytical result) to calculate the volume-weighted 30-day average (pCi/L, mg/L, or µg/L). The equation can be given as follows:

$$\frac{\sum_{day=0}^{day=-29} [picocuries\ \ or\ micrograms]}{\sum_{day=0}^{day=-29} [liters]} = 30day\ Average_{day=0} [pCi/L, mg/L, or\ \mu g/L] \qquad \text{(Equation B-5)}$$

- The 30-day average values are then rounded to two significant figures. No rounding occurs with the measured input numbers prior to calculation of the 30-day averages. Only the final calculated value is rounded. For example, a calculated value of 0.124 pCi/L would be rounded to 0.12 pCi/L. Similarly, a value of 0.246 pCi/L would be rounded to 0.25 pCi/L.
- These 30-day averages are then compared to the appropriate water quality standards according to the criteria in the applicable data evaluation flowcharts in RFLMA (Attachment A2).

[2] Estimation is required when flow rates exceed the capacity of the flow-control structure (e.g., a flume), winter ice conditions result in an inaccurate measurement, or equipment fails.

### B.1.3 Evaluation Using 12-Month Rolling Averages

Evaluation of analytical data using 12-month rolling averages is currently performed for the POE and POC monitoring locations as specified in RFLMA. The method is as follows:

- Rolling 12-month averages are calculated monthly for each location (on the last day of each month).
- Calculations are performed using daily time steps. The 12-month rolling average for a particular day (specifically the last day of each month) is calculated using a "window" of time that includes the previous 365 calendar days. Therefore, for a location with continuous flow and complete analytical results, 365 (366 in a leap year) daily values are included in each window (12 windows per year). For a location that flows intermittently, the rolling 12-month window will include fewer than 365 daily values, because days of zero flow have no applicable analytical result or discharge volume.
- When no analytical result or measured flow value is available for a particular day, then the day is not included in the rolling 12-month window. No analytical result may be available either due to NSQ for analysis (Section B.1.1) or a failed laboratory analysis. Flow measurement may also be missing due to equipment failures or adverse weather conditions (winter freezing).
- When a negative radionuclide result (e.g., −0.002 pCi/L) is returned from the laboratory due to blank correction, then a value of 0.0 pCi/L is used for calculation purposes. When a nondetect is returned from the laboratory for nitrate analyses, then one-half the detection limit is used for calculation purposes.
- When a field sample result has a corresponding duplicate or reanalysis ("re-run"), **AND** *neither* result is greater than the applicable water quality standard, **THEN** the analytical result used in calculations is the arithmetic average of the individual analytical results.
- When a field sample result has a corresponding duplicate or reanalysis ("re-run"), **AND** *either* result is greater than the applicable water quality standard, **THEN** an evaluation of the data pair is performed to determine the representativeness of the sample results.[3] The method for determining representativeness is given below.

#### B.1.3.1 Determining Representativeness for Non-Radionuclide Results

1. The RPD for the data pair is calculated:

$$RPD(\%) = \frac{|R_1 - R_2|}{(R_1 + R_2)/2} * 100$$

*where* (Equation B-6)

$R_1$ = *value of initial result*

$R_2$ = *value of duplicate result*

[3] Significant differences in values for a data pair are an indication of potential problems with sample preparation and/or analysis. Under these circumstances, an applicable value to be used for the calculation of 30-day averages cannot be determined with sufficient confidence to make compliance decisions. As such, an evaluation is required to assess the representativeness of the sample and its usability for compliance decisions.

2a. **IF** the RPD is greater than or equal to 100 percent ([higher result] ≥ 3x [lower result]), **THEN** the results will be determined to be nonrepresentative. The results will not be used for the calculation of 30-day averages, and no 30-day average values will be computed for the days during which the sample was collected.

2b. **IF** the RPD is less than 100 percent ([higher result] < 3x [lower result]), **THEN** the results will be determined to be sufficiently representative. The arithmetic average of the results will be used for the calculation of 30-day average values.

#### B.1.3.2 Determining Representativeness for Radionuclides

1. The DER for the radionuclide data pair is calculated:

$$DER = \frac{|R_1 - R_2|}{\sqrt{(2\sigma_{R1})^2 + (2\sigma_{R2})^2}}$$

*where*

$R_1 = value\ of\ initial\ result$ (Equation B-7)

$R_2 = value\ of\ duplicate\ result$

$2\sigma_{R1} = 2\ sigma\ error\ of\ initial\ result$

$2\sigma_{R2} = 2\ sigma\ error\ of\ duplicate\ result$

2a. **IF** the DER is greater than or equal to 5, **THEN** the results will be determined to be nonrepresentative. The results will not be used for the calculation of 12-month rolling averages.

2b. **IF** the DER is less than 5, **THEN** the results will be determined to be sufficiently representative. The arithmetic average of the results will be used for the calculation of 12-month rolling average values.

#### B.1.3.3 Calculation of 12-Month Rolling Average

- Each calendar day is assigned the activity or concentration (e.g. analytical result in pCi/L or mg/L) of the composite sample that was in progress at the end of that day (specifically, at 23:59:59).
- In the event that more than one composite sample was collected during a single day due to high flows, the results for each composite sample will be volume-weighted to calculate an appropriate single concentration or activity value to be applied to the day. The equation can be given as follows:

$$Volume-Weighted\ Result = \frac{(R_0 * V_0)+(R_1 * V_1)+(R_2 * V_2)}{V_0 + V_1 + V_2}$$

*where*

$R_0 = value\ of\ \ first\ composite\ period$

$R_1 = value\ of\ \ second\ composite\ period$ (Equation B-8)

$R_2 = value\ of\ \ third\ composite\ period$

$V_0 = streamflow\ volume\ during\ \ first\ composite$

$V_1 = streamflow\ volume\ during\ second\ composite$

$V_2 = streamflow\ volume\ during\ third\ composite$

An example is as follows where a particular day (5/10 in this example) was covered by three composite samples:

| Composite | Period of Collection | Analytical Result (µg/L) | Streamflow Volume During Collection (L) |
|---|---|---|---|
| #1 | 5/5 9:10–5/10 8:45 | 1.0 | 1.5E6 |
| #2 | 5/10 8:45–5/10 15:00 | 3.0 | 2.0E6 |
| #3 | 5/10 15:00–5/15 7:40 | 2.0 | 0.5E6 |

Therefore, the volume-weighted result to apply to 5/10 is as follows:

$$Volume-Weighted\ Result = \frac{(1.0*1.5)+(3.0*2.0)+(2.0*0.5)}{(1.5+2.0+0.5)} = 2.125\ \mu g/L$$ (Equation B-9)

- Each calendar day has an associated surface water volume (liters) that was measured by the flow meter. The flow record may contain estimated values for certain conditions.[4]
- The daily surface water volume is then multiplied by the corresponding activity to calculate a load (in pCi or mg) for each day.
- The sum of the daily loads (pCi or mg) for the preceding 365 calendar days (with both flow and an analytical result) is divided by the sum of the daily surface water volumes (liters) for the preceding 365 calendar days to calculate the 12-month rolling average (pCi/L or mg/L). The equation can be given as follows:

$$\frac{\sum_{day=0}^{day=-364}[picocuries\ or\ micrograms]}{\sum_{day=0}^{day=-364}[liters]} = Rolling\ 12-Month\ Average_{day=0}[pCi/L\ or\ mg/L]$$

*where*

*"day = 0" = is the last day of each month* (Equation B-10)

[4] Estimation is required when flow rates exceed the capacity of the flow-control structure (e.g., a flume), winter ice conditions result in an inaccurate measurement, or equipment fails.

- The 12-month rolling average values are then rounded to two significant figures. No rounding occurs with the measured input numbers prior to calculation of the 12-month rolling averages. Only the final calculated value is rounded. For example, a calculated value of 0.124 pCi/L would be rounded to 0.12 pCi/L. Similarly, a value of 0.246 pCi/L would be rounded to 0.25 pCi/L.
- These 12-month rolling averages are then compared to the appropriate water quality standards according to the criteria in the applicable data evaluation flowcharts in RFLMA (Attachment A2).

### B.1.4 Volume-Weighted Averages for Various Time Periods (Periodic Averages)

The method is as follows:

- The time-period for the volume-weighted average is selected (e.g., monthly, seasonal, annual, period of sampling).
- When a negative radionuclide result (e.g., −0.002 pCi/L) is returned from the lab due to blank correction, then a value of 0.0 pCi/L is used for calculation purposes. When an undetect is returned from the lab for metals or nitrate analyses, then half the detection limit is used for calculation purposes. When a sample has a corresponding field duplicate, the value used in calculations is the arithmetic average of the 'real' value and the 'duplicate'. When a sample has multiple 'real' analyses ('re-runs'), the value used in calculations is the arithmetic average of the multiple 'real' analyses.
- When no analytical result or measured flow value is available for a particular day, then an applicable activity (pCi/L) is estimated based on Pu/Am ratios, recent values on either side of the missing result, the annual volume-weighted average, etc. No analytical result may be available either due to a non-sufficient quantity for analysis (referred to as an NSQ condition) or a failed lab analysis. Flow measurement may be missing due to equipment failures or adverse weather conditions (winter freezing).
- The analytical result (pCi/L, mg/L, or µg/L) for a particular composite sample period[5] is multiplied by the associated flow volume (streamflow in liters) to obtain a load for each composite sample period (pCi, mg, or µg).[6]
- The sum of the individual composite-sampling period loads (for the selected time-period) is calculated in pCi, mg, or µg.
- The sum of the sample-period loads (pCi, mg, or µg) for the selected time-period is divided by the sum of the sample-period surface-water volumes (liters) to calculate the volume-weighted average (pCi/L, mg/L, or µg/L). The equation can be given as follows:

$$\frac{\sum[pCi,\ mg,\ or\ \mu g]}{\sum[liters]} = Periodic\ Average\,[pCi/L,\ mg/L,\ or\ \mu g/L] \qquad \text{(Equation B-11)}$$

[5] When no analytical result is available due to a failed lab analysis or a sample of non-sufficient quantity, the activity for the period of the missing analytical result is estimated. The activity is estimated using the annual or seasonal volume-weighted average or based on the location-specific Pu/Am ratio when only one analyte result is available. The estimation technique is chosen using professional judgment based on location.

[6] When a composite-sample period overlaps the selected time-period for loading, then a proportion of the load for the entire sampling period is calculated based on relative streamflow volume.

### B.1.5 Loading Analysis

#### B.1.5.1 Continuous Flow-Paced Sampling Analytical Results

Load estimation for continuous flow-paced sampling is generally used to evaluate the relative radionuclide loads of tributary monitoring locations and as an estimation of actual loads at specific monitoring locations. The nature of the continuous sampling during all flow conditions allows for more accurate load calculations compared to storm-event sampling. The method is as follows:

- The time-period for loading comparison is selected (e.g., monthly, seasonal, annual).
- When a negative radionuclide result (e.g., −0.002 pCi/L) is returned from the lab due to blank correction, then a value of 0.0 pCi/L is used for calculation purposes. When a sample has a corresponding field duplicate, the value used in calculations is the arithmetic average of the 'real' value and the 'duplicate.' When a sample has multiple 'real' analyses ('re-runs'), the value used in calculations is the arithmetic average of the multiple 'real' analyses.
- When no analytical result or measured flow value is available for a particular day, then an applicable activity (pCi/L) or concentration (µg/L) is estimated based on Pu/Am ratios, recent values on either side of the missing result, the annual volume-weighted average, etc. No analytical result may be available either due to a non-sufficient quantity for analysis (referred to as an NSQ condition) or a failed lab analysis. Flow measurement may be missing due to equipment failures or adverse weather conditions (winter freezing).
- The analytical result (pCi/L or µg/L) for a particular composite sample period[5] is multiplied by the associated flow volume (streamflow in liters) to obtain a load for each composite sample period (pCi or µg).[7]
- The sum of the individual composite-sampling period loads (for the selected time-period) is calculated in pCi or µg, and converted to desired units.

[7] When a composite-sample period overlaps the selected time-period for loading, then a proportion of the load for the entire sampling period is calculated based on relative streamflow volume.

## B.2 Surface-Water Sample Collection Methods

Location-specific sample collection protocols are detailed in the RFSOG. The telemetry system centrally monitors the status of all automated samplers. Stations determined to have completed composites will be visited for collection, at which time the data from the flow meter will be recorded and downloaded electronically to a lap-top PC to obtain the sampling interval information. Information regarding missed grabs[8], grab sample flow-pacing, and grab sample volume is recorded directly from the sampler to field logbooks.

The composite-sample bottle is removed from the sampler, sealed, and transported to the Site office for preparation, shipment, and tracking.[9] A clean sample container will then be placed in the sampler for the next targeted sample.[10] Since some composite samples will remain in the field filling for as long as a month, samples will be acidified in the container to a pH<2 following collection from the field. The acidified samples will stand for 24 hours to remove any constituents that may have sorbed to the inside surface of the container.[11]

### B.2.1 Sample Types

#### B.2.1.1 Continuous Flow-Paced Composite Samples

Continuous flow-paced composite samples are collected during all flow conditions. Automated samplers collect grab samples year-round. When a composite sample is removed from the sampler for analysis, the next composite sample starts filling immediately, if flow is available. If the location is dry at the initiation of a new composite sample, the flow meter is programmed to trigger sample collection at the next available flow period. A composite sample consists of multiple grab samples[12] that are flow-paced. In other words, one grab sample is deposited in the composite sample bottle each time a specified volume of stream discharge is measured by the flow meter. Figure B-1 is an example of flow-pacing of grab samples every 4,390 cubic feet of stream discharge for a continuous flow-paced sampling event. The chosen flow pace depends on expected stream discharge, the composite volume desired, and the desired composite-sampling period. Details on the method used to determine the desired flow pace are provided below (see Section B.2.2).

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[8] Missed grab samples may be caused by equipment malfunction or the freezing of sample intake lines.
[9] Stoller prepares, ships, and tracks all samples according to the applicable Site QA/QC documents.
[10] Stoller is responsible for the cleaning of sample bottles according to Site QA/QC requirements. All locations have dedicated sample bottles to reduce the risk of cross-contamination. Sample bottle cleaning tools are also dedicated. Clean sample bottles waiting for deployment are stored at the Site office.
[11] For analyses which can not be acidified prior to analysis (i.e., TSS), the required volume is removed from the sample bottle prior to acidification.
[12] The current grab sample volume for continuous flow-paced composite samples is 200 milliliters (mL). This volume was chosen to maximize the number of grabs while achieving adequate repeatability. ISCO samplers have a sample volume repeatability of ±10 mL. Therefore, a volume error of ±5 percent can be expected.

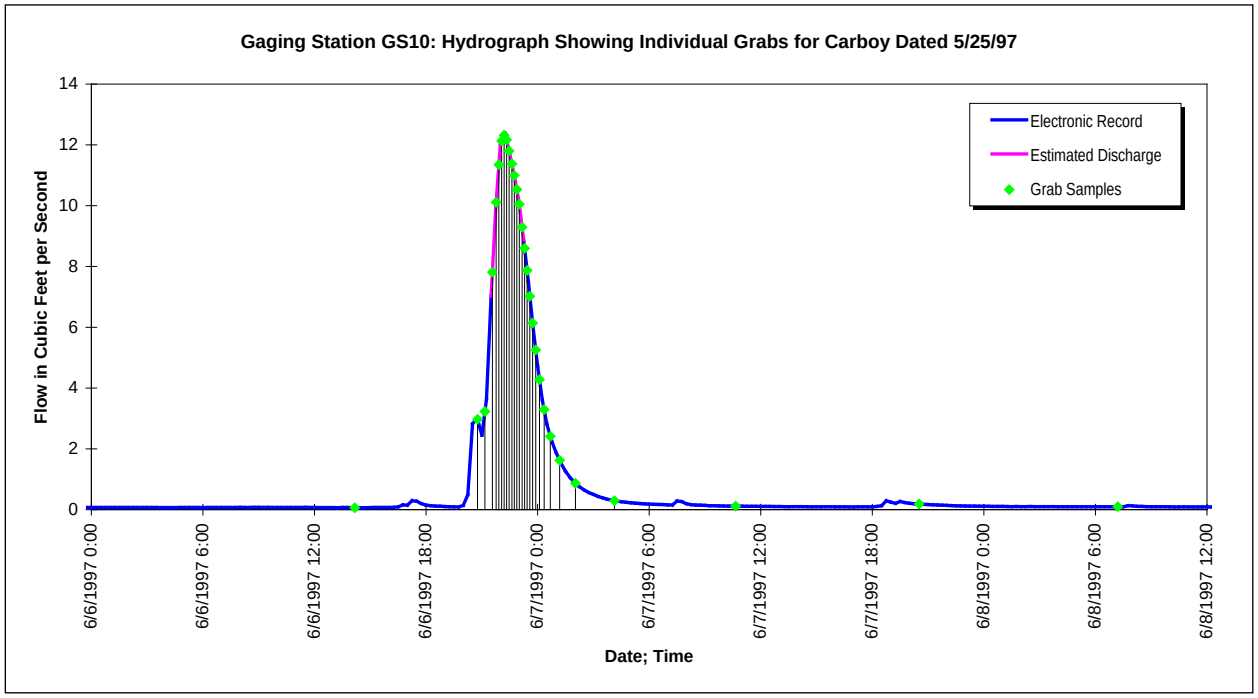


*Figure B-1. Example of Hydrograph Showing Continuous Flow-Paced Composite Sampling*

Ideally, by flow-pacing composite samples and effectively collecting more frequent grabs during higher flow rates, an analytical result—in terms of concentration (e.g., milligrams per liter [mg/L]) or activity (e.g., picocuries per liter [pCi/L])—that is representative of the entire sampling period is obtained. This result can then be used with the corresponding discharge volume to evaluate a constituent load and/or the appropriate calculated values.

### B.2.2 Flow Pacing of Automated Samplers

The chosen flow pacing for a composite sample must satisfy the following criteria:

- The composite sample should fill during the specified time period as determined by the targeted sample collection frequencies.[13,14]
- The collected sample volume must be adequate such that the location-specific analyses can be conducted by the laboratory.[15]

[13] Annual composite sample totals are determined by statistically evaluating historical data. Software programs such as Visual Sample Plan (VSP; Battelle Memorial Institute; http://vsp.pnl.gov/) are used to determine appropriate sample counts to achieve a level of confidence in the results such that decisions can be made. Annual sample counts are distributed monthly based on historical flow data.

[14] Samples are flow-paced based on average expected discharge rates calculated from historic discharge records. Consequently, samples may fill in periods shorter than the targeted period when flow rates are significantly higher than normal. Similarly, samplers may not fill during the targeted period if flow rates are significantly lower than predicted by historical flow record.

[15] Specific analyses each require some minimum volume of sample. Therefore, the minimum required sample volume depends on the location-specific analyte suite.

The following steps are used to determine the appropriate flow pace for a continuously collected composite sample:

[1] The location-specific targeted time period for the composite sample must be known. For example, assume four composite samples are targeted for the month of May at GS10.

[2] The expected discharge volume for the targeted time period must then be calculated using historic flow record.[16] For locations with limited historic flow record, professional judgment, estimations related to basin size, and/or flow record at upstream/downstream locations are used to determine expected discharge volumes.

For example, at GS10 the expected discharge volume for May is 5.48 MG. To collect four composite samples for the month, one composite sample is collected for every 1.37 MG (183,142 cubic feet).

[3] The targeted number of 200-mL grab samples for the composite sample is then determined. The targeted number of grabs is set using professional judgment to collect a composite volume between the minimum sample volume required for complete analysis and the maximum volume that can be contained in the sample container.[17] This allows for variation in actual measured discharge (from the expected discharge based on historic record), while still collecting the composite sample during the targeted time period.

For example, at GS10 the composite sample bottles can contain a maximum of 22 L, and the minimum required sample volume for complete laboratory analysis at GS10 is 3.5 L. Consequently, the sampler at GS10 is normally paced to collect sixty 200-mL grab samples if the stream discharge volume is average for the target period, resulting in a composite sample volume of 12 L. The actual stream discharge volume would be expected to vary from historical averages. Therefore, composite samples are collected from the field with a total number of grabs varying from 18 (3.6 L) to 110 (22 L).

[4] The expected discharge volume is then divided by the targeted number of grab samples to obtain a discharge volume per grab sample. This is the flow pace for the composite sample.

Continuing with the GS10 example, collecting 60 grab samples for a stream discharge of 183,142 cubic feet results in a flow pace of 3,052 cubic feet of stream discharge per grab sample.

[16] The expected discharge volume is the historic average volume. Generally, available flow record after October 1, 1992, is used (data prior to October 1, 1992, is considered less reliable). The actual period of record depends on monitoring location. Due to the significant reduction in runoff following site closure, professional judgment is used where appropriate.

[17] The Site currently uses 15- and 22-L composite sample bottles (carboys).

## B.3 Results of Statistical Assessments of Groundwater-Quality Data

This appendix includes statistical output generated by the commercially-available software program, Sanitas (Sanitas Technologies 2014). (Note: This report does not recommend the use of any specific software; this information is merely provided for completeness.) Statistical assessments of groundwater quality are directed by the *Rocky Flats Legacy Management Agreement* (DOE 2012).

In accordance with RFLMA decision rules, these statistical results include trending calculations for Sentinel wells, downgradient RCRA wells, and for those Evaluation wells sampled in 2013; and comparisons of upgradient and downgradient concentrations for RCRA wells. In addition, statistical trending results are included for upgradient RCRA wells, selected AOC analytes and wells, and for influent to the MSPTS, ETPTS, and SPPTS. In most cases, trending calculations utilize the Seasonal-Kendall (S-K) method, which has been determined (K-H 2004d) to be most appropriate for groundwater at the Rocky Flats Site; for wells that are not monitored over more than one season per year (i.e., for Evaluation wells sampled biennially), the Mann-Kendall (M-K) method is used because seasonality is not a factor. Comparisons of upgradient and downgradient water quality were performed using ANOVA methods; only the RCRA wells received this treatment.

Graphical representations of S-K trends that were calculated to meet a level of significance of at least 80 percent are included for those wells and locations so evaluated. Graphical representations of M-K trends are included where a level of significance of at least 95 percent is met. Summary tables are also included that describe the results of these calculations. Summary ANOVA reports are provided to describe the results of the statistical comparisons of upgradient vs. downgradient water quality in RCRA wells at the two landfills.

Refer to the body of this Annual Report for discussion of trends and groundwater quality in the various areas of interest.

### B.3.1 S-K Trend Plots and Summary Tables

#### B.3.1.1 Sentinel Wells

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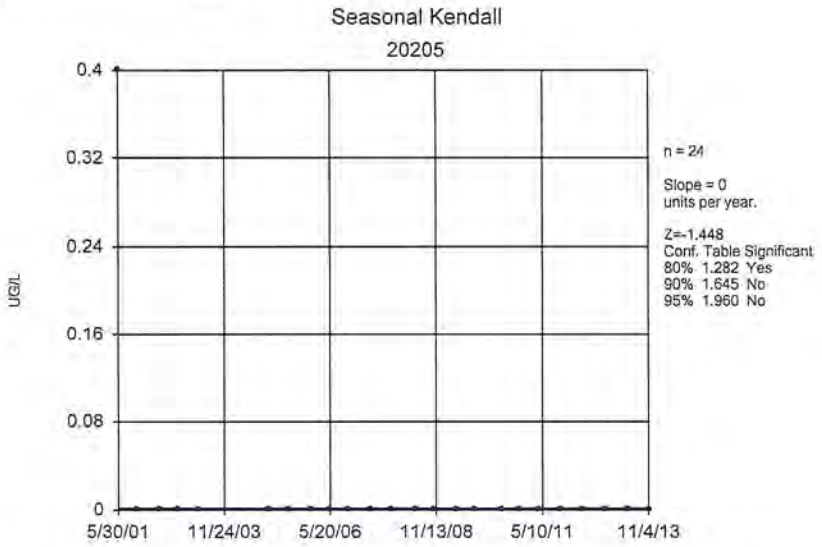


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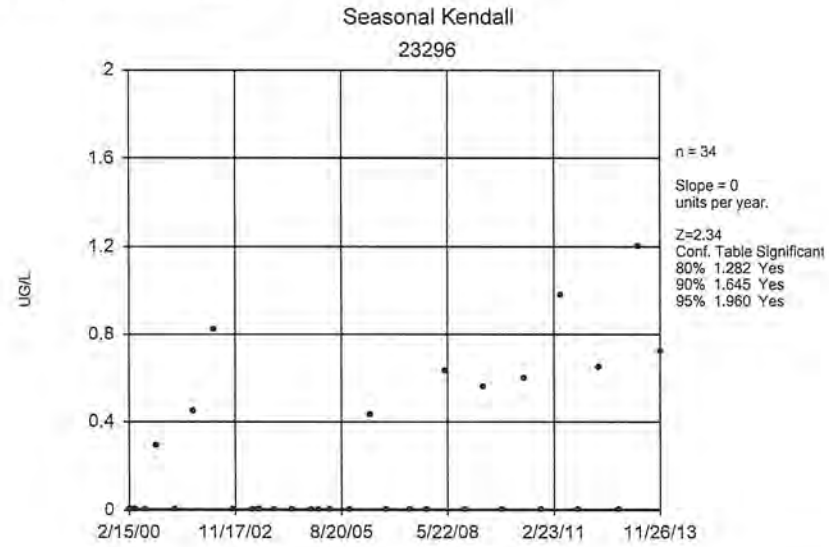


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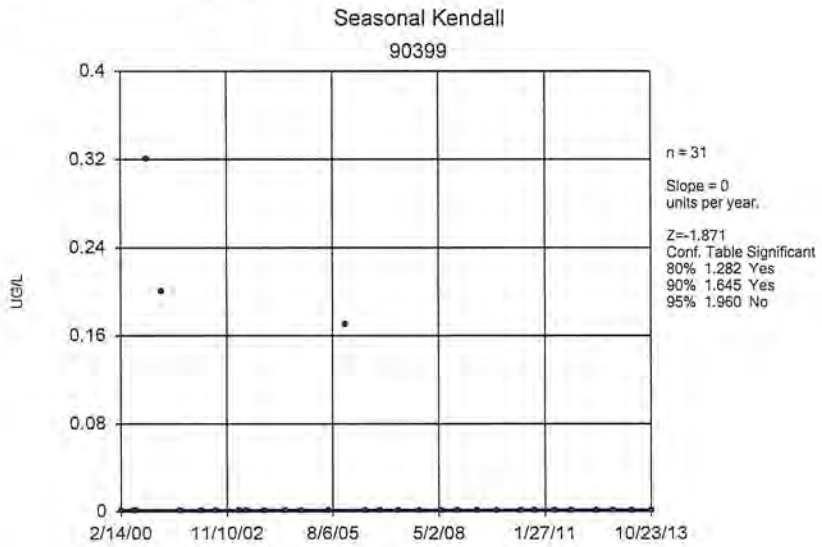


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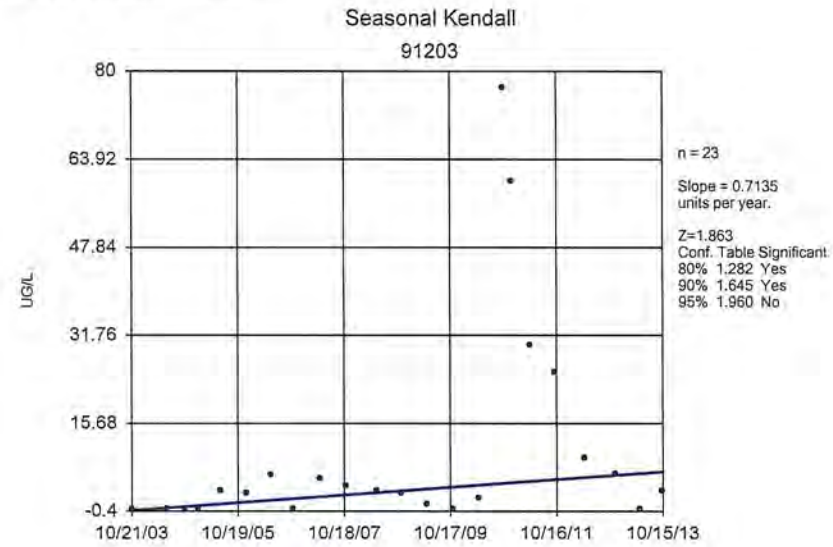


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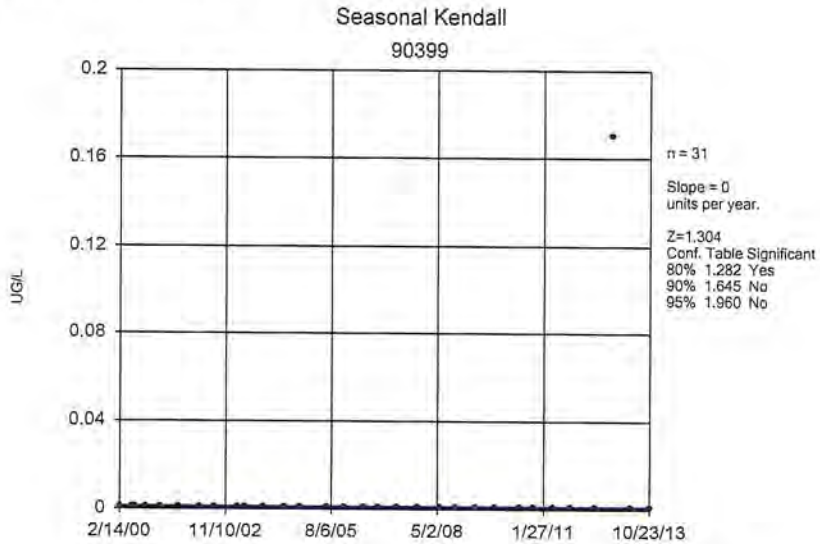


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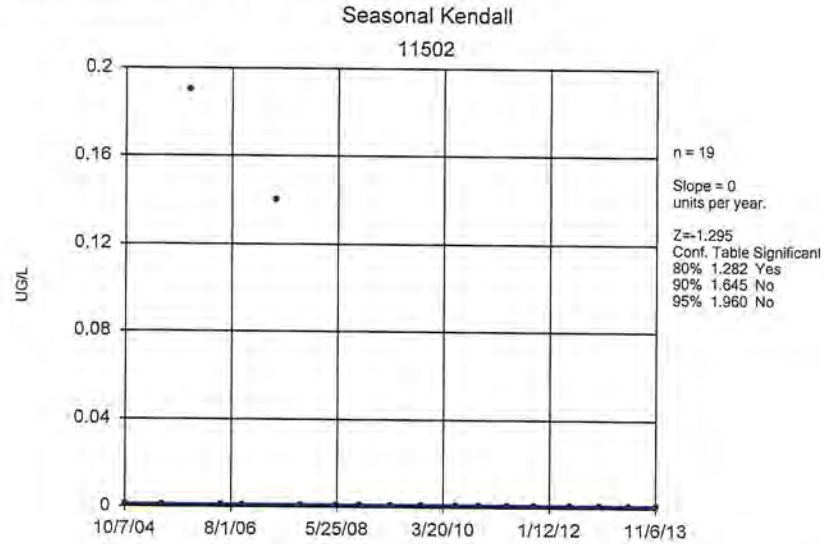


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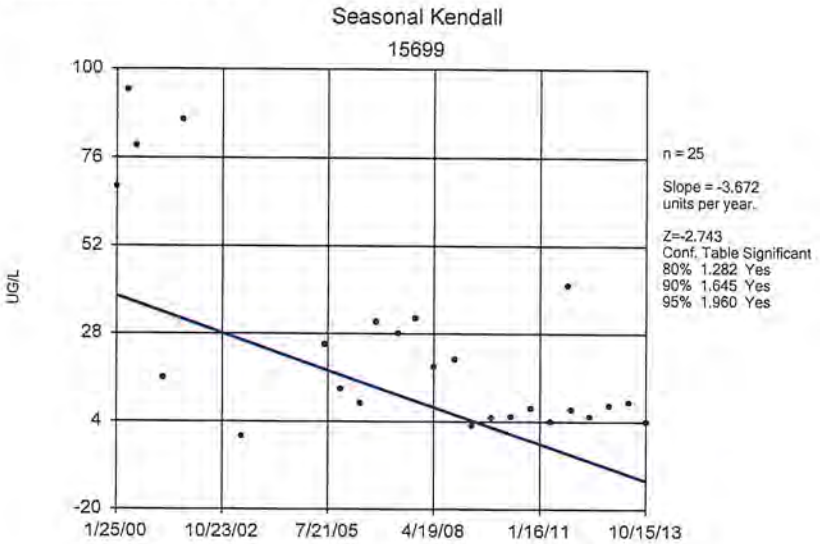


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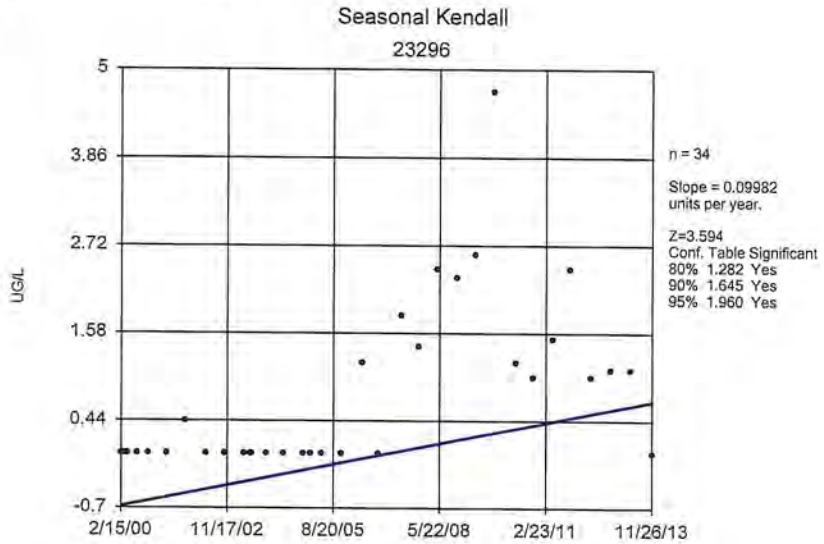


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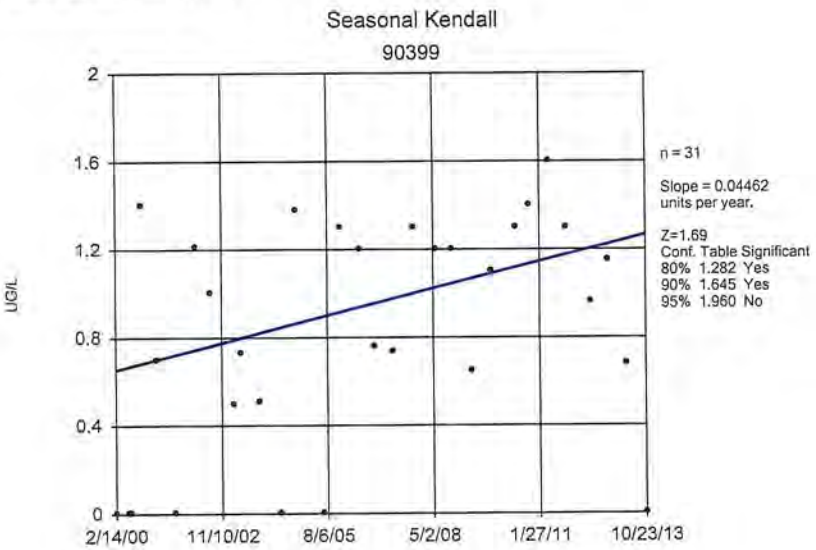


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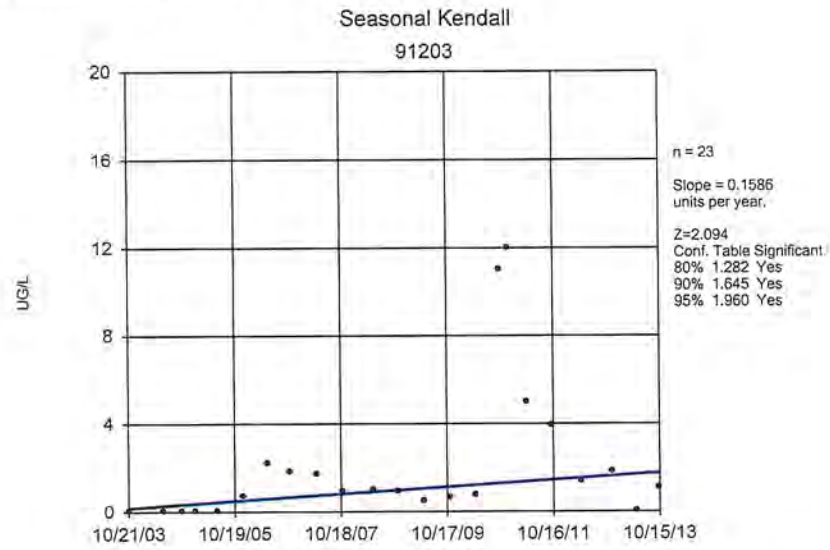


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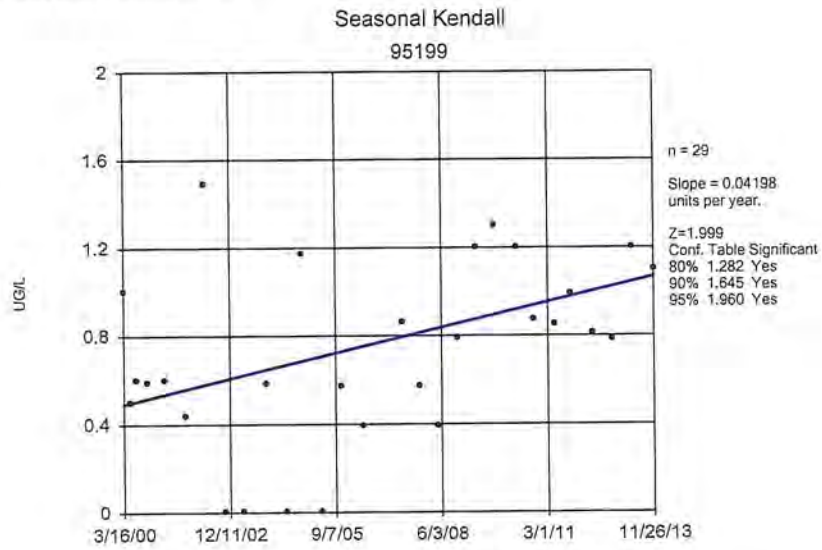


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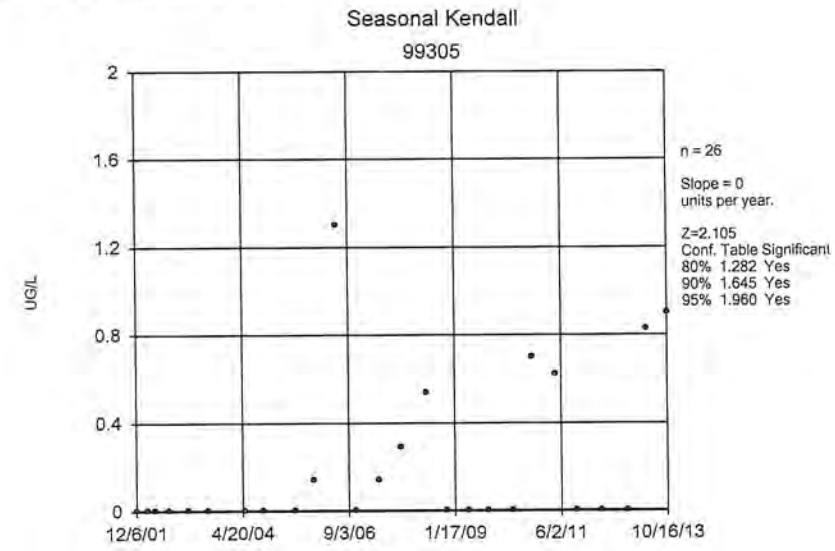


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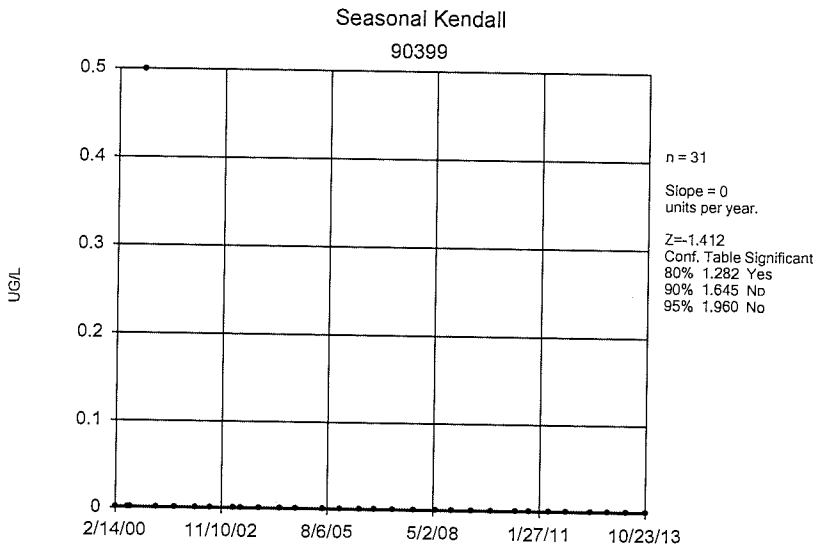


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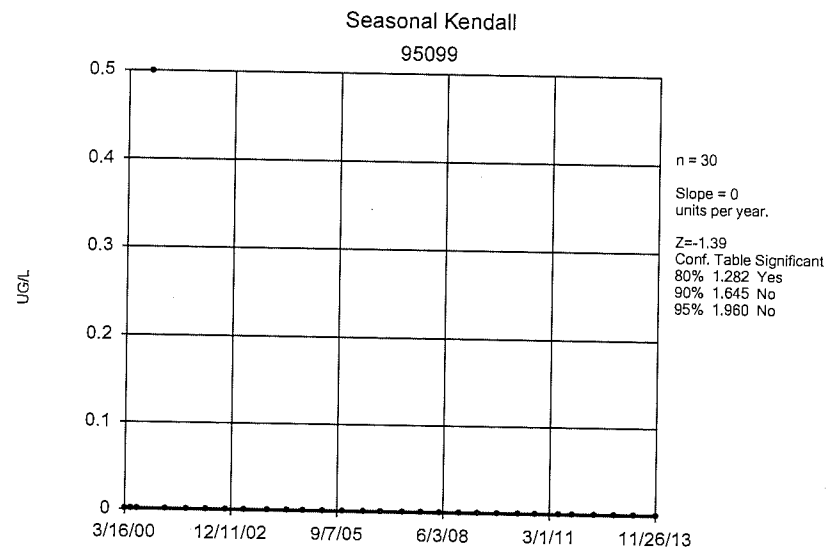


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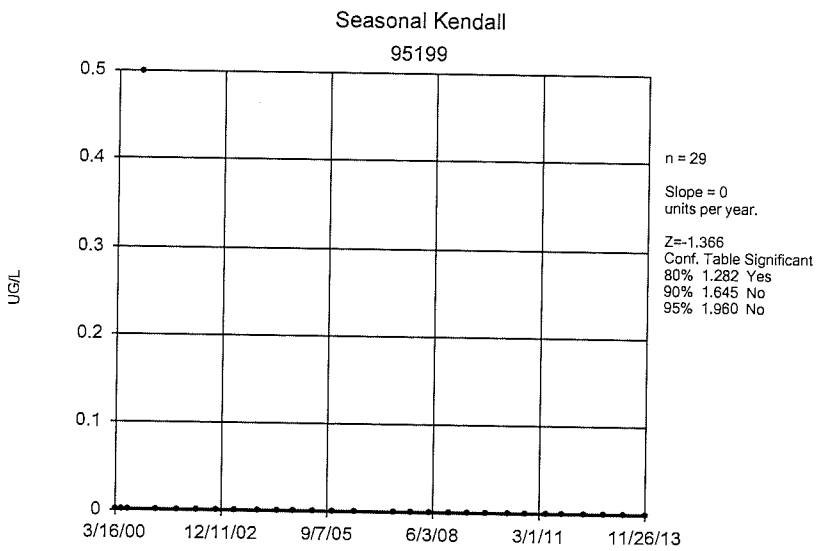


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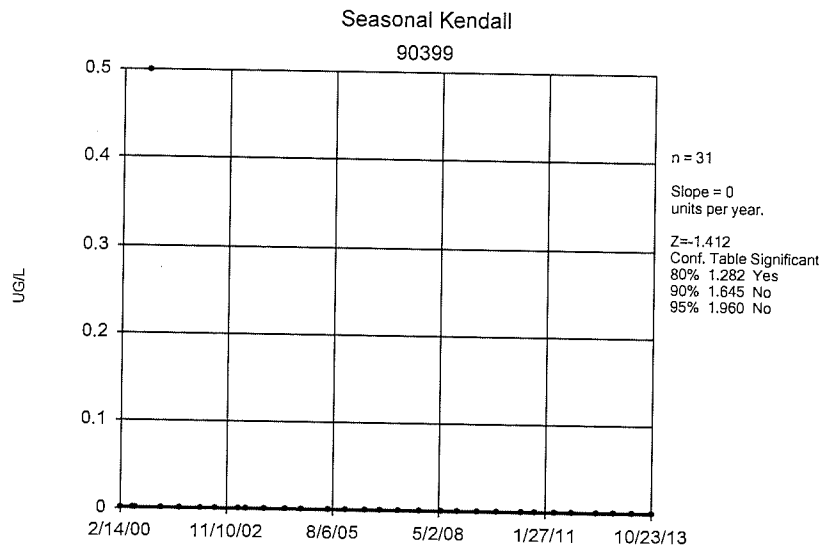


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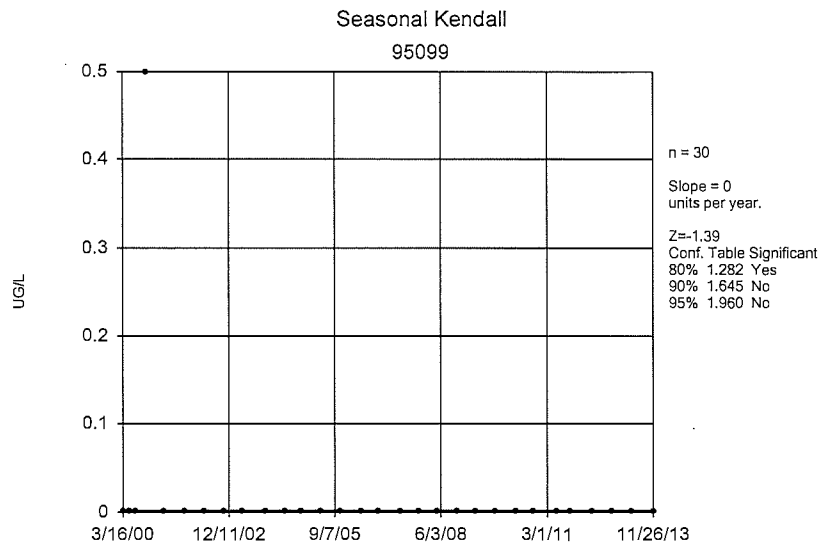


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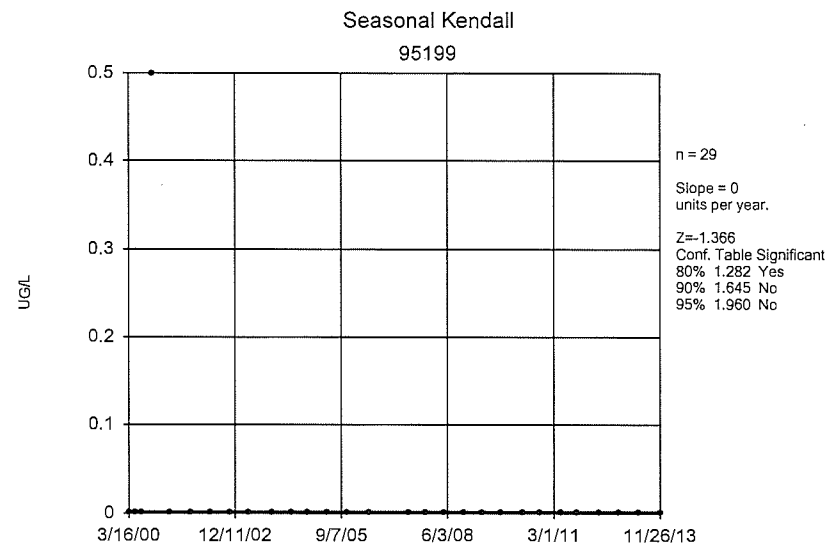


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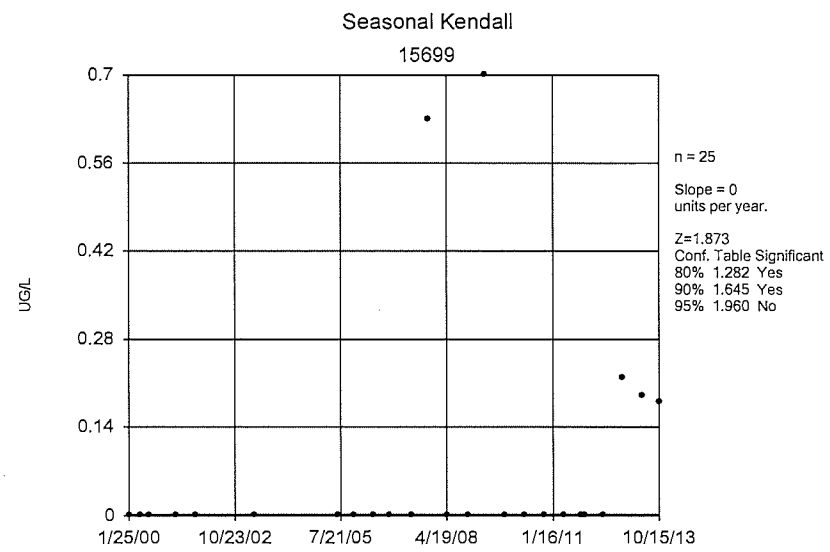


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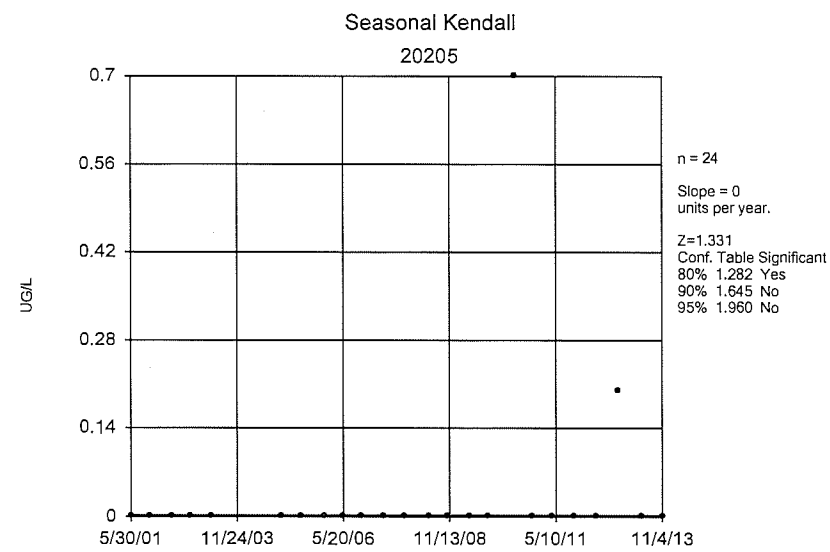


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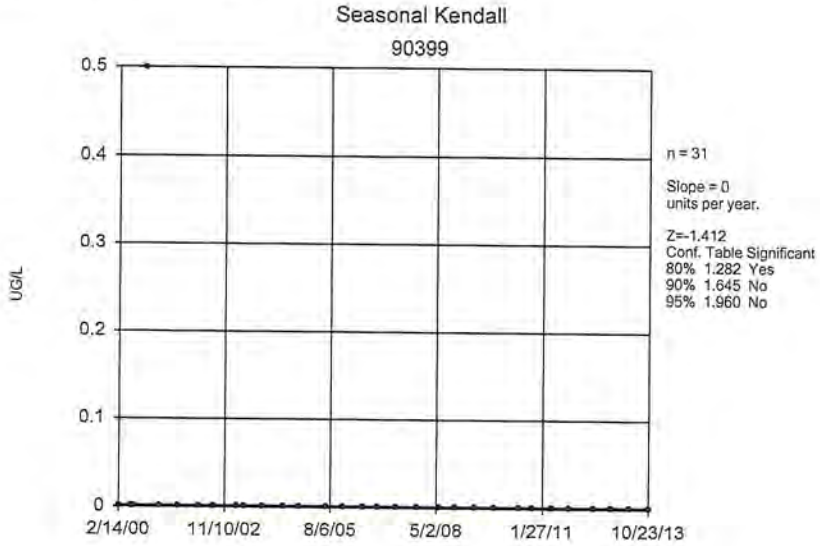


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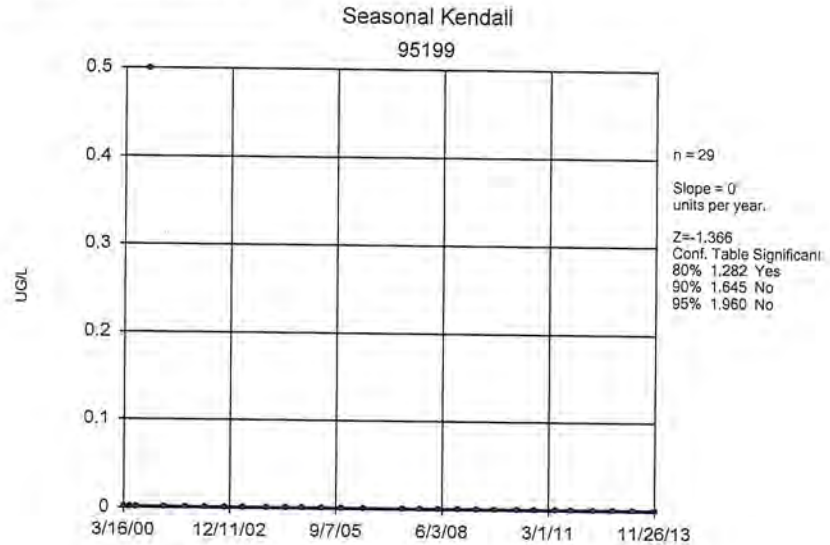


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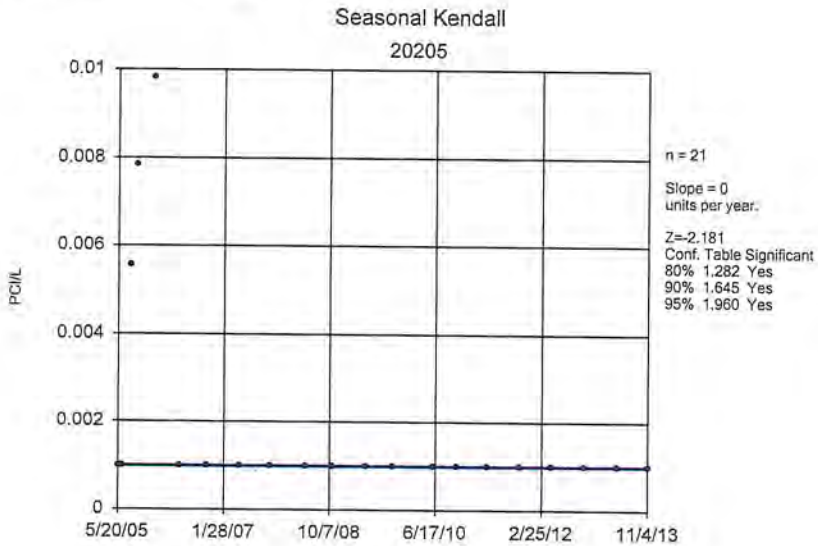


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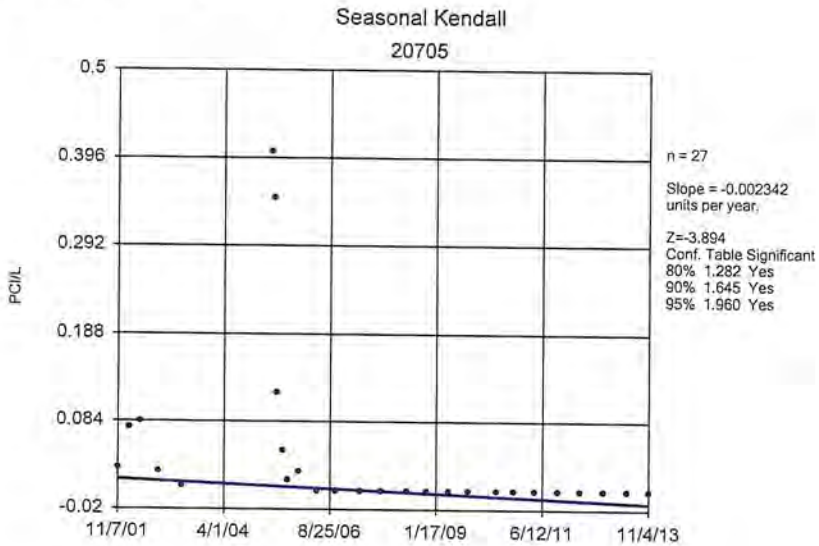
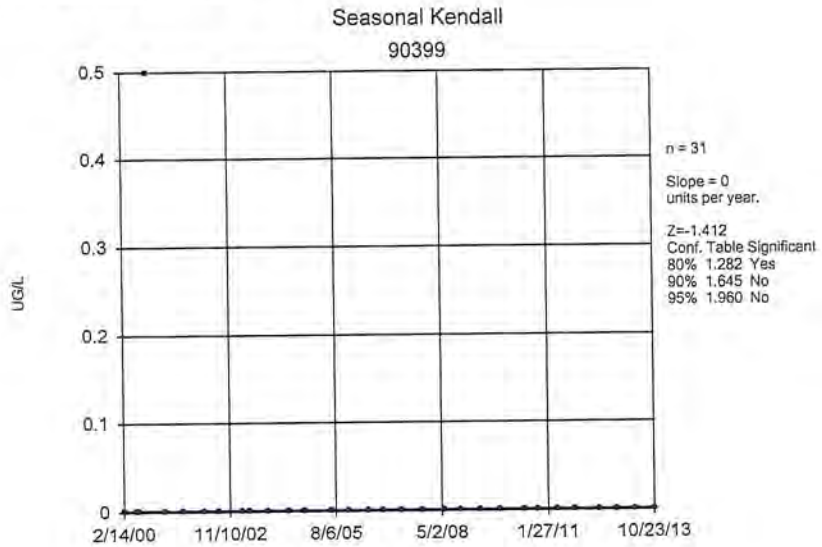
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



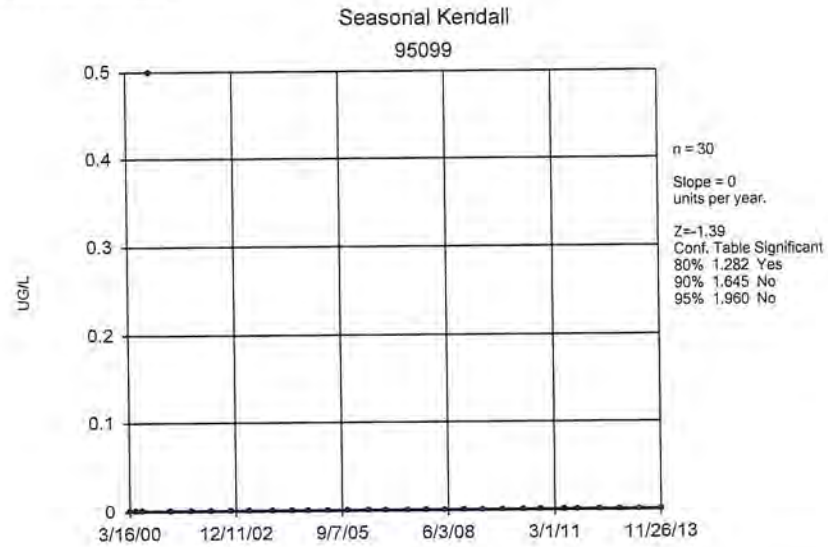

Constituent: Americium-241 Analysis Run 3/2/2014 1:46 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



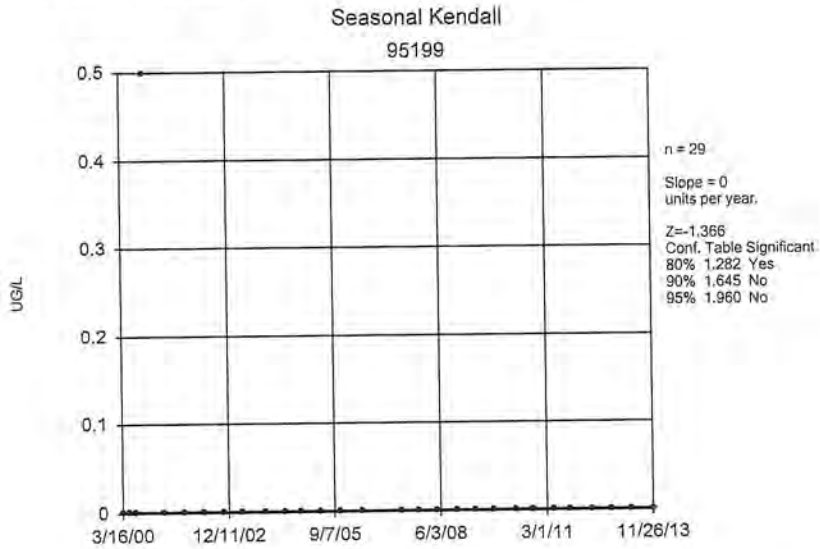

Constituent: Benzene Analysis Run 3/2/2014 1:47 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



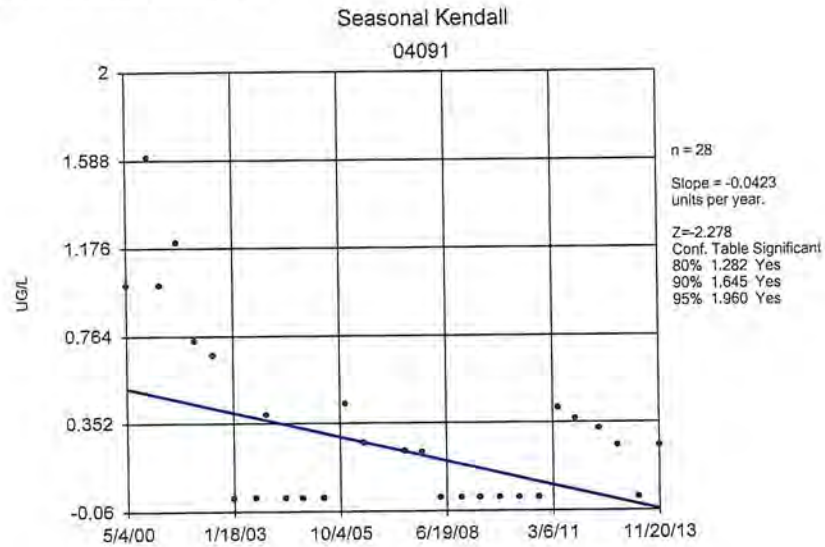

Constituent: Benzene Analysis Run 3/2/2014 1:47 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



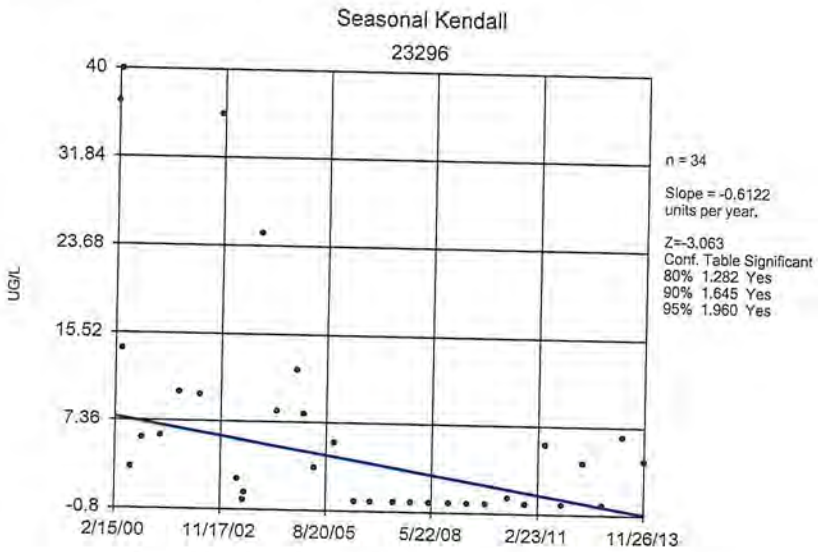

Constituent: Benzene Analysis Run 3/2/2014 1:47 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



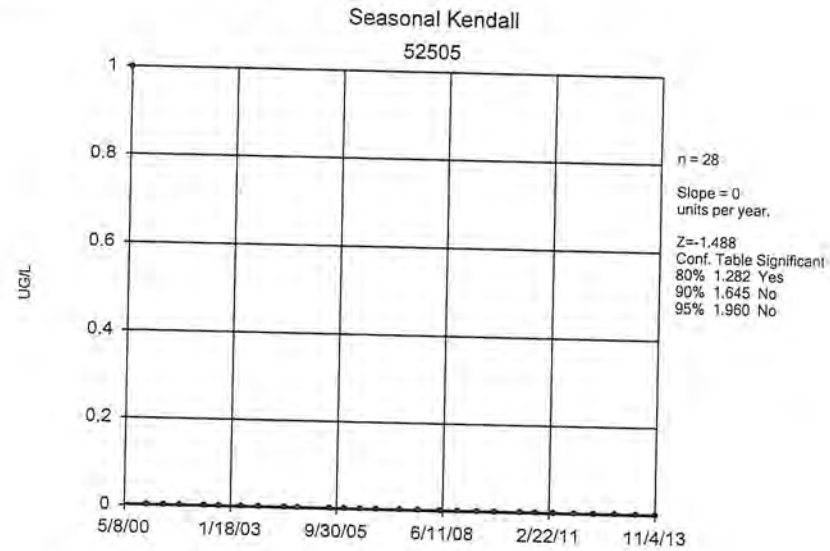

Constituent: Carbon tetrachloride Analysis Run 3/2/2014 1:48 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



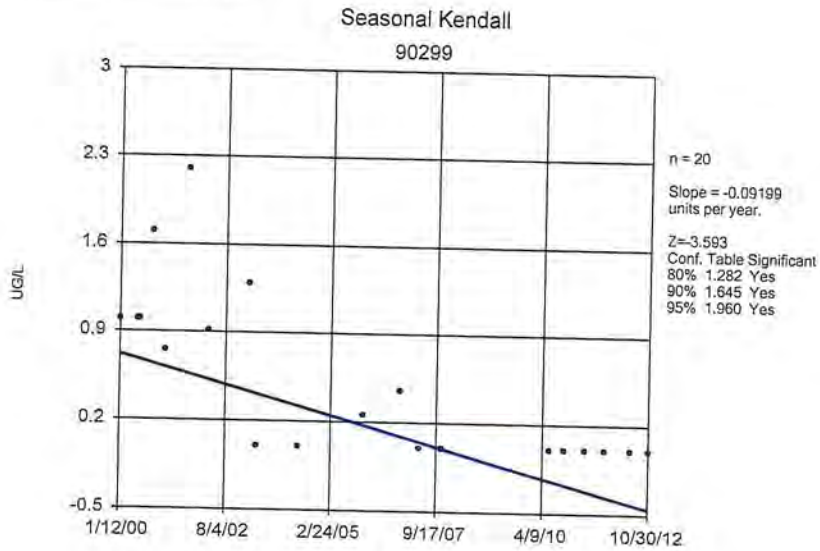

Constituent: Carbon tetrachloride Analysis Run 3/2/2014 1:49 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



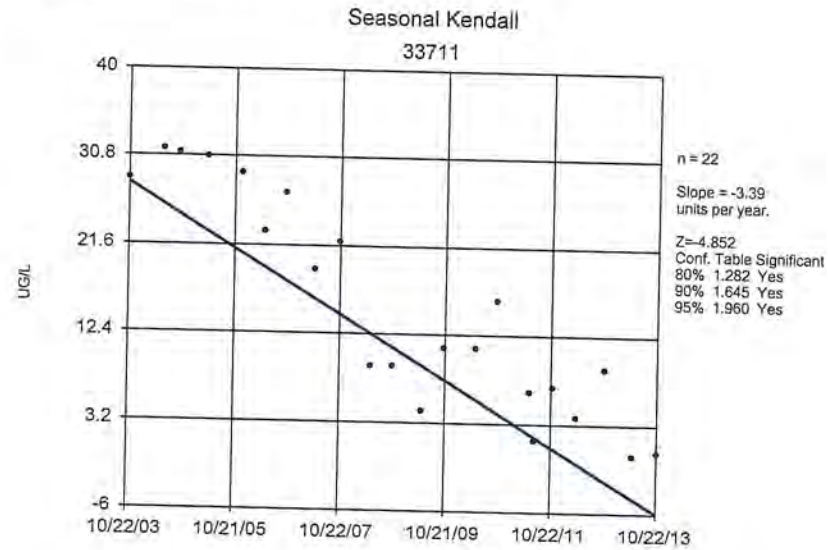

Constituent: Carbon tetrachloride Analysis Run 3/2/2014 1:49 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



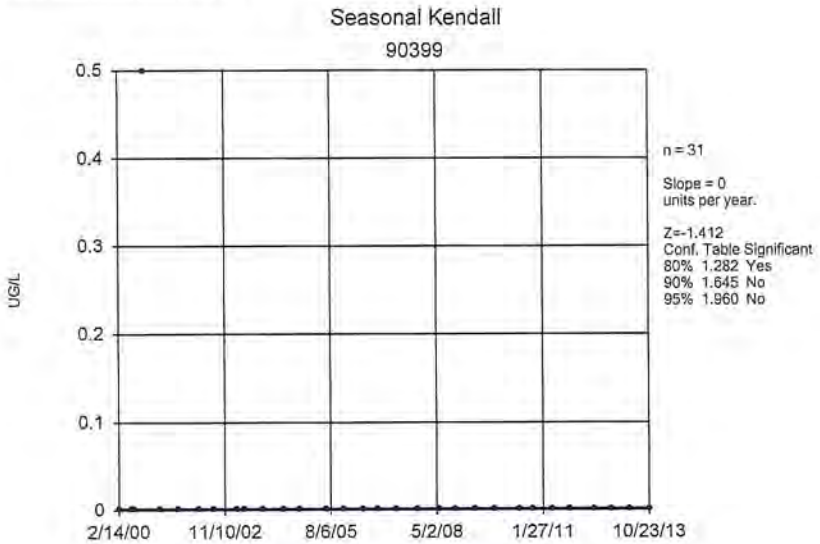

Constituent: Carbon tetrachloride Analysis Run 3/2/2014 1:49 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



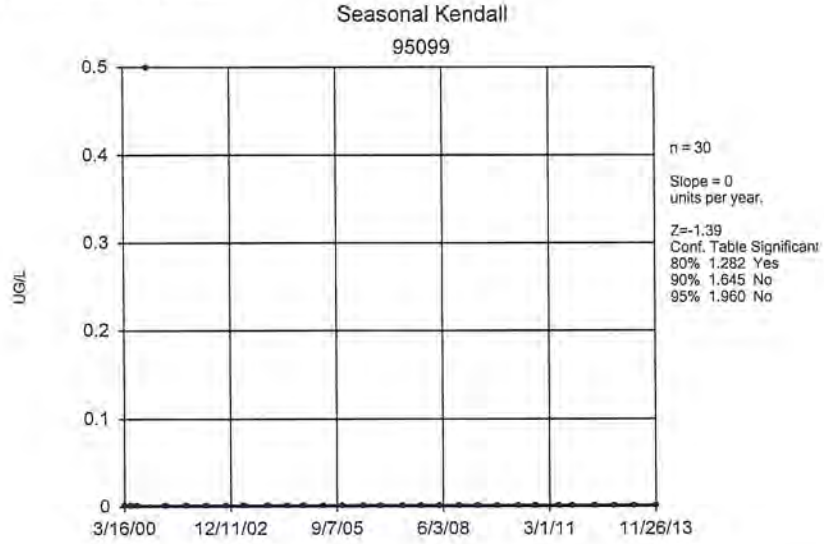

Constituent: Chlorobenzene Analysis Run 3/2/2014 1:49 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



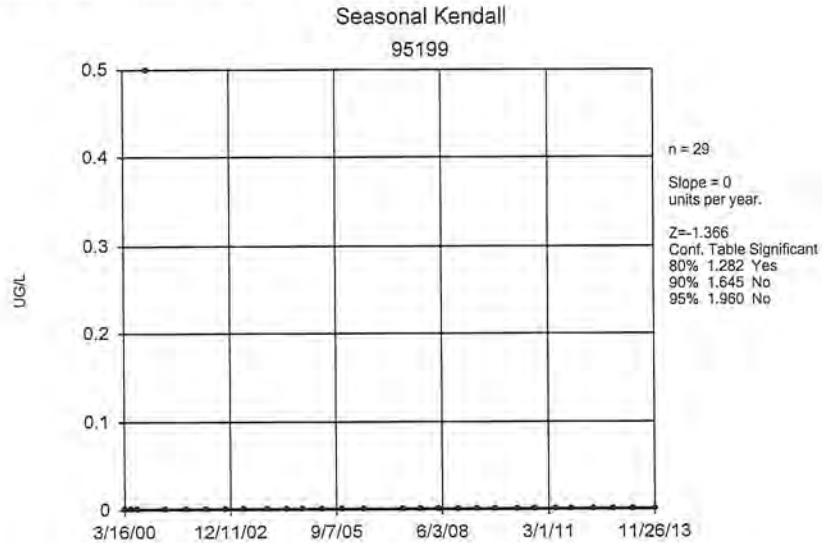

Constituent: Chlorobenzene Analysis Run 3/2/2014 1:49 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



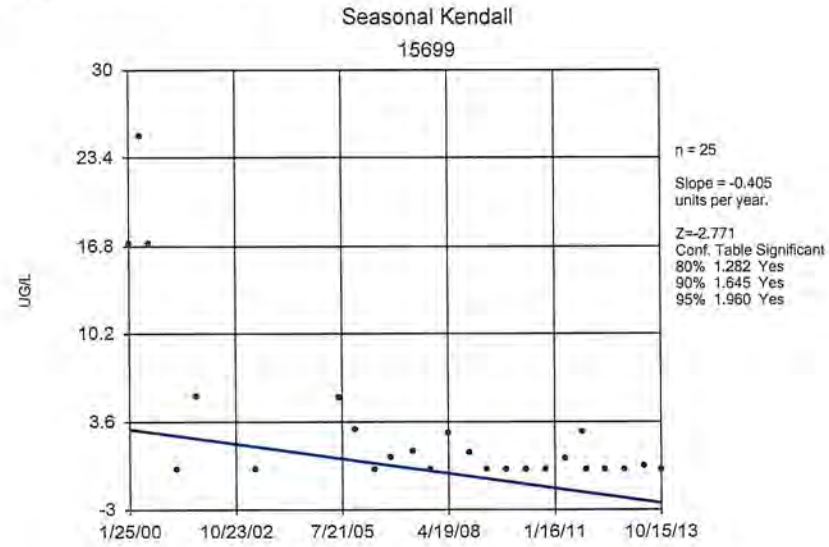

Constituent: Chlorobenzene Analysis Run 3/2/2014 1:49 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



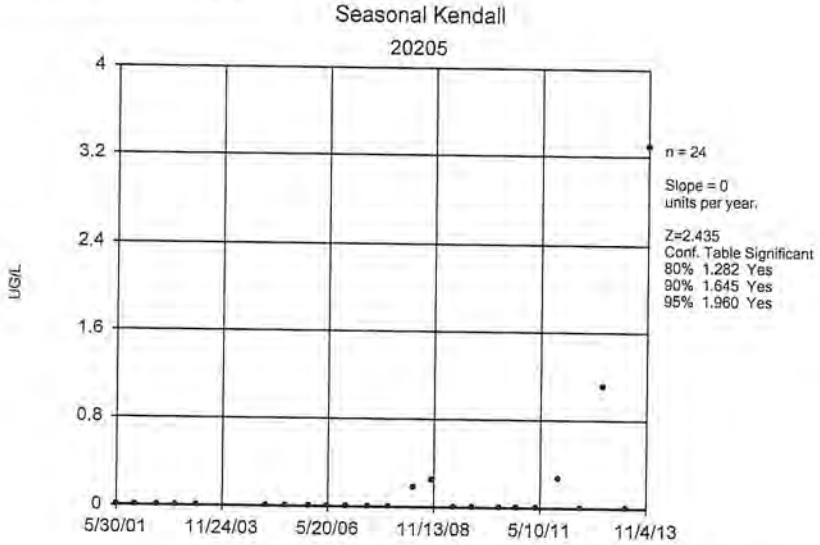

Constituent: Chlorobenzene Analysis Run 3/2/2014 1:49 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



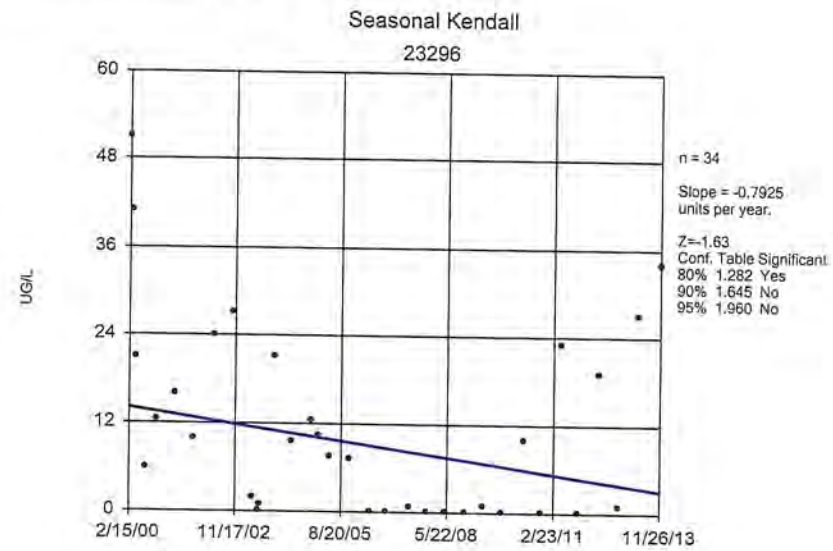

Constituent: Chloroform Analysis Run 3/2/2014 1:50 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



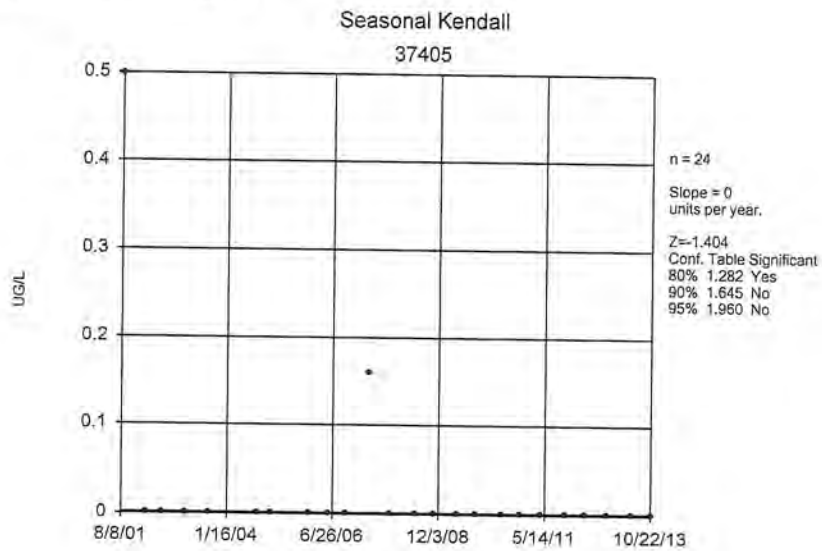

Constituent: Chloroform Analysis Run 3/2/2014 1:50 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



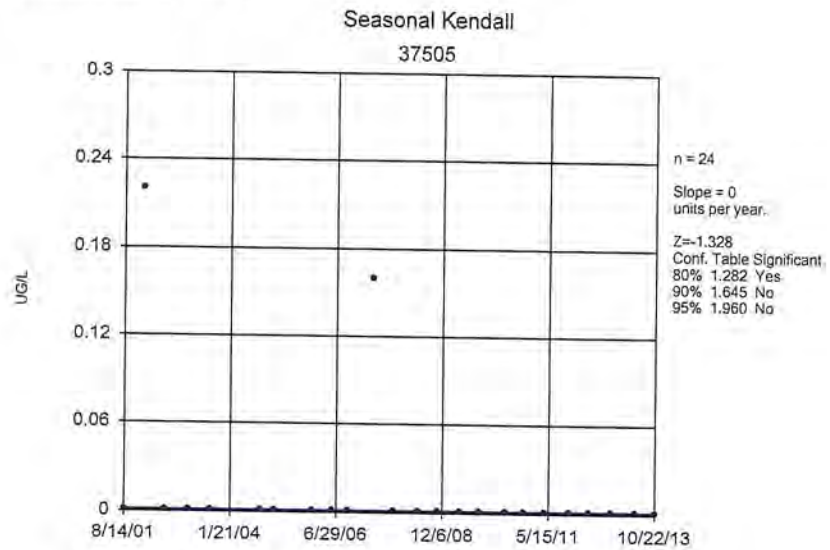

Constituent: Chloroform Analysis Run 3/2/2014 1:50 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



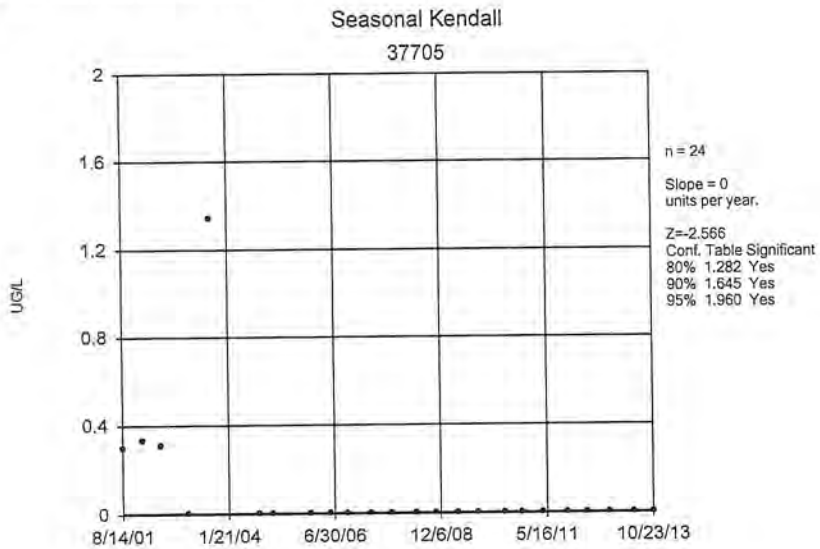

Constituent: Chloroform Analysis Run 3/2/2014 1:50 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA




Constituent: Chloroform Analysis Run 3/2/2014 1:50 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA




Constituent: Chloroform Analysis Run 3/2/2014 1:50 PM
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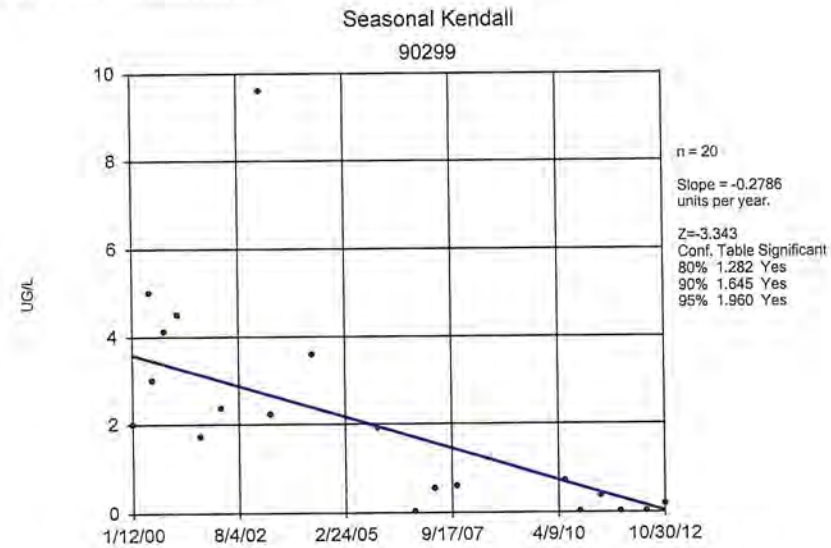
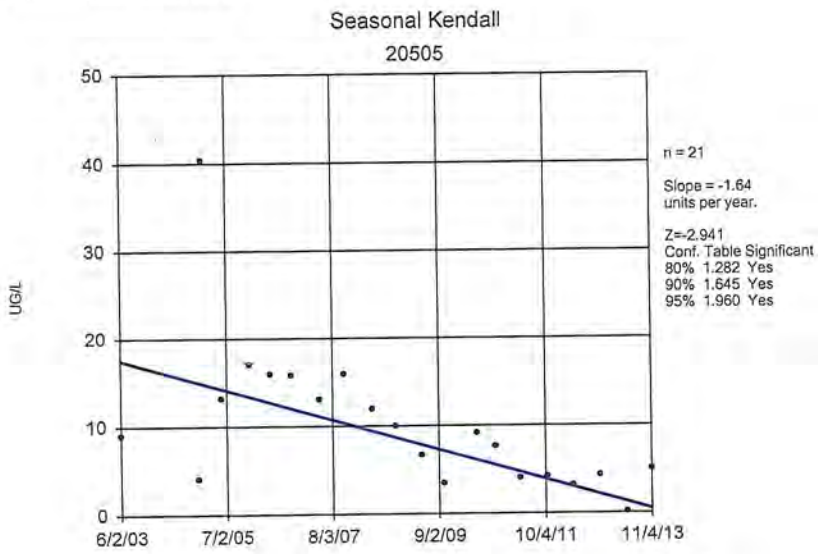
Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



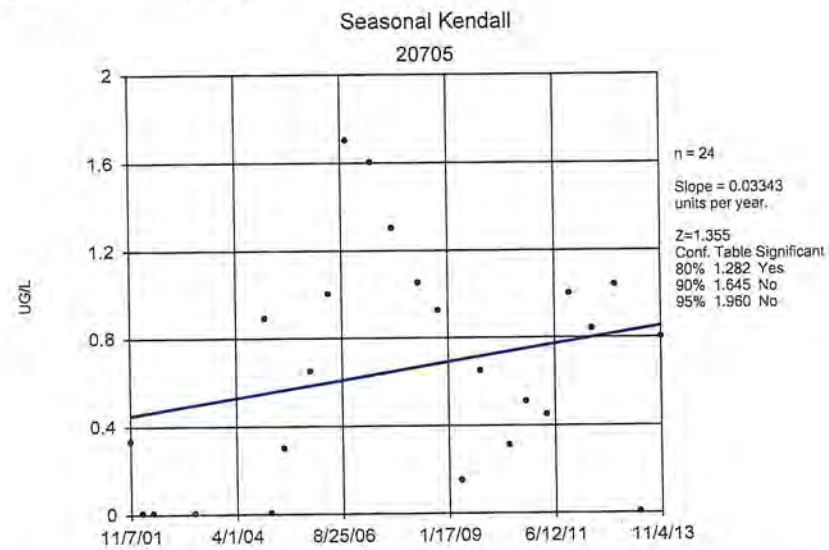

Constituent: Chloroform Analysis Run 3/2/2014 1:50 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



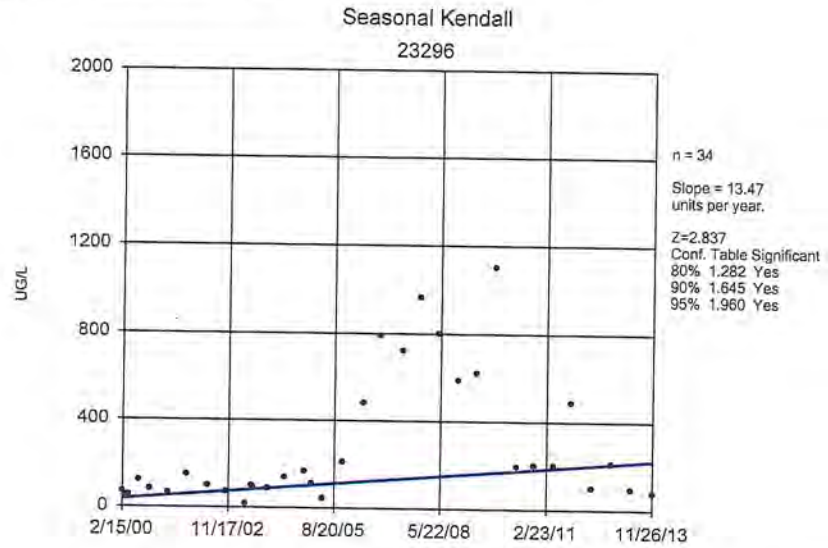

Constituent: cis-1,2-Dichloroethene Analysis Run 3/2/2014 1:51 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



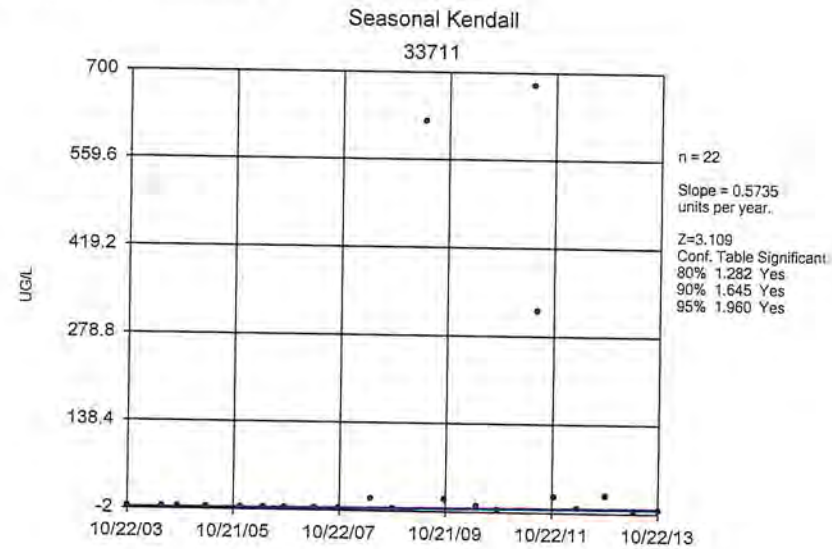

Constituent: cis-1,2-Dichloroethene Analysis Run 3/2/2014 1:51 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



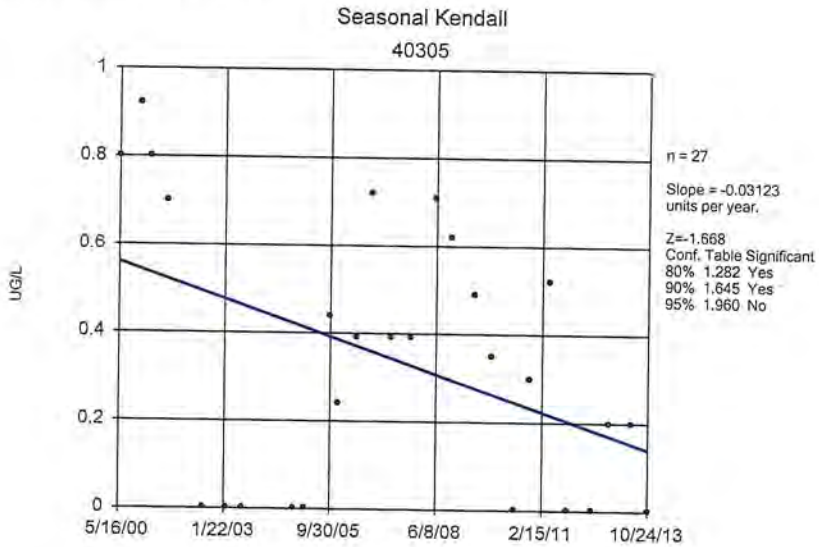

Constituent: cis-1,2-Dichloroethene Analysis Run 3/2/2014 1:51 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



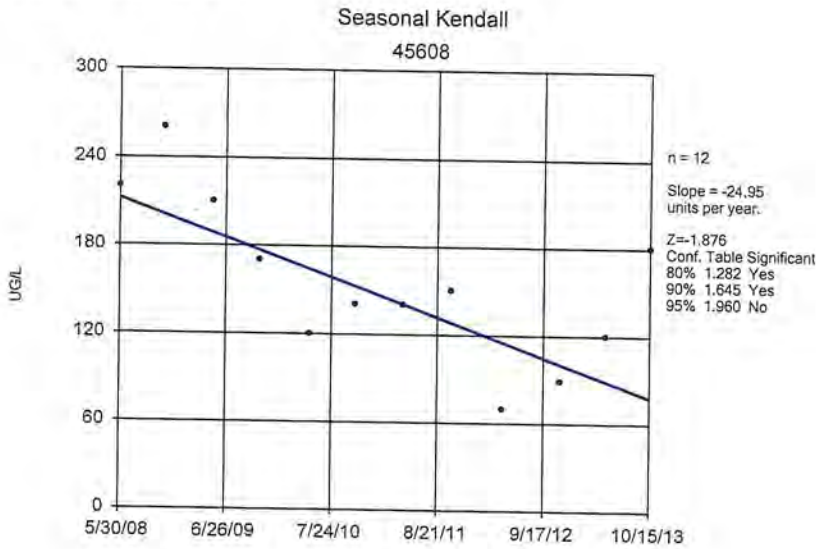

Constituent: cis-1,2-Dichloroethene Analysis Run 3/2/2014 1:51 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



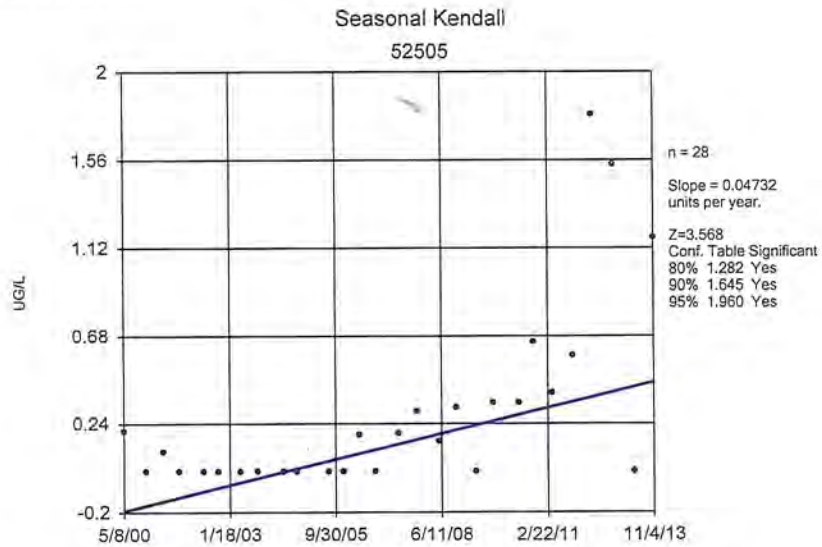

Constituent: cis-1,2-Dichloroethene Analysis Run 3/2/2014 1:51 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



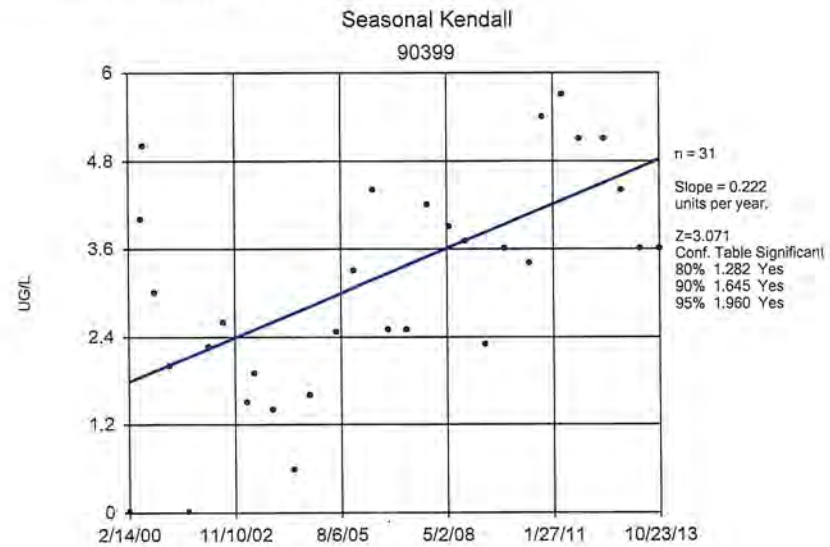

Constituent: cis-1,2-Dichloroethene Analysis Run 3/2/2014 1:51 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



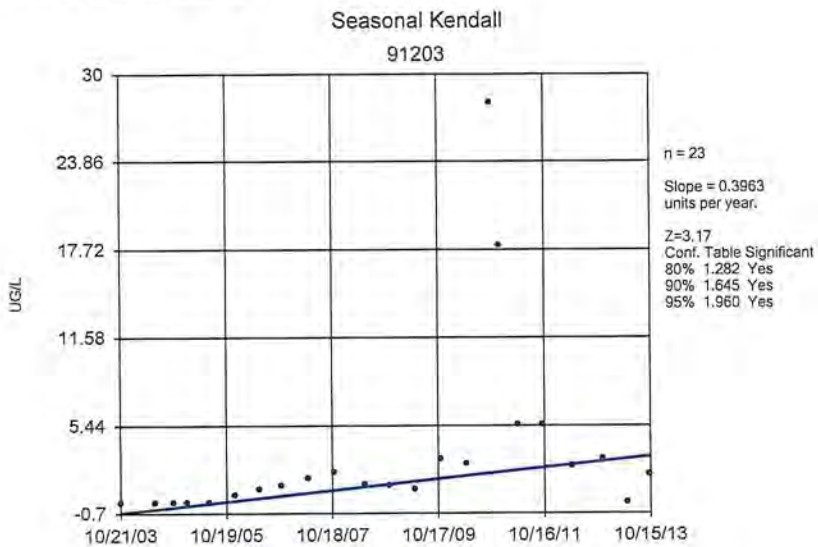

Constituent: cis-1,2-Dichloroethene Analysis Run 3/2/2014 1:51 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



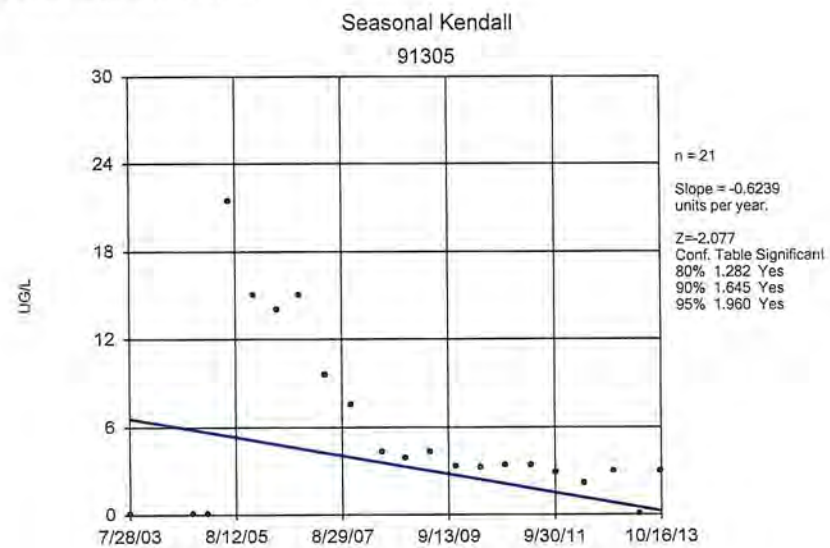

Constituent: cis-1,2-Dichloroethene Analysis Run 3/2/2014 1:51 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



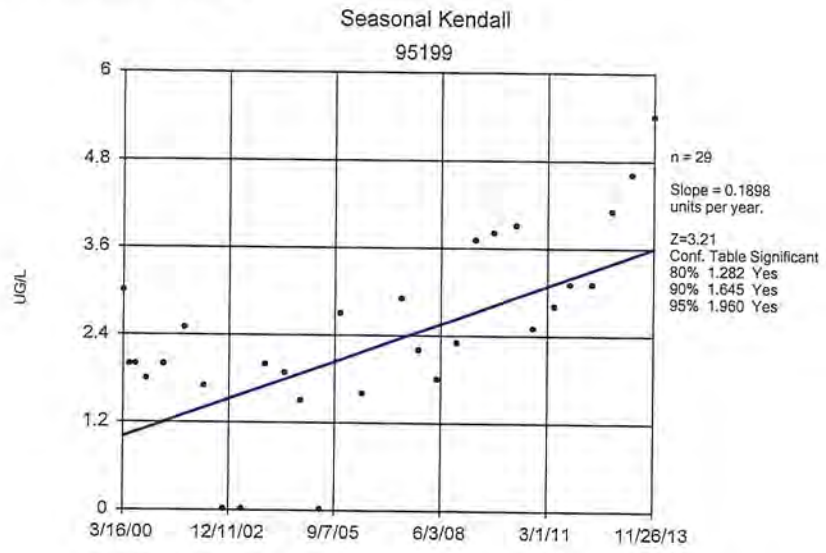

Constituent: cis-1,2-Dichloroethene Analysis Run 3/2/2014 1:51 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



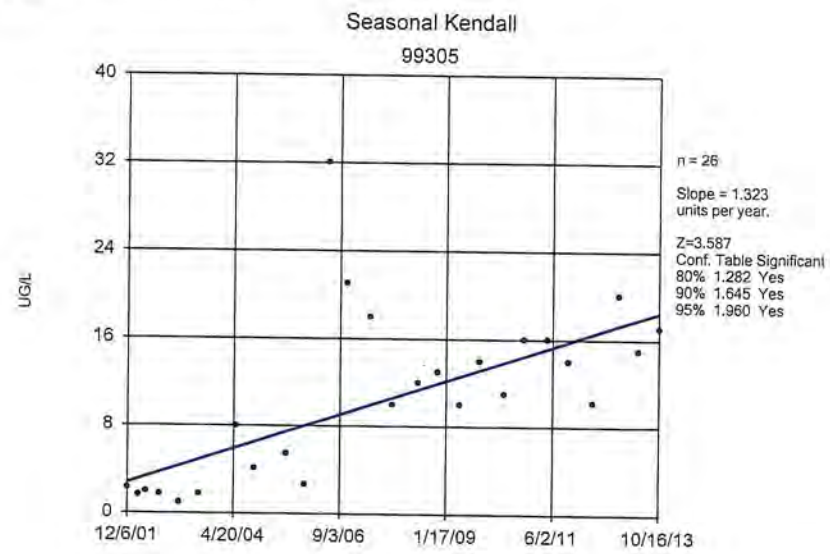

Constituent: cis-1,2-Dichloroethene Analysis Run 3/2/2014 1:51 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



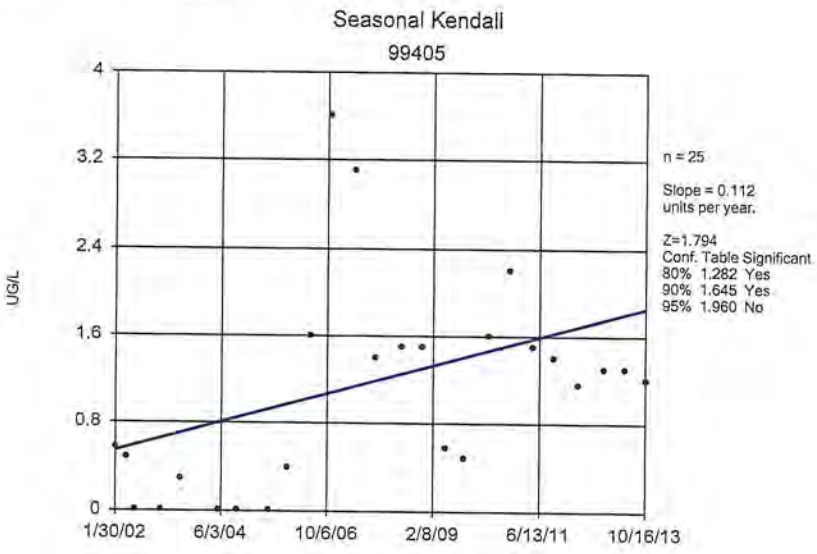

Constituent: cis-1,2-Dichloroethene Analysis Run 3/2/2014 1:52 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



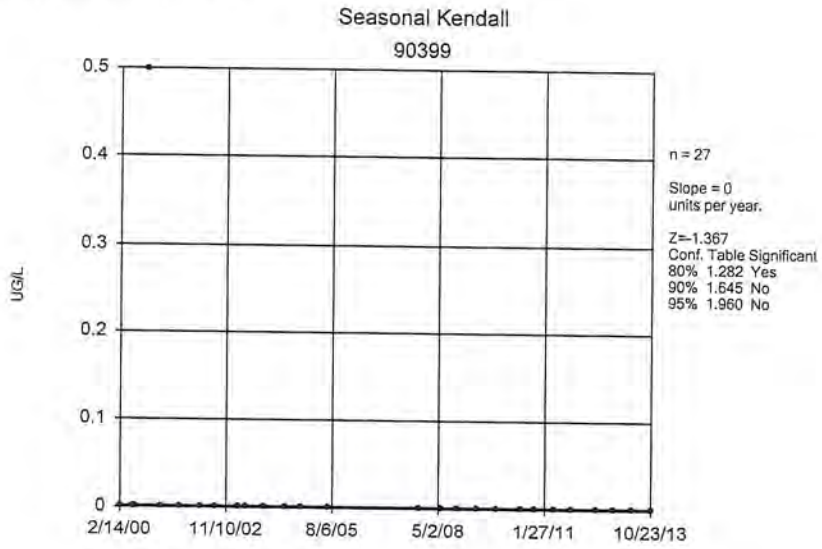

Constituent: cis-1,2-Dichloroethene Analysis Run 3/2/2014 1:52 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



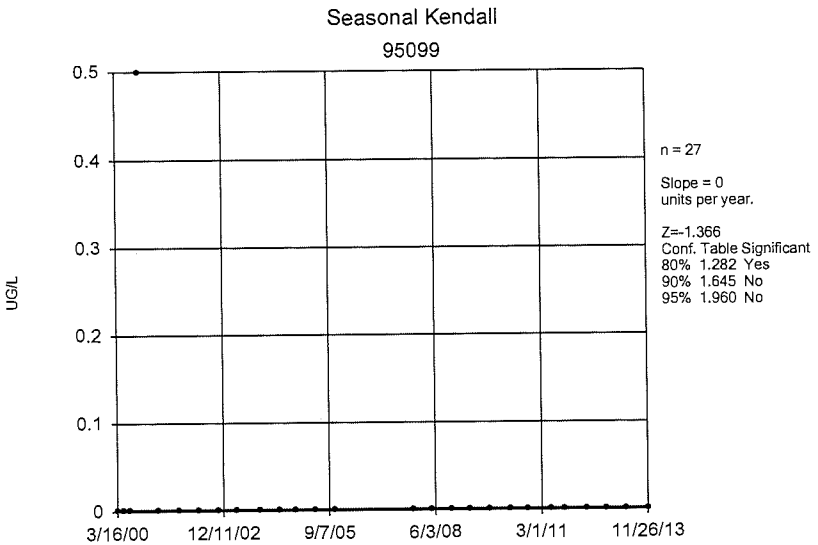

Constituent: cis-1,2-Dichloroethene Analysis Run 3/2/2014 1:52 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



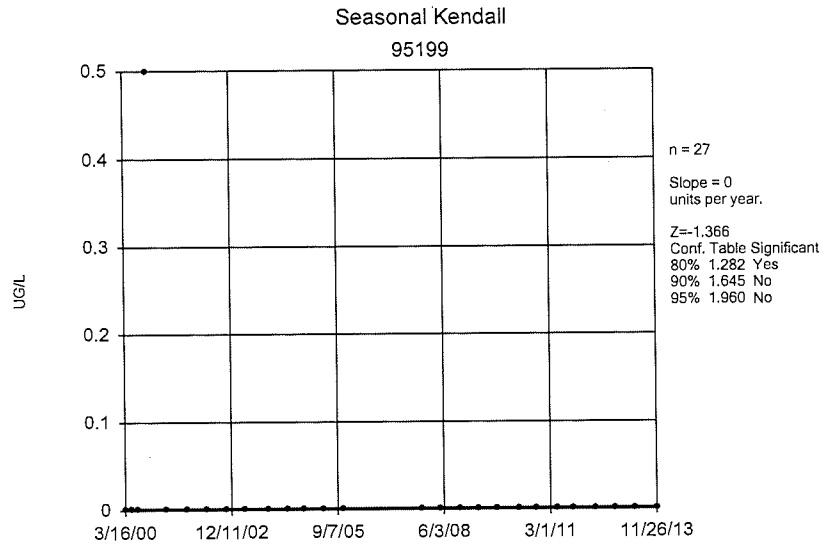

Constituent: Ethylbenzene Analysis Run 3/2/2014 1:52 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



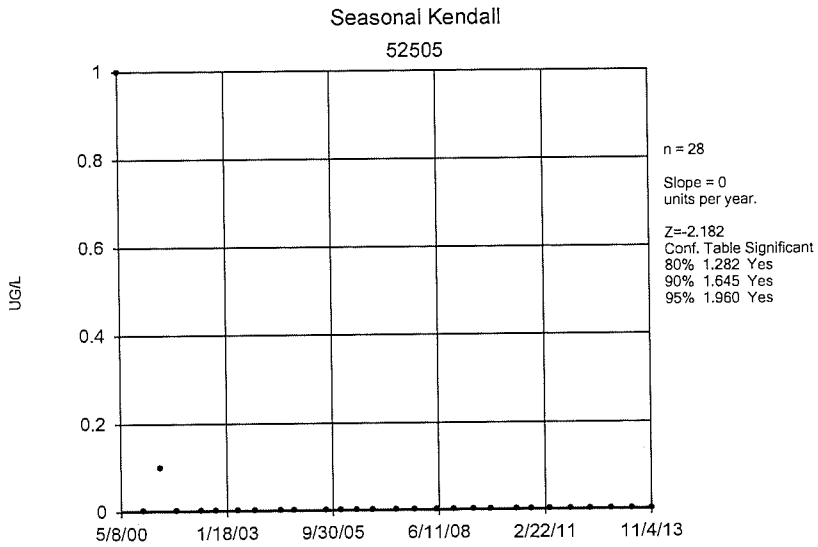

Constituent: Ethylbenzene Analysis Run 3/2/2014 1:52 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



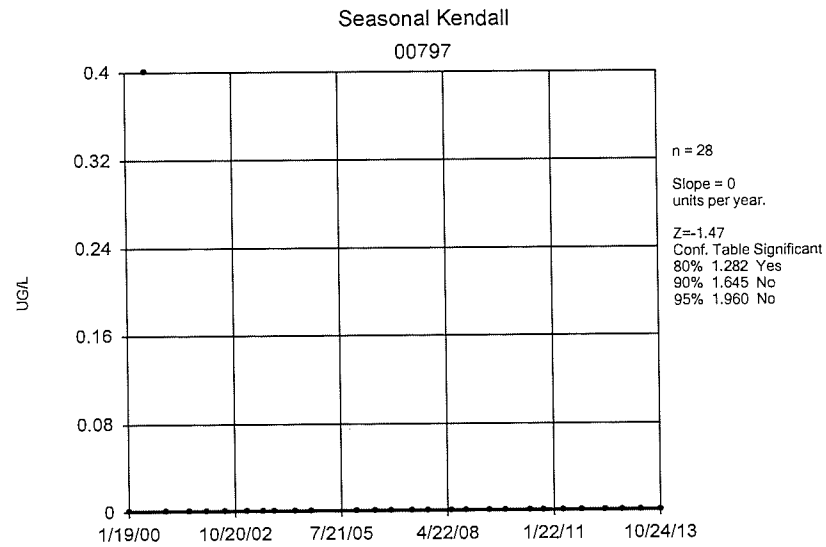

Constituent: Ethylbenzene Analysis Run 3/2/2014 1:52 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



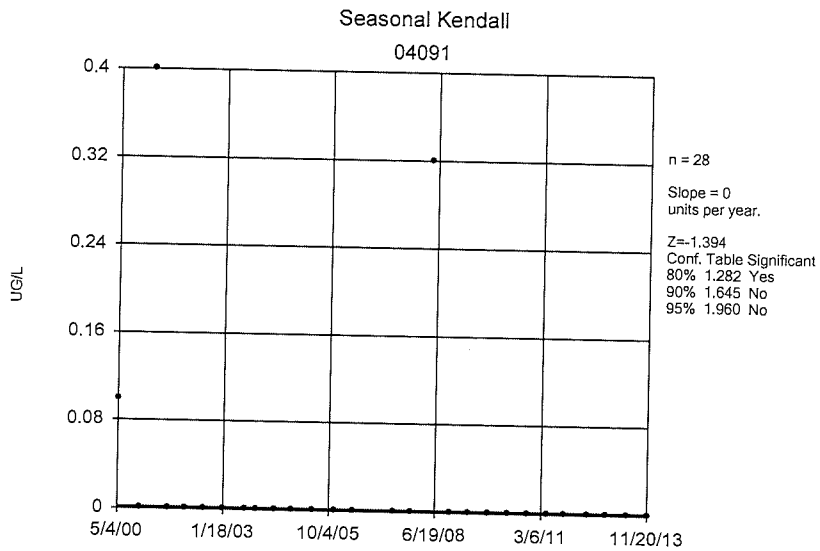

Constituent: Hexachlorobutadiene Analysis Run 3/2/2014 1:52 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



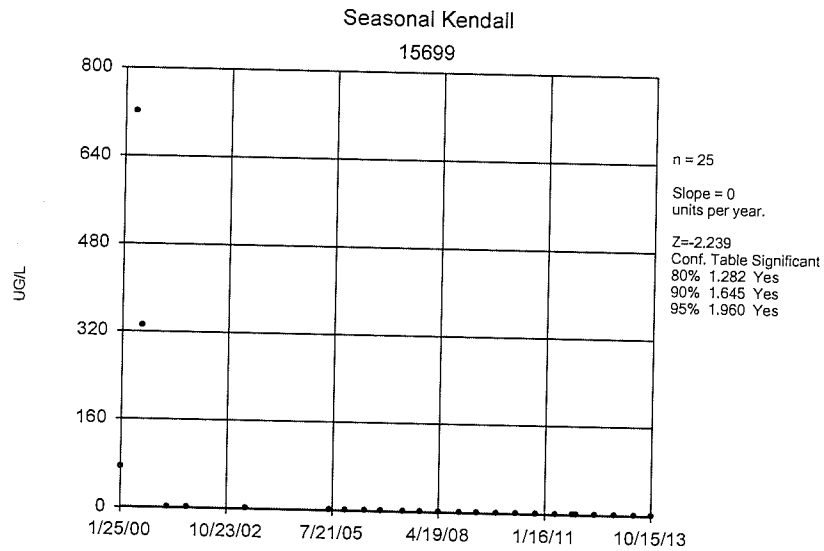

Constituent: Methylene chloride Analysis Run 3/2/2014 1:53 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



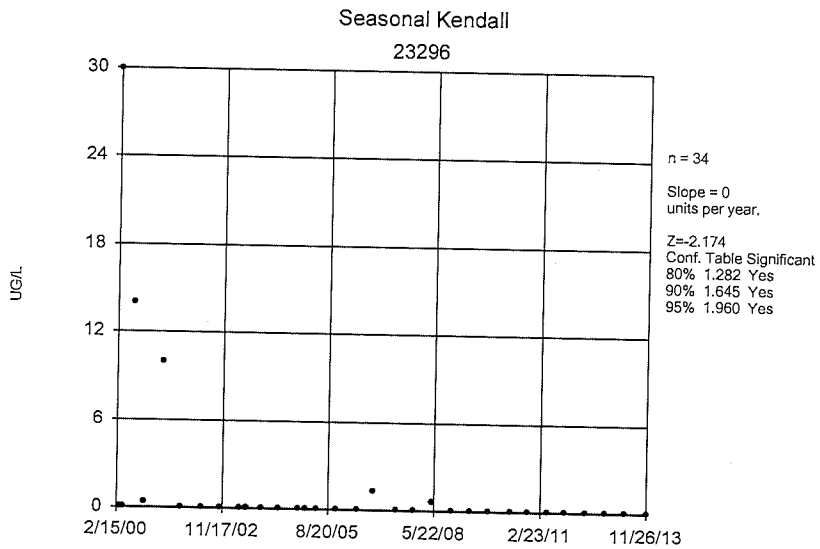

Constituent: Methylene chloride Analysis Run 3/2/2014 1:53 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA




Constituent: Methylene chloride Analysis Run 3/2/2014 1:53 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA




Constituent: Methylene chloride Analysis Run 3/2/2014 1:53 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

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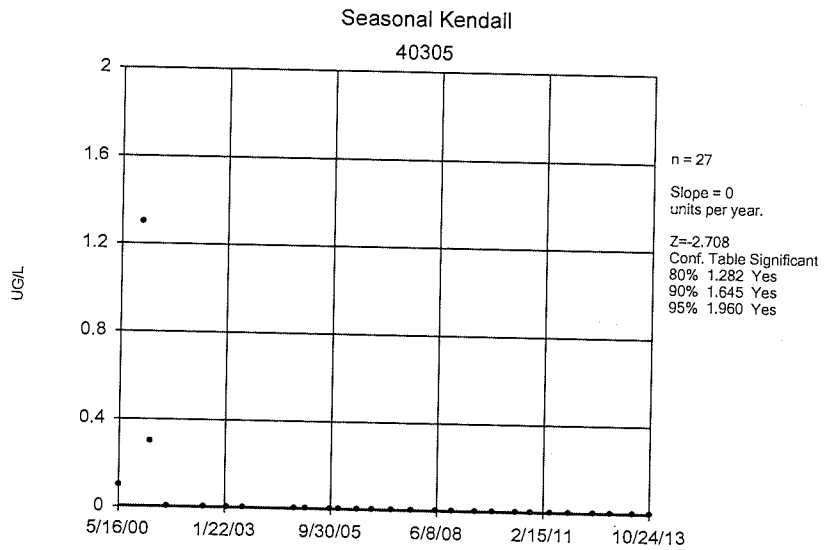


Constituent: Methylene chloride Analysis Run 3/2/2014 1:53 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

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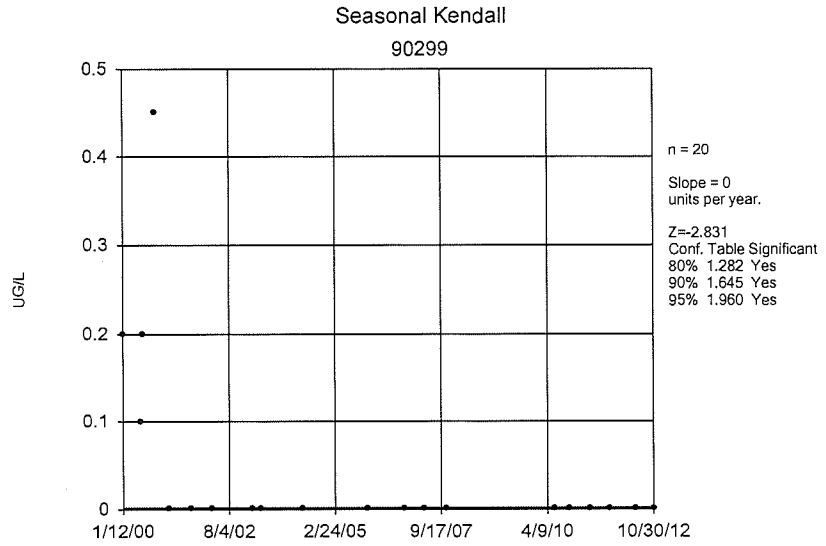
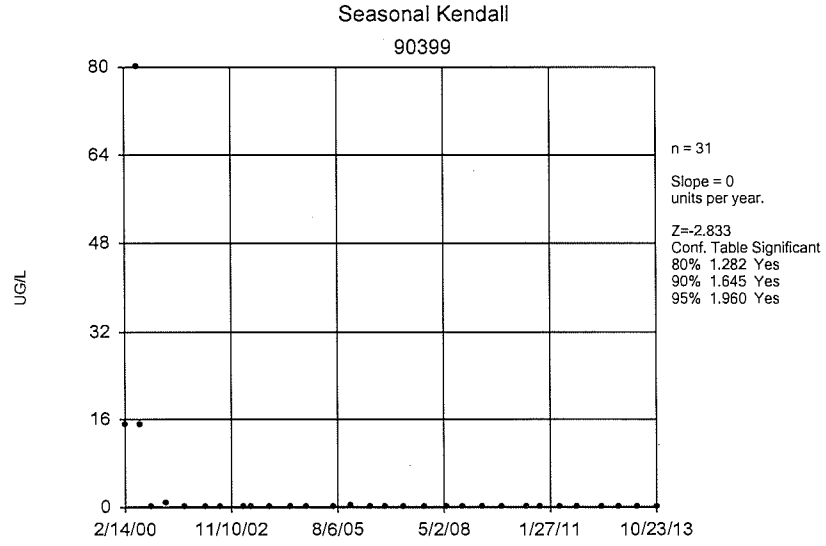


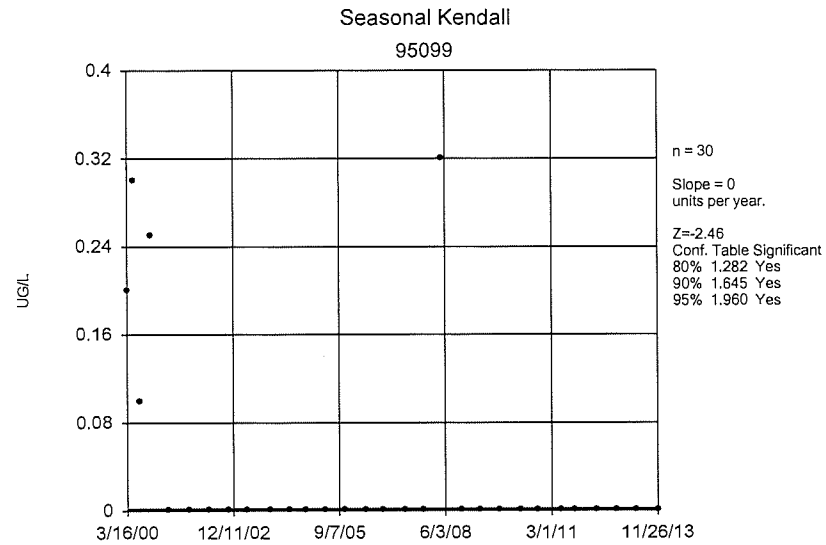

Constituent: Methylene chloride Analysis Run 3/2/2014 1:53 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



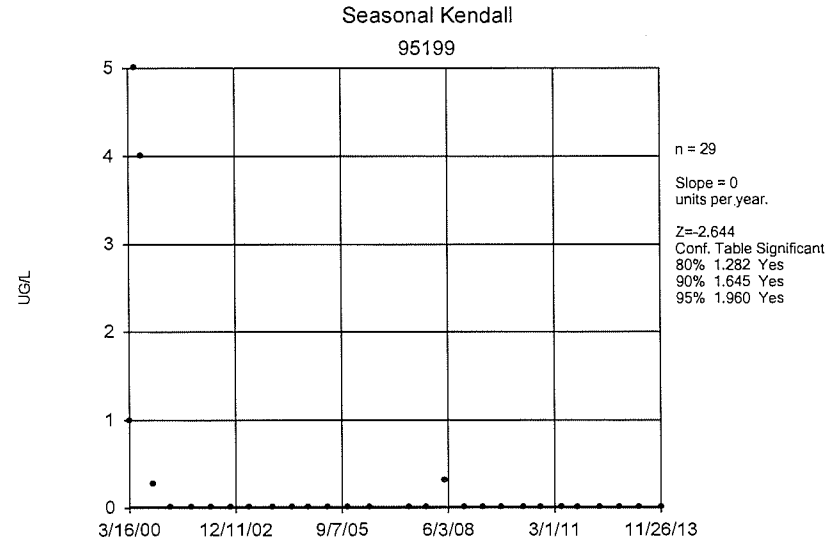

Constituent: Methylene chloride Analysis Run 3/2/2014 1:53 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



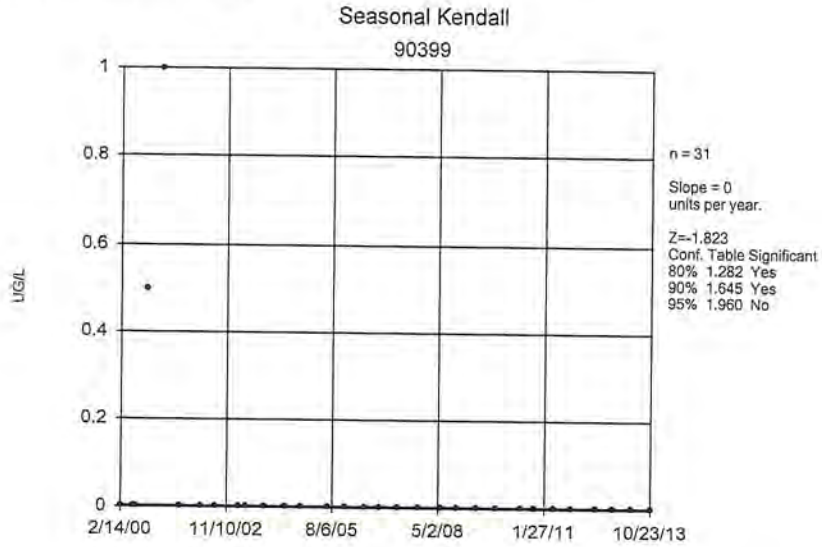

Constituent: Methylene chloride Analysis Run 3/2/2014 1:53 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



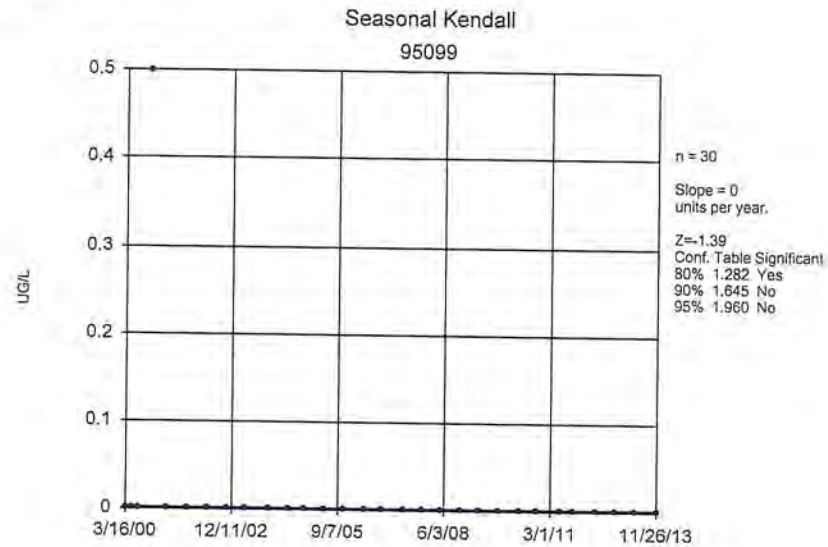

Constituent: Methylene chloride Analysis Run 3/2/2014 1:53 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



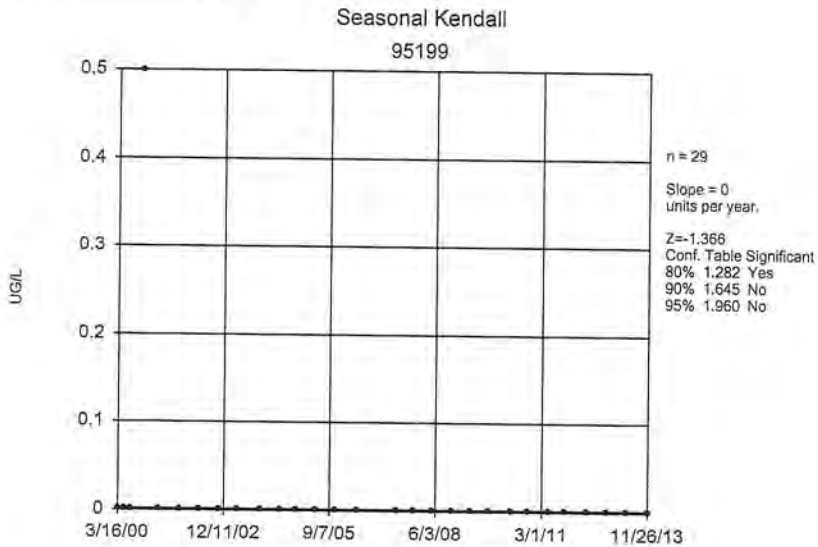

Constituent: Naphthalene Analysis Run 3/2/2014 1:54 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA




Constituent: Naphthalene Analysis Run 3/2/2014 1:54 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA




Constituent: Naphthalene Analysis Run 3/2/2014 1:54 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

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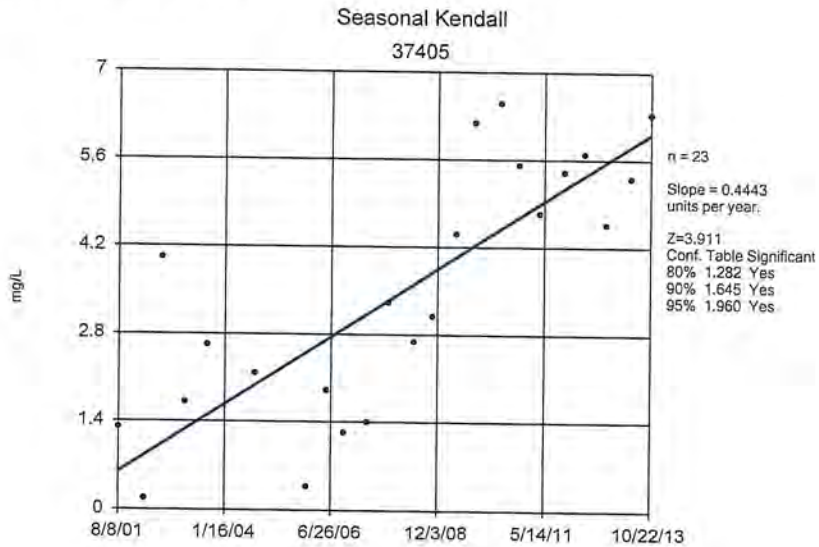


Constituent: Nitrate + Nitrite as Nitrogen Analysis Run 3/2/2014 1:54 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

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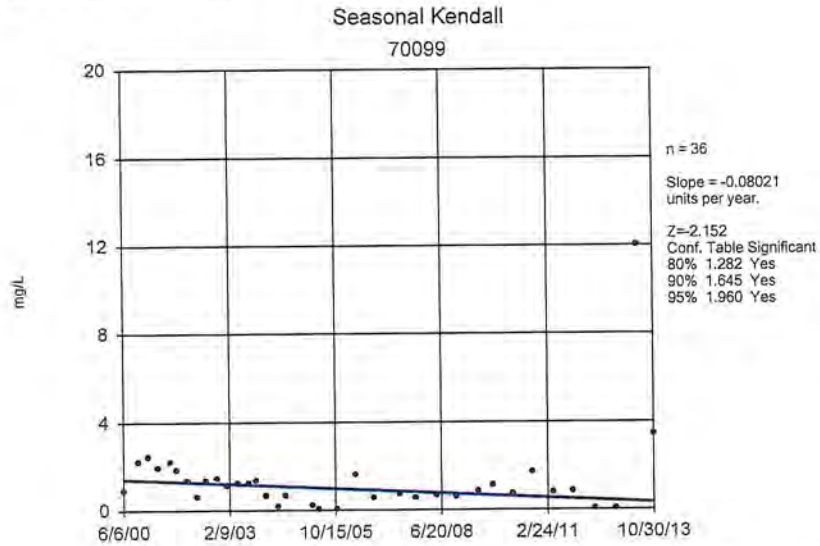
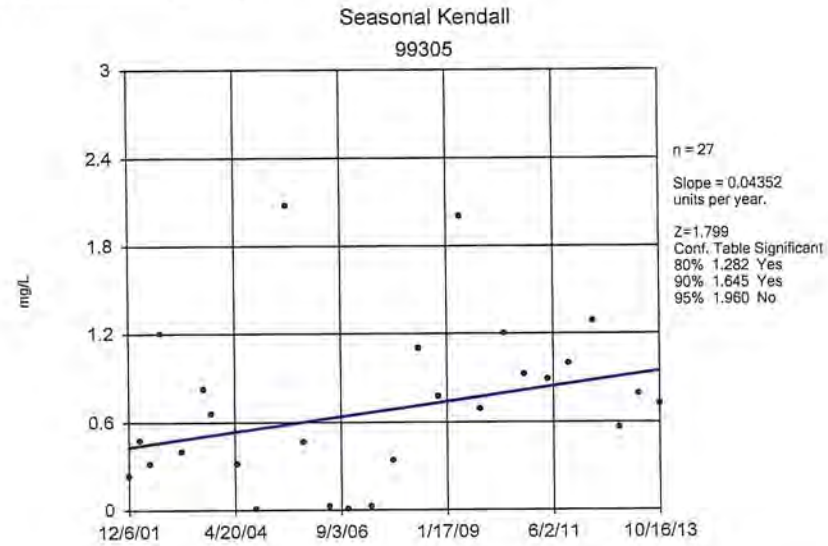


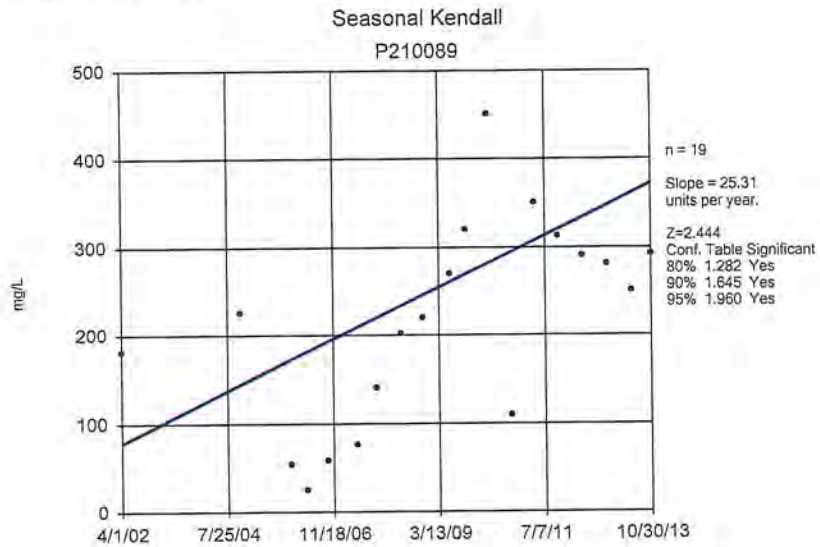

Constituent: Nitrate + Nitrite as Nitrogen Analysis Run 3/2/2014 1:54 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA




Constituent: Nitrate + Nitrite as Nitrogen Analysis Run 3/2/2014 1:54 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA




Constituent: Nitrate + Nitrite as Nitrogen Analysis Run 3/2/2014 1:54 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

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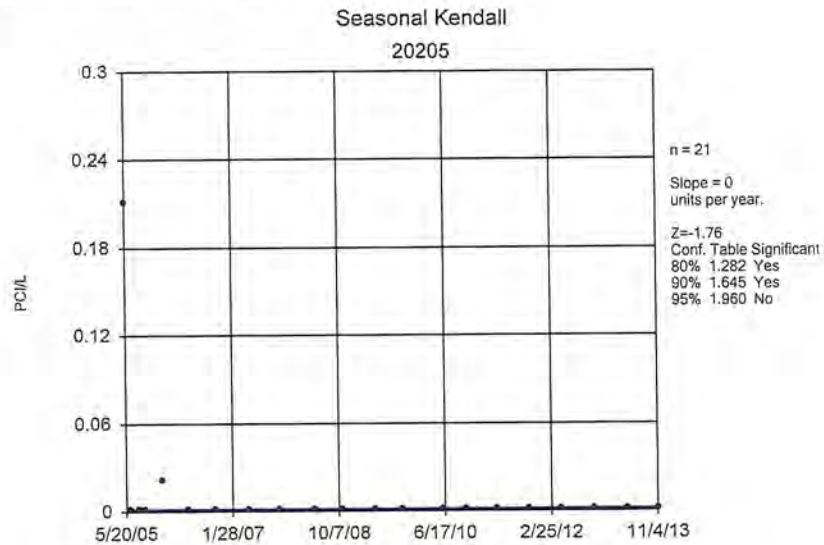
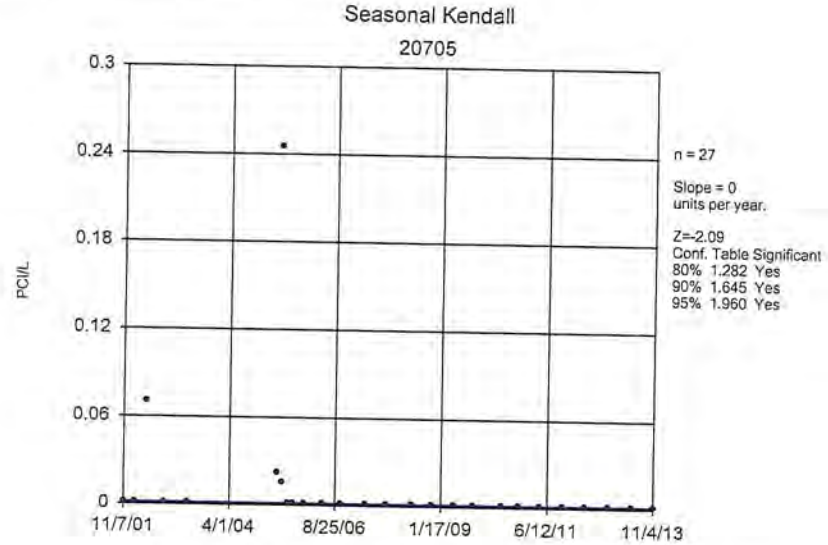


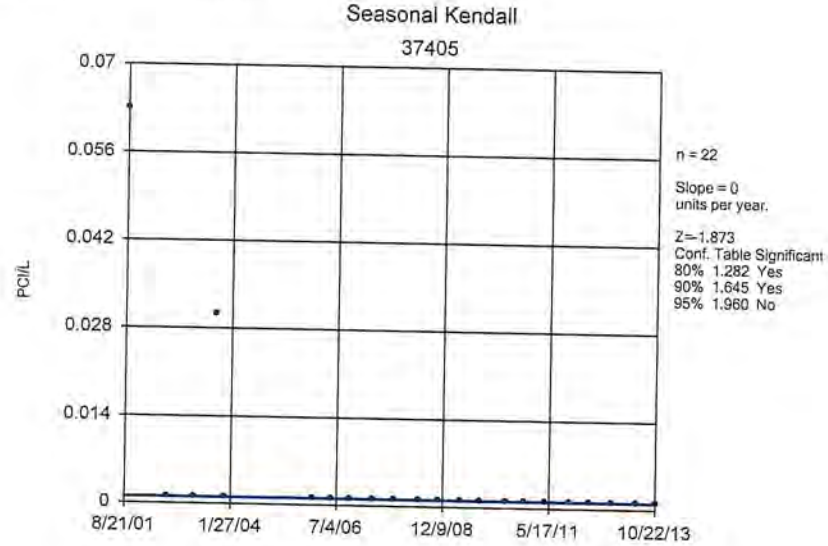

Constituent: Plutonium-239, 240 Analysis Run 3/2/2014 1:54 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



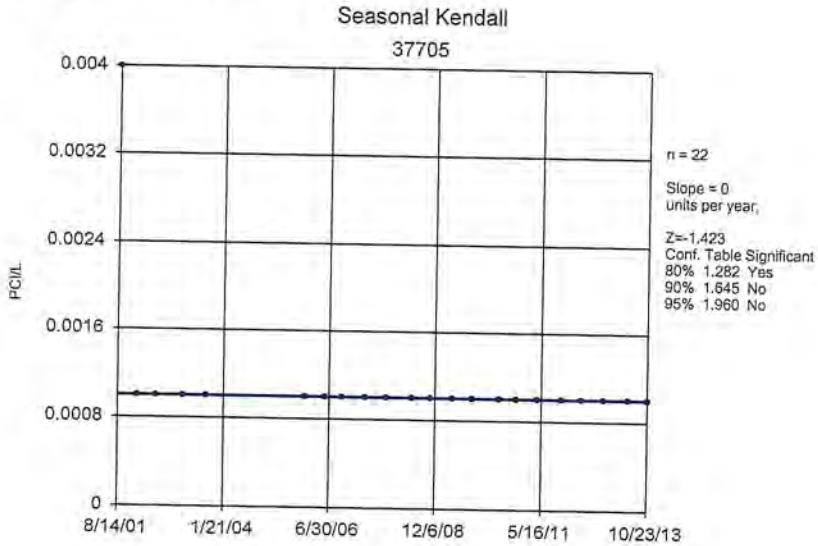

Constituent: Plutonium-239, 240 Analysis Run 3/2/2014 1:54 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



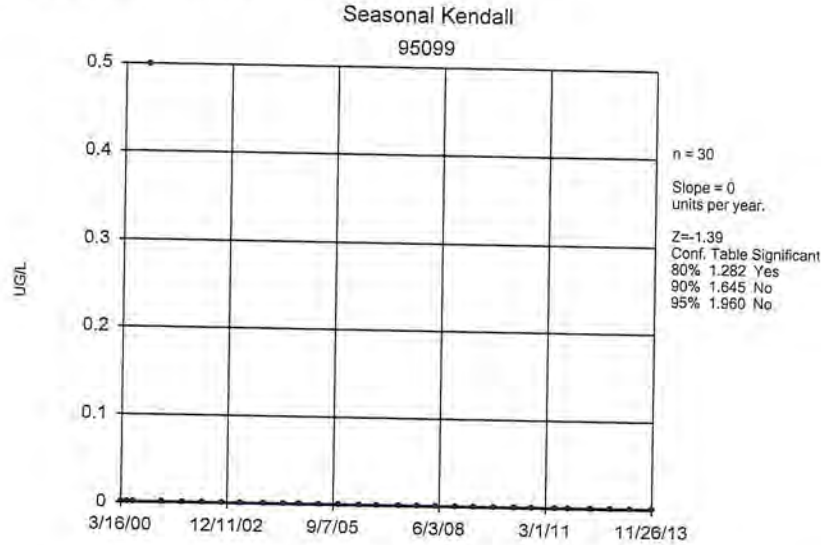

Constituent: Plutonium-239, 240 Analysis Run 3/2/2014 1:54 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA




Constituent: Plutonium-239, 240 Analysis Run 3/2/2014 1:54 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA




Constituent: Styrene Analysis Run 3/2/2014 1:55 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

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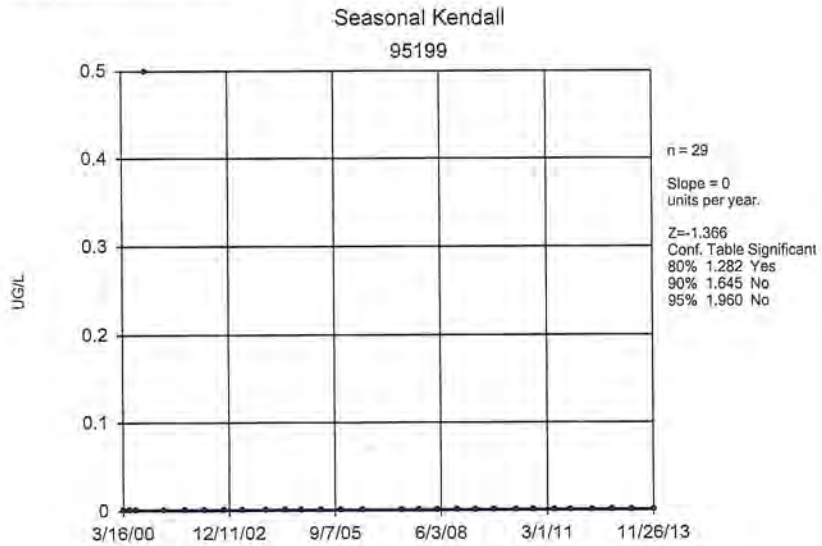


Constituent: Styrene Analysis Run 3/2/2014 1:55 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

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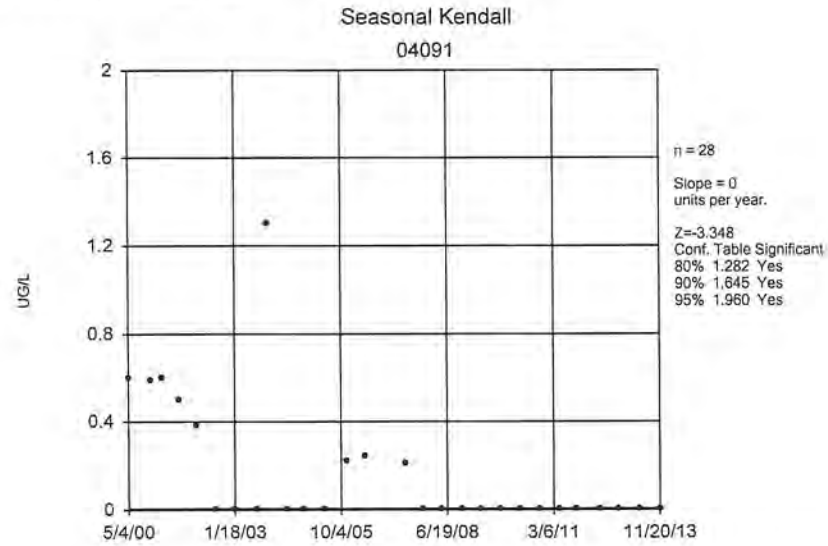


Constituent: Tetrachloroethene Analysis Run 3/2/2014 1:55 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

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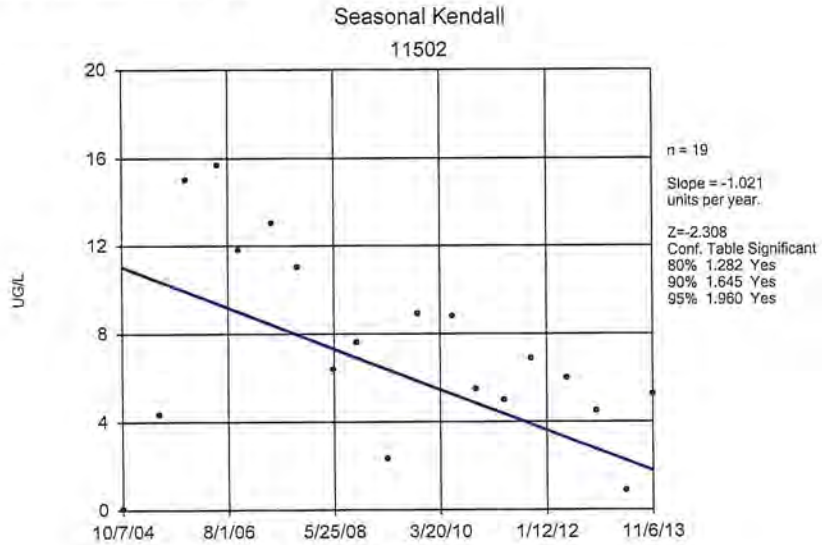


Constituent: Tetrachloroethene Analysis Run 3/2/2014 1:55 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

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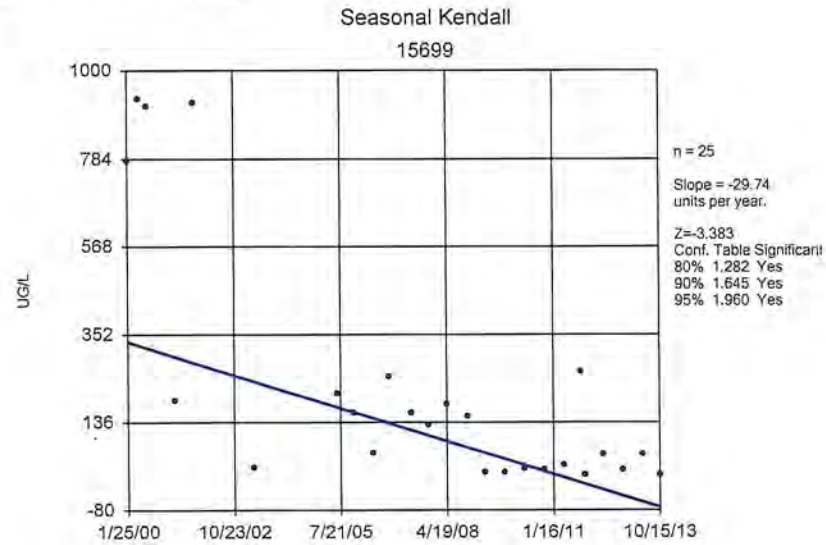


Constituent: Tetrachloroethene Analysis Run 3/2/2014 1:55 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

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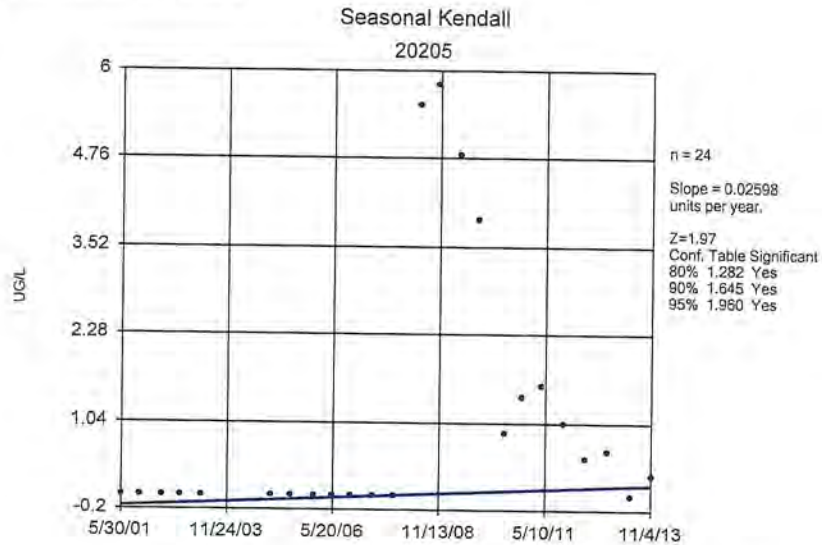
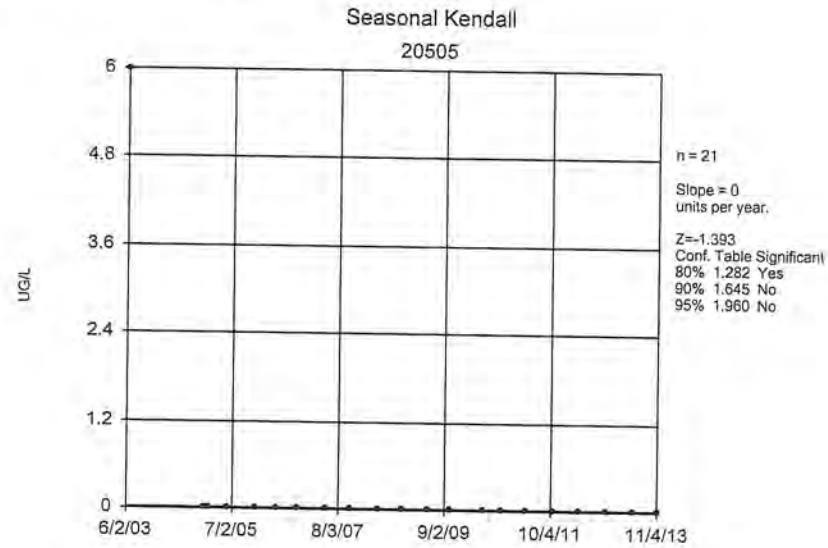



Constituent: Tetrachloroethene Analysis Run 3/2/2014 1:55 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA




Constituent: Tetrachloroethene Analysis Run 3/2/2014 1:55 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

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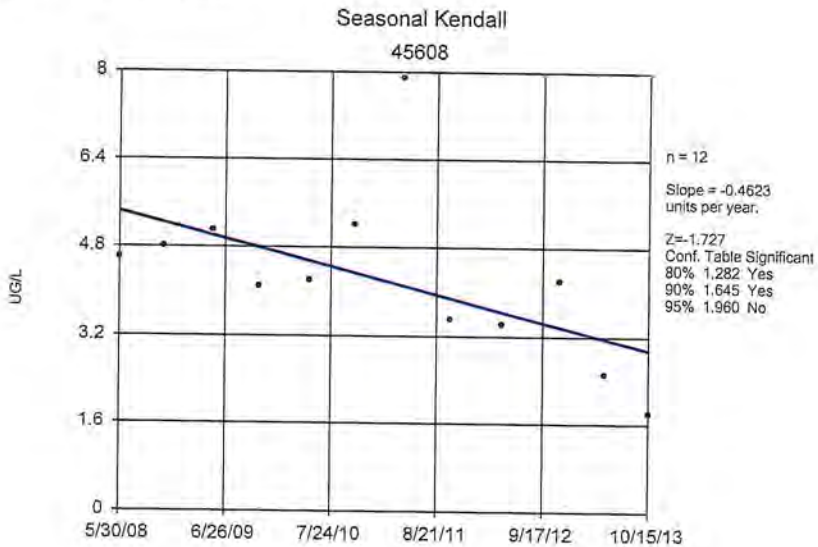


Constituent: Tetrachloroethene Analysis Run 3/2/2014 1:55 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

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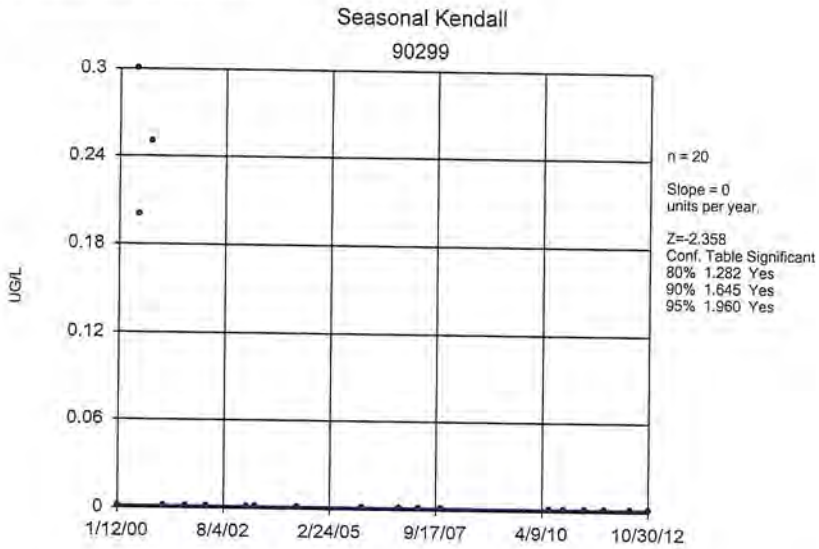


Constituent: Tetrachloroethene Analysis Run 3/2/2014 1:55 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

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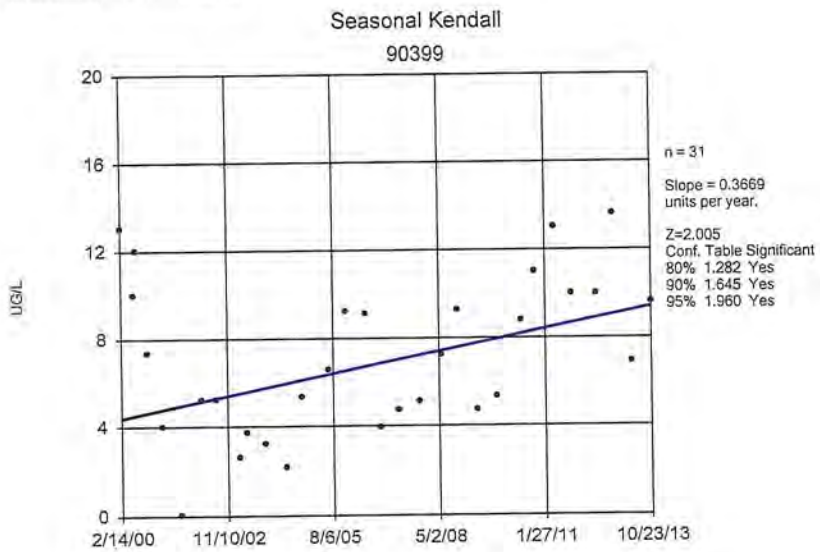


Constituent: Tetrachloroethene Analysis Run 3/2/2014 1:55 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

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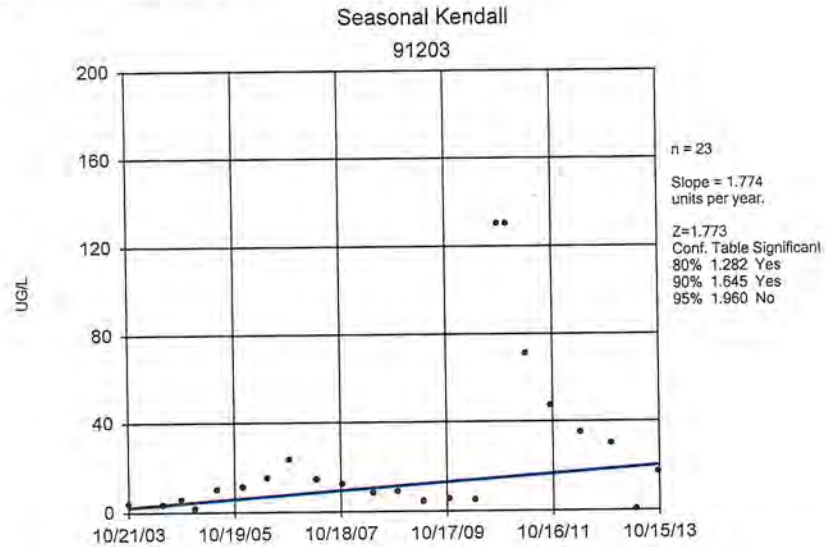


Constituent: Tetrachloroethene Analysis Run 3/2/2014 1:55 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

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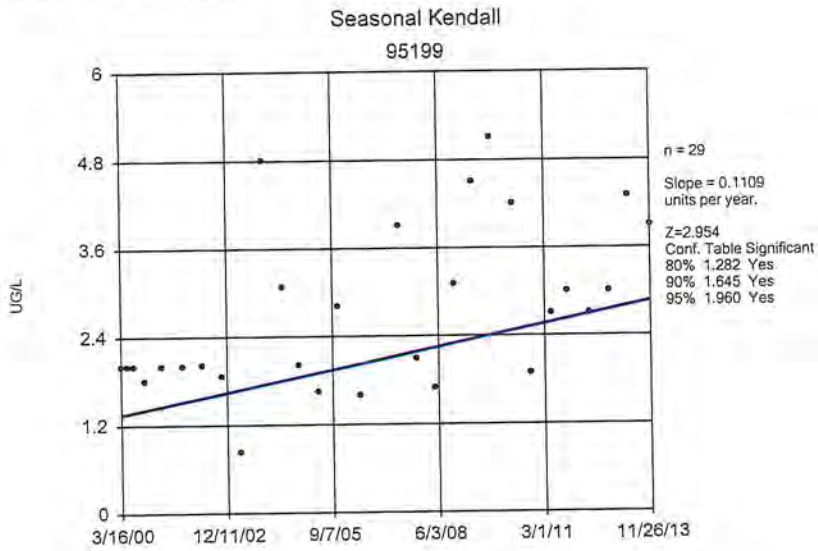
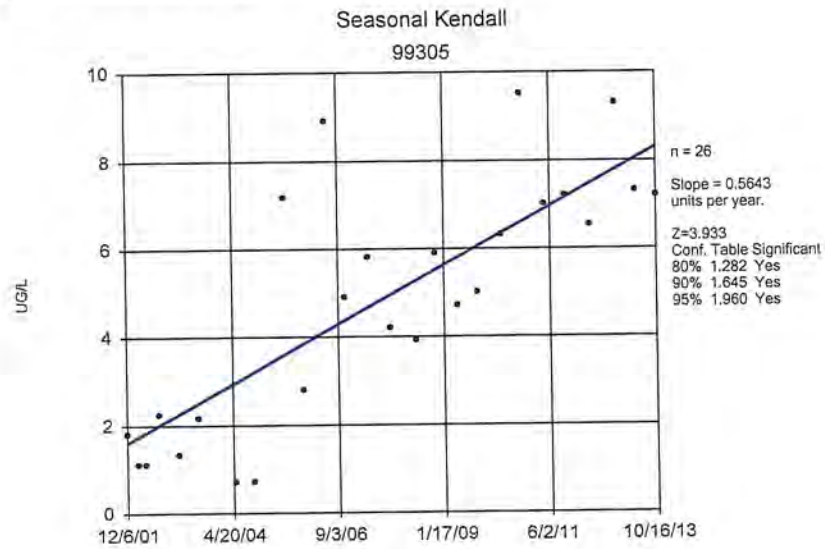


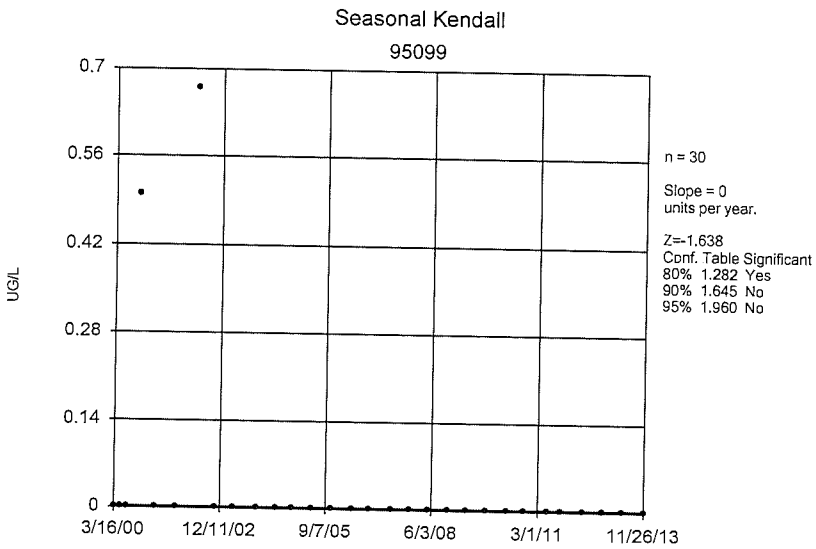

Constituent: Tetrachloroethene Analysis Run 3/2/2014 1:55 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA




Constituent: Tetrachloroethene Analysis Run 3/2/2014 1:55 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA




Constituent: Toluene Analysis Run 3/2/2014 1:56 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

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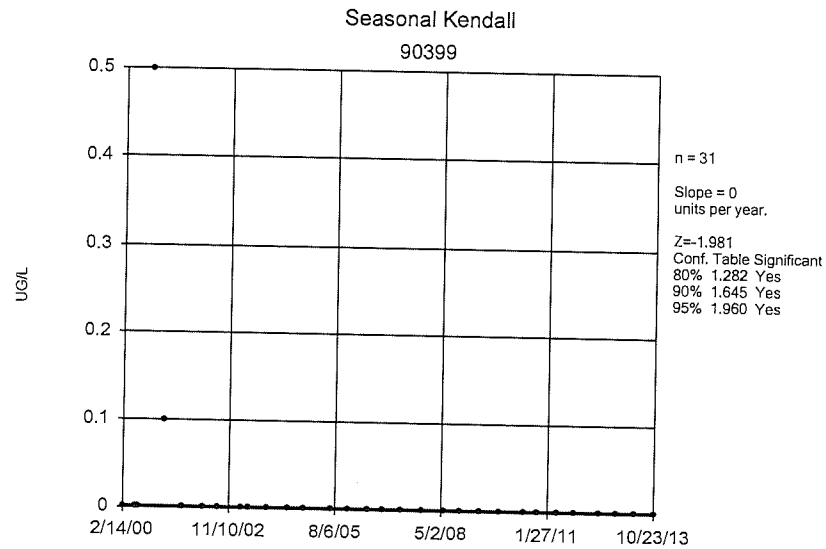


Constituent: Total Xylenes Analysis Run 3/2/2014 1:57 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

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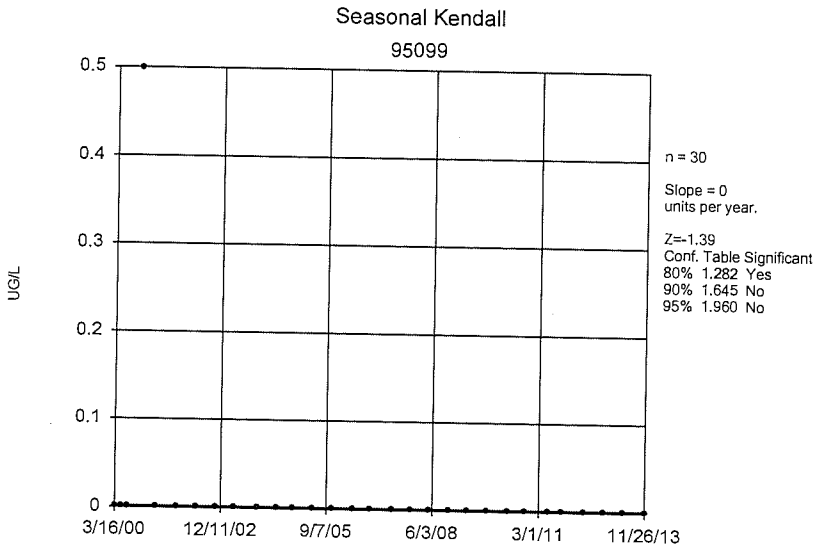
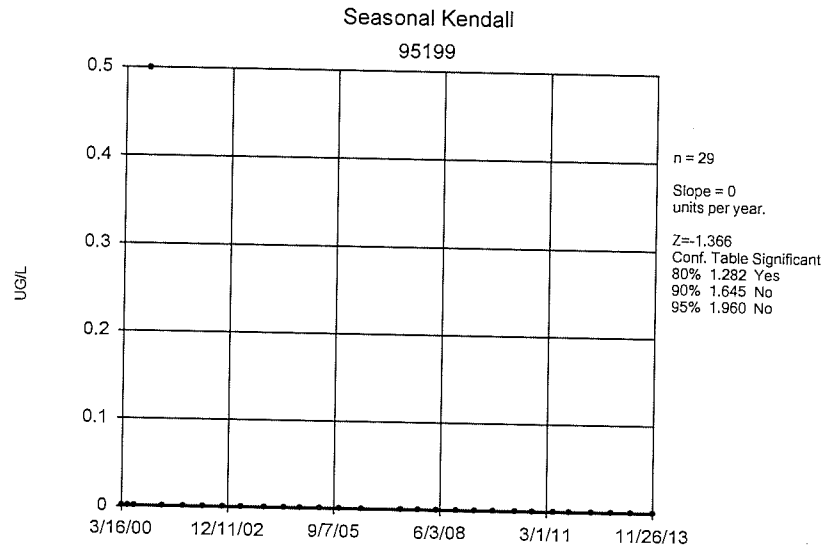


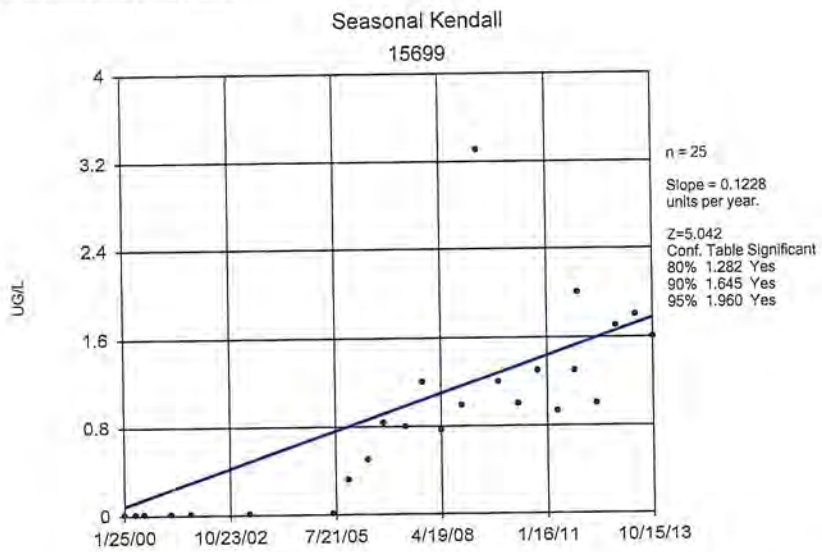

Constituent: Total Xylenes Analysis Run 3/2/2014 1:57 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



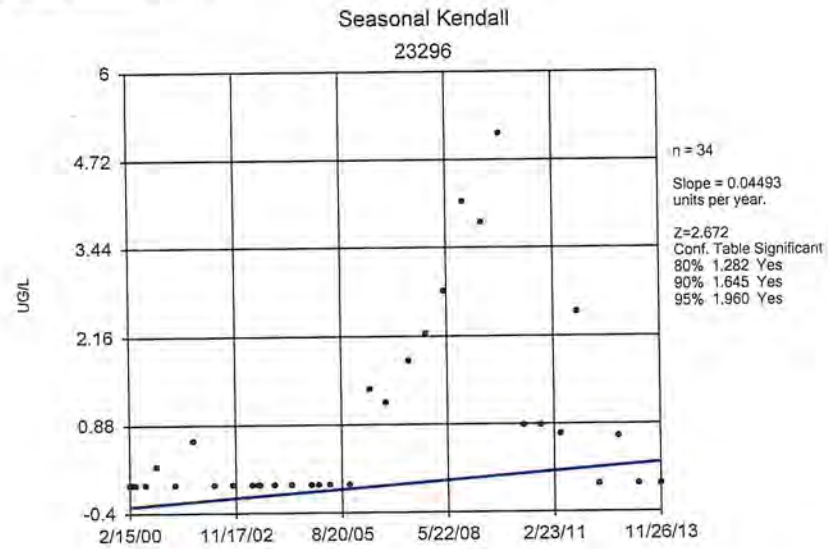

Constituent: Total Xylenes Analysis Run 3/2/2014 1:57 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



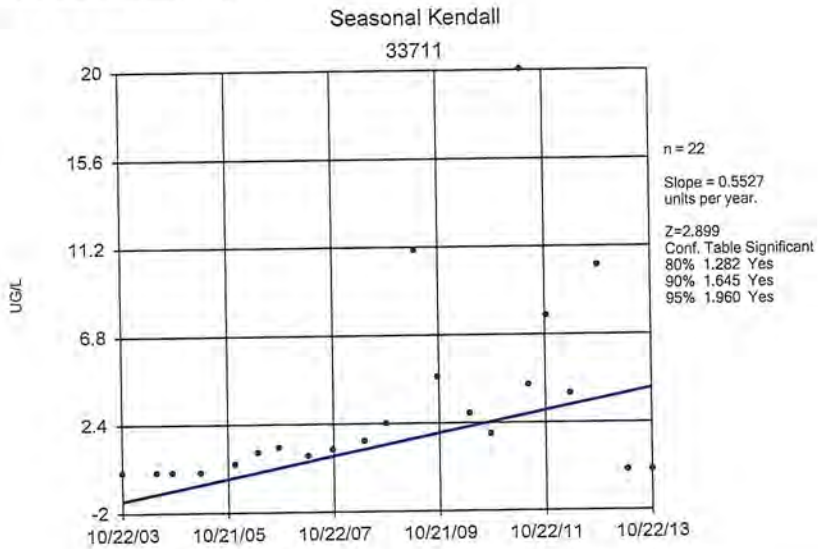

Constituent: trans-1,2-Dichloroethene Analysis Run 3/2/2014 1:57 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



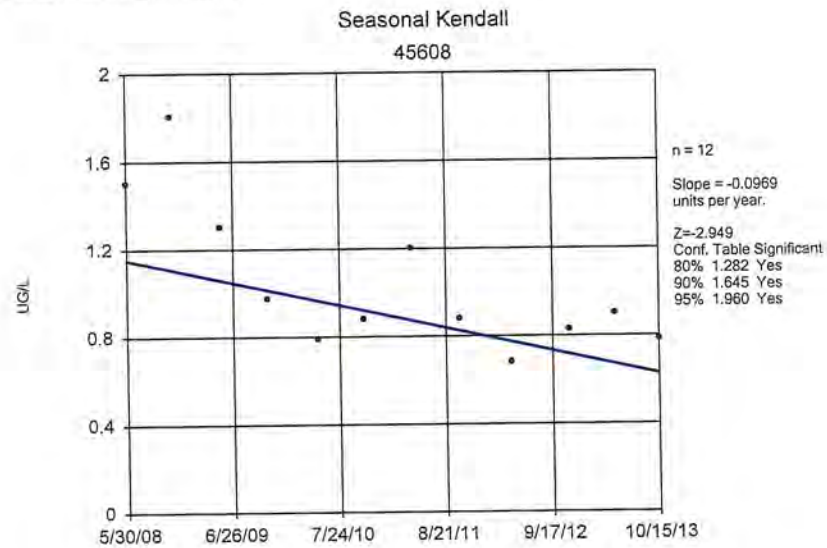

Constituent: trans-1,2-Dichloroethene Analysis Run 3/2/2014 1:57 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



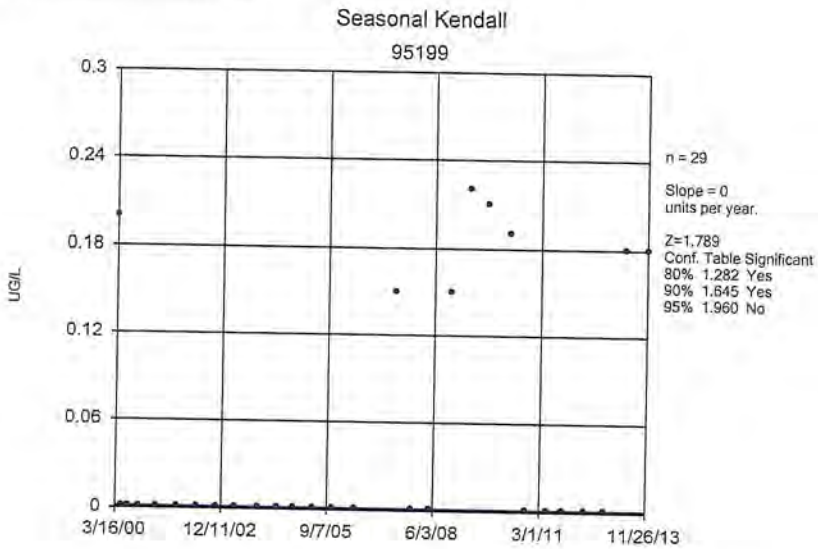

Constituent: trans-1,2-Dichloroethene Analysis Run 3/2/2014 1:57 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



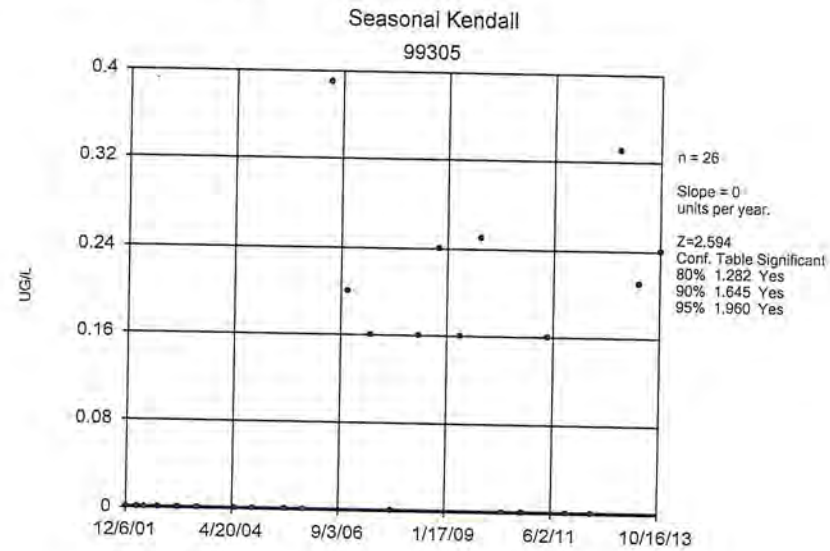

Constituent: trans-1,2-Dichloroethene Analysis Run 3/2/2014 1:57 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



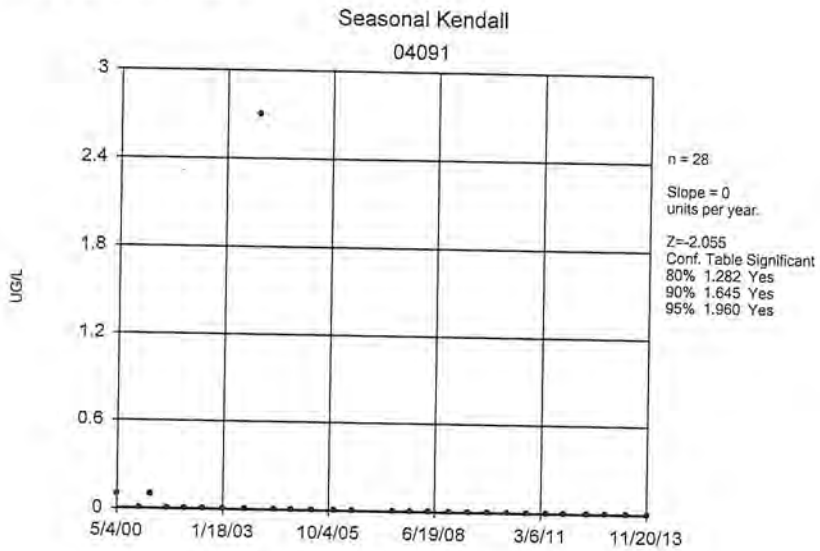

Constituent: trans-1,2-Dichloroethene Analysis Run 3/2/2014 1:57 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA




Constituent: trans-1,2-Dichloroethene Analysis Run 3/2/2014 1:57 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA




Constituent: Trichloroethene Analysis Run 3/2/2014 1:58 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

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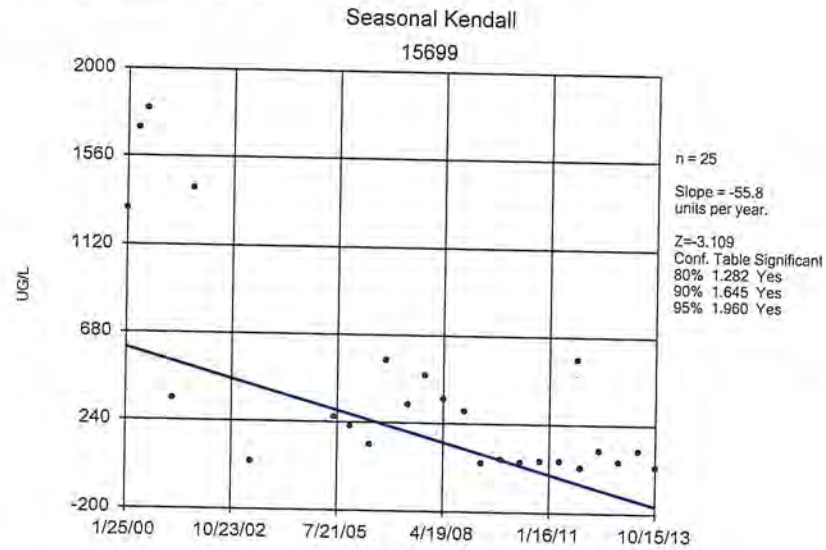
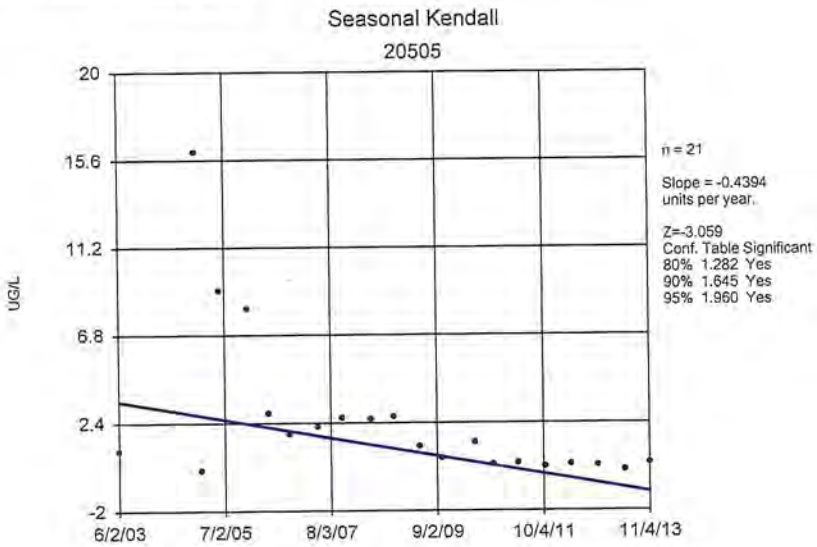


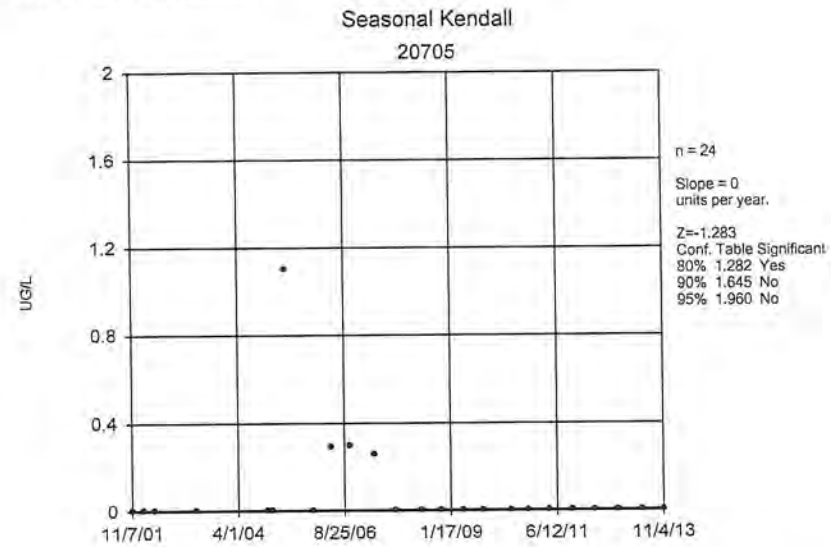

Constituent: Trichloroethene Analysis Run 3/2/2014 1:58 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



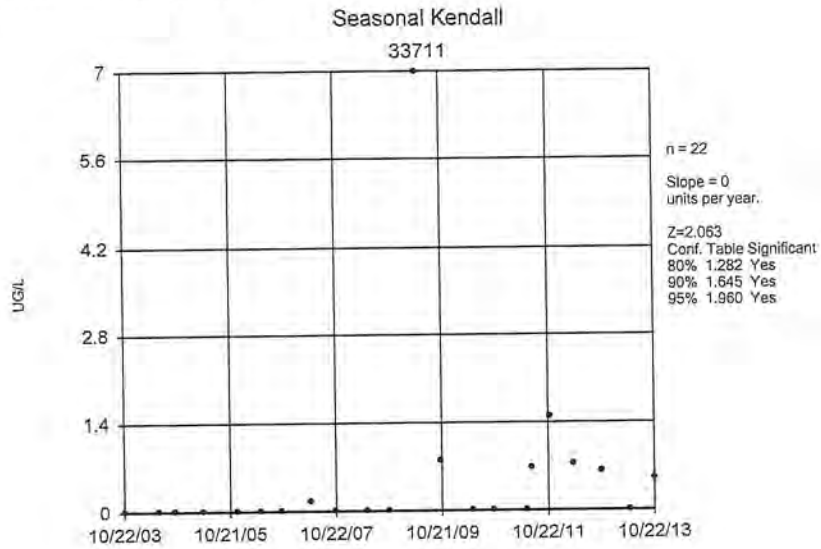

Constituent: Trichloroethene Analysis Run 3/2/2014 1:58 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



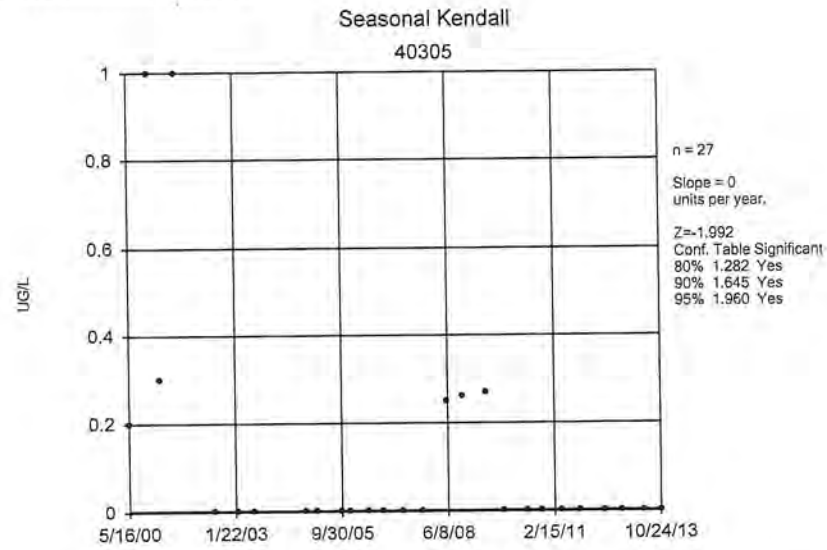

Constituent: Trichloroethene Analysis Run 3/2/2014 1:58 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



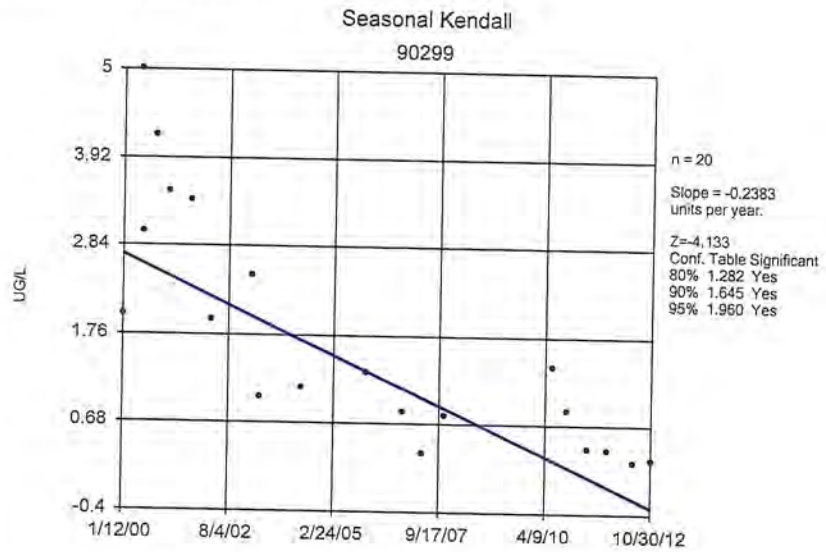

Constituent: Trichloroethene Analysis Run 3/2/2014 1:58 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



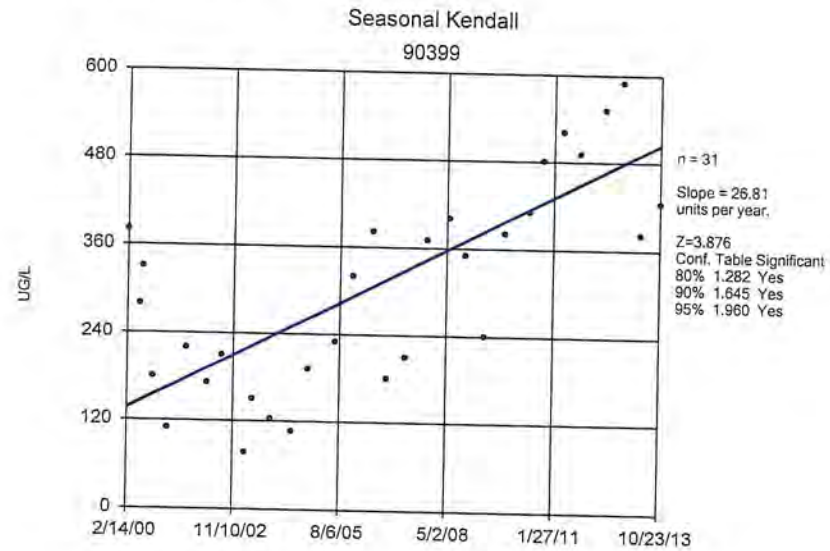

Constituent: Trichloroethene Analysis Run 3/2/2014 1:58 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



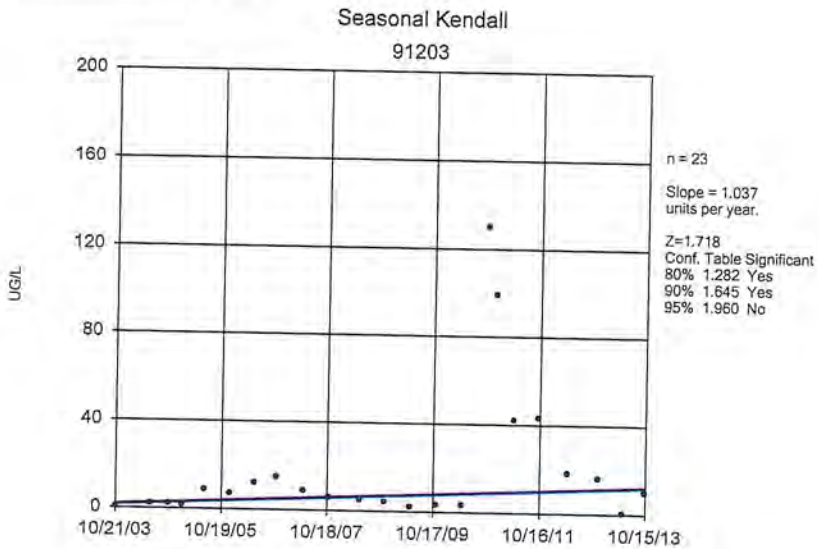

Constituent: Trichloroethene Analysis Run 3/2/2014 1:58 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



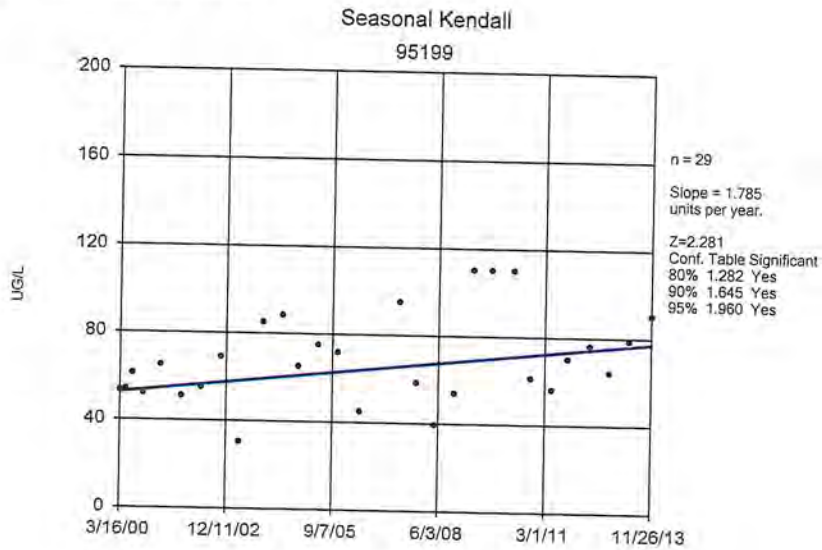

Constituent: Trichloroethene Analysis Run 3/2/2014 1:58 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



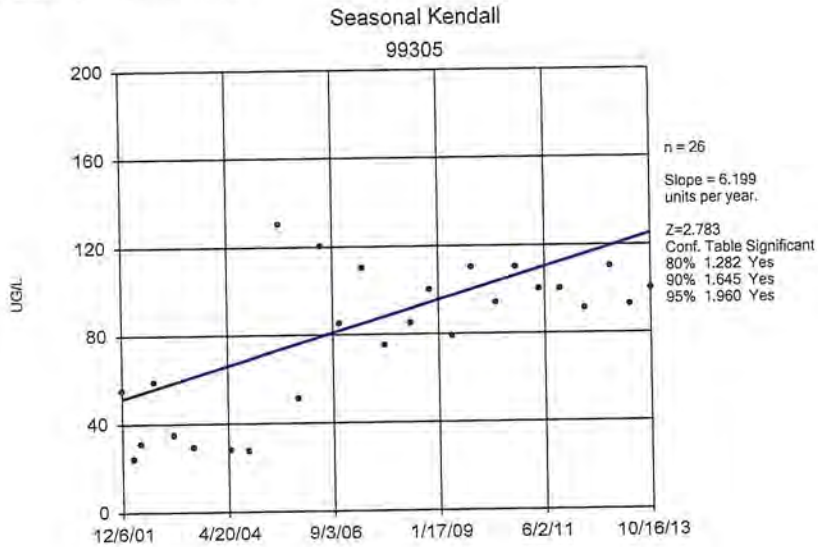

Constituent: Trichloroethene Analysis Run 3/2/2014 1:58 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



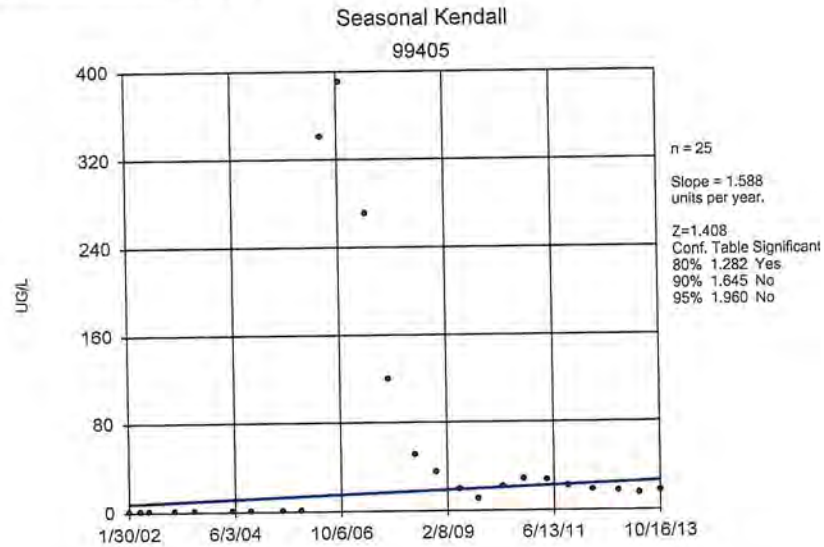

Constituent: Trichloroethene Analysis Run 3/2/2014 1:59 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



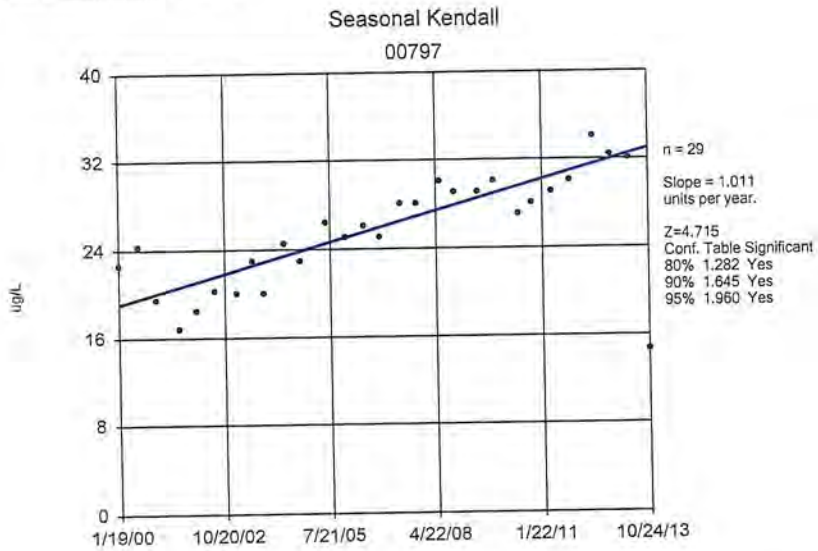

Constituent: Trichloroethene Analysis Run 3/2/2014 1:59 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



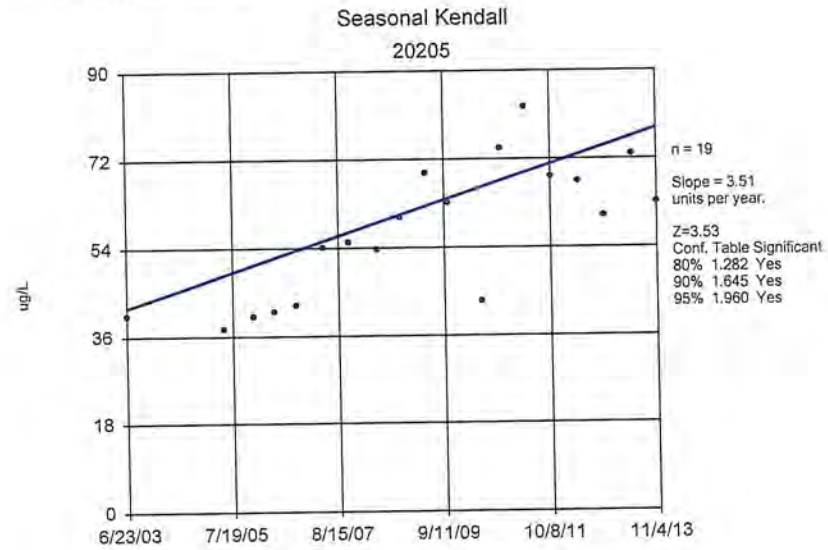

Constituent: Trichloroethene Analysis Run 3/2/2014 1:59 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



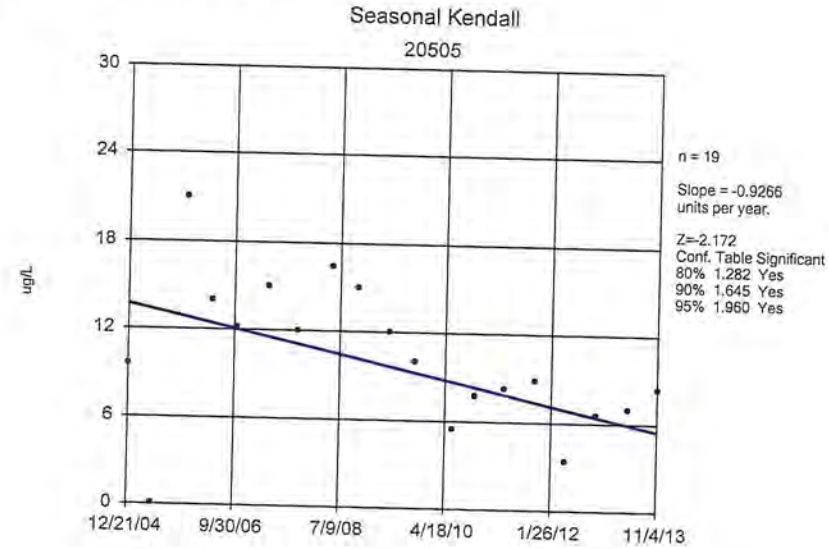

Constituent: Uranium Analysis Run 3/2/2014 1:59 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



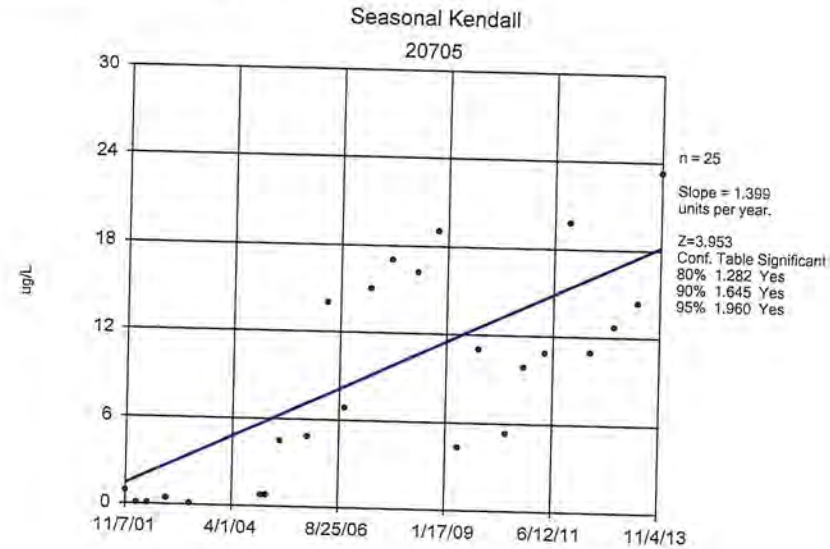

Constituent: Uranium Analysis Run 3/2/2014 1:59 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



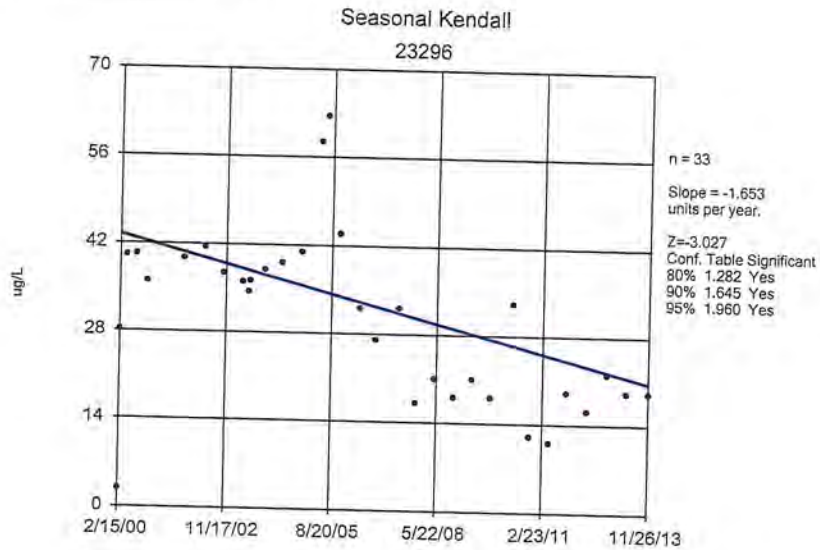

Constituent: Uranium Analysis Run 3/2/2014 1:59 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



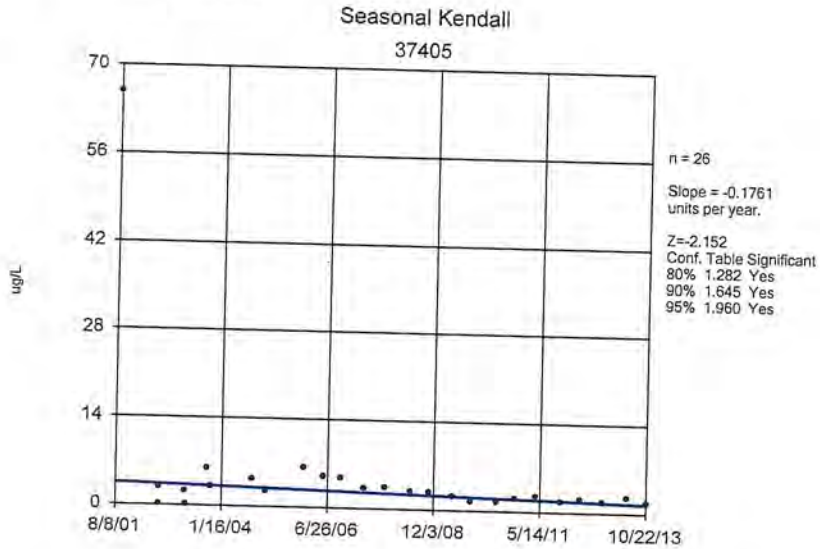

Constituent: Uranium Analysis Run 3/2/2014 1:59 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



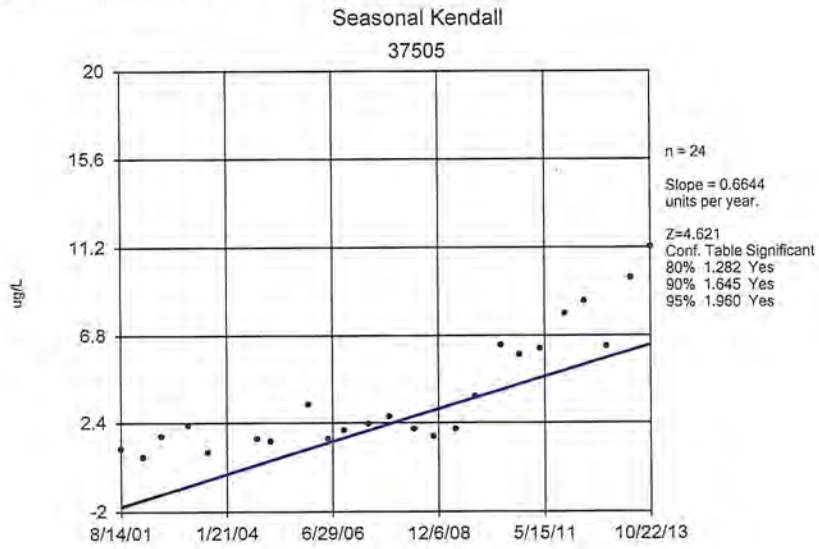

Constituent: Uranium Analysis Run 3/2/2014 1:59 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



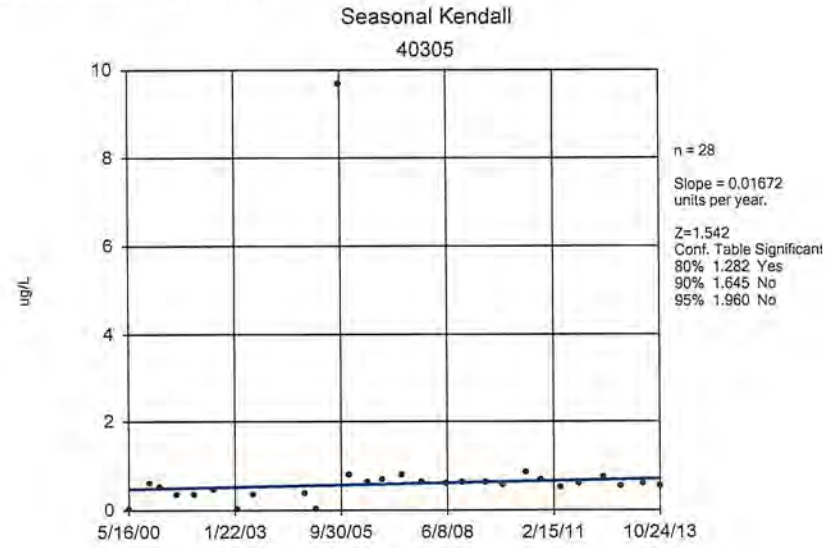

Constituent: Uranium Analysis Run 3/2/2014 1:59 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



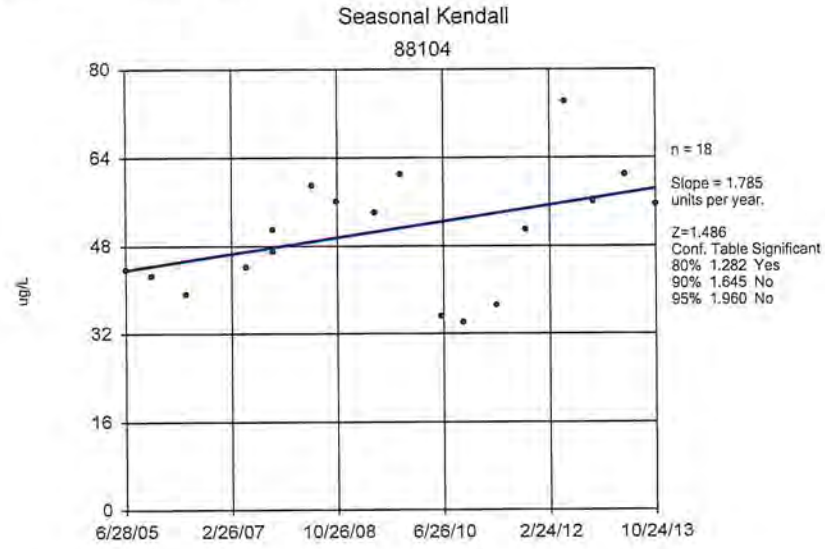

Constituent: Uranium Analysis Run 3/2/2014 1:59 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



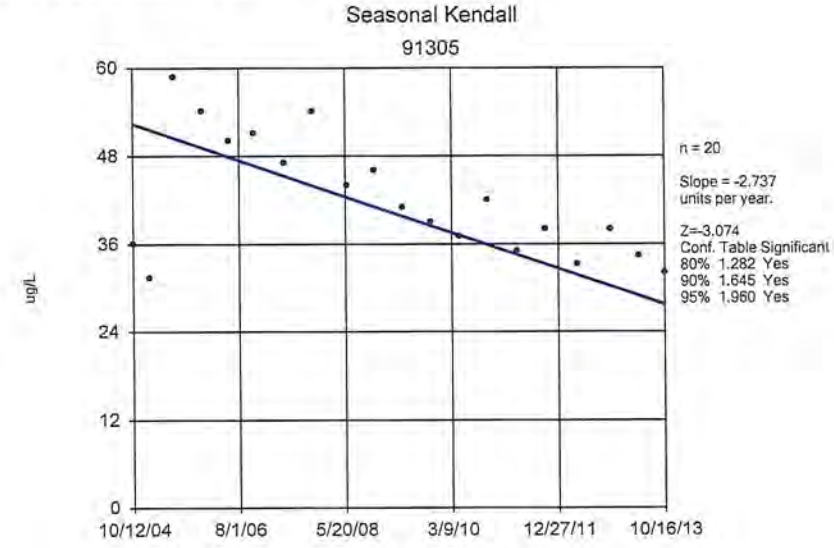

Constituent: Uranium Analysis Run 3/2/2014 1:59 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



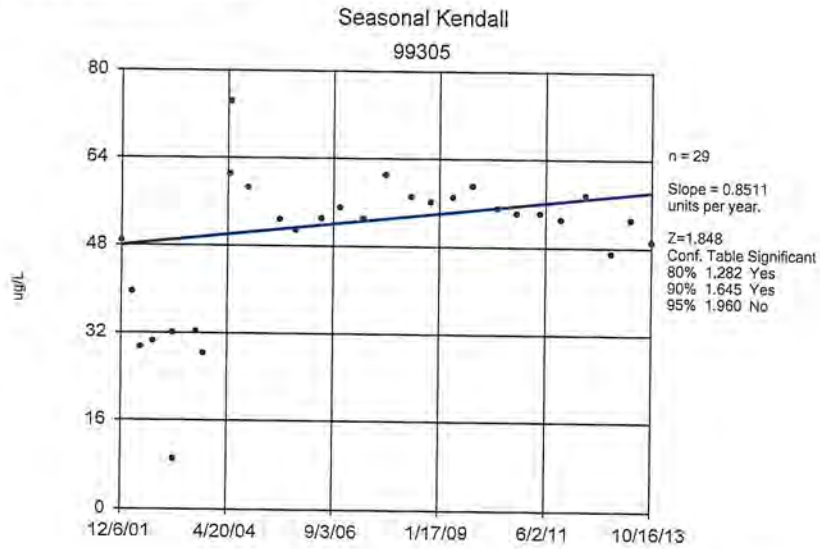

Constituent: Uranium Analysis Run 3/2/2014 1:59 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



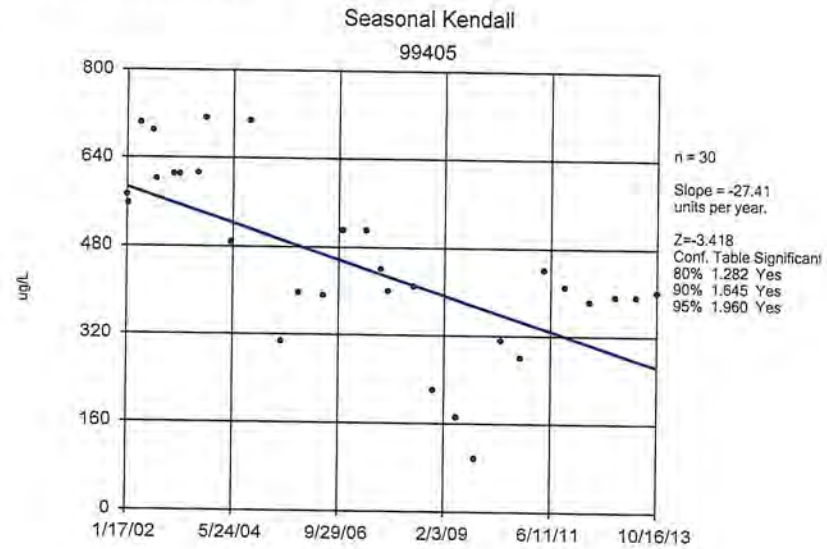

Constituent: Uranium Analysis Run 3/2/2014 1:59 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



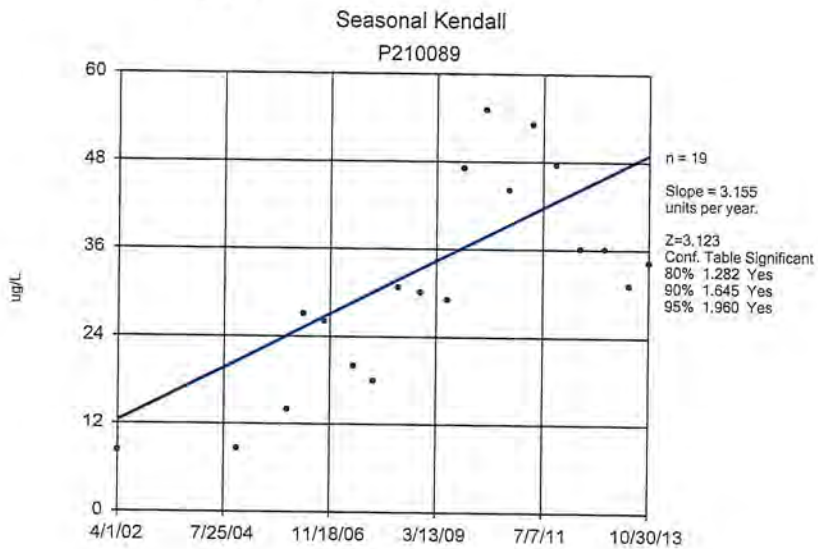

Constituent: Uranium Analysis Run 3/2/2014 1:59 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



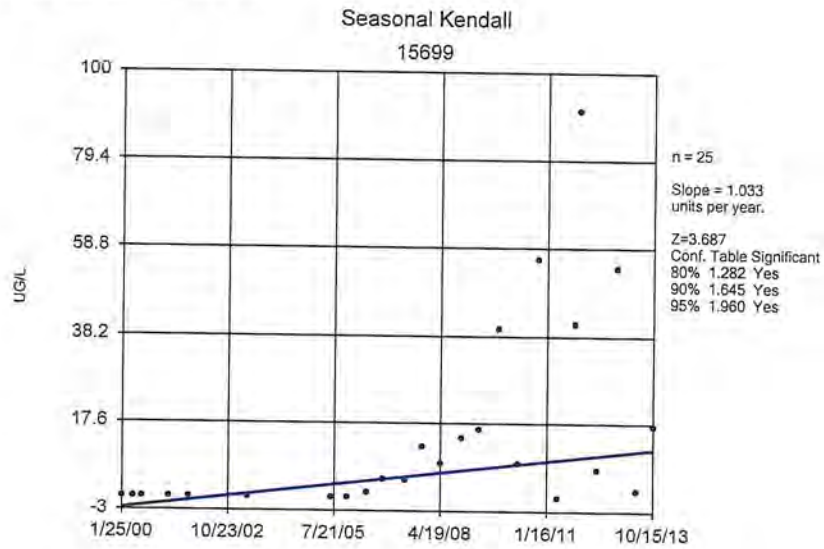

Constituent: Uranium Analysis Run 3/2/2014 1:59 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



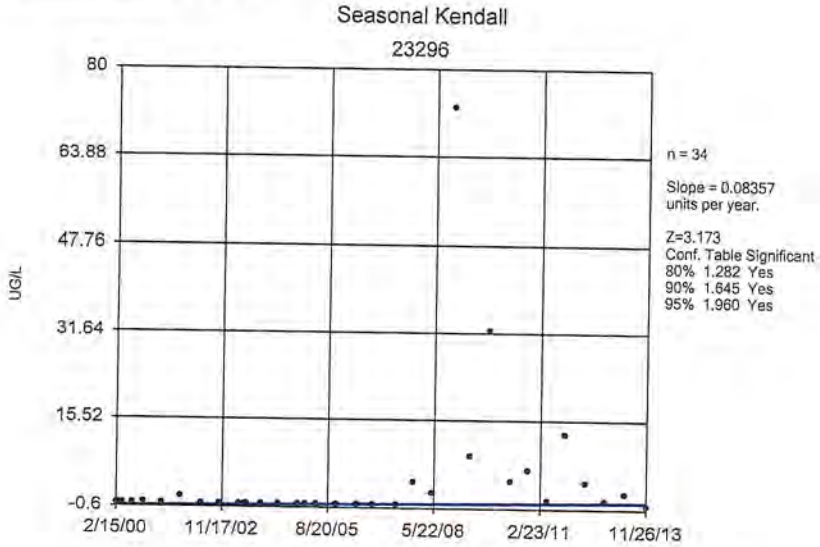

Constituent: Uranium Analysis Run 3/2/2014 1:59 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



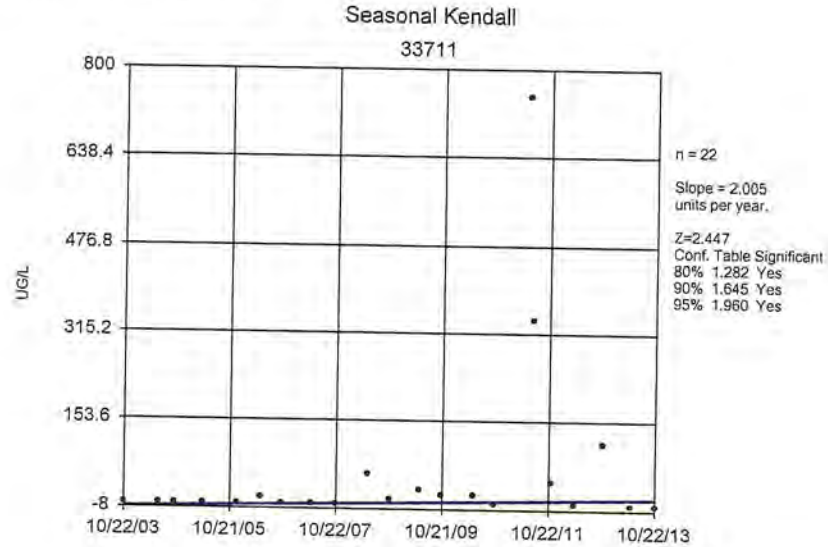

Constituent: Vinyl chloride Analysis Run 3/2/2014 1:59 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



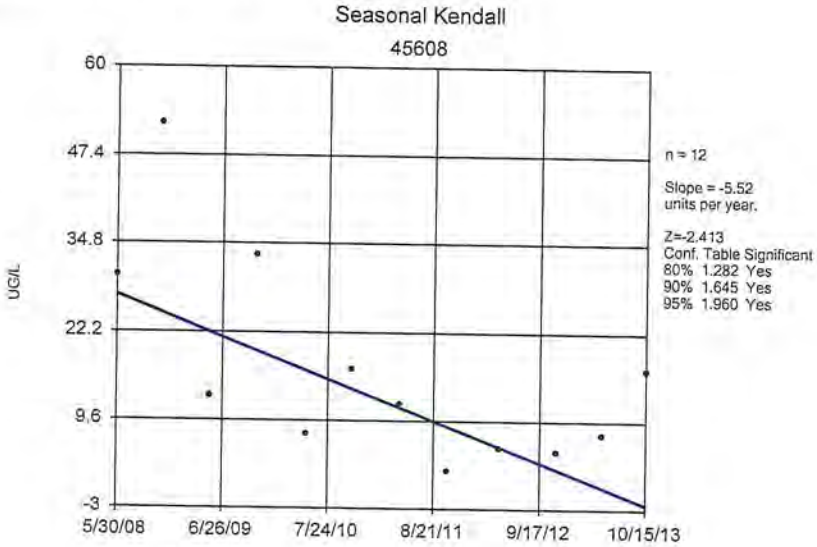

Constituent: Vinyl chloride Analysis Run 3/2/2014 1:59 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



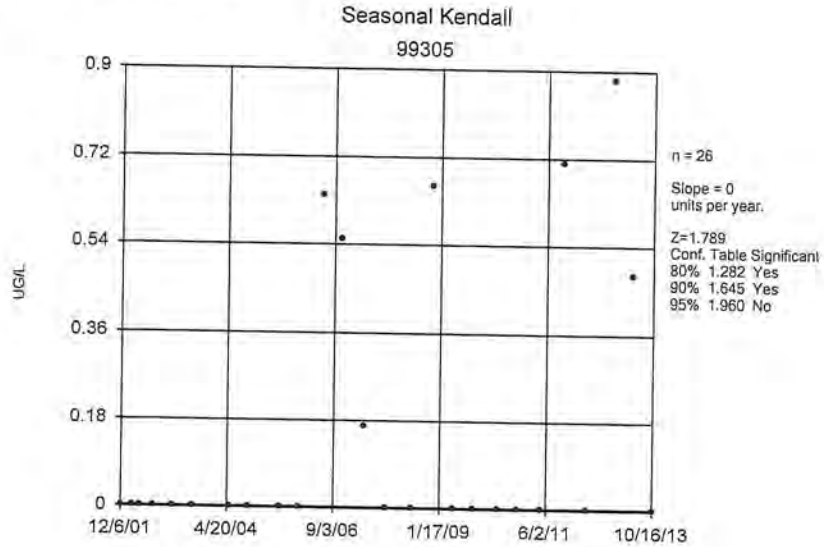

Constituent: Vinyl chloride Analysis Run 3/2/2014 1:59 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA




Constituent: Vinyl chloride Analysis Run 3/2/2014 1:59 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA




Constituent: Vinyl chloride Analysis Run 3/2/2014 1:59 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro

# Sentinel Wells: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro Printed 3/2/2014, 2:04 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane (UG/L) | 00797 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,1-Trichloroethane (UG/L) | 04091 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,1-Trichloroethane (UG/L) | 11502 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,1-Trichloroethane (UG/L) | 15699 | 25 | -0.02758 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **1,1,1-Trichloroethane (UG/L)** | **20205** | **24** | **0** | **-1.448** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| 1,1,1-Trichloroethane (UG/L) | 20505 | 21 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,1-Trichloroethane (UG/L) | 20705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **1,1,1-Trichloroethane (UG/L)** | **23296** | **34** | **0** | **2.34** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| 1,1,1-Trichloroethane (UG/L) | 30002 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,1-Trichloroethane (UG/L) | 33711 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,1-Trichloroethane (UG/L) | 37405 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,1-Trichloroethane (UG/L) | 37505 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,1-Trichloroethane (UG/L) | 37705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,1-Trichloroethane (UG/L) | 40305 | 27 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,1-Trichloroethane (UG/L) | 45608 | 12 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,1-Trichloroethane (UG/L) | 52505 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,1-Trichloroethane (UG/L) | 88104 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,1-Trichloroethane (UG/L) | 90299 | 20 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **1,1,1-Trichloroethane (UG/L)** | **90399** | **31** | **0** | **-1.871** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **No** |
| **1,1,1-Trichloroethane (UG/L)** | **91203** | **23** | **0.7135** | **1.863** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **No** |
| 1,1,1-Trichloroethane (UG/L) | 91305 | 21 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,1-Trichloroethane (UG/L) | 95099 | 30 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,1-Trichloroethane (UG/L) | 95199 | 29 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,1-Trichloroethane (UG/L) | 99305 | 26 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,1-Trichloroethane (UG/L) | 99405 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,1-Trichloroethane (UG/L) | P210089 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 00797 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 04091 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 11502 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 15699 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 20205 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 20505 | 21 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 20705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 23296 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 30002 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 33711 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 37405 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 37505 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 37705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 40305 | 27 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |

# Sentinel Wells: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro Printed 3/2/2014, 2:04 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,2,2-Tetrachloroethane (UG/L) | 45608 | 12 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 52505 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 88104 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 90299 | 20 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 90399 | 31 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 91203 | 23 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 91305 | 21 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 95099 | 30 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 95199 | 29 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 99305 | 26 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 99405 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | P210089 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | 00797 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | 04091 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | 11502 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | 15699 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | 20205 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | 20505 | 21 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | 20705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | 23296 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | 30002 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | 33711 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | 37405 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | 37505 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | 37705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | 40305 | 27 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | 45608 | 12 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | 52505 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | 88104 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | 90299 | 20 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **1,1,2-Trichloroethane (UG/L)** | **90399** | **31** | **0** | **1.304** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| 1,1,2-Trichloroethane (UG/L) | 91203 | 23 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | 91305 | 21 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | 95099 | 30 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | 95199 | 29 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | 99305 | 26 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | 99405 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | P210089 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1-Dichloroethene (UG/L) | 00797 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1-Dichloroethene (UG/L) | 04091 | 28 | 0 | 0.639 | 1.282 | No | 1.645 | No | 1.960 | No |

# Sentinel Wells: Seasonal Kendall



Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro Printed 3/2/2014, 2:04 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| **1,1-Dichloroethene (UG/L)** | **11502** | **19** | **0** | **-1.295** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| **1,1-Dichloroethene (UG/L)** | **15699** | **25** | **-3.672** | **-2.743** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| 1,1-Dichloroethene (UG/L) | 20205 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1-Dichloroethene (UG/L) | 20505 | 21 | 0.01196 | 0.593 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1-Dichloroethene (UG/L) | 20705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **1,1-Dichloroethene (UG/L)** | **23296** | **34** | **0.09982** | **3.594** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| 1,1-Dichloroethene (UG/L) | 30002 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1-Dichloroethene (UG/L) | 33711 | 22 | 0 | 0.1173 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1-Dichloroethene (UG/L) | 37405 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1-Dichloroethene (UG/L) | 37505 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1-Dichloroethene (UG/L) | 37705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1-Dichloroethene (UG/L) | 40305 | 27 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1-Dichloroethene (UG/L) | 45608 | 12 | -0.00... | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1-Dichloroethene (UG/L) | 52505 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1-Dichloroethene (UG/L) | 88104 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1-Dichloroethene (UG/L) | 90299 | 20 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **1,1-Dichloroethene (UG/L)** | **90399** | **31** | **0.04462** | **1.69** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **No** |
| **1,1-Dichloroethene (UG/L)** | **91203** | **23** | **0.1586** | **2.094** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| 1,1-Dichloroethene (UG/L) | 91305 | 21 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1-Dichloroethene (UG/L) | 95099 | 30 | 0 | 0.3475 | 1.282 | No | 1.645 | No | 1.960 | No |
| **1,1-Dichloroethene (UG/L)** | **95199** | **29** | **0.04198** | **1.999** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **1,1-Dichloroethene (UG/L)** | **99305** | **26** | **0** | **2.105** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| 1,1-Dichloroethene (UG/L) | 99405 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1-Dichloroethene (UG/L) | P210089 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2,4-Trichlorobenzene (UG/L) | 00797 | 28 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2,4-Trichlorobenzene (UG/L) | 04091 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2,4-Trichlorobenzene (UG/L) | 11502 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2,4-Trichlorobenzene (UG/L) | 15699 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2,4-Trichlorobenzene (UG/L) | 20205 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2,4-Trichlorobenzene (UG/L) | 20505 | 21 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2,4-Trichlorobenzene (UG/L) | 20705 | 23 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2,4-Trichlorobenzene (UG/L) | 23296 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2,4-Trichlorobenzene (UG/L) | 30002 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2,4-Trichlorobenzene (UG/L) | 33711 | 22 | 0 | 0.3358 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2,4-Trichlorobenzene (UG/L) | 37405 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2,4-Trichlorobenzene (UG/L) | 37505 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2,4-Trichlorobenzene (UG/L) | 37705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2,4-Trichlorobenzene (UG/L) | 40305 | 27 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2,4-Trichlorobenzene (UG/L) | 45608 | 12 | 0 | 1.171 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2,4-Trichlorobenzene (UG/L) | 52505 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |

# Sentinel Wells: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro Printed 3/2/2014, 2:04 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,2,4-Trichlorobenzene (UG/L) | 88104 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2,4-Trichlorobenzene (UG/L) | 90299 | 20 | 0 | -1.268 | 1.282 | No | 1.645 | No | 1.960 | No |
| **1,2,4-Trichlorobenzene (UG/L)** | **90399** | **31** | **0** | **-1.412** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| 1,2,4-Trichlorobenzene (UG/L) | 91203 | 23 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2,4-Trichlorobenzene (UG/L) | 91305 | 21 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **1,2,4-Trichlorobenzene (UG/L)** | **95099** | **30** | **0** | **-1.39** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| **1,2,4-Trichlorobenzene (UG/L)** | **95199** | **29** | **0** | **-1.366** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| 1,2,4-Trichlorobenzene (UG/L) | 99305 | 26 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2,4-Trichlorobenzene (UG/L) | 99405 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2,4-Trichlorobenzene (UG/L) | P210089 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 00797 | 26 | 0 | -1.159 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 04091 | 27 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 11502 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 15699 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 20205 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 20505 | 21 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 20705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 23296 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 30002 | 21 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 33711 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 37405 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 37505 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 37705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 40305 | 27 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 45608 | 12 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 52505 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 88104 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 90299 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 90399 | 30 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 91203 | 23 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 91305 | 21 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 95099 | 29 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 95199 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 99305 | 26 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 99405 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | P210089 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 00797 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 04091 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 11502 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 15699 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |

# Sentinel Wells: Seasonal Kendall



Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro Printed 3/2/2014, 2:04 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,2-Dibromoethane (UG/L) | 20205 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 20505 | 21 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 20705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 23296 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 30002 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 33711 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 37405 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 37505 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 37705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 40305 | 27 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 45608 | 12 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 52505 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 88104 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 90299 | 20 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 90399 | 31 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 91203 | 23 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 91305 | 21 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 95099 | 29 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 95199 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 99305 | 26 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 99405 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | P210089 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | 00797 | 28 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | 04091 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | 11502 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | 15699 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | 20205 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | 20505 | 21 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | 20705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | 23296 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | 30002 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | 33711 | 22 | 0 | 0.729 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | 37405 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | 37505 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | 37705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | 40305 | 27 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | 45608 | 12 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | 52505 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | 88104 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | 90299 | 20 | 0 | -1.268 | 1.282 | No | 1.645 | No | 1.960 | No |

# Sentinel Wells: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro Printed 3/2/2014, 2:04 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| **1,2-Dichlorobenzene (UG/L)** | **90399** | **31** | **0** | **-1.412** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| 1,2-Dichlorobenzene (UG/L) | 91203 | 23 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | 91305 | 21 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **1,2-Dichlorobenzene (UG/L)** | **95099** | **30** | **0** | **-1.39** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| **1,2-Dichlorobenzene (UG/L)** | **95199** | **29** | **0** | **-1.366** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| 1,2-Dichlorobenzene (UG/L) | 99305 | 26 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | 99405 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | P210089 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 00797 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 04091 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 11502 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 15699 | 25 | 0.04418 | 0.9772 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 20205 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 20505 | 21 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 20705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 23296 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 30002 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 33711 | 22 | 0 | 0.3358 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 37405 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 37505 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 37705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 40305 | 27 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 45608 | 12 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 52505 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 88104 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 90299 | 20 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 90399 | 31 | 0 | 0.1585 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 91203 | 23 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 91305 | 21 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 95099 | 30 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 95199 | 29 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 99305 | 26 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 99405 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | P210089 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 00797 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 04091 | 28 | 0 | 0.2481 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 11502 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 15699 | 25 | 0 | 0.1338 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 20205 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 20505 | 21 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |

# Sentinel Wells: Seasonal Kendall



Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro Printed 3/2/2014, 2:04 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,2-Dichloropropane (UG/L) | 20705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 23296 | 34 | 0 | 0.5119 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 30002 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 33711 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 37405 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 37505 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 37705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 40305 | 27 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 45608 | 12 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 52505 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 88104 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 90299 | 20 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 90399 | 31 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 91203 | 23 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 91305 | 21 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 95099 | 30 | 0 | 0.3475 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 95199 | 29 | 0 | 0.3475 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 99305 | 26 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 99405 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | P210089 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | 00797 | 28 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | 04091 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | 11502 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **1,3-Dichlorobenzene (UG/L)** | **15699** | **25** | **0** | **1.873** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **No** |
| **1,3-Dichlorobenzene (UG/L)** | **20205** | **24** | **0** | **1.331** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| 1,3-Dichlorobenzene (UG/L) | 20505 | 21 | 0 | 0.2589 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | 20705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | 23296 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | 30002 | 22 | 0 | 0.9072 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | 33711 | 22 | -0.03787 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | 37405 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | 37505 | 24 | 0 | 0.3763 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | 37705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | 40305 | 27 | 0 | 0.9822 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | 45608 | 12 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | 52505 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | 88104 | 19 | 0 | 0.2897 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | 90299 | 20 | 0 | 0.3012 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | 90399 | 31 | 0 | 1.123 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | 91203 | 23 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |

# Sentinel Wells: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro Printed 3/2/2014, 2:04 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,3-Dichlorobenzene (UG/L) | 91305 | 21 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | 95099 | 30 | 0 | 0.4791 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | 95199 | 29 | 0 | 0.2147 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | 99305 | 26 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | 99405 | 25 | 0 | 0.1966 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | P210089 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | 00797 | 28 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | 04091 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | 11502 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | 15699 | 25 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | 20205 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | 20505 | 21 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | 20705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | 23296 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | 30002 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | 33711 | 22 | 0.2331 | 0.7742 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | 37405 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | 37505 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | 37705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | 40305 | 27 | 0 | 0.4009 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | 45608 | 12 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | 52505 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | 88104 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | 90299 | 20 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **1,4-Dichlorobenzene (UG/L)** | **90399** | **31** | **0** | **-1.412** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| 1,4-Dichlorobenzene (UG/L) | 91203 | 23 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | 91305 | 21 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | 95099 | 30 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **1,4-Dichlorobenzene (UG/L)** | **95199** | **29** | **0** | **-1.366** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| 1,4-Dichlorobenzene (UG/L) | 99305 | 26 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | 99405 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | P210089 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Americium-241 (PCI/L)** | **20205** | **21** | **0** | **-2.181** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Americium-241 (PCI/L) | 20505 | 18 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Americium-241 (PCI/L)** | **20705** | **27** | **-0.00...** | **-3.894** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Americium-241 (PCI/L) | 37405 | 22 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Americium-241 (PCI/L) | 37705 | 22 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzene (UG/L) | 00797 | 28 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzene (UG/L) | 04091 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzene (UG/L) | 11502 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |

# Sentinel Wells: Seasonal Kendall



Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro Printed 3/2/2014, 2:04 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene (UG/L) | 15699 | 25 | 0 | 0.2267 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzene (UG/L) | 20205 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzene (UG/L) | 20505 | 21 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzene (UG/L) | 20705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzene (UG/L) | 23296 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzene (UG/L) | 30002 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzene (UG/L) | 33711 | 22 | 0 | -0.293 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzene (UG/L) | 37405 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzene (UG/L) | 37505 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzene (UG/L) | 37705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzene (UG/L) | 40305 | 27 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzene (UG/L) | 45608 | 12 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzene (UG/L) | 52505 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzene (UG/L) | 88104 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Benzene (UG/L)** | 90299 | 20 | 0 | -1.268 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzene (UG/L) | **90399** | **31** | **0** | **-1.412** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Benzene (UG/L) | 91203 | 23 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Benzene (UG/L)** | 91305 | 21 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Benzene (UG/L)** | **95099** | **30** | **0** | **-1.39** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Benzene (UG/L) | **95199** | **29** | **0** | **-1.366** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Benzene (UG/L) | 99305 | 26 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzene (UG/L) | 99405 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | P210089 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | 00797 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | 04091 | 28 | 0 | 0.2481 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | 11502 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | 15699 | 25 | 0 | 0.1338 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | 20205 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | 20505 | 21 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | 20705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | 23296 | 34 | 0 | 0.5119 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | 30002 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | 33711 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | 37405 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | 37505 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | 37705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | 40305 | 27 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | 45608 | 12 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | 52505 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | 88104 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |

# Sentinel Wells: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro Printed 3/2/2014, 2:04 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| Bromodichloromethane (UG/L) | 90299 | 20 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | 90399 | 31 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | 91203 | 23 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | 91305 | 21 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | 95099 | 30 | 0 | 0.3475 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | 95199 | 29 | 0 | 0.3475 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | 99305 | 26 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | 99405 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | P210089 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 00797 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 04091 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 11502 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 15699 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 20205 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 20505 | 21 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 20705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 23296 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 30002 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 33711 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 37405 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 37505 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 37705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 40305 | 27 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 45608 | 12 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 52505 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 88104 | 19 | 0 | 0.2594 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 90299 | 20 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 90399 | 31 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 91203 | 23 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 91305 | 21 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 95099 | 30 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 95199 | 29 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 99305 | 26 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 99405 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | P210089 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | 00797 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | 04091 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | 11502 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | 15699 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | 20205 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |

# Sentinel Wells: Seasonal Kendall



Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro Printed 3/2/2014, 2:04 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| Bromomethane (UG/L) | 20505 | 21 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | 20705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | 23296 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | 30002 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | 33711 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | 37405 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | 37505 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | 37705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | 40305 | 27 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | 45608 | 12 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | 52505 | 27 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | 88104 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | 90299 | 20 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | 90399 | 31 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | 91203 | 23 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | 91305 | 21 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | 95099 | 30 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | 95199 | 29 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | 99305 | 26 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | 99405 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Carbon tetrachloride (UG/L) | P210089 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Carbon tetrachloride (UG/L)** | 00797 | 28 | 0 | 1.099 | 1.282 | No | 1.645 | No | 1.960 | No |
| Carbon tetrachloride (UG/L) | **04091** | **28** | **-0.0423** | **-2.278** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Carbon tetrachloride (UG/L) | 11502 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Carbon tetrachloride (UG/L) | 15699 | 25 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Carbon tetrachloride (UG/L) | 20205 | 24 | 0 | 0.9818 | 1.282 | No | 1.645 | No | 1.960 | No |
| Carbon tetrachloride (UG/L) | 20505 | 21 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Carbon tetrachloride (UG/L)** | 20705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Carbon tetrachloride (UG/L) | **23296** | **34** | **-0.6122** | **-3.063** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Carbon tetrachloride (UG/L) | 30002 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Carbon tetrachloride (UG/L) | 33711 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Carbon tetrachloride (UG/L) | 37405 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Carbon tetrachloride (UG/L) | 37505 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Carbon tetrachloride (UG/L) | 37705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Carbon tetrachloride (UG/L) | 40305 | 27 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Carbon tetrachloride (UG/L)** | 45608 | 12 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Carbon tetrachloride (UG/L) | **52505** | **28** | **0** | **-1.488** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| **Carbon tetrachloride (UG/L)** | 88104 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Carbon tetrachloride (UG/L) | **90299** | **20** | **-0.09199** | **-3.593** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| | 90399 | 31 | -1.179 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |

# Sentinel Wells: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro Printed 3/2/2014, 2:04 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| Carbon tetrachloride (UG/L) | 91203 | 23 | -1.442 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Carbon tetrachloride (UG/L) | 91305 | 21 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Carbon tetrachloride (UG/L) | 95099 | 30 | 0 | 0.56 | 1.282 | No | 1.645 | No | 1.960 | No |
| Carbon tetrachloride (UG/L) | 95199 | 29 | 0 | -0.745 | 1.282 | No | 1.645 | No | 1.960 | No |
| Carbon tetrachloride (UG/L) | 99305 | 26 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Carbon tetrachloride (UG/L) | 99405 | 25 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Carbon tetrachloride (UG/L) | P210089 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorobenzene (UG/L) | 00797 | 28 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorobenzene (UG/L) | 04091 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorobenzene (UG/L) | 11502 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorobenzene (UG/L) | 15699 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorobenzene (UG/L) | 20205 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorobenzene (UG/L) | 20505 | 21 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorobenzene (UG/L) | 20705 | 23 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorobenzene (UG/L) | 23296 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorobenzene (UG/L) | 30002 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Chlorobenzene (UG/L)** | **33711** | **22** | **-3.39** | **-4.852** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Chlorobenzene (UG/L) | 37405 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorobenzene (UG/L) | 37505 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorobenzene (UG/L) | 37705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorobenzene (UG/L) | 40305 | 27 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorobenzene (UG/L) | 45608 | 12 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorobenzene (UG/L) | 52505 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorobenzene (UG/L) | 88104 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorobenzene (UG/L) | 90299 | 20 | 0 | -1.268 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Chlorobenzene (UG/L)** | **90399** | **31** | **0** | **-1.412** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Chlorobenzene (UG/L) | 91203 | 23 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorobenzene (UG/L) | 91305 | 21 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Chlorobenzene (UG/L)** | **95099** | **30** | **0** | **-1.39** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| **Chlorobenzene (UG/L)** | **95199** | **29** | **0** | **-1.366** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Chlorobenzene (UG/L) | 99305 | 26 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorobenzene (UG/L) | 99405 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorobenzene (UG/L) | P210089 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | 00797 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | 04091 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | 11502 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | 15699 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | 20205 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | 20505 | 21 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | 20705 | 23 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |

# Sentinel Wells: Seasonal Kendall



Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro Printed 3/2/2014, 2:04 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| Chlorodibromomethane (UG/L) | 23296 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | 30002 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | 33711 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | 37405 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | 37505 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | 37705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | 40305 | 27 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | 45608 | 12 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | 52505 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | 88104 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | 90299 | 20 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | 90399 | 31 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | 91203 | 23 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | 91305 | 21 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | 95099 | 30 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | 95199 | 29 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | 99305 | 26 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | 99405 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | P210089 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloroform (UG/L) | 00797 | 28 | 0 | 0.347 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloroform (UG/L) | 04091 | 28 | 0 | -1.242 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloroform (UG/L) | 11502 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Chloroform (UG/L)** | **15699** | **25** | **-0.405** | **-2.771** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Chloroform (UG/L)** | **20205** | **24** | **0** | **2.435** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Chloroform (UG/L) | 20505 | 21 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloroform (UG/L) | 20705 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Chloroform (UG/L)** | **23296** | **34** | **-0.7925** | **-1.63** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Chloroform (UG/L) | 30002 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloroform (UG/L) | 33711 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Chloroform (UG/L)** | **37405** | **24** | **0** | **-1.404** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Chloromethane (UG/L) | 91305 | 21 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | 95099 | 30 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | 95199 | 29 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | 99305 | 26 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | 99405 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | P210089 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| cis-1,2-Dichloroethene (UG/L) | 00797 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| cis-1,2-Dichloroethene (UG/L) | 04091 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| cis-1,2-Dichloroethene (UG/L) | 11502 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| cis-1,2-Dichloroethene (UG/L) | 15699 | 25 | 8.699 | 1.189 | 1.282 | No | 1.645 | No | 1.960 | No |

# Sentinel Wells: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro Printed 3/2/2014, 2:04 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| cis-1,2-Dichloroethene (UG/L) | 20205 | 24 | 0 | 0.869 | 1.282 | No | 1.645 | No | 1.960 | No |
| **cis-1,2-Dichloroethene (UG/L)** | **20505** | **21** | **-1.64** | **-2.941** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **cis-1,2-Dichloroethene (UG/L)** | **20705** | **24** | **0.03343** | **1.355** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| **cis-1,2-Dichloroethene (UG/L)** | **23296** | **34** | **13.47** | **2.837** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| cis-1,2-Dichloroethene (UG/L) | 30002 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **cis-1,2-Dichloroethene (UG/L)** | **33711** | **22** | **0.5735** | **3.109** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| cis-1,2-Dichloroethene (UG/L) | 37405 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| cis-1,2-Dichloroethene (UG/L) | 37505 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| cis-1,2-Dichloroethene (UG/L) | 37705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **cis-1,2-Dichloroethene (UG/L)** | **40305** | **27** | **-0.03123** | **-1.668** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **No** |
| **cis-1,2-Dichloroethene (UG/L)** | **45608** | **12** | **-24.95** | **-1.876** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **No** |
| **cis-1,2-Dichloroethene (UG/L)** | **52505** | **28** | **0.04732** | **3.568** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| cis-1,2-Dichloroethene (UG/L) | 88104 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| cis-1,2-Dichloroethene (UG/L) | 90299 | 20 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **cis-1,2-Dichloroethene (UG/L)** | **90399** | **31** | **0.222** | **3.071** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **cis-1,2-Dichloroethene (UG/L)** | **91203** | **23** | **0.3963** | **3.17** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **cis-1,2-Dichloroethene (UG/L)** | **91305** | **21** | **-0.6239** | **-2.077** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| cis-1,2-Dichloroethene (UG/L) | 95099 | 30 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **cis-1,2-Dichloroethene (UG/L)** | **95199** | **29** | **0.1898** | **3.21** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **cis-1,2-Dichloroethene (UG/L)** | **99305** | **26** | **1.323** | **3.587** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **cis-1,2-Dichloroethene (UG/L)** | **99405** | **25** | **0.112** | **1.794** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **No** |
| cis-1,2-Dichloroethene (UG/L) | P210089 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | 33711 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | 37405 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | 37505 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | 37705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | 40305 | 27 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | 45608 | 12 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Hexachlorobutadiene (UG/L)** | **52505** | **28** | **0** | **-2.182** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Hexachlorobutadiene (UG/L) | 88104 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | 90299 | 20 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | 90399 | 31 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | 91203 | 23 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | 91305 | 21 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | 95099 | 30 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | 95199 | 29 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | 99305 | 26 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | 99405 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | P210089 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Methylene chloride (UG/L)** | **00797** | **28** | **0** | **-1.47** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |

# Sentinel Wells: Seasonal Kendall



Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro Printed 3/2/2014, 2:04 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| **Methylene chloride (UG/L)** | **04091** | **28** | **0** | **-1.394** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Methylene chloride (UG/L) | 11502 | 19 | 0 | 0.5178 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Methylene chloride (UG/L)** | **15699** | **25** | **0** | **-2.239** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Methylene chloride (UG/L) | 20205 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Methylene chloride (UG/L) | 20505 | 21 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Methylene chloride (UG/L) | 20705 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Methylene chloride (UG/L)** | **23296** | **34** | **0** | **-2.174** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Methylene chloride (UG/L) | 30002 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Methylene chloride (UG/L) | 33711 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Methylene chloride (UG/L) | 37405 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Methylene chloride (UG/L) | 37505 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Methylene chloride (UG/L) | 37705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Methylene chloride (UG/L)** | **40305** | **27** | **0** | **-2.708** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Methylene chloride (UG/L) | 45608 | 12 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Methylene chloride (UG/L) | 52505 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Methylene chloride (UG/L) | 88104 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Nitrate + Nitrite as Nitrogen (mg/L) | 20705 | 17 | 0 | 0.1887 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Nitrate + Nitrite as Nitrogen (mg/L)** | **37405** | **23** | **0.4443** | **3.911** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Nitrate + Nitrite as Nitrogen (mg/L) | 37505 | 23 | -0.07833 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Nitrate + Nitrite as Nitrogen (mg/L) | 37705 | 23 | 0.009874 | 0.6698 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Nitrate + Nitrite as Nitrogen (mg/L)** | **70099** | **36** | **-0.08021** | **-2.152** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Nitrate + Nitrite as Nitrogen (mg/L) | 91305 | 20 | 0.009677 | 0.3757 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Nitrate + Nitrite as Nitrogen (mg/L)** | **99305** | **27** | **0.04352** | **1.799** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **No** |
| Nitrate + Nitrite as Nitrogen (mg/L) | 99405 | 25 | -0.05192 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Nitrate + Nitrite as Nitrogen (mg/L)** | **P210089** | **19** | **25.31** | **2.444** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Plutonium-239, 240 (PCI/L)** | **20205** | **21** | **0** | **-1.76** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **No** |
| Plutonium-239, 240 (PCI/L) | 20505 | 18 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Plutonium-239, 240 (PCI/L)** | **20705** | **27** | **0** | **-2.09** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Plutonium-239, 240 (PCI/L)** | **37405** | **22** | **0** | **-1.873** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **No** |
| **Plutonium-239, 240 (PCI/L)** | **37705** | **22** | **0** | **-1.423** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Styrene (UG/L) | 00797 | 28 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Styrene (UG/L) | 04091 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Styrene (UG/L) | 11502 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Styrene (UG/L) | 15699 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Styrene (UG/L) | 20205 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Styrene (UG/L) | 20505 | 21 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Styrene (UG/L) | 20705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Styrene (UG/L) | 23296 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Styrene (UG/L) | 30002 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Styrene (UG/L) | 33711 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |

# Sentinel Wells: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro Printed 3/2/2014, 2:04 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| Styrene (UG/L) | 37405 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Styrene (UG/L) | 37505 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Styrene (UG/L) | 37705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Styrene (UG/L) | 40305 | 27 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Styrene (UG/L) | 45608 | 12 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Styrene (UG/L) | 52505 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Styrene (UG/L) | 88104 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Styrene (UG/L) | 90299 | 20 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Styrene (UG/L) | 90399 | 31 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Styrene (UG/L) | 91203 | 23 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Toluene (UG/L) | 11502 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Toluene (UG/L) | 15699 | 25 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Toluene (UG/L) | 20205 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Toluene (UG/L) | 20505 | 21 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Toluene (UG/L) | 20705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Toluene (UG/L) | 23296 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Toluene (UG/L) | 30002 | 22 | 0 | -1.036 | 1.282 | No | 1.645 | No | 1.960 | No |
| Toluene (UG/L) | 33711 | 22 | 0 | 1.046 | 1.282 | No | 1.645 | No | 1.960 | No |
| Toluene (UG/L) | 37405 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Toluene (UG/L) | 37505 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Toluene (UG/L) | 37705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Toluene (UG/L) | 40305 | 27 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Toluene (UG/L) | 45608 | 12 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Toluene (UG/L) | 52505 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Toluene (UG/L) | 88104 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Toluene (UG/L) | 90299 | 20 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Toluene (UG/L) | 90399 | 31 | 0 | -1.136 | 1.282 | No | 1.645 | No | 1.960 | No |
| Toluene (UG/L) | 91203 | 23 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Toluene (UG/L) | 91305 | 21 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Toluene (UG/L)** | **95099** | **30** | **0** | **-1.638** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Toluene (UG/L) | 95199 | 29 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Toluene (UG/L) | 99305 | 26 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Toluene (UG/L) | 99405 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Toluene (UG/L) | P210089 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Total Xylenes (UG/L) | 00797 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Total Xylenes (UG/L) | 04091 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Total Xylenes (UG/L) | 11502 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Total Xylenes (UG/L) | 15699 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Total Xylenes (UG/L) | 20205 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Total Xylenes (UG/L) | 20505 | 21 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |

# Sentinel Wells: Seasonal Kendall



Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro Printed 3/2/2014, 2:04 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Xylenes (UG/L) | 20705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Total Xylenes (UG/L) | 23296 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Total Xylenes (UG/L) | 30002 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Total Xylenes (UG/L) | 33711 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Total Xylenes (UG/L) | 37405 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Total Xylenes (UG/L) | 37505 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Total Xylenes (UG/L) | 37705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,2-Dichloroethene (UG/L) | 91305 | 21 | 0 | -1.203 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,2-Dichloroethene (UG/L) | 95099 | 30 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **trans-1,2-Dichloroethene (UG/L)** | **95199** | **29** | **0** | **1.789** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **No** |
| **trans-1,2-Dichloroethene (UG/L)** | **99305** | **26** | **0** | **2.594** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| trans-1,2-Dichloroethene (UG/L) | 99405 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,2-Dichloroethene (UG/L) | P210089 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 00797 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 04091 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 11502 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 15699 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 20205 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 20505 | 21 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 20705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 23296 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 30002 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 33711 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 37405 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 37505 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 37705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 40305 | 27 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 45608 | 12 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 52505 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 88104 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 90299 | 20 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 90399 | 31 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 91203 | 23 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 91305 | 21 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 95099 | 30 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 95199 | 29 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 99305 | 26 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 99405 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | P210089 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Uranium (ug/L)** | **37505** | **24** | **0.6644** | **4.621** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |

# Sentinel Wells: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro Printed 3/2/2014, 2:04 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| Uranium (ug/L) | 37705 | 24 | -0.11 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Uranium (ug/L)** | **40305** | **28** | **0.01672** | **1.542** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Uranium (ug/L) | 70099 | 36 | 2.241 | 0.6453 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Uranium (ug/L)** | **88104** | **18** | **1.785** | **1.486** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| **Uranium (ug/L)** | **91305** | **20** | **-2.737** | **-3.074** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Uranium (ug/L)** | **99305** | **29** | **0.8511** | **1.848** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **No** |
| **Uranium (ug/L)** | **99405** | **30** | **-27.41** | **-3.418** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Uranium (ug/L)** | **P210089** | **19** | **3.155** | **3.123** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Vinyl chloride (UG/L) | 00797 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Vinyl chloride (UG/L) | 04091 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Vinyl chloride (UG/L) | 11502 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Vinyl chloride (UG/L)** | **15699** | **25** | **1.033** | **3.687** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Vinyl chloride (UG/L) | 20205 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Vinyl chloride (UG/L) | 20505 | 21 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Vinyl chloride (UG/L) | 20705 | 24 | 0.02359 | 0.8355 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Vinyl chloride (UG/L)** | **23296** | **34** | **0.08357** | **3.173** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Vinyl chloride (UG/L) | 30002 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Vinyl chloride (UG/L)** | **33711** | **22** | **2.005** | **2.447** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Vinyl chloride (UG/L) | 37405 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Vinyl chloride (UG/L) | 37505 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Vinyl chloride (UG/L) | 37705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Vinyl chloride (UG/L) | 40305 | 27 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Vinyl chloride (UG/L)** | **45608** | **12** | **-5.52** | **-2.413** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Vinyl chloride (UG/L) | 52505 | 28 | 0 | 0.3636 | 1.282 | No | 1.645 | No | 1.960 | No |
| Vinyl chloride (UG/L) | 88104 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Vinyl chloride (UG/L) | 90299 | 20 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Vinyl chloride (UG/L) | 90399 | 31 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Vinyl chloride (UG/L) | 91203 | 23 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Vinyl chloride (UG/L) | 91305 | 21 | 0 | -1.088 | 1.282 | No | 1.645 | No | 1.960 | No |
| Vinyl chloride (UG/L) | 95099 | 30 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Vinyl chloride (UG/L) | 95199 | 29 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Vinyl chloride (UG/L)** | **99305** | **26** | **0** | **1.789** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **No** |
| Vinyl chloride (UG/L) | 99405 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Vinyl chloride (UG/L) | P210089 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Chloroform (UG/L)** | **37505** | **24** | **0** | **-1.328** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| **Chloroform (UG/L)** | **37705** | **24** | **0** | **-2.566** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Chloroform (UG/L) | 40305 | 27 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloroform (UG/L) | 45608 | 12 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloroform (UG/L) | 52505 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloroform (UG/L) | 88104 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |

# Sentinel Wells: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro Printed 3/2/2014, 2:04 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| **Chloroform (UG/L)** | **90299** | **20** | **-0.2786** | **-3.343** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Chloroform (UG/L) | 90399 | 31 | 0.5886 | 1.035 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloroform (UG/L) | 91203 | 23 | -0.3899 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloroform (UG/L) | 91305 | 21 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloroform (UG/L) | 95099 | 30 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloroform (UG/L) | 95199 | 29 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloroform (UG/L) | 99305 | 26 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloroform (UG/L) | 99405 | 25 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloroform (UG/L) | P210089 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | 00797 | 28 | 0 | 0.1336 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | 04091 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | 11502 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | 15699 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | 20205 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | 20505 | 21 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | 20705 | 24 | 0 | 0.7906 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | 23296 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | 30002 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | 33711 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | 37405 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | 37505 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | 37705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | 40305 | 27 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | 45608 | 12 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | 52505 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | 88104 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | 90299 | 20 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | 90399 | 31 | 0 | -1.086 | 1.282 | No | 1.645 | No | 1.960 | No |
| Ethylbenzene (UG/L) | 91203 | 23 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Ethylbenzene (UG/L) | 00797 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Ethylbenzene (UG/L) | 04091 | 26 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Ethylbenzene (UG/L) | 11502 | 16 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Ethylbenzene (UG/L) | 15699 | 22 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Ethylbenzene (UG/L) | 20205 | 20 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Ethylbenzene (UG/L) | 20505 | 17 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Ethylbenzene (UG/L) | 20705 | 20 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Ethylbenzene (UG/L) | 23296 | 31 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Ethylbenzene (UG/L) | 30002 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Ethylbenzene (UG/L) | 33711 | 18 | 0 | 0.2897 | 1.282 | No | 1.645 | No | 1.960 | No |
| Ethylbenzene (UG/L) | 37405 | 20 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |

# Sentinel Wells: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro Printed 3/2/2014, 2:04 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| Ethylbenzene (UG/L) | 37505 | 20 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Ethylbenzene (UG/L) | 37705 | 20 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Ethylbenzene (UG/L) | 40305 | 23 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Ethylbenzene (UG/L) | 45608 | 12 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Ethylbenzene (UG/L) | 52505 | 24 | 0 | 0.2897 | 1.282 | No | 1.645 | No | 1.960 | No |
| Ethylbenzene (UG/L) | 88104 | 16 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Ethylbenzene (UG/L) | 90299 | 17 | 0 | -1.167 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Ethylbenzene (UG/L)** | **90399** | **27** | **0** | **-1.367** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Ethylbenzene (UG/L) | 91203 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Ethylbenzene (UG/L) | 91305 | 17 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Ethylbenzene (UG/L)** | **95099** | **27** | **0** | **-1.366** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| **Ethylbenzene (UG/L)** | **95199** | **27** | **0** | **-1.366** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Ethylbenzene (UG/L) | 99305 | 23 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Ethylbenzene (UG/L) | 99405 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Ethylbenzene (UG/L) | P210089 | 15 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | 00797 | 28 | 0 | 0.1158 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | 04091 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | 11502 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | 15699 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | 20205 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | 20505 | 21 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | 20705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | 23296 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | 30002 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Methylene chloride (UG/L)** | **90299** | **20** | **0** | **-2.831** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Methylene chloride (UG/L)** | **90399** | **31** | **0** | **-2.833** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Methylene chloride (UG/L) | 91203 | 23 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Methylene chloride (UG/L) | 91305 | 21 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Methylene chloride (UG/L)** | **95099** | **30** | **0** | **-2.46** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Methylene chloride (UG/L)** | **95199** | **29** | **0** | **-2.644** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Methylene chloride (UG/L) | 99305 | 26 | 0 | 1.04 | 1.282 | No | 1.645 | No | 1.960 | No |
| Methylene chloride (UG/L) | 99405 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Methylene chloride (UG/L) | P210089 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Naphthalene (UG/L) | 00797 | 28 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Naphthalene (UG/L) | 04091 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Naphthalene (UG/L) | 11502 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Naphthalene (UG/L) | 15699 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Naphthalene (UG/L) | 20205 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Naphthalene (UG/L) | 20505 | 21 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Naphthalene (UG/L) | 20705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |

# Sentinel Wells: Seasonal Kendall



Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro Printed 3/2/2014, 2:04 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene (UG/L) | 23296 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Naphthalene (UG/L) | 30002 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Naphthalene (UG/L) | 33711 | 22 | 0 | 0.3766 | 1.282 | No | 1.645 | No | 1.960 | No |
| Naphthalene (UG/L) | 37405 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Naphthalene (UG/L) | 37505 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Naphthalene (UG/L) | 37705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Naphthalene (UG/L) | 40305 | 27 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Naphthalene (UG/L) | 45608 | 12 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Naphthalene (UG/L) | 52505 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Naphthalene (UG/L) | 88104 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Naphthalene (UG/L) | 90299 | 20 | 0 | -1.268 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Naphthalene (UG/L)** | **90399** | **31** | **0** | **-1.823** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **No** |
| Naphthalene (UG/L) | 91203 | 23 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Naphthalene (UG/L) | 91305 | 21 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Naphthalene (UG/L)** | **95099** | **30** | **0** | **-1.39** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| **Naphthalene (UG/L)** | **95199** | **29** | **0** | **-1.366** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Naphthalene (UG/L) | 99305 | 26 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Naphthalene (UG/L) | 99405 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Naphthalene (UG/L) | P210089 | 19 | 0 | 0.6963 | 1.282 | No | 1.645 | No | 1.960 | No |
| Styrene (UG/L) | 91305 | 21 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Styrene (UG/L)** | **95099** | **30** | **0** | **-1.39** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| **Styrene (UG/L)** | **95199** | **29** | **0** | **-1.366** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Styrene (UG/L) | 99305 | 26 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Styrene (UG/L) | 99405 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Styrene (UG/L) | P210089 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Tetrachloroethene (UG/L) | 00797 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Tetrachloroethene (UG/L)** | **04091** | **28** | **0** | **-3.348** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Tetrachloroethene (UG/L)** | **11502** | **19** | **-1.021** | **-2.308** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Tetrachloroethene (UG/L)** | **15699** | **25** | **-29.74** | **-3.383** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Tetrachloroethene (UG/L)** | **20205** | **24** | **0.02598** | **1.97** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Tetrachloroethene (UG/L)** | **20505** | **21** | **0** | **-1.393** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Tetrachloroethene (UG/L) | 20705 | 23 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Tetrachloroethene (UG/L) | 23296 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Tetrachloroethene (UG/L) | 30002 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Tetrachloroethene (UG/L) | 33711 | 22 | 0 | 0.4573 | 1.282 | No | 1.645 | No | 1.960 | No |
| Tetrachloroethene (UG/L) | 37405 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Tetrachloroethene (UG/L) | 37505 | 24 | 0.01113 | 1.218 | 1.282 | No | 1.645 | No | 1.960 | No |
| Tetrachloroethene (UG/L) | 37705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Tetrachloroethene (UG/L) | 40305 | 27 | 0.001695 | 0.3711 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Tetrachloroethene (UG/L)** | **45608** | **12** | **-0.4623** | **-1.727** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **No** |

# Sentinel Wells: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro Printed 3/2/2014, 2:04 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| Tetrachloroethene (UG/L) | 52505 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Tetrachloroethene (UG/L) | 88104 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Tetrachloroethene (UG/L)** | **90299** | **20** | **0** | **-2.358** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Tetrachloroethene (UG/L)** | **90399** | **31** | **0.3669** | **2.005** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Tetrachloroethene (UG/L)** | **91203** | **23** | **1.774** | **1.773** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **No** |
| Tetrachloroethene (UG/L) | 91305 | 21 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Tetrachloroethene (UG/L) | 95099 | 30 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Tetrachloroethene (UG/L)** | **95199** | **29** | **0.1109** | **2.954** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Tetrachloroethene (UG/L)** | **99305** | **26** | **0.5643** | **3.933** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Tetrachloroethene (UG/L) | 99405 | 25 | 0 | 0.1668 | 1.282 | No | 1.645 | No | 1.960 | No |
| Tetrachloroethene (UG/L) | P210089 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Toluene (UG/L) | 00797 | 28 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Toluene (UG/L) | 04091 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Total Xylenes (UG/L) | 40305 | 27 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Total Xylenes (UG/L) | 45608 | 12 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Total Xylenes (UG/L) | 52505 | 28 | 0 | 0.4961 | 1.282 | No | 1.645 | No | 1.960 | No |
| Total Xylenes (UG/L) | 88104 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Total Xylenes (UG/L) | 90299 | 20 | 0 | -1.268 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Total Xylenes (UG/L)** | **90399** | **31** | **0** | **-1.981** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Total Xylenes (UG/L) | 91203 | 23 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Total Xylenes (UG/L) | 91305 | 21 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Total Xylenes (UG/L)** | **95099** | **30** | **0** | **-1.39** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| **Total Xylenes (UG/L)** | **95199** | **29** | **0** | **-1.366** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Total Xylenes (UG/L) | 99305 | 26 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Total Xylenes (UG/L) | 99405 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Total Xylenes (UG/L) | P210089 | 18 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,2-Dichloroethene (UG/L) | 00797 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,2-Dichloroethene (UG/L) | 04091 | 28 | 0 | 0.4961 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,2-Dichloroethene (UG/L) | 11502 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **trans-1,2-Dichloroethene (UG/L)** | **15699** | **25** | **0.1228** | **5.042** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| trans-1,2-Dichloroethene (UG/L) | 20205 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,2-Dichloroethene (UG/L) | 20505 | 21 | 0 | -1.167 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,2-Dichloroethene (UG/L) | 20705 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **trans-1,2-Dichloroethene (UG/L)** | **23296** | **34** | **0.04493** | **2.672** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| trans-1,2-Dichloroethene (UG/L) | 30002 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **trans-1,2-Dichloroethene (UG/L)** | **33711** | **22** | **0.5527** | **2.899** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| trans-1,2-Dichloroethene (UG/L) | 37405 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,2-Dichloroethene (UG/L) | 37505 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,2-Dichloroethene (UG/L) | 37705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,2-Dichloroethene (UG/L) | 40305 | 27 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |

# Sentinel Wells: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: RFLMA S wells, SWD&CPro Printed 3/2/2014, 2:04 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| **trans-1,2-Dichloroethene (UG/L)** | **45608** | **12** | **-0.0969** | **-2.949** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| trans-1,2-Dichloroethene (UG/L) | 52505 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,2-Dichloroethene (UG/L) | 88104 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,2-Dichloroethene (UG/L) | 90299 | 20 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,2-Dichloroethene (UG/L) | 90399 | 31 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,2-Dichloroethene (UG/L) | 91203 | 23 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Trichloroethene (UG/L) | 00797 | 29 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Trichloroethene (UG/L)** | **04091** | **28** | **0** | **-2.055** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Trichloroethene (UG/L) | 11502 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Trichloroethene (UG/L)** | **15699** | **25** | **-55.8** | **-3.109** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Trichloroethene (UG/L) | 20205 | 24 | 0 | 0.5726 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Trichloroethene (UG/L)** | **20505** | **21** | **-0.4394** | **-3.059** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Trichloroethene (UG/L)** | **20705** | **24** | **0** | **-1.283** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Trichloroethene (UG/L) | 23296 | 34 | 5.431 | 0.3805 | 1.282 | No | 1.645 | No | 1.960 | No |
| Trichloroethene (UG/L) | 30002 | 22 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Trichloroethene (UG/L)** | **33711** | **22** | **0** | **2.063** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Trichloroethene (UG/L) | 37405 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Trichloroethene (UG/L) | 37505 | 24 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Trichloroethene (UG/L) | 37705 | 24 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Trichloroethene (UG/L)** | **40305** | **27** | **0** | **-1.992** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Trichloroethene (UG/L) | 45608 | 12 | -2.917 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Trichloroethene (UG/L) | 52505 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Trichloroethene (UG/L) | 88104 | 19 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Trichloroethene (UG/L)** | **90299** | **20** | **-0.2383** | **-4.133** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Trichloroethene (UG/L)** | **90399** | **31** | **26.81** | **3.876** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Trichloroethene (UG/L)** | **91203** | **23** | **1.037** | **1.718** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **No** |
| Trichloroethene (UG/L) | 91305 | 21 | 0 | 0.9199 | 1.282 | No | 1.645 | No | 1.960 | No |
| Trichloroethene (UG/L) | 95099 | 30 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Trichloroethene (UG/L)** | **95199** | **29** | **1.785** | **2.281** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Trichloroethene (UG/L)** | **99305** | **26** | **6.199** | **2.783** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Trichloroethene (UG/L)** | **99405** | **25** | **1.588** | **1.408** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Trichloroethene (UG/L) | P210089 | 19 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Uranium (ug/L)** | **00797** | **29** | **1.011** | **4.715** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Uranium (ug/L) | 11502 | 19 | -0.04138 | -0.622 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Uranium (ug/L)** | **20205** | **19** | **3.51** | **3.53** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Uranium (ug/L)** | **20505** | **19** | **-0.9266** | **-2.172** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Uranium (ug/L)** | **20705** | **25** | **1.399** | **3.953** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Uranium (ug/L)** | **23296** | **33** | **-1.653** | **-3.027** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Uranium (ug/L)** | **37405** | **26** | **-0.1761** | **-2.152** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |

#### B.3.1.2 Evaluation Wells

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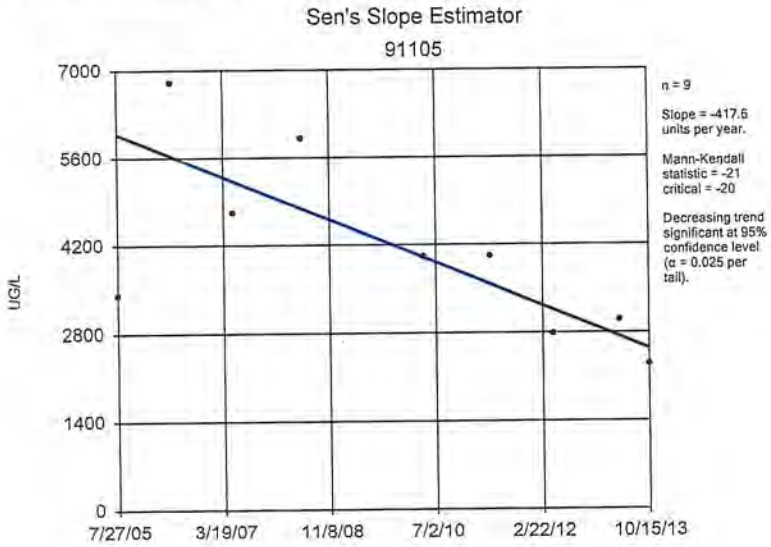


Constituent: 1,1,1-Trichloroethane Analysis Run 3/10/2014 6:09 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro

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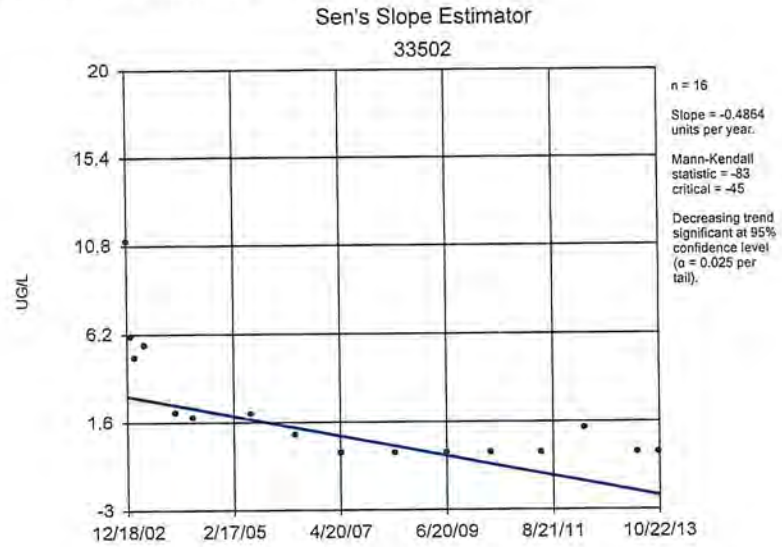


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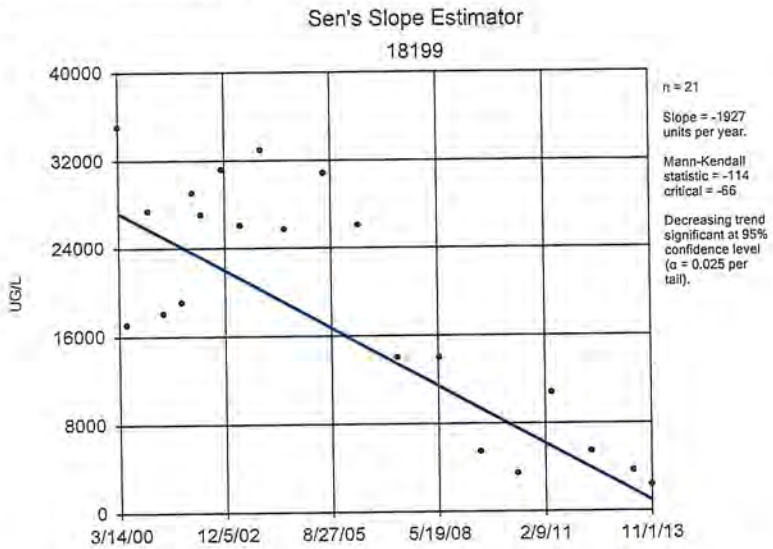


Constituent: Carbon tetrachloride Analysis Run 3/10/2014 6:14 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro

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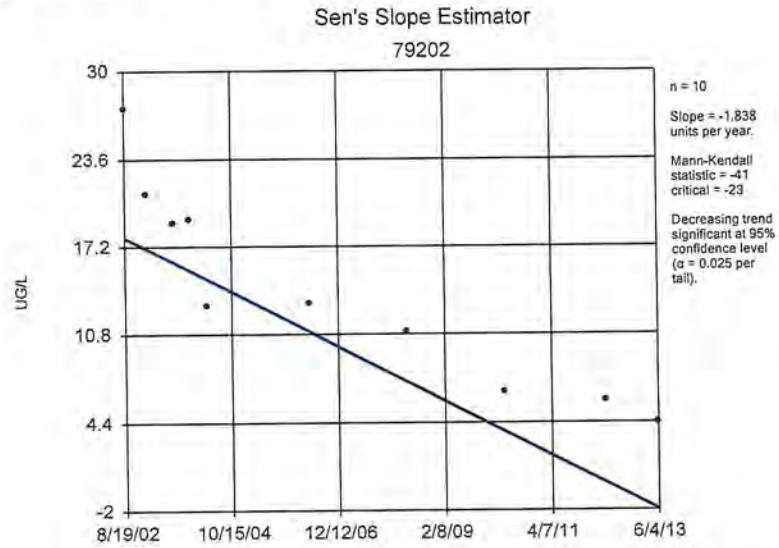


Constituent: Carbon tetrachloride Analysis Run 3/10/2014 6:14 PM
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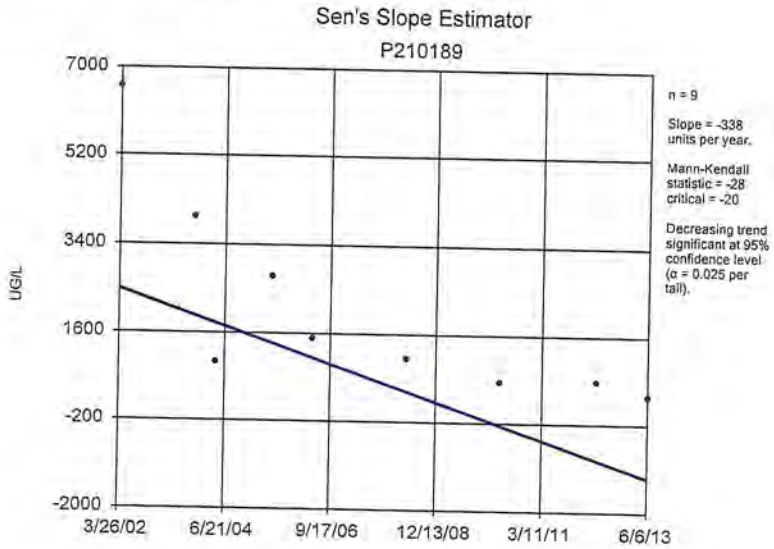


Constituent: Carbon tetrachloride Analysis Run 3/10/2014 6:14 PM
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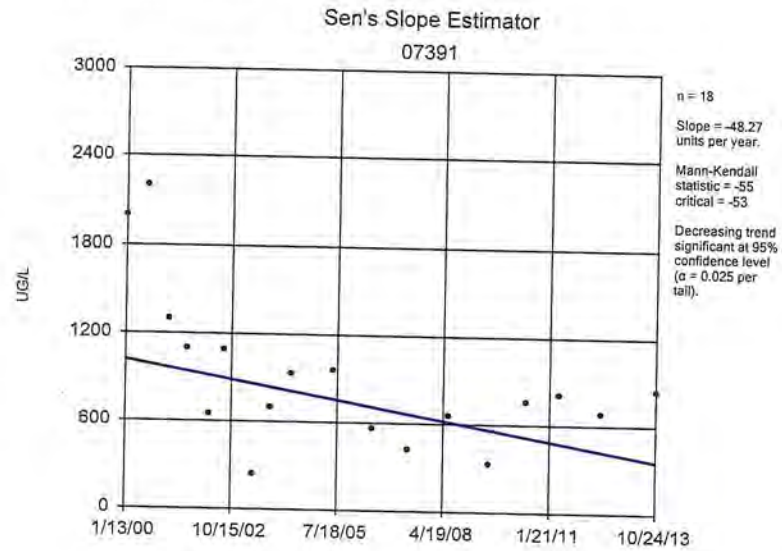


Constituent: Chloroform Analysis Run 3/10/2014 6:14 PM
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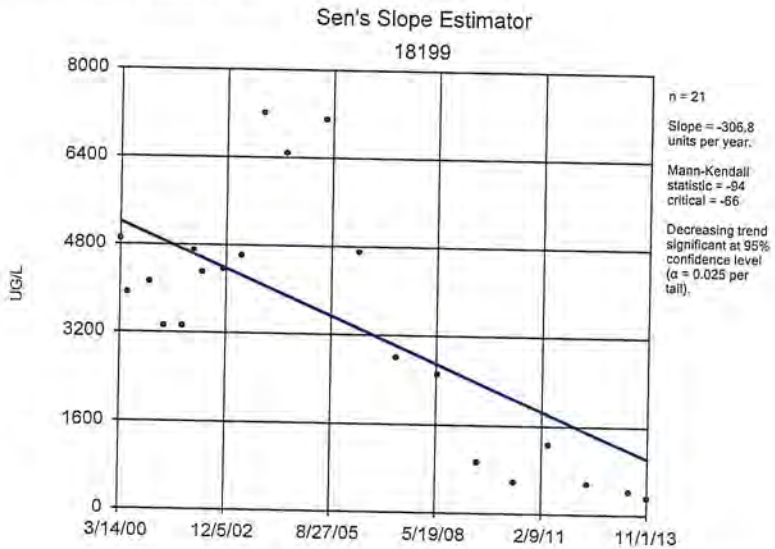


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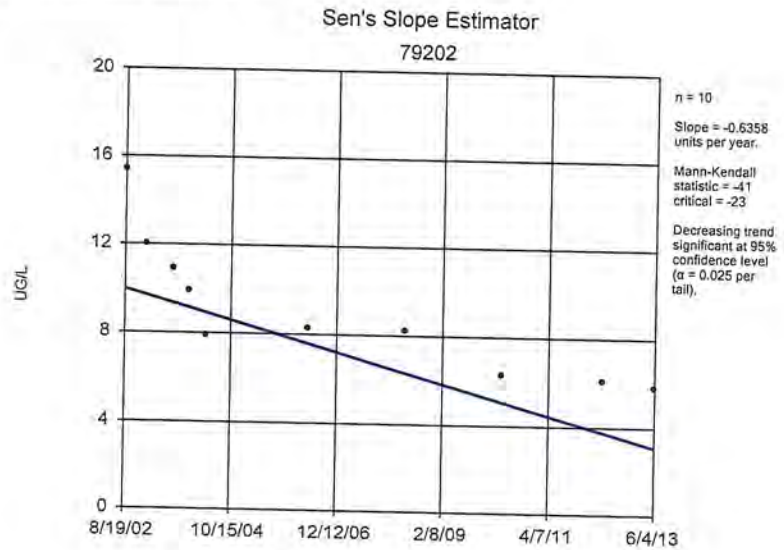


Constituent: Chloroform Analysis Run 3/10/2014 6:15 PM
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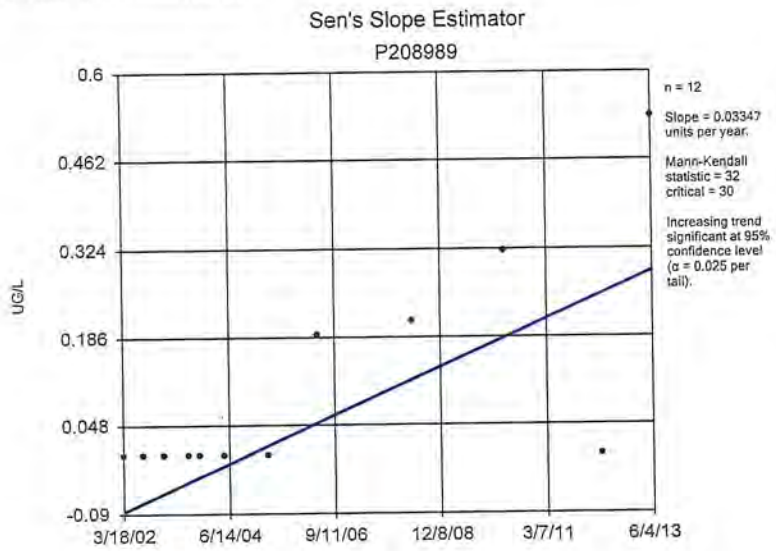


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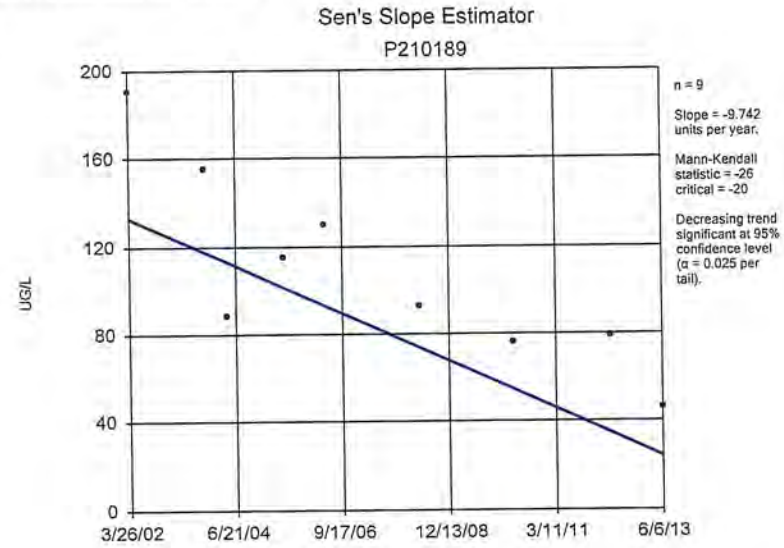


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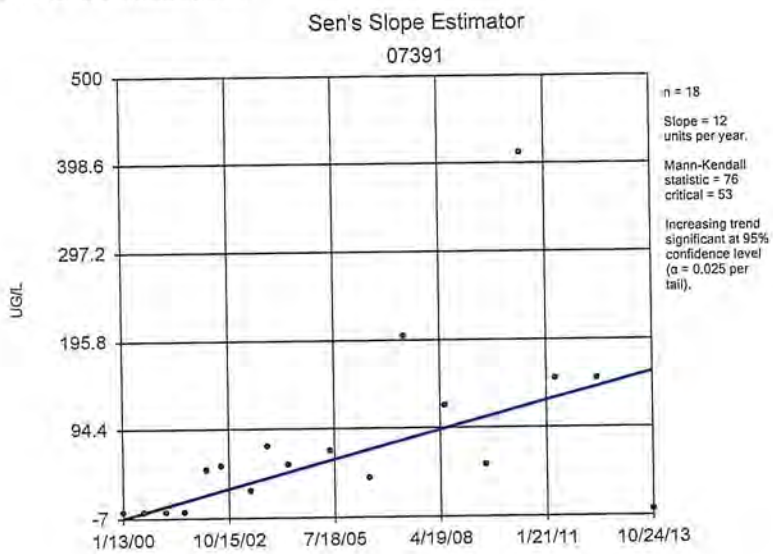


Constituent: cis-1,2-Dichloroethene Analysis Run 3/10/2014 6:15 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro

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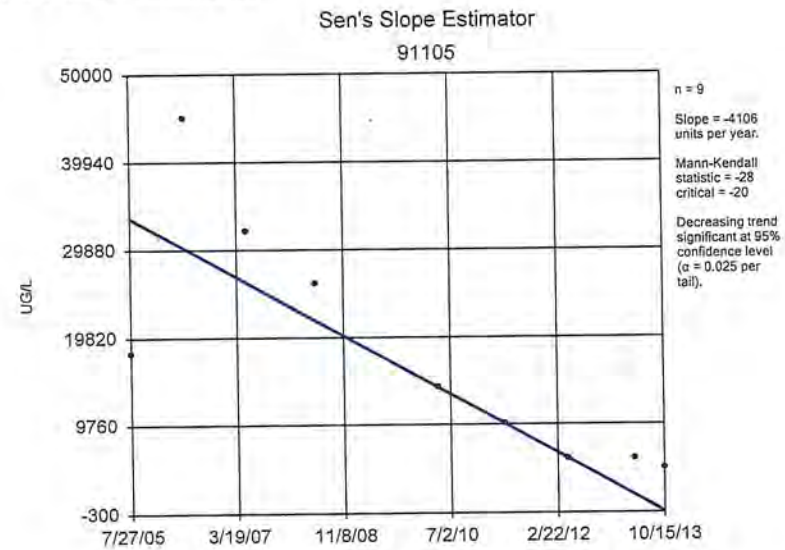


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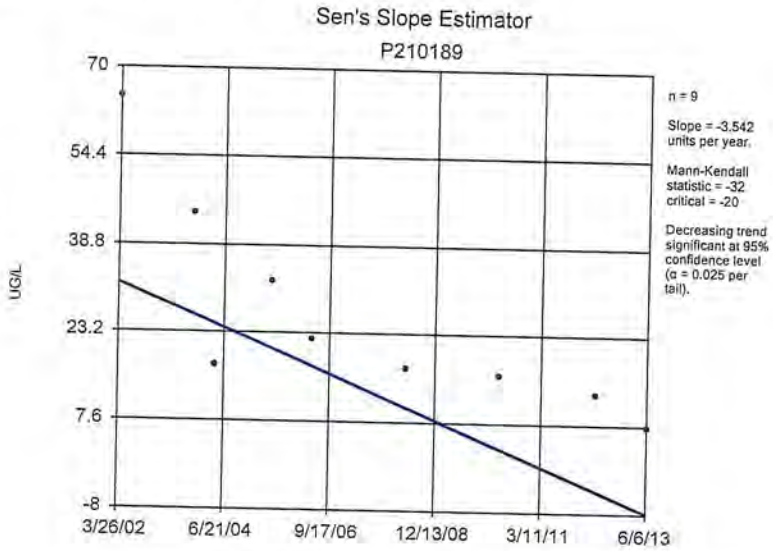


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Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro

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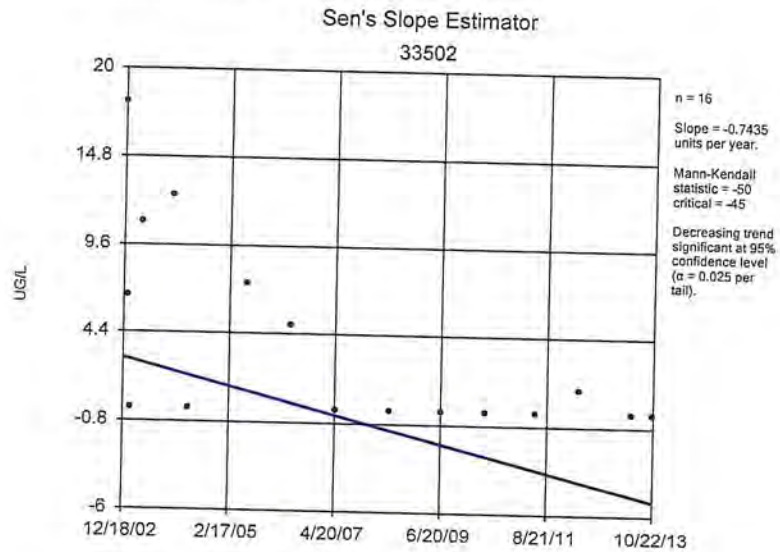


Constituent: Naphthalene Analysis Run 3/10/2014 6:17 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro

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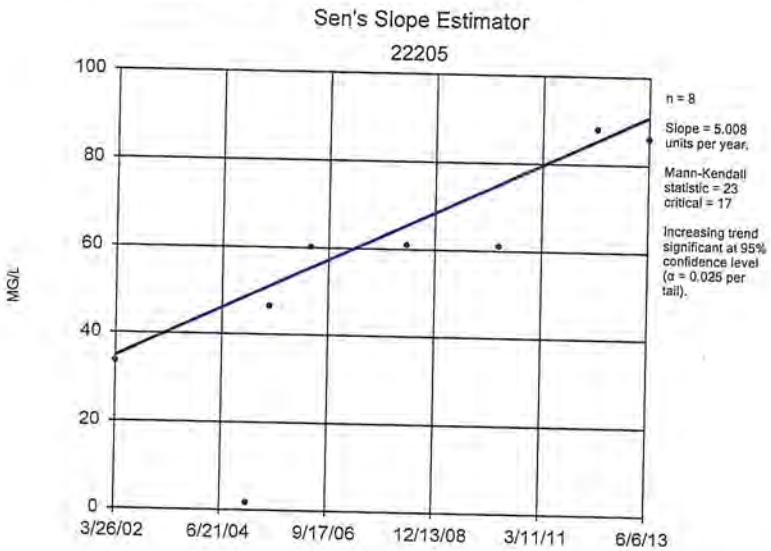


Constituent: Nitrate + Nitrite as Nitrogen Analysis Run 3/10/2014 6:17 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro

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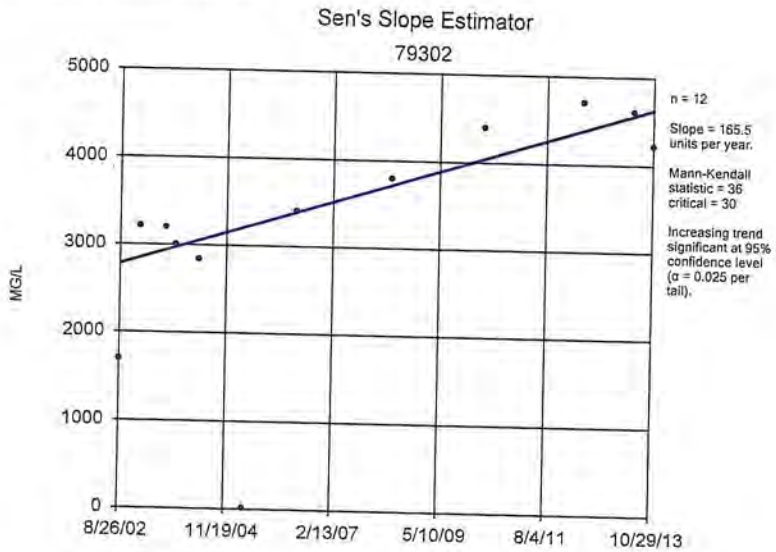


Constituent: Nitrate + Nitrite as Nitrogen Analysis Run 3/10/2014 6:17 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro

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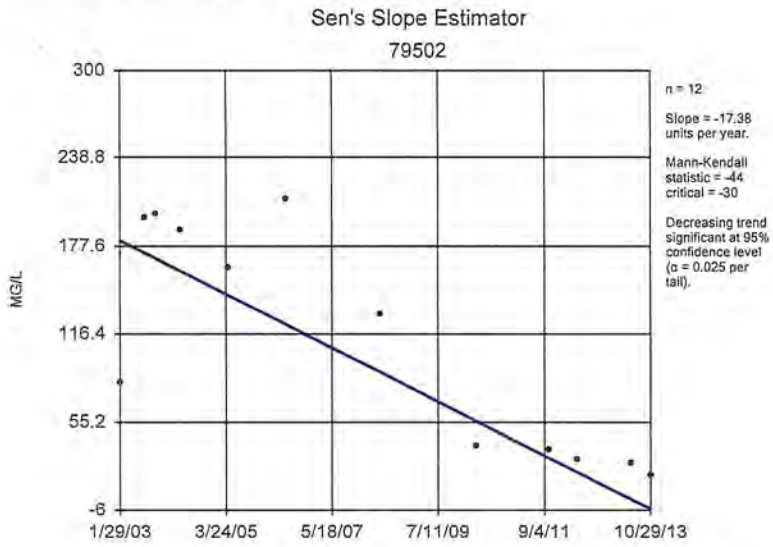


Constituent: Nitrate + Nitrite as Nitrogen Analysis Run 3/10/2014 6:17 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro

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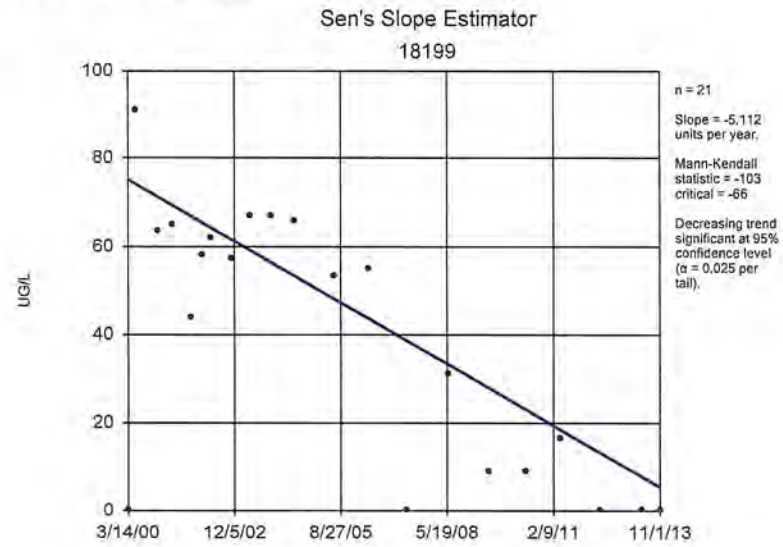


Constituent: Tetrachloroethene Analysis Run 3/10/2014 6:18 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro

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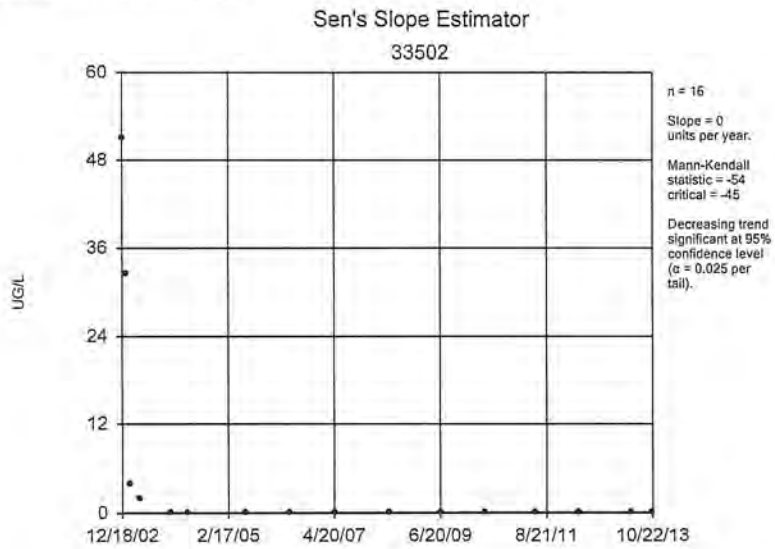


Constituent: Tetrachloroethene Analysis Run 3/10/2014 6:18 PM
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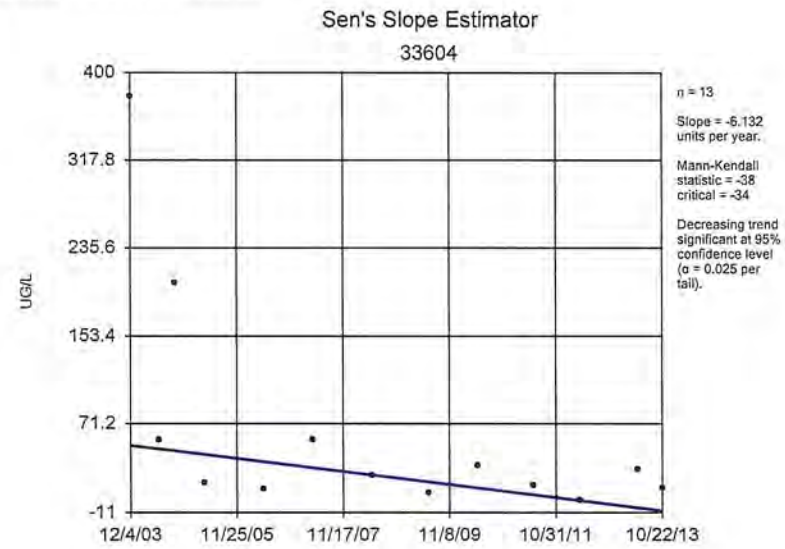


Constituent: Tetrachloroethene Analysis Run 3/10/2014 6:18 PM
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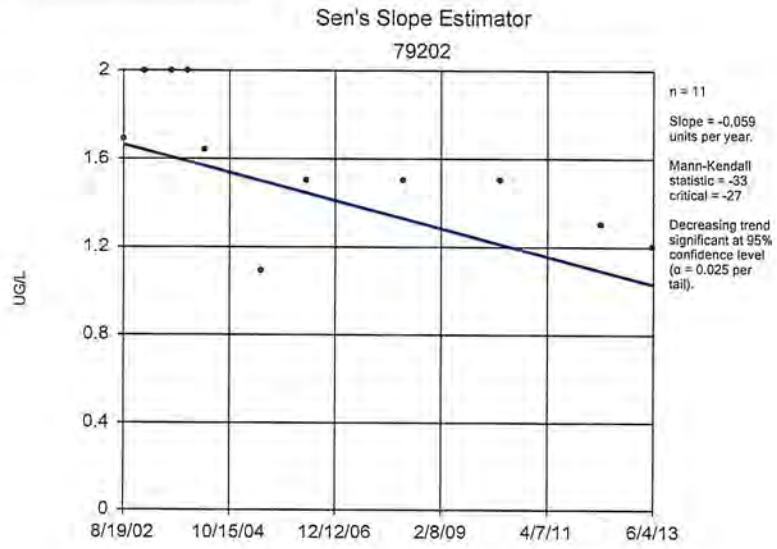


Constituent: Tetrachloroethene Analysis Run 3/10/2014 6:18 PM
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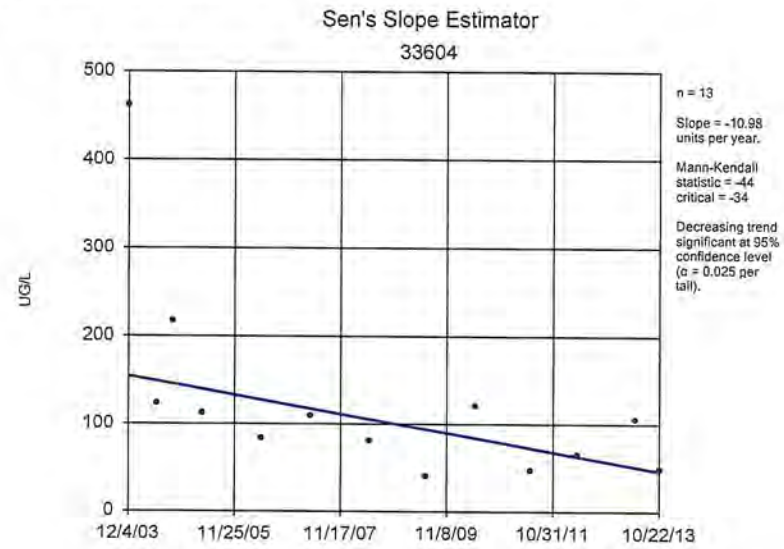


Constituent: Trichloroethene Analysis Run 3/10/2014 6:20 PM
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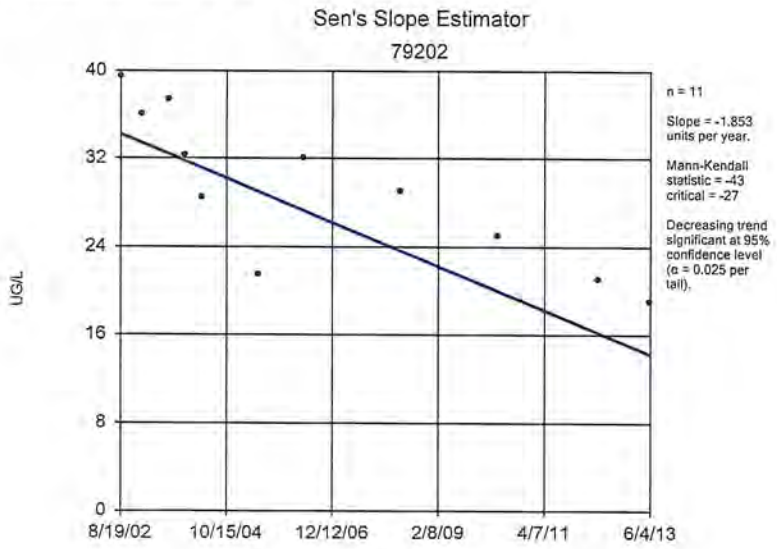


Constituent: Trichloroethene Analysis Run 3/10/2014 6:20 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro

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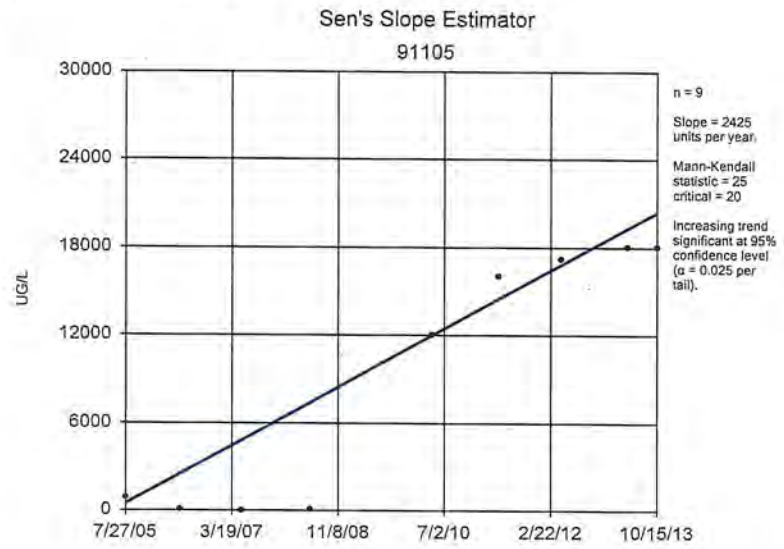


Constituent: Trichloroethene Analysis Run 3/10/2014 6:20 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro

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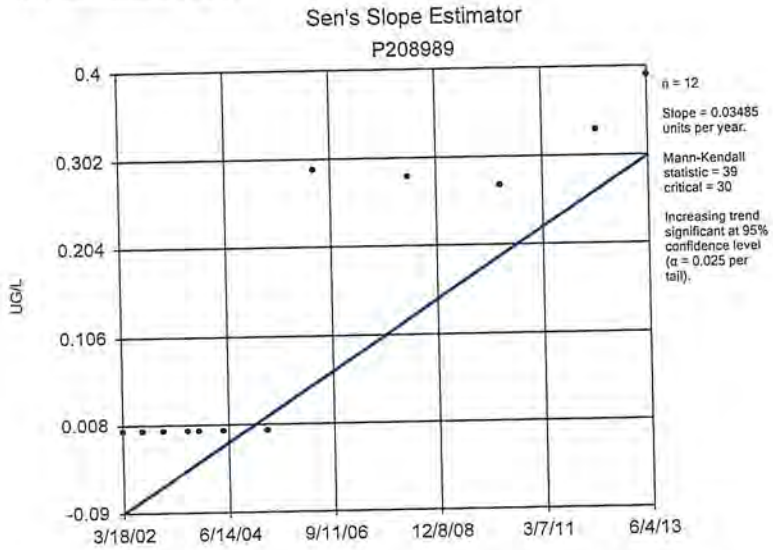
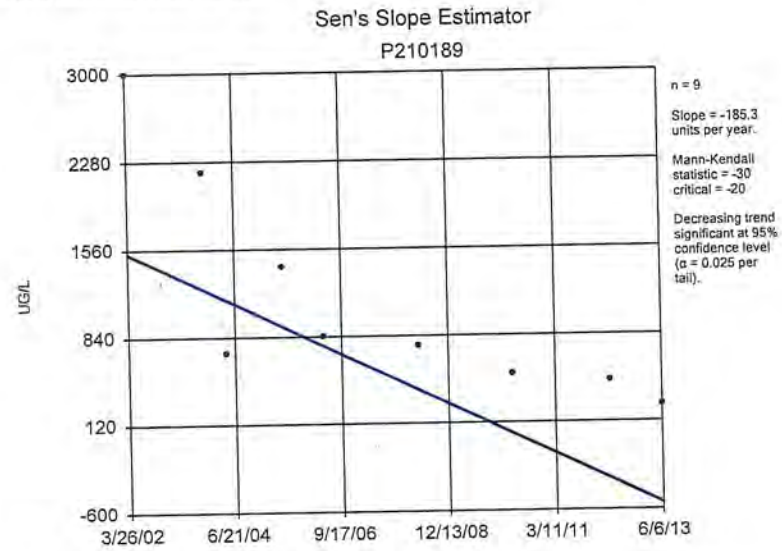


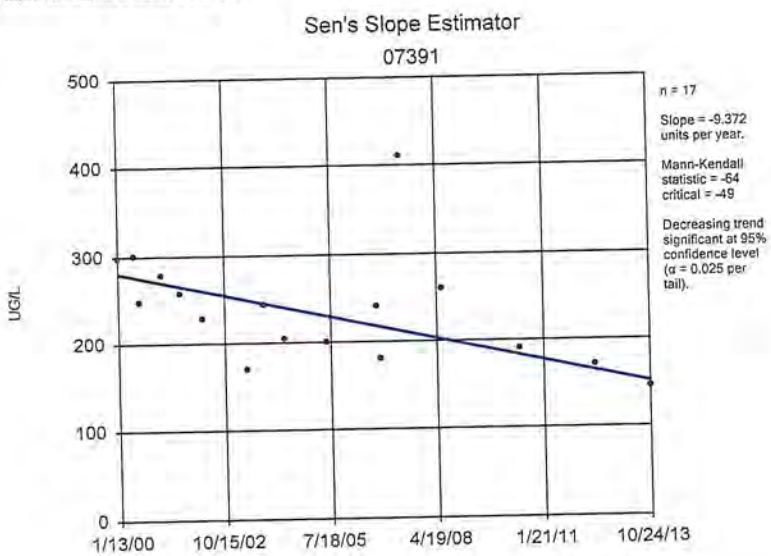

Constituent: Trichloroethene Analysis Run 3/10/2014 6:20 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



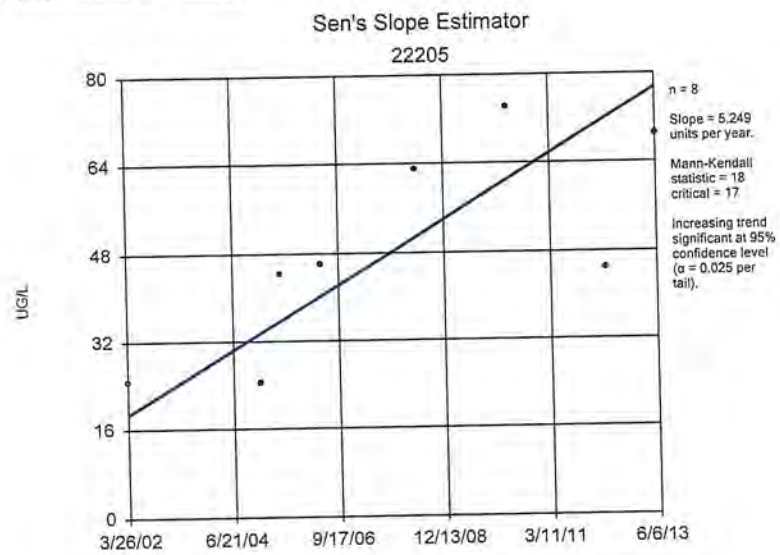

Constituent: Trichloroethene Analysis Run 3/10/2014 6:20 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



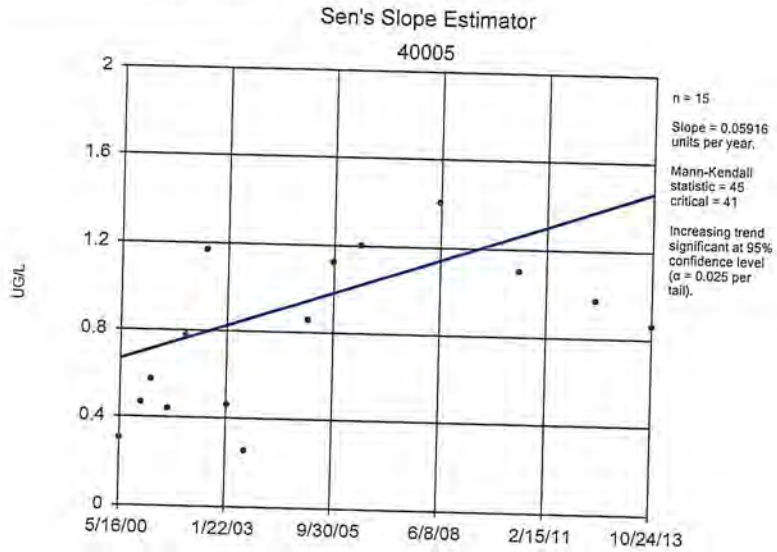

Constituent: URANIUM Analysis Run 3/10/2014 6:20 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



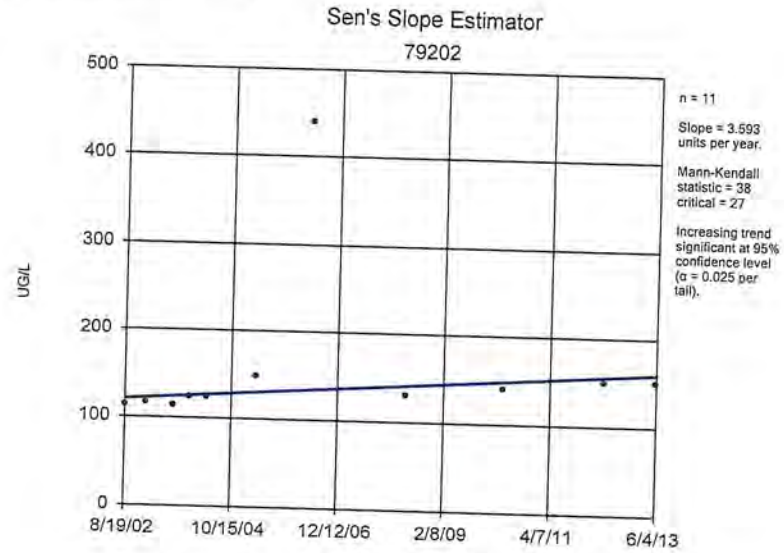

Constituent: URANIUM Analysis Run 3/10/2014 6:20 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



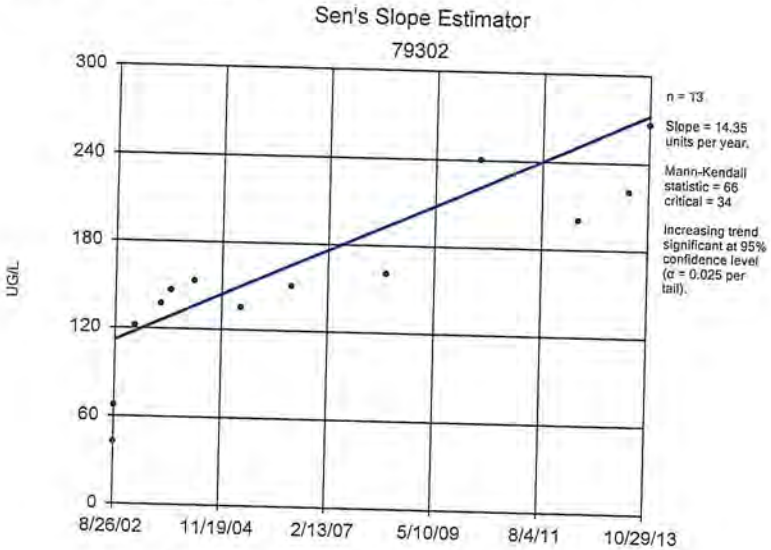

Constituent: URANIUM Analysis Run 3/10/2014 6:20 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



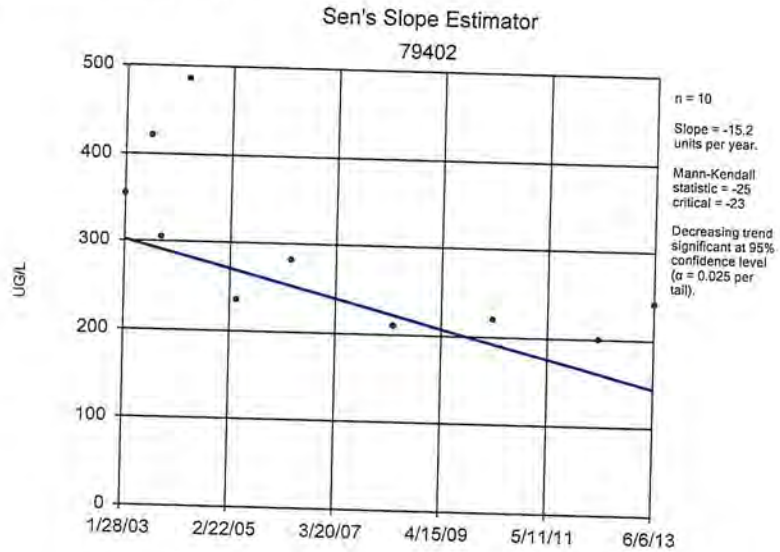

Constituent: URANIUM Analysis Run 3/10/2014 6:20 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



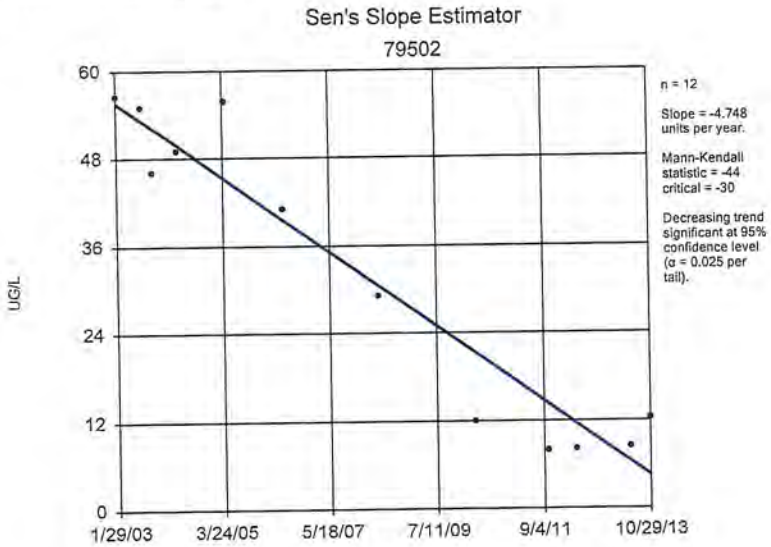

Constituent: URANIUM Analysis Run 3/10/2014 6:20 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



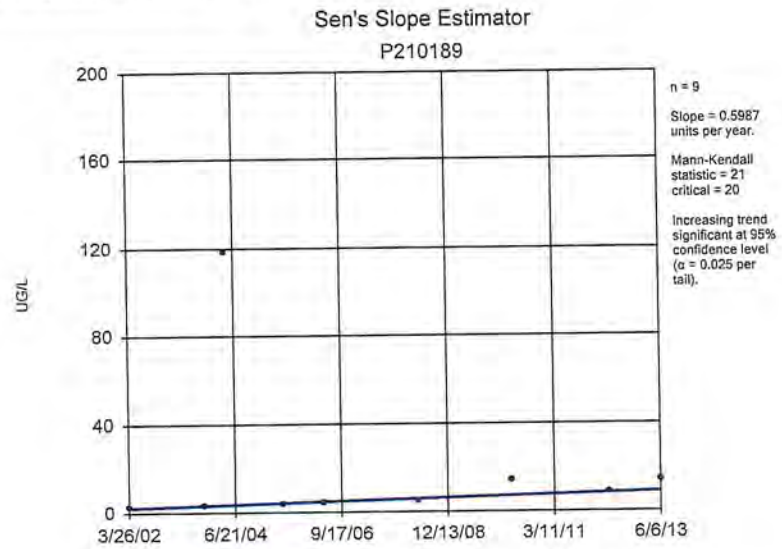

Constituent: URANIUM Analysis Run 3/10/2014 6:20 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA




Constituent: URANIUM Analysis Run 3/10/2014 6:20 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA




Constituent: URANIUM Analysis Run 3/10/2014 6:20 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro

# Selected Evaluation Wells: Trend Test

Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro Printed 3/10/2014, 6:21 PM

| Constituent | Well | Slope | Calc. | Critical | Sig. | N | %NDs | Normality | Xform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane (UG/L) | 00203 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,1-Trichloroethane (UG/L) | 07391 | -7.972 | -25 | -53 | No | 18 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,1-Trichloroethane (UG/L) | 18199 | 0 | 19 | 66 | No | 21 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,1-Trichloroethane (UG/L) | 20902 | 0 | 0 | 41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,1-Trichloroethane (UG/L) | 22205 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,1-Trichloroethane (UG/L) | 33502 | 0.005912 | 3 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,1-Trichloroethane (UG/L) | 33604 | 0 | 0 | 34 | No | 13 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,1-Trichloroethane (UG/L) | 40005 | 2.807 | 14 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,1-Trichloroethane (UG/L) | 79102 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,1-Trichloroethane (UG/L) | 79202 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| **1,1,1-Trichloroethane (UG/L)** | **91105** | **-417.6** | **-21** | **-20** | **Yes** | **9** | **0** | **n/a** | **n/a** | **0.05** | **NP** |
| 1,1,1-Trichloroethane (UG/L) | P208989 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,1-Trichloroethane (UG/L) | P210189 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,2,2-Tetrachloroethane (UG/L) | 00203 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,2,2-Tetrachloroethane (UG/L) | 07391 | 0 | 0 | 53 | No | 18 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,2,2-Tetrachloroethane (UG/L) | 18199 | 0 | 14 | 66 | No | 21 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,2,2-Tetrachloroethane (UG/L) | 20902 | 0 | 0 | 41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,2,2-Tetrachloroethane (UG/L) | 22205 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,2,2-Tetrachloroethane (UG/L) | 33502 | 0 | 0 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,2,2-Tetrachloroethane (UG/L) | 33604 | 0 | 0 | 34 | No | 13 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,2,2-Tetrachloroethane (UG/L) | 40005 | 0 | 0 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,2,2-Tetrachloroethane (UG/L) | 79102 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,2,2-Tetrachloroethane (UG/L) | 79202 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,2,2-Tetrachloroethane (UG/L) | 91105 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,2,2-Tetrachloroethane (UG/L) | P208989 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,2,2-Tetrachloroethane (UG/L) | P210189 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,2-Trichloroethane (UG/L) | 00203 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,2-Trichloroethane (UG/L) | 07391 | 0 | -4 | -53 | No | 18 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,2-Trichloroethane (UG/L) | 18199 | 0 | 0 | 66 | No | 21 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,2-Trichloroethane (UG/L) | 20902 | 0 | 0 | 41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,2-Trichloroethane (UG/L) | 22205 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,2-Trichloroethane (UG/L) | 33502 | 0 | 0 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,2-Trichloroethane (UG/L) | 33604 | 0 | -12 | -34 | No | 13 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,2-Trichloroethane (UG/L) | 40005 | 0 | 7 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,2-Trichloroethane (UG/L) | 79102 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,2-Trichloroethane (UG/L) | 79202 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,2-Trichloroethane (UG/L) | 91105 | 0 | 4 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,2-Trichloroethane (UG/L) | P208989 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| 1,1,2-Trichloroethane (UG/L) | P210189 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| 1,1-Dichloroethene (UG/L) | 00203 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |

# Selected Evaluation Wells: Trend Test

Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro Printed 3/10/2014, 6:21 PM

| Constituent | Well | Slope | Calc. | Critical | Sig. | N | %NDs | Normality | Xform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene (UG/L) | 07391 | 4.647 | 36 | 53 | No | 18 | 0 | n/a | n/a | 0.05 | NP |
| 1,1-Dichloroethene (UG/L) | 18199 | 0 | 31 | 66 | No | 21 | 0 | n/a | n/a | 0.05 | NP |
| 1,1-Dichloroethene (UG/L) | 20902 | 0 | 0 | 41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| 1,1-Dichloroethene (UG/L) | 22205 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| 1,1-Dichloroethene (UG/L) | 33502 | 0 | 6 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| 1,1-Dichloroethene (UG/L) | 33604 | -0.4799 | -19 | -34 | No | 13 | 0 | n/a | n/a | 0.05 | NP |
| 1,1-Dichloroethene (UG/L) | 40005 | 21.78 | 13 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| 1,1-Dichloroethene (UG/L) | 79102 | 0.00747 | 10 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| 1,1-Dichloroethene (UG/L) | 79202 | 0 | 3 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| 1,1-Dichloroethene (UG/L) | 91105 | -35.17 | -16 | -20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| 1,1-Dichloroethene (UG/L) | P208989 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| 1,1-Dichloroethene (UG/L) | P210189 | -0.08046 | -10 | -20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| 1,2,4-Trichlorobenzene (UG/L) | 00203 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| 1,2,4-Trichlorobenzene (UG/L) | 07391 | 0 | 0 | 53 | No | 18 | 0 | n/a | n/a | 0.05 | NP |
| 1,2,4-Trichlorobenzene (UG/L) | 18199 | 0 | 0 | 66 | No | 21 | 0 | n/a | n/a | 0.05 | NP |
| 1,2,4-Trichlorobenzene (UG/L) | 20902 | 0 | 0 | 41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| 1,2,4-Trichlorobenzene (UG/L) | 22205 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| **1,2,4-Trichlorobenzene (UG/L)** | **33502** | **-0.4864** | **-83** | **-45** | **Yes** | **16** | **0** | **n/a** | **n/a** | **0.05** | **NP** |
| 1,2,4-Trichlorobenzene (UG/L) | 33604 | 0 | 0 | 34 | No | 13 | 0 | n/a | n/a | 0.05 | NP |
| 1,2,4-Trichlorobenzene (UG/L) | 40005 | 0 | 0 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| 1,2,4-Trichlorobenzene (UG/L) | 79102 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| 1,2,4-Trichlorobenzene (UG/L) | 79202 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| 1,2,4-Trichlorobenzene (UG/L) | 91105 | 0 | 13 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| 1,2,4-Trichlorobenzene (UG/L) | P208989 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| 1,2,4-Trichlorobenzene (UG/L) | P210189 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dibromo-3-chloropropane (ug/L) | 00203 | 0 | 0 | 10 | No | 5 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dibromo-3-chloropropane (ug/L) | 07391 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dibromo-3-chloropropane (ug/L) | 18199 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dibromo-3-chloropropane (ug/L) | 20902 | 0 | 0 | 10 | No | 5 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dibromo-3-chloropropane (ug/L) | 22205 | 0 | 0 | 10 | No | 5 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dibromo-3-chloropropane (ug/L) | 33502 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dibromo-3-chloropropane (ug/L) | 33604 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dibromo-3-chloropropane (ug/L) | 40005 | 0 | 0 | 10 | No | 5 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dibromo-3-chloropropane (ug/L) | 79102 | 0 | 0 | 12 | No | 6 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dibromo-3-chloropropane (ug/L) | 79202 | 0 | 0 | 10 | No | 5 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dibromo-3-chloropropane (ug/L) | 91105 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dibromo-3-chloropropane (ug/L) | P208989 | 0 | 0 | 10 | No | 5 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dibromo-3-chloropropane (ug/L) | P210189 | 0 | 0 | 10 | No | 5 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dibromoethane (UG/L) | 00203 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dibromoethane (UG/L) | 07391 | 0 | 0 | 53 | No | 18 | 0 | n/a | n/a | 0.05 | NP |

# Selected Evaluation Wells: Trend Test



Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro Printed 3/10/2014, 6:21 PM

| Constituent | Well | Slope | Calc. | Critical | Sig. | N | %NDs | Normality | Xform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,2-Dibromoethane (UG/L) | 18199 | 0 | 0 | 66 | No | 21 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dibromoethane (UG/L) | 20902 | 0 | 0 | 41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dibromoethane (UG/L) | 22205 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dibromoethane (UG/L) | 33502 | 0 | 0 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dibromoethane (UG/L) | 33604 | 0 | 0 | 34 | No | 13 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dibromoethane (UG/L) | 40005 | 0 | 0 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dibromoethane (UG/L) | 79102 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dibromoethane (UG/L) | 79202 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dibromoethane (UG/L) | 91105 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dibromoethane (UG/L) | P208989 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dibromoethane (UG/L) | P210189 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichlorobenzene (UG/L) | 00203 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichlorobenzene (UG/L) | 07391 | 0 | 0 | 53 | No | 18 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichlorobenzene (UG/L) | 18199 | 0 | 0 | 66 | No | 21 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichlorobenzene (UG/L) | 20902 | 0 | 0 | 41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichlorobenzene (UG/L) | 22205 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichlorobenzene (UG/L) | 33502 | -0.2074 | -34 | -45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichlorobenzene (UG/L) | 33604 | 0 | 12 | 34 | No | 13 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichlorobenzene (UG/L) | 40005 | 0 | 0 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichlorobenzene (UG/L) | 79102 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichlorobenzene (UG/L) | 79202 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichlorobenzene (UG/L) | 91105 | 0 | 4 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichlorobenzene (UG/L) | P208989 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichlorobenzene (UG/L) | P210189 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichloroethane (UG/L) | 00203 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichloroethane (UG/L) | 07391 | 0 | -3 | -53 | No | 18 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichloroethane (UG/L) | 18199 | 0 | 11 | 66 | No | 21 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichloroethane (UG/L) | 20902 | 0 | 0 | 41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichloroethane (UG/L) | 22205 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichloroethane (UG/L) | 33502 | 0 | 0 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichloroethane (UG/L) | 33604 | 0 | -1 | -34 | No | 13 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichloroethane (UG/L) | 40005 | 0 | 1 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichloroethane (UG/L) | 79102 | 0 | 4 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichloroethane (UG/L) | 79202 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichloroethane (UG/L) | 91105 | 0 | -5 | -20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichloroethane (UG/L) | P208989 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichloroethane (UG/L) | P210189 | 0.1411 | 14 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichloropropane (UG/L) | 00203 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichloropropane (UG/L) | 07391 | 0 | -3 | -53 | No | 18 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichloropropane (UG/L) | 18199 | 0 | 19 | 66 | No | 21 | 0 | n/a | n/a | 0.05 | NP |

# Selected Evaluation Wells: Trend Test

Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro Printed 3/10/2014, 6:21 PM

| Constituent | Well | Slope | Calc. | Critical | Sig. | N | %NDs | Normality | Xform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,2-Dichloropropane (UG/L) | 20902 | 0 | 10 | 41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichloropropane (UG/L) | 22205 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichloropropane (UG/L) | 33502 | 0 | 32 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichloropropane (UG/L) | 33604 | 0 | 0 | 34 | No | 13 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichloropropane (UG/L) | 40005 | 0 | 0 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichloropropane (UG/L) | 79102 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichloropropane (UG/L) | 79202 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichloropropane (UG/L) | 91105 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichloropropane (UG/L) | P208989 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| 1,2-Dichloropropane (UG/L) | P210189 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| 1,3-Dichlorobenzene (UG/L) | 00203 | 0 | 9 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| 1,3-Dichlorobenzene (UG/L) | 07391 | 0 | 0 | 53 | No | 18 | 0 | n/a | n/a | 0.05 | NP |
| 1,3-Dichlorobenzene (UG/L) | 18199 | 0 | 12 | 66 | No | 21 | 0 | n/a | n/a | 0.05 | NP |
| 1,3-Dichlorobenzene (UG/L) | 20902 | 0 | 10 | 41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| 1,3-Dichlorobenzene (UG/L) | 22205 | 0 | 7 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| 1,3-Dichlorobenzene (UG/L) | 33502 | -0.3047 | -28 | -45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| 1,3-Dichlorobenzene (UG/L) | 33604 | 0 | -4 | -34 | No | 13 | 0 | n/a | n/a | 0.05 | NP |
| 1,3-Dichlorobenzene (UG/L) | 40005 | 0 | 0 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| 1,3-Dichlorobenzene (UG/L) | 79102 | 0 | 9 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| 1,3-Dichlorobenzene (UG/L) | 79202 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| 1,3-Dichlorobenzene (UG/L) | 91105 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| 1,3-Dichlorobenzene (UG/L) | P208989 | 0 | 19 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| 1,3-Dichlorobenzene (UG/L) | P210189 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| 1,4-Dichlorobenzene (UG/L) | 00203 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| 1,4-Dichlorobenzene (UG/L) | 07391 | 0 | 0 | 53 | No | 18 | 0 | n/a | n/a | 0.05 | NP |
| 1,4-Dichlorobenzene (UG/L) | 18199 | 0 | 0 | 66 | No | 21 | 0 | n/a | n/a | 0.05 | NP |
| 1,4-Dichlorobenzene (UG/L) | 20902 | 0 | 0 | 41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| 1,4-Dichlorobenzene (UG/L) | 22205 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| 1,4-Dichlorobenzene (UG/L) | 33502 | -1.655 | -26 | -41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| 1,4-Dichlorobenzene (UG/L) | 33604 | -0.5628 | -24 | -34 | No | 13 | 0 | n/a | n/a | 0.05 | NP |
| 1,4-Dichlorobenzene (UG/L) | 40005 | 0 | 0 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| 1,4-Dichlorobenzene (UG/L) | 79102 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| 1,4-Dichlorobenzene (UG/L) | 79202 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| 1,4-Dichlorobenzene (UG/L) | 91105 | 0 | 4 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| 1,4-Dichlorobenzene (UG/L) | P208989 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| 1,4-Dichlorobenzene (UG/L) | P210189 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| 2,4,5-TRICHLOROPHENOL (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| 2,4,6-TRICHLOROPHENOL (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| 2,4-DICHLOROPHENOL (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| 2,4-DIMETHYLPHENOL (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |

# Selected Evaluation Wells: Trend Test



Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro Printed 3/10/2014, 6:21 PM

| Constituent | Well | Slope | Calc. | Critical | Sig. | N | %NDs | Normality | Xform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,4-DINITROPHENOL (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| 2,4-DINITROTOLUENE (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| 2,6-DINITROTOLUENE (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| 2-CHLORONAPHTHALENE (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| 2-CHLOROPHENOL (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| 3,3`-DICHLOROBENZIDINE (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| 4,6-DINITRO-2-METHYLPHENOL (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| 4-CHLORO-3-METHYLPHENOL (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| 4-NITROPHENOL (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| ACENAPHTHENE (UG/L) | 33502 | 1.647 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| ANTHRACENE (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| Benzene (UG/L) | 00203 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| Benzene (UG/L) | 07391 | 0 | -8 | -53 | No | 18 | 0 | n/a | n/a | 0.05 | NP |
| Benzene (UG/L) | 18199 | 0 | 0 | 66 | No | 21 | 0 | n/a | n/a | 0.05 | NP |
| Benzene (UG/L) | 20902 | 0 | 0 | 41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| Benzene (UG/L) | 22205 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| Benzene (UG/L) | 33502 | 0 | 4 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| Benzene (UG/L) | 33604 | 0 | 12 | 34 | No | 13 | 0 | n/a | n/a | 0.05 | NP |
| Benzene (UG/L) | 40005 | 0 | 0 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| Benzene (UG/L) | 79102 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| Benzene (UG/L) | 79202 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| Benzene (UG/L) | 91105 | 0 | 4 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| Benzene (UG/L) | P208989 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| Benzene (UG/L) | P210189 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| BENZO[a]ANTHRACENE (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| BENZO[a]PYRENE (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| BENZO[b]FLUORANTHENE (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| BENZO[ghi]PERYLENE (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| BENZO[k]FLUORANTHENE (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| BIS[2-CHLOROETHYL]ETHER (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| BIS[2-ETHYLHEXYL]PHTHALATE (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| BIS-CHLOROISOPROPYL ETHER (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| Bromodichloromethane (UG/L) | 00203 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| Bromodichloromethane (UG/L) | 07391 | 0 | -3 | -53 | No | 18 | 0 | n/a | n/a | 0.05 | NP |
| Bromodichloromethane (UG/L) | 18199 | 0 | -2 | -66 | No | 21 | 0 | n/a | n/a | 0.05 | NP |
| Bromodichloromethane (UG/L) | 20902 | 0 | 0 | 41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| Bromodichloromethane (UG/L) | 22205 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| Bromodichloromethane (UG/L) | 33502 | 0 | 0 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| Bromodichloromethane (UG/L) | 33604 | 0 | 0 | 34 | No | 13 | 0 | n/a | n/a | 0.05 | NP |
| Bromodichloromethane (UG/L) | 40005 | 0 | 0 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |

# Selected Evaluation Wells: Trend Test

Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro Printed 3/10/2014, 6:21 PM

| Constituent | Well | Slope | Calc. | Critical | Sig. | N | %NDs | Normality | Xform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Bromodichloromethane (UG/L) | 79102 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| Bromodichloromethane (UG/L) | 79202 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| Bromodichloromethane (UG/L) | 91105 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| Bromodichloromethane (UG/L) | P208989 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| Bromodichloromethane (UG/L) | P210189 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| Bromoform (UG/L) | 00203 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| Bromoform (UG/L) | 07391 | 0 | -3 | -53 | No | 18 | 0 | n/a | n/a | 0.05 | NP |
| Bromoform (UG/L) | 18199 | 0 | 0 | 66 | No | 21 | 0 | n/a | n/a | 0.05 | NP |
| Bromoform (UG/L) | 20902 | 0 | 8 | 41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| Bromoform (UG/L) | 22205 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| Bromoform (UG/L) | 33502 | 0 | 0 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| Bromoform (UG/L) | 33604 | 0 | 0 | 34 | No | 13 | 0 | n/a | n/a | 0.05 | NP |
| Bromoform (UG/L) | 40005 | 0 | 0 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| Bromoform (UG/L) | 79102 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| Bromoform (UG/L) | 79202 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| Bromoform (UG/L) | 91105 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| Bromoform (UG/L) | P208989 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| Bromoform (UG/L) | P210189 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| Bromomethane (UG/L) | 00203 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| Bromomethane (UG/L) | 07391 | 0 | 0 | 53 | No | 18 | 0 | n/a | n/a | 0.05 | NP |
| Bromomethane (UG/L) | 18199 | 0 | 0 | 66 | No | 21 | 0 | n/a | n/a | 0.05 | NP |
| Bromomethane (UG/L) | 20902 | 0 | 0 | 41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| Bromomethane (UG/L) | 22205 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| Bromomethane (UG/L) | 33502 | 0 | 0 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| Bromomethane (UG/L) | 33604 | 0 | 0 | 34 | No | 13 | 0 | n/a | n/a | 0.05 | NP |
| Bromomethane (UG/L) | 40005 | 0 | 0 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| Bromomethane (UG/L) | 79102 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| Bromomethane (UG/L) | 79202 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| Bromomethane (UG/L) | 91105 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| Bromomethane (UG/L) | P208989 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| Bromomethane (UG/L) | P210189 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| BUTYL BENZYL PHTHALATE (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| Carbon tetrachloride (UG/L) | 00203 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| Carbon tetrachloride (UG/L) | 07391 | 0 | -17 | -53 | No | 18 | 0 | n/a | n/a | 0.05 | NP |
| **Carbon tetrachloride (UG/L)** | **18199** | **-1927** | **-114** | **-66** | **Yes** | **21** | **0** | **n/a** | **n/a** | **0.05** | **NP** |
| Carbon tetrachloride (UG/L) | 20902 | -7.78 | -4 | -41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| Carbon tetrachloride (UG/L) | 22205 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| Carbon tetrachloride (UG/L) | 33502 | 0 | -7 | -45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| Carbon tetrachloride (UG/L) | 33604 | 0 | 0 | 34 | No | 13 | 0 | n/a | n/a | 0.05 | NP |
| Carbon tetrachloride (UG/L) | 40005 | 0 | 0 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |

# Selected Evaluation Wells: Trend Test



Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro Printed 3/10/2014, 6:21 PM

| Constituent | Well | Slope | Calc. | Critical | Sig. | N | %NDs | Normality | Xform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Carbon tetrachloride (UG/L) | 79102 | -3.76 | -8 | -27 | No | 11 | 0 | n/a | n/a | 0.05 | NP |
| **Carbon tetrachloride (UG/L)** | **79202** | **-1.838** | **-41** | **-23** | **Yes** | **10** | **0** | **n/a** | **n/a** | **0.05** | **NP** |
| Carbon tetrachloride (UG/L) | 91105 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| Carbon tetrachloride (UG/L) | P208989 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| **Carbon tetrachloride (UG/L)** | **P210189** | **-338** | **-28** | **-20** | **Yes** | **9** | **0** | **n/a** | **n/a** | **0.05** | **NP** |
| Chlorobenzene (UG/L) | 00203 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| Chlorobenzene (UG/L) | 07391 | 0 | 0 | 53 | No | 18 | 0 | n/a | n/a | 0.05 | NP |
| Chlorobenzene (UG/L) | 18199 | 0 | 0 | 66 | No | 21 | 0 | n/a | n/a | 0.05 | NP |
| Chlorobenzene (UG/L) | 20902 | 0 | 0 | 41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| Chlorobenzene (UG/L) | 22205 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| Chlorobenzene (UG/L) | 33502 | -0.00... | -23 | -45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| Chlorobenzene (UG/L) | 33604 | 0 | -1 | -34 | No | 13 | 0 | n/a | n/a | 0.05 | NP |
| Chlorobenzene (UG/L) | 40005 | 0 | 0 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| Chlorobenzene (UG/L) | 79102 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| Chlorobenzene (UG/L) | 79202 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| Chlorobenzene (UG/L) | 91105 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| Chlorobenzene (UG/L) | P208989 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| Chlorobenzene (UG/L) | P210189 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| Chlorodibromomethane (ug/L) | 00203 | 0 | 0 | 10 | No | 5 | 0 | n/a | n/a | 0.05 | NP |
| Chlorodibromomethane (ug/L) | 07391 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| Chlorodibromomethane (ug/L) | 18199 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| Chlorodibromomethane (ug/L) | 20902 | 0 | 0 | 10 | No | 5 | 0 | n/a | n/a | 0.05 | NP |
| Chlorodibromomethane (ug/L) | 22205 | 0 | 0 | 10 | No | 5 | 0 | n/a | n/a | 0.05 | NP |
| Chlorodibromomethane (ug/L) | 33502 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| Chlorodibromomethane (ug/L) | 33604 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| Chlorodibromomethane (ug/L) | 40005 | 0 | 0 | 10 | No | 5 | 0 | n/a | n/a | 0.05 | NP |
| Chlorodibromomethane (ug/L) | 79102 | 0 | 0 | 12 | No | 6 | 0 | n/a | n/a | 0.05 | NP |
| Chlorodibromomethane (ug/L) | 79202 | 0 | 0 | 10 | No | 5 | 0 | n/a | n/a | 0.05 | NP |
| Chlorodibromomethane (ug/L) | 91105 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| Chlorodibromomethane (ug/L) | P208989 | 0 | 0 | 10 | No | 5 | 0 | n/a | n/a | 0.05 | NP |
| Chlorodibromomethane (ug/L) | P210189 | 0 | 0 | 10 | No | 5 | 0 | n/a | n/a | 0.05 | NP |
| Chloroform (UG/L) | 00203 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| **Chloroform (UG/L)** | **07391** | **-48.27** | **-55** | **-53** | **Yes** | **18** | **0** | **n/a** | **n/a** | **0.05** | **NP** |
| **Chloroform (UG/L)** | **18199** | **-306.8** | **-94** | **-66** | **Yes** | **21** | **0** | **n/a** | **n/a** | **0.05** | **NP** |
| Chloroform (UG/L) | 20902 | -5.002 | -22 | -41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| Chloroform (UG/L) | 22205 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| Chloroform (UG/L) | 33502 | 0 | 0 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| Chloroform (UG/L) | 33604 | 0 | 0 | 34 | No | 13 | 0 | n/a | n/a | 0.05 | NP |
| Chloroform (UG/L) | 40005 | 0 | -12 | -45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| Chloroform (UG/L) | 79102 | 1.628 | 24 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |

# Selected Evaluation Wells: Trend Test

Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro Printed 3/10/2014, 6:21 PM

| Constituent | Well | Slope | Calc. | Critical | Sig. | N | %NDs | Normality | Xform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Chloroform (UG/L)** | **79202** | **-0.6358** | **-41** | **-23** | **Yes** | **10** | **0** | **n/a** | **n/a** | **0.05** | **NP** |
| Chloroform (UG/L) | 91105 | -23.63 | -13 | -20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| **Chloroform (UG/L)** | **P208989** | **0.03347** | **32** | **30** | **Yes** | **12** | **0** | **n/a** | **n/a** | **0.05** | **NP** |
| **Chloroform (UG/L)** | **P210189** | **-9.742** | **-26** | **-20** | **Yes** | **9** | **0** | **n/a** | **n/a** | **0.05** | **NP** |
| Chloromethane (UG/L) | 00203 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| Chloromethane (UG/L) | 07391 | 0 | 0 | 53 | No | 18 | 0 | n/a | n/a | 0.05 | NP |
| Chloromethane (UG/L) | 18199 | 0 | 8 | 66 | No | 21 | 0 | n/a | n/a | 0.05 | NP |
| Chloromethane (UG/L) | 20902 | 0 | 0 | 41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| Chloromethane (UG/L) | 22205 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| Chloromethane (UG/L) | 33502 | 0 | 0 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| Chloromethane (UG/L) | 33604 | 0 | 0 | 34 | No | 13 | 0 | n/a | n/a | 0.05 | NP |
| Chloromethane (UG/L) | 40005 | 0 | 0 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| Chloromethane (UG/L) | 79102 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| Chloromethane (UG/L) | 79202 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| Chloromethane (UG/L) | 91105 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| Chloromethane (UG/L) | P208989 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| Chloromethane (UG/L) | P210189 | 0 | -6 | -20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| CHRYSENE (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| cis-1,2-Dichloroethene (UG/L) | 00203 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| **cis-1,2-Dichloroethene (UG/L)** | **07391** | **12** | **76** | **53** | **Yes** | **18** | **0** | **n/a** | **n/a** | **0.05** | **NP** |
| cis-1,2-Dichloroethene (UG/L) | 18199 | 0 | 19 | 66 | No | 21 | 0 | n/a | n/a | 0.05 | NP |
| cis-1,2-Dichloroethene (UG/L) | 20902 | 0 | 0 | 41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| cis-1,2-Dichloroethene (UG/L) | 22205 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| cis-1,2-Dichloroethene (UG/L) | 33502 | 145.9 | 36 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| cis-1,2-Dichloroethene (UG/L) | 33604 | -152.9 | -21 | -30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| cis-1,2-Dichloroethene (UG/L) | 40005 | 11.06 | 7 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| cis-1,2-Dichloroethene (UG/L) | 79102 | 0.001339 | 1 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| cis-1,2-Dichloroethene (UG/L) | 79202 | -0.02957 | -5 | -23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| **cis-1,2-Dichloroethene (UG/L)** | **91105** | **-4106** | **-28** | **-20** | **Yes** | **9** | **0** | **n/a** | **n/a** | **0.05** | **NP** |
| cis-1,2-Dichloroethene (UG/L) | P208989 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| **cis-1,2-Dichloroethene (UG/L)** | **P210189** | **-3.542** | **-32** | **-20** | **Yes** | **9** | **0** | **n/a** | **n/a** | **0.05** | **NP** |
| DIBENZO[a,h]ANTHRACENE (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| DIBROMOCHLOROMETHANE (UG/L) | 00203 | 0 | 0 | 10 | No | 5 | 0 | n/a | n/a | 0.05 | NP |
| DIBROMOCHLOROMETHANE (UG/L) | 07391 | 0 | 5 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| DIBROMOCHLOROMETHANE (UG/L) | 18199 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| DIBROMOCHLOROMETHANE (UG/L) | 20902 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| DIBROMOCHLOROMETHANE (UG/L) | 22205 | 0 | NaN | NaN | No | 3 | 0 | n/a | n/a | NaN | NP |
| DIBROMOCHLOROMETHANE (UG/L) | 33502 | 0 | 0 | 15 | No | 7 | 0 | n/a | n/a | 0.05 | NP |
| DIBROMOCHLOROMETHANE (UG/L) | 33604 | 0 | 0 | 8 | No | 4 | 0 | n/a | n/a | 0.05 | NP |
| DIBROMOCHLOROMETHANE (UG/L) | 40005 | 0 | 0 | 27 | No | 11 | 0 | n/a | n/a | 0.05 | NP |

# Selected Evaluation Wells: Trend Test



Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro Printed 3/10/2014, 6:21 PM

| Constituent | Well | Slope | Calc. | Critical | Sig. | N | %NDs | Normality | Xform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DIBROMOCHLOROMETHANE (UG/L) | 79102 | 0 | 0 | 12 | No | 6 | 0 | n/a | n/a | 0.05 | NP |
| DIBROMOCHLOROMETHANE (UG/L) | 79202 | 0 | 0 | 10 | No | 5 | 0 | n/a | n/a | 0.05 | NP |
| DIBROMOCHLOROMETHANE (UG/L) | P208989 | 0 | 0 | 15 | No | 7 | 0 | n/a | n/a | 0.05 | NP |
| DIBROMOCHLOROMETHANE (UG/L) | P210189 | 0 | 0 | 8 | No | 4 | 0 | n/a | n/a | 0.05 | NP |
| DIETHYL PHTHALATE (UG/L) | 33502 | 8.779 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| DIMETHYL PHTHALATE (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| DI-n-BUTYL PHTHALATE (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| Ethylbenzene (UG/L) | 00203 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| Ethylbenzene (UG/L) | 07391 | 0 | -1 | -45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| Ethylbenzene (UG/L) | 18199 | 0 | 0 | 58 | No | 19 | 0 | n/a | n/a | 0.05 | NP |
| Ethylbenzene (UG/L) | 20902 | 0 | 0 | 37 | No | 14 | 0 | n/a | n/a | 0.05 | NP |
| Ethylbenzene (UG/L) | 22205 | 0 | 0 | 15 | No | 7 | 0 | n/a | n/a | 0.05 | NP |
| Ethylbenzene (UG/L) | 33502 | 0 | -9 | -37 | No | 14 | 0 | n/a | n/a | 0.05 | NP |
| Ethylbenzene (UG/L) | 33604 | 0 | 0 | 27 | No | 11 | 0 | n/a | n/a | 0.05 | NP |
| Ethylbenzene (UG/L) | 40005 | 0 | 0 | 41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| Ethylbenzene (UG/L) | 79102 | 0 | 0 | 27 | No | 11 | 0 | n/a | n/a | 0.05 | NP |
| Ethylbenzene (UG/L) | 79202 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| Ethylbenzene (UG/L) | 91105 | 0 | 2 | 15 | No | 7 | 0 | n/a | n/a | 0.05 | NP |
| Ethylbenzene (UG/L) | P208989 | 0 | 0 | 27 | No | 11 | 0 | n/a | n/a | 0.05 | NP |
| Ethylbenzene (UG/L) | P210189 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| FLUORANTHENE (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| FLUORENE (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| HEXACHLOROBENZENE (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| Hexachlorobutadiene (UG/L) | 00203 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| Hexachlorobutadiene (UG/L) | 07391 | 0 | 0 | 53 | No | 18 | 0 | n/a | n/a | 0.05 | NP |
| Hexachlorobutadiene (UG/L) | 18199 | 0 | 17 | 66 | No | 21 | 0 | n/a | n/a | 0.05 | NP |
| Hexachlorobutadiene (UG/L) | 20902 | 0 | 0 | 41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| Hexachlorobutadiene (UG/L) | 22205 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| Hexachlorobutadiene (UG/L) | 33502 | 0 | 0 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| Hexachlorobutadiene (UG/L) | 33604 | 0 | 0 | 34 | No | 13 | 0 | n/a | n/a | 0.05 | NP |
| Hexachlorobutadiene (UG/L) | 40005 | 0 | 0 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| Hexachlorobutadiene (UG/L) | 79102 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| Hexachlorobutadiene (UG/L) | 79202 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| Hexachlorobutadiene (UG/L) | 91105 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| Hexachlorobutadiene (UG/L) | P208989 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| Hexachlorobutadiene (UG/L) | P210189 | 0 | -4 | -20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| HEXACHLOROCYCLOPENTADIENE (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| HEXACHLOROETHANE (UG/L) | 18199 | -9.724 | NaN | NaN | No | 3 | 0 | n/a | n/a | NaN | NP |
| HEXACHLOROETHANE (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| INDENO[1,2,3-cd]PYRENE (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |

# Selected Evaluation Wells: Trend Test

Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro Printed 3/10/2014, 6:21 PM

| Constituent | Well | Slope | Calc. | Critical | Sig. | N | %NDs | Normality | Xform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ISOPHORONE (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| Methylene chloride (UG/L) | 00203 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| Methylene chloride (UG/L) | 07391 | 0 | -48 | -53 | No | 18 | 0 | n/a | n/a | 0.05 | NP |
| Methylene chloride (UG/L) | 18199 | -0.7256 | -53 | -66 | No | 21 | 0 | n/a | n/a | 0.05 | NP |
| Methylene chloride (UG/L) | 20902 | 0 | -23 | -41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| Methylene chloride (UG/L) | 22205 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| Methylene chloride (UG/L) | 33502 | 0 | -11 | -45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| Methylene chloride (UG/L) | 33604 | 0 | 0 | 34 | No | 13 | 0 | n/a | n/a | 0.05 | NP |
| Methylene chloride (UG/L) | 40005 | 0 | -11 | -45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| Methylene chloride (UG/L) | 79102 | 0 | 1 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| Methylene chloride (UG/L) | 79202 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| Methylene chloride (UG/L) | 91105 | 0 | -7 | -20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| Methylene chloride (UG/L) | P208989 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| Methylene chloride (UG/L) | P210189 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| Naphthalene (UG/L) | 00203 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| Naphthalene (UG/L) | 07391 | 0 | 0 | 53 | No | 18 | 0 | n/a | n/a | 0.05 | NP |
| Naphthalene (UG/L) | 18199 | 0 | 0 | 66 | No | 21 | 0 | n/a | n/a | 0.05 | NP |
| Naphthalene (UG/L) | 20902 | 0 | 0 | 41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| Naphthalene (UG/L) | 22205 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| **Naphthalene (UG/L)** | **33502** | **-0.7435** | **-50** | **-45** | **Yes** | **16** | **0** | **n/a** | **n/a** | **0.05** | **NP** |
| Naphthalene (UG/L) | 33604 | 0 | -4 | -34 | No | 13 | 0 | n/a | n/a | 0.05 | NP |
| Naphthalene (UG/L) | 40005 | 0 | 0 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| Naphthalene (UG/L) | 79102 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| Naphthalene (UG/L) | 79202 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| Naphthalene (UG/L) | 91105 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| Naphthalene (UG/L) | P208989 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| Naphthalene (UG/L) | P210189 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| Nitrate + Nitrite as Nitrogen (MG/L) | 00203 | 0.1841 | 11 | 27 | No | 11 | 0 | n/a | n/a | 0.05 | NP |
| **Nitrate + Nitrite as Nitrogen (MG/L)** | **22205** | **5.008** | **23** | **17** | **Yes** | **8** | **0** | **n/a** | **n/a** | **0.05** | **NP** |
| Nitrate + Nitrite as Nitrogen (MG/L) | 51605 | 0.003372 | 42 | 90 | No | 26 | 0 | n/a | n/a | 0.05 | NP |
| Nitrate + Nitrite as Nitrogen (MG/L) | 79102 | -11.79 | -18 | -30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| Nitrate + Nitrite as Nitrogen (MG/L) | 79202 | 37.98 | 25 | 27 | No | 11 | 0 | n/a | n/a | 0.05 | NP |
| **Nitrate + Nitrite as Nitrogen (MG/L)** | **79302** | **165.5** | **36** | **30** | **Yes** | **12** | **0** | **n/a** | **n/a** | **0.05** | **NP** |
| Nitrate + Nitrite as Nitrogen (MG/L) | 79402 | -43.07 | -22 | -23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| **Nitrate + Nitrite as Nitrogen (MG/L)** | **79502** | **-17.38** | **-44** | **-30** | **Yes** | **12** | **0** | **n/a** | **n/a** | **0.05** | **NP** |
| Nitrate + Nitrite as Nitrogen (MG/L) | 79605 | 0.2307 | 11 | 27 | No | 11 | 0 | n/a | n/a | 0.05 | NP |
| Nitrate + Nitrite as Nitrogen (MG/L) | B210489 | 26.91 | 10 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| Nitrate + Nitrite as Nitrogen (MG/L) | P208989 | -27.47 | -29 | -30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| Nitrate + Nitrite as Nitrogen (MG/L) | P210189 | 3.157 | 18 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| NITROBENZENE (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |

# Selected Evaluation Wells: Trend Test



Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro Printed 3/10/2014, 6:21 PM

| Constituent | Well | Slope | Calc. | Critical | Sig. | N | %NDs | Normality | Xform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|
| N-NITROSO-DI-n-PROPYLAMINE (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| N-NITROSODIPHENYLAMINE (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| PENTACHLOROPHENOL (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| PHENOL (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| PROPANE, 1,2-DIBROMO-3-CHLORO- (UG/L) | 00203 | 0 | 0 | 10 | No | 5 | 0 | n/a | n/a | 0.05 | NP |
| PROPANE, 1,2-DIBROMO-3-CHLORO- (UG/L) | 07391 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| PROPANE, 1,2-DIBROMO-3-CHLORO- (UG/L) | 18199 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| PROPANE, 1,2-DIBROMO-3-CHLORO- (UG/L) | 20902 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| PROPANE, 1,2-DIBROMO-3-CHLORO- (UG/L) | 22205 | 0 | NaN | NaN | No | 3 | 0 | n/a | n/a | NaN | NP |
| PROPANE, 1,2-DIBROMO-3-CHLORO- (UG/L) | 33502 | 0 | 0 | 15 | No | 7 | 0 | n/a | n/a | 0.05 | NP |
| PROPANE, 1,2-DIBROMO-3-CHLORO- (UG/L) | 33604 | 0 | 0 | 8 | No | 4 | 0 | n/a | n/a | 0.05 | NP |
| PROPANE, 1,2-DIBROMO-3-CHLORO- (UG/L) | 40005 | 0 | 0 | 27 | No | 11 | 0 | n/a | n/a | 0.05 | NP |
| PROPANE, 1,2-DIBROMO-3-CHLORO- (UG/L) | 79102 | 0 | 0 | 12 | No | 6 | 0 | n/a | n/a | 0.05 | NP |
| PROPANE, 1,2-DIBROMO-3-CHLORO- (UG/L) | 79202 | 0 | 0 | 10 | No | 5 | 0 | n/a | n/a | 0.05 | NP |
| PROPANE, 1,2-DIBROMO-3-CHLORO- (UG/L) | P208989 | 0 | 0 | 15 | No | 7 | 0 | n/a | n/a | 0.05 | NP |
| PROPANE, 1,2-DIBROMO-3-CHLORO- (UG/L) | P210189 | 0 | 0 | 8 | No | 4 | 0 | n/a | n/a | 0.05 | NP |
| PYRENE (UG/L) | 33502 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| Styrene (UG/L) | 00203 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| Styrene (UG/L) | 07391 | 0 | 0 | 53 | No | 18 | 0 | n/a | n/a | 0.05 | NP |
| Styrene (UG/L) | 18199 | 0 | 0 | 66 | No | 21 | 0 | n/a | n/a | 0.05 | NP |
| Styrene (UG/L) | 20902 | 0 | 0 | 41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| Styrene (UG/L) | 22205 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| Styrene (UG/L) | 33502 | 0 | 0 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| Styrene (UG/L) | 33604 | 0 | 0 | 34 | No | 13 | 0 | n/a | n/a | 0.05 | NP |
| Styrene (UG/L) | 40005 | 0 | 0 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| Styrene (UG/L) | 79102 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| Styrene (UG/L) | 79202 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| Styrene (UG/L) | 91105 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| Styrene (UG/L) | P208989 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| Styrene (UG/L) | P210189 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| Tetrachloroethene (UG/L) | 00203 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| Tetrachloroethene (UG/L) | 07391 | 59.57 | 30 | 53 | No | 18 | 0 | n/a | n/a | 0.05 | NP |
| **Tetrachloroethene (UG/L)** | **18199** | **-5.112** | **-103** | **-66** | **Yes** | **21** | **0** | **n/a** | **n/a** | **0.05** | **NP** |
| Tetrachloroethene (UG/L) | 20902 | -0.0173 | -12 | -41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| Tetrachloroethene (UG/L) | 22205 | 0 | -7 | -17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| **Tetrachloroethene (UG/L)** | **33502** | **0** | **-54** | **-45** | **Yes** | **16** | **0** | **n/a** | **n/a** | **0.05** | **NP** |
| **Tetrachloroethene (UG/L)** | **33604** | **-6.132** | **-38** | **-34** | **Yes** | **13** | **0** | **n/a** | **n/a** | **0.05** | **NP** |
| Tetrachloroethene (UG/L) | 40005 | 4.618 | 27 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| Tetrachloroethene (UG/L) | 79102 | 0.03271 | 3 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| **Tetrachloroethene (UG/L)** | **79202** | **-0.059** | **-33** | **-27** | **Yes** | **11** | **0** | **n/a** | **n/a** | **0.05** | **NP** |

# Selected Evaluation Wells: Trend Test

Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro Printed 3/10/2014, 6:21 PM

| Constituent | Well | Slope | Calc. | Critical | Sig. | N | %NDs | Normality | Xform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Tetrachloroethene (UG/L) | 91105 | 152.8 | 11 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| Tetrachloroethene (UG/L) | P208989 | 0.02093 | 20 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| Tetrachloroethene (UG/L) | P210189 | -0.22 | -15 | -20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| Toluene (UG/L) | 00203 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| Toluene (UG/L) | 07391 | 0 | -10 | -53 | No | 18 | 0 | n/a | n/a | 0.05 | NP |
| Toluene (UG/L) | 18199 | 0 | 0 | 66 | No | 21 | 0 | n/a | n/a | 0.05 | NP |
| Toluene (UG/L) | 20902 | 0 | 2 | 41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| Toluene (UG/L) | 22205 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| Toluene (UG/L) | 33502 | 0 | -5 | -45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| Toluene (UG/L) | 33604 | 0 | 5 | 34 | No | 13 | 0 | n/a | n/a | 0.05 | NP |
| Toluene (UG/L) | 40005 | 0 | 0 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| Toluene (UG/L) | 79102 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| Toluene (UG/L) | 79202 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| Toluene (UG/L) | 91105 | 0 | 4 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| Toluene (UG/L) | P208989 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| Toluene (UG/L) | P210189 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| Total Xylene (ug/L) | 07391 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| Total Xylene (ug/L) | 18199 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| Total Xylene (ug/L) | 33502 | -0.609 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| Total Xylene (ug/L) | 33604 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| Total Xylene (ug/L) | 91105 | 0 | NaN | NaN | No | 2 | 0 | n/a | n/a | NaN | NP |
| Total Xylenes (UG/L) | 00203 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| Total Xylenes (UG/L) | 07391 | 0 | 0 | 53 | No | 18 | 0 | n/a | n/a | 0.05 | NP |
| Total Xylenes (UG/L) | 18199 | 0 | 0 | 66 | No | 21 | 0 | n/a | n/a | 0.05 | NP |
| Total Xylenes (UG/L) | 20902 | 0 | 0 | 41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| Total Xylenes (UG/L) | 22205 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| Total Xylenes (UG/L) | 33502 | 0 | -16 | -45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| Total Xylenes (UG/L) | 33604 | 0 | 0 | 34 | No | 13 | 0 | n/a | n/a | 0.05 | NP |
| Total Xylenes (UG/L) | 40005 | 0 | -11 | -45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| Total Xylenes (UG/L) | 79102 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| Total Xylenes (UG/L) | 79202 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| Total Xylenes (UG/L) | 91105 | 0 | 4 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| Total Xylenes (UG/L) | P208989 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| Total Xylenes (UG/L) | P210189 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| trans-1,2-Dichloroethene (UG/L) | 00203 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| trans-1,2-Dichloroethene (UG/L) | 07391 | 0 | -3 | -53 | No | 18 | 0 | n/a | n/a | 0.05 | NP |
| trans-1,2-Dichloroethene (UG/L) | 18199 | 0 | 14 | 66 | No | 21 | 0 | n/a | n/a | 0.05 | NP |
| trans-1,2-Dichloroethene (UG/L) | 20902 | 0 | 0 | 41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| trans-1,2-Dichloroethene (UG/L) | 22205 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| trans-1,2-Dichloroethene (UG/L) | 33502 | 1.082 | 33 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |

# Selected Evaluation Wells: Trend Test



Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro Printed 3/10/2014, 6:21 PM

| Constituent | Well | Slope | Calc. | Critical | Sig. | N | %NDs | Normality | Xform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|
| trans-1,2-Dichloroethene (UG/L) | 33604 | -0.09545 | -3 | -34 | No | 13 | 0 | n/a | n/a | 0.05 | NP |
| trans-1,2-Dichloroethene (UG/L) | 40005 | 0 | -1 | -45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| trans-1,2-Dichloroethene (UG/L) | 79102 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| trans-1,2-Dichloroethene (UG/L) | 79202 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| trans-1,2-Dichloroethene (UG/L) | 91105 | 0 | 4 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| trans-1,2-Dichloroethene (UG/L) | P208989 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| trans-1,2-Dichloroethene (UG/L) | P210189 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| trans-1,3-dichloropropene (UG/L) | 00203 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| trans-1,3-dichloropropene (UG/L) | 07391 | 0 | 0 | 53 | No | 18 | 0 | n/a | n/a | 0.05 | NP |
| trans-1,3-dichloropropene (UG/L) | 18199 | 0 | 0 | 66 | No | 21 | 0 | n/a | n/a | 0.05 | NP |
| trans-1,3-dichloropropene (UG/L) | 20902 | 0 | 0 | 41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| trans-1,3-dichloropropene (UG/L) | 22205 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| trans-1,3-dichloropropene (UG/L) | 33502 | 0 | 0 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| trans-1,3-dichloropropene (UG/L) | 33604 | 0 | 0 | 34 | No | 13 | 0 | n/a | n/a | 0.05 | NP |
| trans-1,3-dichloropropene (UG/L) | 40005 | 0 | 0 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| trans-1,3-dichloropropene (UG/L) | 79102 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| trans-1,3-dichloropropene (UG/L) | 79202 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| trans-1,3-dichloropropene (UG/L) | 91105 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| trans-1,3-dichloropropene (UG/L) | P208989 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| trans-1,3-dichloropropene (UG/L) | P210189 | 0 | 0 | 20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| Trichloroethene (UG/L) | 00203 | 0 | -5 | -23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| Trichloroethene (UG/L) | 07391 | -1487 | -35 | -53 | No | 18 | 0 | n/a | n/a | 0.05 | NP |
| Trichloroethene (UG/L) | 18199 | 0 | 8 | 66 | No | 21 | 0 | n/a | n/a | 0.05 | NP |
| Trichloroethene (UG/L) | 20902 | 0 | -11 | -41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| Trichloroethene (UG/L) | 22205 | 0 | -5 | -17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| Trichloroethene (UG/L) | 33502 | -0.318 | -18 | -45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| **Trichloroethene (UG/L)** | **33604** | **-10.98** | **-44** | **-34** | **Yes** | **13** | **0** | **n/a** | **n/a** | **0.05** | **NP** |
| Trichloroethene (UG/L) | 40005 | 217.2 | 45 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| Trichloroethene (UG/L) | 79102 | 3.577 | 14 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| **Trichloroethene (UG/L)** | **79202** | **-1.853** | **-43** | **-27** | **Yes** | **11** | **0** | **n/a** | **n/a** | **0.05** | **NP** |
| **Trichloroethene (UG/L)** | **91105** | **2425** | **25** | **20** | **Yes** | **9** | **0** | **n/a** | **n/a** | **0.05** | **NP** |
| **Trichloroethene (UG/L)** | **P208989** | **0.03485** | **39** | **30** | **Yes** | **12** | **0** | **n/a** | **n/a** | **0.05** | **NP** |
| **Trichloroethene (UG/L)** | **P210189** | **-185.3** | **-30** | **-20** | **Yes** | **9** | **0** | **n/a** | **n/a** | **0.05** | **NP** |
| URANIUM (UG/L) | 00203 | -1.199 | -3 | -27 | No | 11 | 0 | n/a | n/a | 0.05 | NP |
| **URANIUM (UG/L)** | **07391** | **-9.372** | **-64** | **-49** | **Yes** | **17** | **0** | **n/a** | **n/a** | **0.05** | **NP** |
| **URANIUM (UG/L)** | **22205** | **5.249** | **18** | **17** | **Yes** | **8** | **0** | **n/a** | **n/a** | **0.05** | **NP** |
| **URANIUM (UG/L)** | **40005** | **0.05916** | **45** | **41** | **Yes** | **15** | **0** | **n/a** | **n/a** | **0.05** | **NP** |
| URANIUM (UG/L) | 51605 | 0.4741 | 99 | 123 | No | 32 | 0 | n/a | n/a | 0.05 | NP |
| URANIUM (UG/L) | 79102 | -18.31 | -12 | -30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| **URANIUM (UG/L)** | **79202** | **3.593** | **38** | **27** | **Yes** | **11** | **0** | **n/a** | **n/a** | **0.05** | **NP** |

# Selected Evaluation Wells: Trend Test

Facility: Rocky Flats Client: DOE LM Data File: RFLMA E wells, SWD&CPro Printed 3/10/2014, 6:21 PM

| Constituent | Well | Slope | Calc. | Critical | Sig. | N | %NDs | Normality | Xform | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **URANIUM (UG/L)** | **79302** | **14.35** | **66** | **34** | **Yes** | **13** | **0** | **n/a** | **n/a** | **0.05** | **NP** |
| **URANIUM (UG/L)** | **79402** | **-15.2** | **-25** | **-23** | **Yes** | **10** | **0** | **n/a** | **n/a** | **0.05** | **NP** |
| **URANIUM (UG/L)** | **79502** | **-4.748** | **-44** | **-30** | **Yes** | **12** | **0** | **n/a** | **n/a** | **0.05** | **NP** |
| URANIUM (UG/L) | 79605 | 42.05 | 32 | 37 | No | 14 | 0 | n/a | n/a | 0.05 | NP |
| URANIUM (UG/L) | B210489 | 0.4526 | 5 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| URANIUM (UG/L) | P208989 | -2.527 | -29 | -30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| **URANIUM (UG/L)** | **P210189** | **0.5987** | **21** | **20** | **Yes** | **9** | **0** | **n/a** | **n/a** | **0.05** | **NP** |
| Vinyl chloride (UG/L) | 00203 | 0 | 0 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| Vinyl chloride (UG/L) | 07391 | 0 | 0 | 53 | No | 18 | 0 | n/a | n/a | 0.05 | NP |
| Vinyl chloride (UG/L) | 18199 | 0 | 19 | 66 | No | 21 | 0 | n/a | n/a | 0.05 | NP |
| Vinyl chloride (UG/L) | 20902 | 0 | 0 | 41 | No | 15 | 0 | n/a | n/a | 0.05 | NP |
| Vinyl chloride (UG/L) | 22205 | 0 | 0 | 17 | No | 8 | 0 | n/a | n/a | 0.05 | NP |
| Vinyl chloride (UG/L) | 33502 | 70.84 | 32 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| Vinyl chloride (UG/L) | 33604 | 1.78 | 1 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| Vinyl chloride (UG/L) | 40005 | 0 | 0 | 45 | No | 16 | 0 | n/a | n/a | 0.05 | NP |
| Vinyl chloride (UG/L) | 79102 | 0 | 4 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| Vinyl chloride (UG/L) | 79202 | 0.07181 | 18 | 23 | No | 10 | 0 | n/a | n/a | 0.05 | NP |
| Vinyl chloride (UG/L) | 91105 | 0 | -1 | -20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |
| Vinyl chloride (UG/L) | P208989 | 0 | 0 | 30 | No | 12 | 0 | n/a | n/a | 0.05 | NP |
| Vinyl chloride (UG/L) | P210189 | 0 | -6 | -20 | No | 9 | 0 | n/a | n/a | 0.05 | NP |

#### B.3.1.3 AOC Wells

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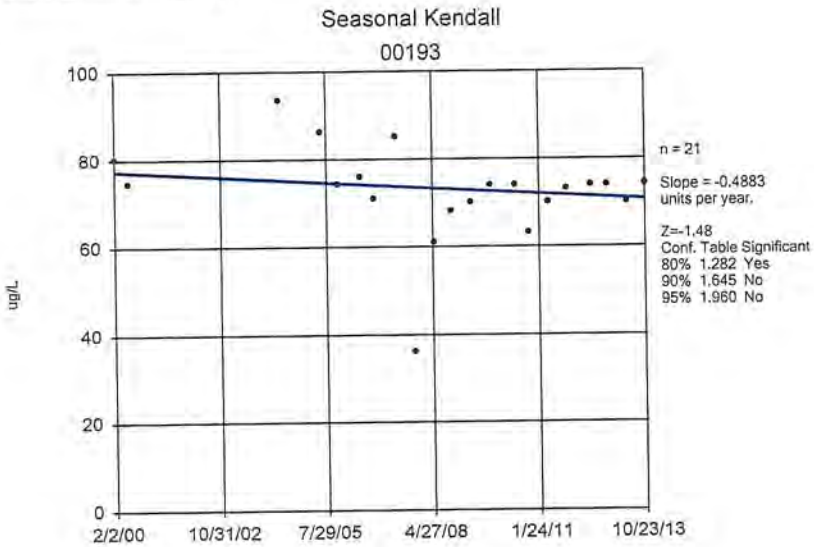


Constituent: Uranium Analysis Run 3/3/2014 1:35 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA AOC wells, SWD&CPro

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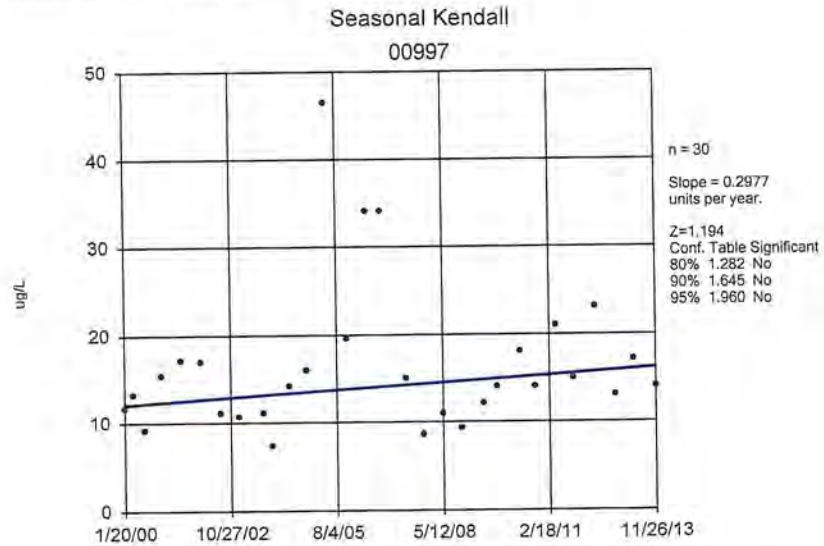
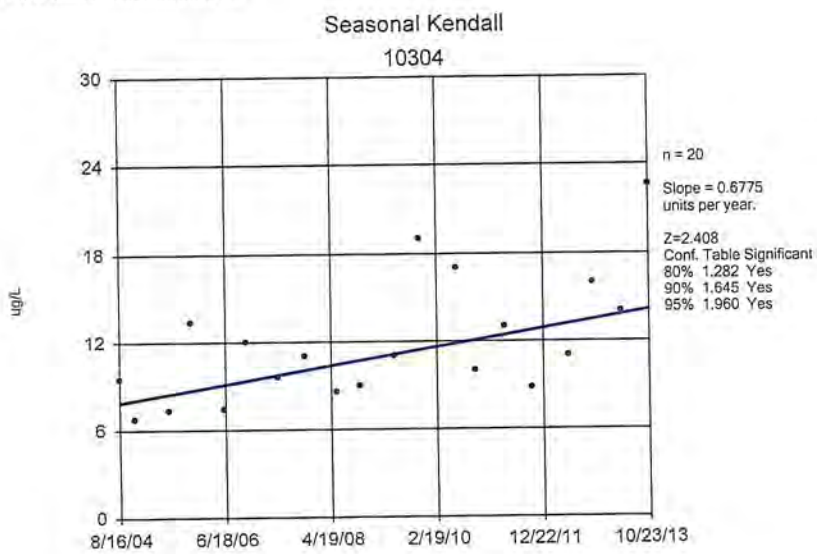



Constituent: Uranium Analysis Run 3/3/2014 1:40 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA AOC wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA




Constituent: Uranium Analysis Run 3/3/2014 1:41 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA AOC wells, SWD&CPro

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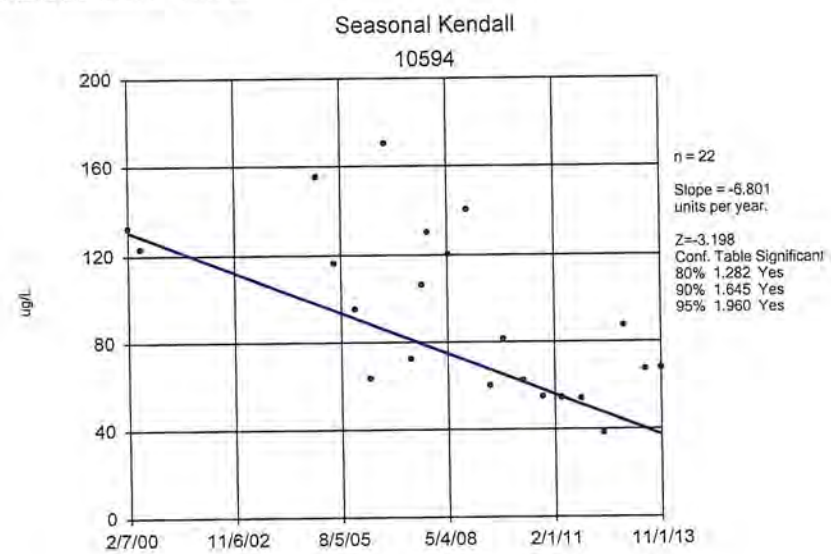


Constituent: Uranium Analysis Run 3/3/2014 1:42 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA AOC wells, SWD&CPro

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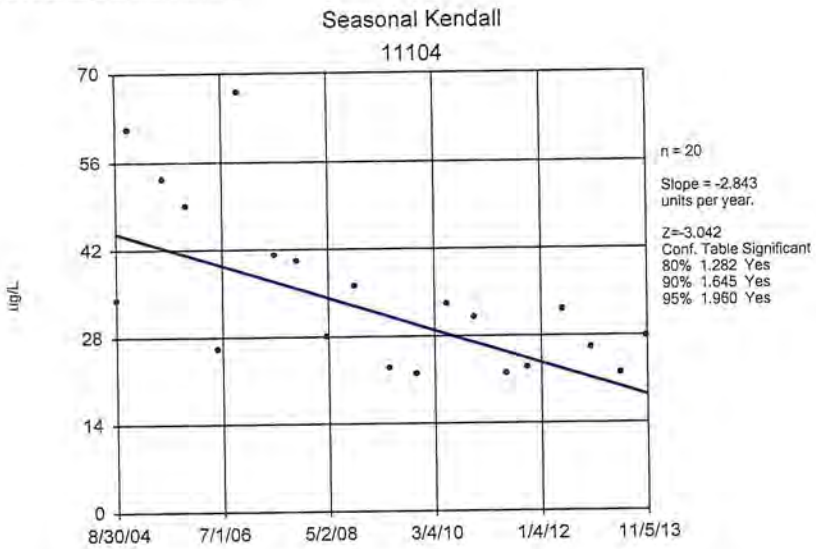


Constituent: Uranium Analysis Run 3/3/2014 1:43 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA AOC wells, SWD&CPro

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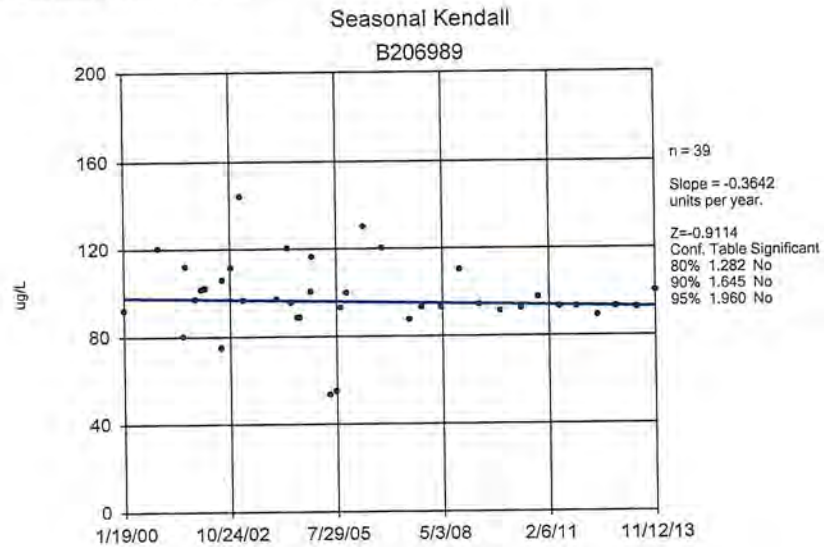


Constituent: Uranium Analysis Run 3/3/2014 1:43 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA AOC wells, SWD&CPro

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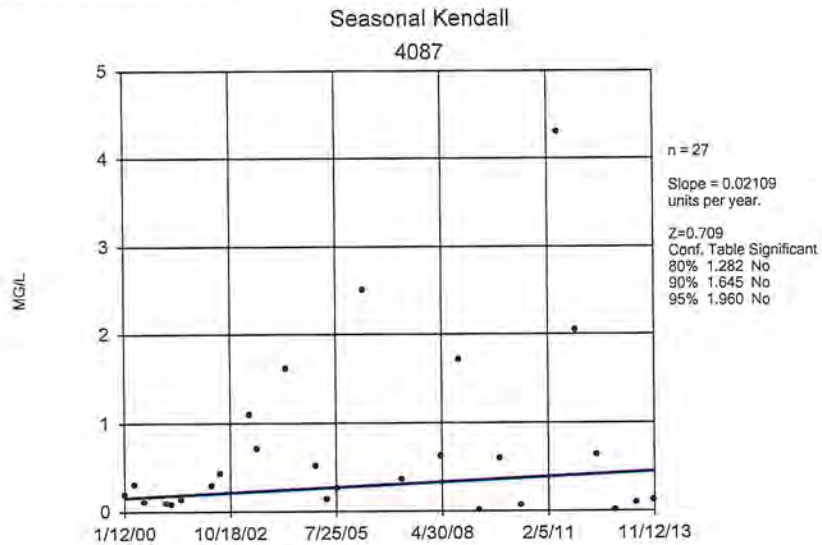


Constituent: Nitrate + Nitrite as Nitrogen Analysis Run 3/3/2014 1:44 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA AOC wells, SWD&CPro

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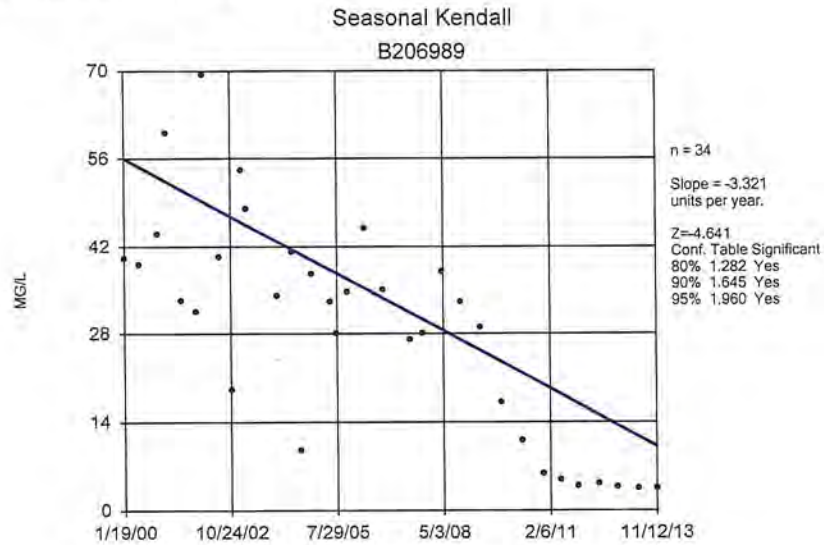


Constituent: Nitrate + Nitrite as Nitrogen Analysis Run 3/3/2014 1:45 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA AOC wells, SWD&CPro

# AOC Wells: Seasonal Kendall

Facility: Rocky Flats  Client: DOE LM  Data File: RFLMA AOC wells, SWD&CPro  Printed 3/3/2014, 1:45 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| **Uranium (ug/L)** | **00193** | **21** | **-0.4883** | **-1.48** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Uranium (ug/L) | 00997 | 30 | 0.2977 | 1.194 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Uranium (ug/L)** | **10304** | **20** | **0.6775** | **2.408** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Uranium (ug/L)** | **10594** | **22** | **-6.801** | **-3.198** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Uranium (ug/L)** | **11104** | **20** | **-2.843** | **-3.042** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Uranium (ug/L) | B206989 | 39 | -0.3642 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Nitrate + Nitrite as Nitrogen (MG/L) | 4087 | 27 | 0.02109 | 0.709 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Nitrate + Nitrite as Nitrogen (MG/L)** | **B206989** | **34** | **-3.321** | **-4.641** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |

### B.3.2 ANOVA and S-K Results for the PLF and OLF

#### B.3.2.1 PLF ANOVA Summary

# Non-Parametric ANOVA

Constituent: 1,1,1-Trichloroethane Analysis Run 3/9/2014 4:36 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

For observations made between 1/17/2000 and 11/13/2013, the non-parametric analysis of variance test indicates a DIFFERENCE between the medians of the groups tested at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one group has a significantly different median concentration of this constituent when compared to another group.

Calculated Kruskal-Wallis statistic = 219.2

Tabulated Chi-Squared value = 11.07 with 3 degrees of freedom at the 5% significance level.

There were 20 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 173.5
Adjusted Kruskal-Wallis statistic (H') = 219.2

The contrast test was performed to determine if any compliance group concentration was significantly higher than the background concentration. The contrast test indicates statistical significance in none of the compliance wells.

Contrast table:

| Well | Difference | Contrast | Significant? |
|---|---|---|---|
| 73105 | -83.56 | 30.01 | No |
| 73205 | -81.21 | 30.01 | No |
| 73005 | -83.56 | 30.39 | No |

The critical (contrast) value was computed with 3 degrees of freedom and a 1.667% error level for each well comparison. (Note: In this case, with Anova indicating differences that are not reflected in the contrast test, it should be concluded that it is the median of the Background data which is significantly higher.)

Non-parametric test used in lieu of parametric anova because the Chi Squared normality test showed the residuals to be non-normal at the 0.05 alpha level.

# Non-Parametric ANOVA

Constituent: 1,1-Dichloroethene Analysis Run 3/9/2014 4:36 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

For observations made between 1/11/2000 and 11/13/2013, the non-parametric analysis of variance test indicates a DIFFERENCE between the medians of the groups tested at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one group has a significantly different median concentration of this constituent when compared to another group.

Calculated Kruskal-Wallis statistic = 229.5

Tabulated Chi-Squared value = 11.07 with 3 degrees of freedom at the 5% significance level.

There were 25 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 178.4
Adjusted Kruskal-Wallis statistic (H') = 229.5

The contrast test was performed to determine if any compliance group concentration was significantly higher than the background concentration. The contrast test indicates statistical significance in none of the compliance wells.

Contrast table:

| Well | Difference | Contrast | Significant? |
|---|---|---|---|
| 73005 | -80.91 | 30.5 | No |
| 73105 | -80.91 | 30.11 | No |
| 73205 | -78.56 | 30.11 | No |

The critical (contrast) value was computed with 3 degrees of freedom and a 1.667% error level for each well comparison. (Note: In this case, with Anova indicating differences that are not reflected in the contrast test, it should be concluded that it is the median of the Background data which is significantly higher.)

Non-parametric test used in lieu of parametric anova because the Chi Squared normality test showed the residuals to be non-normal at the 0.05 alpha level.

# Non-Parametric ANOVA

Constituent: Boron Analysis Run 3/9/2014 4:36 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

For observations made between 12/28/2005 and 11/13/2013, the non-parametric analysis of variance test indicates a DIFFERENCE between the medians of the groups tested at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one group has a significantly different median concentration of this constituent when compared to another group.

Calculated Kruskal-Wallis statistic = 174.8

Tabulated Chi-Squared value = 11.07 with 3 degrees of freedom at the 5% significance level.

There were 35 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 174.6
Adjusted Kruskal-Wallis statistic (H') = 174.8

The contrast test was performed to determine if any compliance group concentration was significantly higher than the background concentration. The contrast test indicates statistical significance in 3 of the compliance wells.

Contrast table:

| Well | Difference | Contrast | Significant? |
|---|---|---|---|
| 73005 | 54.4 | 24.8 | Yes |
| 73205 | 95.29 | 24.51 | Yes |
| 73105 | 128.3 | 24.51 | Yes |

The critical (contrast) value was computed with 3 degrees of freedom and a 1.667% error level for each well comparison.

Non-parametric test used in lieu of parametric anova because the Chi Squared normality test showed the residuals to be non-normal at the 0.05 alpha level.

# Non-Parametric ANOVA

Constituent: Cadmium Analysis Run 3/9/2014 4:36 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

For observations made between 1/11/2000 and 11/13/2013, the non-parametric analysis of variance test indicates a DIFFERENCE between the medians of the groups tested at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one group has a significantly different median concentration of this constituent when compared to another group.

Calculated Kruskal-Wallis statistic = 21.22

Tabulated Chi-Squared value = 11.07 with 3 degrees of freedom at the 5% significance level.

There were 6 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 9.47
Adjusted Kruskal-Wallis statistic (H') = 21.22

The contrast test was performed to determine if any compliance group concentration was significantly higher than the background concentration. The contrast test indicates statistical significance in 1 of the compliance wells.

Contrast table:

| Well | Difference | Contrast | Significant? |
|---|---|---|---|
| 73005 | 2.183 | 29.67 | No |
| 73205 | 32.03 | 29.3 | Yes |
| 73105 | -11 | 29.3 | No |

The critical (contrast) value was computed with 3 degrees of freedom and a 1.667% error level for each well comparison.

Non-parametric test used in lieu of parametric anova because the Chi Squared normality test showed the residuals to be non-normal at the 0.05 alpha level.

# Non-Parametric ANOVA

Constituent: Carbon tetrachloride Analysis Run 3/9/2014 4:36 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

For observations made between 1/11/2000 and 11/13/2013, the non-parametric analysis of variance test indicates a DIFFERENCE between the medians of the groups tested at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one group has a significantly different median concentration of this constituent when compared to another group.

Calculated Kruskal-Wallis statistic = 83.39

Tabulated Chi-Squared value = 11.07 with 3 degrees of freedom at the 5% significance level.

There were 10 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 35.58
Adjusted Kruskal-Wallis statistic (H') = 83.39

The contrast test was performed to determine if any compliance group concentration was significantly higher than the background concentration. The contrast test indicates statistical significance in none of the compliance wells.

Contrast table:

| Well | Difference | Contrast | Significant? |
|---|---|---|---|
| 73005 | -34.31 | 30.5 | No |
| 73105 | -34.31 | 30.11 | No |
| 73205 | -31.04 | 30.11 | No |

The critical (contrast) value was computed with 3 degrees of freedom and a 1.667% error level for each well comparison. (Note: In this case, with Anova indicating differences that are not reflected in the contrast test, it should be concluded that it is the median of the Background data which is significantly higher.)

Non-parametric test used in lieu of parametric anova because the Chi Squared normality test showed the residuals to be non-normal at the 0.05 alpha level.

# Non-Parametric ANOVA

Constituent: Chloroform Analysis Run 3/9/2014 4:36 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

For observations made between 1/11/2000 and 11/13/2013, the non-parametric analysis of variance test indicates a DIFFERENCE between the medians of the groups tested at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one group has a significantly different median concentration of this constituent when compared to another group.

Calculated Kruskal-Wallis statistic = 62.49

Tabulated Chi-Squared value = 11.07 with 3 degrees of freedom at the 5% significance level.

There were 9 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 20.2
Adjusted Kruskal-Wallis statistic (H') = 62.49

The contrast test was performed to determine if any compliance group concentration was significantly higher than the background concentration. The contrast test indicates statistical significance in none of the compliance wells.

Contrast table:

| Well | Difference | Contrast | Significant? |
|---|---|---|---|
| 73005 | -21.93 | 30.5 | No |
| 73105 | -9.714 | 30.11 | No |
| 73205 | -18.49 | 30.11 | No |

The critical (contrast) value was computed with 3 degrees of freedom and a 1.667% error level for each well comparison. (Note: In this case, with Anova indicating differences that are not reflected in the contrast test, it should be concluded that it is the median of the Background data which is significantly higher.)

Non-parametric test used in lieu of parametric anova because the Chi Squared normality test showed the residuals to be non-normal at the 0.05 alpha level.

# Non-Parametric ANOVA

Constituent: Chromium Analysis Run 3/9/2014 4:36 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

For observations made between 1/11/2000 and 11/13/2013, the non-parametric analysis of variance test indicates a DIFFERENCE between the medians of the groups tested at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one group has a significantly different median concentration of this constituent when compared to another group.

Calculated Kruskal-Wallis statistic = 44.96

Tabulated Chi-Squared value = 11.07 with 3 degrees of freedom at the 5% significance level.

There were 7 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 20.07
Adjusted Kruskal-Wallis statistic (H') = 44.96

The contrast test was performed to determine if any compliance group concentration was significantly higher than the background concentration. The contrast test indicates statistical significance in 1 of the compliance wells.

Contrast table:

| Well | Difference | Contrast | Significant? |
|---|---|---|---|
| 73005 | 50.93 | 29.67 | Yes |
| 73105 | -17.7 | 29.3 | No |
| 73205 | 0.395 | 29.3 | No |

The critical (contrast) value was computed with 3 degrees of freedom and a 1.667% error level for each well comparison.

Non-parametric test used in lieu of parametric anova because the Chi Squared normality test showed the residuals to be non-normal at the 0.05 alpha level.

# Non-Parametric ANOVA

Constituent: cis-1,2-Dichloroethene Analysis Run 3/9/2014 4:36 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

For observations made between 1/11/2000 and 11/13/2013, the non-parametric analysis of variance test indicates a DIFFERENCE between the medians of the groups tested at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one group has a significantly different median concentration of this constituent when compared to another group.

Calculated Kruskal-Wallis statistic = 26.88

Tabulated Chi-Squared value = 11.07 with 3 degrees of freedom at the 5% significance level.

There were 5 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 5.591
Adjusted Kruskal-Wallis statistic (H') = 26.88

The contrast test was performed to determine if any compliance group concentration was significantly higher than the background concentration. The contrast test indicates statistical significance in none of the compliance wells.

Contrast table:

| Well | Difference | Contrast | Significant? |
|---|---|---|---|
| 73005 | -14.7 | 30.5 | No |
| 73105 | -14.7 | 30.11 | No |
| 73205 | -11.04 | 30.11 | No |

The critical (contrast) value was computed with 3 degrees of freedom and a 1.667% error level for each well comparison. (Note: In this case, with Anova indicating differences that are not reflected in the contrast test, it should be concluded that it is the median of the Background data which is significantly higher.)

Non-parametric test used in lieu of parametric anova because the Chi Squared normality test showed the residuals to be non-normal at the 0.05 alpha level.

# Non-Parametric ANOVA

Constituent: Copper Analysis Run 3/9/2014 4:36 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

For observations made between 1/11/2000 and 11/13/2013, the non-parametric analysis of variance test indicates a DIFFERENCE between the medians of the groups tested at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one group has a significantly different median concentration of this constituent when compared to another group.

Calculated Kruskal-Wallis statistic = 18.97

Tabulated Chi-Squared value = 11.07 with 3 degrees of freedom at the 5% significance level.

There were 9 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 9.667
Adjusted Kruskal-Wallis statistic (H') = 18.97

The contrast test was performed to determine if any compliance group concentration was significantly higher than the background concentration. The contrast test indicates statistical significance in 1 of the compliance wells.

Contrast table:

| Well | Difference | Contrast | Significant? |
|---|---|---|---|
| 73205 | 38.13 | 29.3 | Yes |
| 73005 | 1.492 | 29.67 | No |
| 73105 | 16.51 | 29.3 | No |

The critical (contrast) value was computed with 3 degrees of freedom and a 1.667% error level for each well comparison.

Non-parametric test used in lieu of parametric anova because the Chi Squared normality test showed the residuals to be non-normal at the 0.05 alpha level.

# Non-Parametric ANOVA

Constituent: Nickel Analysis Run 3/9/2014 4:36 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

For observations made between 1/11/2000 and 11/13/2013, the non-parametric analysis of variance test indicates a DIFFERENCE between the medians of the groups tested at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one group has a significantly different median concentration of this constituent when compared to another group.

Calculated Kruskal-Wallis statistic = 54.2

Tabulated Chi-Squared value = 11.07 with 3 degrees of freedom at the 5% significance level.

There were 17 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 43.76
Adjusted Kruskal-Wallis statistic (H') = 54.2

The contrast test was performed to determine if any compliance group concentration was significantly higher than the background concentration. The contrast test indicates statistical significance in 2 of the compliance wells.

Contrast table:

| Well | Difference | Contrast | Significant? |
|---|---|---|---|
| 73005 | -26.3 | 29.67 | No |
| 73105 | 49.08 | 29.3 | Yes |
| 73205 | 34.19 | 29.3 | Yes |

The critical (contrast) value was computed with 3 degrees of freedom and a 1.667% error level for each well comparison.

Non-parametric test used in lieu of parametric anova because the Chi Squared normality test showed the residuals to be non-normal at the 0.05 alpha level.

# Non-Parametric ANOVA

Constituent: Selenium Analysis Run 3/9/2014 4:36 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

For observations made between 1/11/2000 and 11/13/2013, the non-parametric analysis of variance test indicates a DIFFERENCE between the medians of the groups tested at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one group has a significantly different median concentration of this constituent when compared to another group.

Calculated Kruskal-Wallis statistic = 181

Tabulated Chi-Squared value = 11.07 with 3 degrees of freedom at the 5% significance level.

There were 29 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 163.8
Adjusted Kruskal-Wallis statistic (H') = 181

The contrast test was performed to determine if any compliance group concentration was significantly higher than the background concentration. The contrast test indicates statistical significance in 2 of the compliance wells.

Contrast table:

| Well | Difference | Contrast | Significant? |
|---|---|---|---|
| 73105 | -27.5 | 29.3 | No |
| 73005 | 84.24 | 29.67 | Yes |
| 73205 | 131.4 | 29.3 | Yes |

The critical (contrast) value was computed with 3 degrees of freedom and a 1.667% error level for each well comparison.

Non-parametric test used in lieu of parametric anova because the Chi Squared normality test showed the residuals to be non-normal at the 0.05 alpha level.

# Non-Parametric ANOVA

Constituent: Tetrachloroethene Analysis Run 3/9/2014 4:36 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

For observations made between 1/11/2000 and 11/13/2013, the non-parametric analysis of variance test indicates a DIFFERENCE between the medians of the groups tested at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one group has a significantly different median concentration of this constituent when compared to another group.

Calculated Kruskal-Wallis statistic = 226

Tabulated Chi-Squared value = 11.07 with 3 degrees of freedom at the 5% significance level.

There were 22 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 178.5
Adjusted Kruskal-Wallis statistic (H') = 226

The contrast test was performed to determine if any compliance group concentration was significantly higher than the background concentration. The contrast test indicates statistical significance in none of the compliance wells.

Contrast table:

| Well | Difference | Contrast | Significant? |
|---|---|---|---|
| 73005 | -80.42 | 30.5 | No |
| 73105 | -82.85 | 30.11 | No |
| 73205 | -80.49 | 30.11 | No |

The critical (contrast) value was computed with 3 degrees of freedom and a 1.667% error level for each well comparison. (Note: In this case, with Anova indicating differences that are not reflected in the contrast test, it should be concluded that it is the median of the Background data which is significantly higher.)

Non-parametric test used in lieu of parametric anova because the Chi Squared normality test showed the residuals to be non-normal at the 0.05 alpha level.

# Non-Parametric ANOVA

Constituent: Trichloroethene Analysis Run 3/9/2014 4:36 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

For observations made between 1/11/2000 and 11/13/2013, the non-parametric analysis of variance test indicates a DIFFERENCE between the medians of the groups tested at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one group has a significantly different median concentration of this constituent when compared to another group.

Calculated Kruskal-Wallis statistic = 237.9

Tabulated Chi-Squared value = 11.07 with 3 degrees of freedom at the 5% significance level.

There were 20 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 187.9
Adjusted Kruskal-Wallis statistic (H') = 237.9

The contrast test was performed to determine if any compliance group concentration was significantly higher than the background concentration. The contrast test indicates statistical significance in none of the compliance wells.

Contrast table:

| Well | Difference | Contrast | Significant? |
|---|---|---|---|
| 73005 | -83.36 | 30.5 | No |
| 73105 | -83.36 | 30.11 | No |
| 73205 | -81.04 | 30.11 | No |

The critical (contrast) value was computed with 3 degrees of freedom and a 1.667% error level for each well comparison. (Note: In this case, with Anova indicating differences that are not reflected in the contrast test, it should be concluded that it is the median of the Background data which is significantly higher.)

Non-parametric test used in lieu of parametric anova because the Chi Squared normality test showed the residuals to be non-normal at the 0.05 alpha level.

# Non-Parametric ANOVA

Constituent: Uranium Analysis Run 3/9/2014 4:36 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

For observations made between 1/11/2000 and 11/13/2013, the non-parametric analysis of variance test indicates a DIFFERENCE between the medians of the groups tested at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one group has a significantly different median concentration of this constituent when compared to another group.

Calculated Kruskal-Wallis statistic = 182.7

Tabulated Chi-Squared value = 11.07 with 3 degrees of freedom at the 5% significance level.

There were 25 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 156.6
Adjusted Kruskal-Wallis statistic (H') = 182.7

The contrast test was performed to determine if any compliance group concentration was significantly higher than the background concentration. The contrast test indicates statistical significance in 3 of the compliance wells.

Contrast table:

| Well | Difference | Contrast | Significant? |
|---|---|---|---|
| 73105 | 85.99 | 29.11 | Yes |
| 73005 | 94.17 | 29.49 | Yes |
| 73205 | 147.6 | 29.11 | Yes |

The critical (contrast) value was computed with 3 degrees of freedom and a 1.667% error level for each well comparison.

Non-parametric test used in lieu of parametric anova because the Chi Squared normality test showed the residuals to be non-normal at the 0.05 alpha level.

# Non-Parametric ANOVA

Constituent: Zinc Analysis Run 3/9/2014 4:36 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

For observations made between 1/17/2000 and 11/13/2013, the non-parametric analysis of variance test indicates a DIFFERENCE between the medians of the groups tested at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one group has a significantly different median concentration of this constituent when compared to another group.

Calculated Kruskal-Wallis statistic = 30.01

Tabulated Chi-Squared value = 11.07 with 3 degrees of freedom at the 5% significance level.

There were 25 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 25.15
Adjusted Kruskal-Wallis statistic (H') = 30.01

The contrast test was performed to determine if any compliance group concentration was significantly higher than the background concentration. The contrast test indicates statistical significance in 1 of the compliance wells.

Contrast table:

| Well | Difference | Contrast | Significant? |
|---|---|---|---|
| 73205 | 23 | 29.1 | No |
| 73105 | 62.87 | 29.1 | Yes |
| 73005 | 24.23 | 29.47 | No |

The critical (contrast) value was computed with 3 degrees of freedom and a 1.667% error level for each well comparison.

Non-parametric test used in lieu of parametric anova because the Chi Squared normality test showed the residuals to be non-normal at the 0.05 alpha level.

# PLF: Analysis of Variance

Facility: Rocky Flats  Client: DOE LM  Data File: RFLMA RCRA wells, SWD&CPro  Printed 3/9/2014, 4:36 PM

| Constituent | Well | Calc. | Crit. | Sig. | Alpha | Transform | ANOVA Sig. | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane (UG/L) | 73105 | -83.56 | 30.01 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| 1,1,1-Trichloroethane (UG/L) | 73205 | -81.21 | 30.01 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| 1,1,1-Trichloroethane (UG/L) | 73005 | -83.56 | 30.39 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| 1,1,2,2-Tetrachloroethane (UG/L) | 73005 | -0.8173 | 30.5 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,1,2,2-Tetrachloroethane (UG/L) | 73105 | -0.8173 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,1,2,2-Tetrachloroethane (UG/L) | 73205 | 3.016 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,1,2-Trichloroethane (UG/L) | 73005 | -0.8109 | 30.5 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,1,2-Trichloroethane (UG/L) | 73105 | -0.8109 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,1,2-Trichloroethane (UG/L) | 73205 | 3.053 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,1-Dichloroethene (UG/L) | 73005 | -80.91 | 30.5 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| 1,1-Dichloroethene (UG/L) | 73105 | -80.91 | 30.11 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| 1,1-Dichloroethene (UG/L) | 73205 | -78.56 | 30.11 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| 1,2,4-Trichlorobenzene (UG/L) | 73005 | 0.6338 | 30.5 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2,4-Trichlorobenzene (UG/L) | 73105 | -3.272 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2,4-Trichlorobenzene (UG/L) | 73205 | 0.5609 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2-Dibromo-3-chloropropane (UG/L) | 73005 | -2.477 | 29.98 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2-Dibromo-3-chloropropane (UG/L) | 73105 | -2.477 | 29.6 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2-Dibromo-3-chloropropane (UG/L) | 73205 | 1.281 | 29.6 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2-Dibromoethane (UG/L) | 73005 | -0.8141 | 30.5 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2-Dibromoethane (UG/L) | 73105 | -0.8141 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2-Dibromoethane (UG/L) | 73205 | 3.034 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2-Dichlorobenzene (UG/L) | 73005 | -3.269 | 30.5 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2-Dichlorobenzene (UG/L) | 73105 | -3.269 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2-Dichlorobenzene (UG/L) | 73205 | 0.5186 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2-Dichloroethane (UG/L) | 73005 | -0.8161 | 30.39 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2-Dichloroethane (UG/L) | 73105 | -0.8161 | 30.01 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2-Dichloroethane (UG/L) | 73205 | 3.017 | 30.01 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2-Dichloropropane (UG/L) | 73005 | -1.635 | 30.5 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2-Dichloropropane (UG/L) | 73105 | -1.635 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2-Dichloropropane (UG/L) | 73205 | 2.184 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,3-Dichlorobenzene (UG/L) | 73005 | -15.65 | 30.5 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,3-Dichlorobenzene (UG/L) | 73205 | -0.5565 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,3-Dichlorobenzene (UG/L) | 73105 | 3.05 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,4-Dichlorobenzene (UG/L) | 73005 | -3.266 | 30.5 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,4-Dichlorobenzene (UG/L) | 73105 | -3.266 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,4-Dichlorobenzene (UG/L) | 73205 | 0.537 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Arsenic (UG/L) | 73005 | -0.09586 | 29.67 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Arsenic (UG/L) | 73105 | -8.433 | 29.3 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Arsenic (UG/L) | 73205 | -4.418 | 29.3 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Benzene (UG/L) | 73005 | -4.08 | 30.5 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |

# PLF: Analysis of Variance

Facility: Rocky Flats  Client: DOE LM  Data File: RFLMA RCRA wells, SWD&CPro  Printed 3/9/2014, 4:36 PM

| Constituent | Well | Calc. | Crit. | Sig. | Alpha | Transform | ANOVA Sig. | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|
| Benzene (UG/L) | 73105 | -4.08 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Benzene (UG/L) | 73205 | -0.2771 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Beryllium (UG/L) | 73005 | -4.986 | 29.67 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Beryllium (UG/L) | 73105 | -4.986 | 29.3 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Beryllium (UG/L) | 73205 | -4.986 | 29.3 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| **Boron (ug/L)** | **73005** | **54.4** | **24.8** | **Yes** | **0.01667** | **n/a** | **Yes** | **0.05** | **NP (normality)** |
| **Boron (ug/L)** | **73205** | **95.29** | **24.51** | **Yes** | **0.01667** | **n/a** | **Yes** | **0.05** | **NP (normality)** |
| **Boron (ug/L)** | **73105** | **128.3** | **24.51** | **Yes** | **0.01667** | **n/a** | **Yes** | **0.05** | **NP (normality)** |
| Bromodichloromethane (UG/L) | 73005 | -1.628 | 30.5 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Bromodichloromethane (UG/L) | 73105 | -1.628 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Bromodichloromethane (UG/L) | 73205 | 2.22 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Bromoform (UG/L) | 73005 | -0.8141 | 30.5 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Bromoform (UG/L) | 73105 | -0.8141 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Bromoform (UG/L) | 73205 | 3.034 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Bromomethane (UG/L) | 73005 | -0.8161 | 30.39 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Bromomethane (UG/L) | 73105 | -0.8161 | 30.01 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Bromomethane (UG/L) | 73205 | 3.017 | 30.01 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Cadmium (UG/L) | 73005 | 2.183 | 29.67 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| **Cadmium (UG/L)** | **73205** | **32.03** | **29.3** | **Yes** | **0.01667** | **n/a** | **Yes** | **0.05** | **NP (normality)** |
| Cadmium (UG/L) | 73105 | -11 | 29.3 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| Carbon tetrachloride (UG/L) | 73005 | -34.31 | 30.5 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| Carbon tetrachloride (UG/L) | 73105 | -34.31 | 30.11 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| Carbon tetrachloride (UG/L) | 73205 | -31.04 | 30.11 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| Chlorobenzene (UG/L) | 73005 | -0.982 | 30.5 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Chlorobenzene (UG/L) | 73105 | -4.904 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Chlorobenzene (UG/L) | 73205 | -1.101 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Chlorodibromomethane (UG/L) | 73005 | -0.8141 | 30.5 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Chlorodibromomethane (UG/L) | 73105 | -0.8141 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Chlorodibromomethane (UG/L) | 73205 | 3.034 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Chloroform (UG/L) | 73005 | -21.93 | 30.5 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| Chloroform (UG/L) | 73105 | -9.714 | 30.11 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| Chloroform (UG/L) | 73205 | -18.49 | 30.11 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| Chloromethane (UG/L) | 73005 | 2.287 | 30.5 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Chloromethane (UG/L) | 73105 | 2.229 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Chloromethane (UG/L) | 73205 | 6.062 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| **Chromium (UG/L)** | **73005** | **50.93** | **29.67** | **Yes** | **0.01667** | **n/a** | **Yes** | **0.05** | **NP (normality)** |
| Chromium (UG/L) | 73105 | -17.7 | 29.3 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| Chromium (UG/L) | 73205 | 0.395 | 29.3 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| cis-1,2-Dichloroethene (UG/L) | 73005 | -14.7 | 30.5 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| cis-1,2-Dichloroethene (UG/L) | 73105 | -14.7 | 30.11 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |

# PLF: Analysis of Variance

Facility: Rocky Flats  Client: DOE LM  Data File: RFLMA RCRA wells, SWD&CPro  Printed 3/9/2014, 4:36 PM

| Constituent | Well | Calc. | Crit. | Sig. | Alpha | Transform | ANOVA Sig. | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|
| cis-1,2-Dichloroethene (UG/L) | 73205 | -11.04 | 30.11 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| **Copper (UG/L)** | **73205** | **38.13** | **29.3** | **Yes** | **0.01667** | **n/a** | **Yes** | **0.05** | **NP (normality)** |
| Copper (UG/L) | 73005 | 1.492 | 29.67 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| Copper (UG/L) | 73105 | 16.51 | 29.3 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| Ethylbenzene (UG/L) | 73005 | 0.1368 | 27.95 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Ethylbenzene (UG/L) | 73205 | 0.1368 | 27.95 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Ethylbenzene (UG/L) | 73105 | -3.943 | 27.95 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Hexachlorobutadiene (UG/L) | 73005 | 3.133 | 30.5 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Hexachlorobutadiene (UG/L) | 73105 | -0.8205 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Hexachlorobutadiene (UG/L) | 73205 | 3.013 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Lead (UG/L) | 73005 | -13.24 | 29.67 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Lead (UG/L) | 73105 | -9.6 | 29.3 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Lead (UG/L) | 73205 | -5.418 | 29.3 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| m,p-Xylene (ug/L) | 73005 | 0 | 10.77 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| m,p-Xylene (ug/L) | 73105 | 2.833 | 10.04 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| m,p-Xylene (ug/L) | 73205 | 0 | 10.77 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Mercury (UG/L) | 73005 | -7.837 | 29.47 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Mercury (UG/L) | 73205 | -8.596 | 29.1 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Mercury (UG/L) | 73105 | -5.126 | 29.1 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Methylene chloride (UG/L) | 73005 | -8.165 | 30.5 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Methylene chloride (UG/L) | 73205 | -4.772 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Methylene chloride (UG/L) | 73105 | -8.181 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Naphthalene (UG/L) | 73005 | 0.6462 | 30.5 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Naphthalene (UG/L) | 73105 | -3.276 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Naphthalene (UG/L) | 73205 | 0.5274 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Nickel (UG/L) | 73005 | -26.3 | 29.67 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| **Nickel (UG/L)** | **73105** | **49.08** | **29.3** | **Yes** | **0.01667** | **n/a** | **Yes** | **0.05** | **NP (normality)** |
| **Nickel (UG/L)** | **73205** | **34.19** | **29.3** | **Yes** | **0.01667** | **n/a** | **Yes** | **0.05** | **NP (normality)** |
| Selenium (UG/L) | 73105 | -27.5 | 29.3 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| **Selenium (UG/L)** | **73005** | **84.24** | **29.67** | **Yes** | **0.01667** | **n/a** | **Yes** | **0.05** | **NP (normality)** |
| **Selenium (UG/L)** | **73205** | **131.4** | **29.3** | **Yes** | **0.01667** | **n/a** | **Yes** | **0.05** | **NP (normality)** |
| Silver (UG/L) | 73005 | -5.127 | 29.67 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Silver (UG/L) | 73105 | -9.111 | 29.3 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Silver (UG/L) | 73205 | -9.111 | 29.3 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Styrene (UG/L) | 73005 | -3.266 | 30.5 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Styrene (UG/L) | 73105 | -3.266 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Styrene (UG/L) | 73205 | 0.537 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Tetrachloroethene (UG/L) | 73005 | -80.42 | 30.5 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| Tetrachloroethene (UG/L) | 73105 | -82.85 | 30.11 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| Tetrachloroethene (UG/L) | 73205 | -80.49 | 30.11 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |

# PLF: Analysis of Variance

Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro Printed 3/9/2014, 4:36 PM

| Constituent | Well | Calc. | Crit. | Sig. | Alpha | Transform | ANOVA Sig. | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|
| Toluene (UG/L) | 73005 | -7.385 | 30.5 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Toluene (UG/L) | 73205 | 0.1608 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Toluene (UG/L) | 73105 | 0.1911 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Total Xylene (ug/L) | 73105 | -1.958 | 11.97 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Total Xylene (ug/L) | 73005 | -1.958 | 12.6 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Total Xylene (ug/L) | 73205 | -1.958 | 11.97 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Total Xylenes (UG/L) | 73005 | -1.598 | 28.65 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Total Xylenes (UG/L) | 73205 | 2.313 | 28.22 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Total Xylenes (UG/L) | 73105 | -1.598 | 28.65 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| trans-1,2-Dichloroethene (UG/L) | 73005 | -1.628 | 30.5 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| trans-1,2-Dichloroethene (UG/L) | 73105 | -1.628 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| trans-1,2-Dichloroethene (UG/L) | 73205 | 2.22 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| trans-1,3-dichloropropene (UG/L) | 73005 | -0.81 | 29.66 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| trans-1,3-dichloropropene (UG/L) | 73105 | -0.81 | 29.66 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| trans-1,3-dichloropropene (UG/L) | 73205 | 3.109 | 29.66 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Trichloroethene (UG/L) | 73005 | -83.36 | 30.5 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| Trichloroethene (UG/L) | 73105 | -83.36 | 30.11 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| Trichloroethene (UG/L) | 73205 | -81.04 | 30.11 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| **Uranium (ug/L)** | **73105** | **85.99** | **29.11** | **Yes** | **0.01667** | **n/a** | **Yes** | **0.05** | **NP (normality)** |
| **Uranium (ug/L)** | **73005** | **94.17** | **29.49** | **Yes** | **0.01667** | **n/a** | **Yes** | **0.05** | **NP (normality)** |
| **Uranium (ug/L)** | **73205** | **147.6** | **29.11** | **Yes** | **0.01667** | **n/a** | **Yes** | **0.05** | **NP (normality)** |
| Vinyl chloride (UG/L) | 73005 | -0.8109 | 30.5 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Vinyl chloride (UG/L) | 73105 | -0.8109 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Vinyl chloride (UG/L) | 73205 | 3.053 | 30.11 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Zinc (UG/L) | 73205 | 23 | 29.1 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| **Zinc (UG/L)** | **73105** | **62.87** | **29.1** | **Yes** | **0.01667** | **n/a** | **Yes** | **0.05** | **NP (normality)** |
| Zinc (UG/L) | 73005 | 24.23 | 29.47 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |

#### B.3.2.2 OLF ANOVA Summary

# Non-Parametric ANOVA

Constituent: Boron Analysis Run 3/9/2014 4:43 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

For observations made between 12/28/2005 and 11/6/2013, the non-parametric analysis of variance test indicates a DIFFERENCE between the medians of the groups tested at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one group has a significantly different median concentration of this constituent when compared to another group.

Calculated Kruskal-Wallis statistic = 114.1

Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.

There were 24 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 113.9
Adjusted Kruskal-Wallis statistic (H') = 114.1

The contrast test was performed to determine if any compliance group concentration was significantly higher than the background concentration. The contrast test indicates statistical significance in 3 of the compliance wells.

Contrast table:

| Well | Difference | Contrast | Significant? |
|---|---|---|---|
| 80005 | 35.11 | 20.14 | Yes |
| 80205 | 63.18 | 20.14 | Yes |
| 80105 | 96.5 | 20.14 | Yes |

The critical (contrast) value was computed with 3 degrees of freedom and a 1.667% error level for each well comparison.

Non-parametric test used in lieu of parametric anova because the Chi Squared normality test showed the residuals to be non-normal at the 0.05 alpha level.

# Non-Parametric ANOVA

Constituent: Cadmium Analysis Run 3/9/2014 4:43 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

For observations made between 9/12/2005 and 11/6/2013, the non-parametric analysis of variance test indicates a DIFFERENCE between the medians of the groups tested at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one group has a significantly different median concentration of this constituent when compared to another group.

Calculated Kruskal-Wallis statistic = 8.839

Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.

There were 15 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 6.998
Adjusted Kruskal-Wallis statistic (H') = 8.839

The contrast test was performed to determine if any compliance group concentration was significantly higher than the background concentration. The contrast test indicates statistical significance in none of the compliance wells.

Contrast table:

| Well | Difference | Contrast | Significant? |
|---|---|---|---|
| 80205 | 3.878 | 20.44 | No |
| 80105 | -12.24 | 20.44 | No |
| 80005 | -18.05 | 20.44 | No |

The critical (contrast) value was computed with 3 degrees of freedom and a 1.667% error level for each well comparison. (Note: In this case, with Anova indicating differences that are not reflected in the contrast test, it should be concluded that it is the median of the Background data which is significantly higher.)

Non-parametric test used in lieu of parametric anova because the Chi Squared normality test showed the residuals to be non-normal at the 0.05 alpha level.

# Non-Parametric ANOVA

Constituent: Chloroform Analysis Run 3/9/2014 4:43 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

For observations made between 6/19/2003 and 11/6/2013, the non-parametric analysis of variance test indicates a DIFFERENCE between the medians of the groups tested at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one group has a significantly different median concentration of this constituent when compared to another group.

Calculated Kruskal-Wallis statistic = 18.14

Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.

There were 2 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 3.017
Adjusted Kruskal-Wallis statistic (H') = 18.14

The contrast test was performed to determine if any compliance group concentration was significantly higher than the background concentration. The contrast test indicates statistical significance in none of the compliance wells.

Contrast table:

| Well | Difference | Contrast | Significant? |
|---|---|---|---|
| 80205 | -14.07 | 20.44 | No |
| 80105 | -14.07 | 20.44 | No |
| 80005 | -12.15 | 20.44 | No |

The critical (contrast) value was computed with 3 degrees of freedom and a 1.667% error level for each well comparison. (Note: In this case, with Anova indicating differences that are not reflected in the contrast test, it should be concluded that it is the median of the Background data which is significantly higher.)

Non-parametric test used in lieu of parametric anova because the Chi Squared normality test showed the residuals to be non-normal at the 0.05 alpha level.

# Non-Parametric ANOVA

Constituent: Nickel Analysis Run 3/9/2014 4:43 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

For observations made between 9/12/2005 and 11/6/2013, the non-parametric analysis of variance test indicates a DIFFERENCE between the medians of the groups tested at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one group has a significantly different median concentration of this constituent when compared to another group.

Calculated Kruskal-Wallis statistic = 25

Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.

There were 14 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 17.84
Adjusted Kruskal-Wallis statistic (H') = 25

The contrast test was performed to determine if any compliance group concentration was significantly higher than the background concentration. The contrast test indicates statistical significance in 1 of the compliance wells.

Contrast table:

| Well | Difference | Contrast | Significant? |
|---|---|---|---|
| 80205 | 23.81 | 20.44 | Yes |
| 80105 | -11.1 | 20.44 | No |
| 80005 | -10.66 | 20.44 | No |

The critical (contrast) value was computed with 3 degrees of freedom and a 1.667% error level for each well comparison.

Non-parametric test used in lieu of parametric anova because the Chi Squared normality test showed the residuals to be non-normal at the 0.05 alpha level.

# Non-Parametric ANOVA

Constituent: Uranium Analysis Run 3/9/2014 4:43 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

For observations made between 9/12/2005 and 11/6/2013, the non-parametric analysis of variance test indicates a DIFFERENCE between the medians of the groups tested at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one group has a significantly different median concentration of this constituent when compared to another group.

Calculated Kruskal-Wallis statistic = 72.07

Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.

There were 16 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 71.11
Adjusted Kruskal-Wallis statistic (H') = 72.07

The contrast test was performed to determine if any compliance group concentration was significantly higher than the background concentration. The contrast test indicates statistical significance in 2 of the compliance wells.

Contrast table:

| Well | Difference | Contrast | Significant? |
|---|---|---|---|
| 80105 | 20.83 | 20.14 | Yes |
| 80205 | 72.02 | 20.14 | Yes |
| 80005 | 8.501 | 20.14 | No |

The critical (contrast) value was computed with 3 degrees of freedom and a 1.667% error level for each well comparison.

Non-parametric test used in lieu of parametric anova because the Chi Squared normality test showed the residuals to be non-normal at the 0.05 alpha level.

# Non-Parametric ANOVA

Constituent: Zinc Analysis Run 3/9/2014 4:43 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

For observations made between 9/12/2005 and 11/6/2013, the non-parametric analysis of variance test indicates a DIFFERENCE between the medians of the groups tested at the 5% significance level. Because the calculated Kruskal-Wallis statistic is greater than the Chi-squared value, we conclude that at least one group has a significantly different median concentration of this constituent when compared to another group.

Calculated Kruskal-Wallis statistic = 8.048

Tabulated Chi-Squared value = 7.815 with 3 degrees of freedom at the 5% significance level.

There were 9 groups of ties in the data, consequently the Kruskal-Wallis statistic (H) was adjusted. The adjusted statistic (H') was utilized to determine if the medians were equal.
Kruskal-Wallis statistic (H) = 5.663
Adjusted Kruskal-Wallis statistic (H') = 8.048

The contrast test was performed to determine if any compliance group concentration was significantly higher than the background concentration. The contrast test indicates statistical significance in none of the compliance wells.

Contrast table:

| Well | Difference | Contrast | Significant? |
|---|---|---|---|
| 80205 | 6.425 | 20.44 | No |
| 80105 | -15.41 | 20.44 | No |
| 80005 | -5.09 | 20.44 | No |

The critical (contrast) value was computed with 3 degrees of freedom and a 1.667% error level for each well comparison. (Note: In this case, with Anova indicating differences that are not reflected in the contrast test, it should be concluded that it is the median of the Background data which is significantly higher.)

Non-parametric test used in lieu of parametric anova because the Chi Squared normality test showed the residuals to be non-normal at the 0.05 alpha level.

# OLF: Analysis of Variance

Facility: Rocky Flats  Client: DOE LM  Data File: RFLMA RCRA wells, SWD&CPro  Printed 3/9/2014, 4:43 PM

| Constituent | Well | Calc. | Crit. | Sig. | Alpha | Transform | ANOVA Sig. | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane (UG/L) | 80205 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,1,1-Trichloroethane (UG/L) | 80105 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,1,1-Trichloroethane (UG/L) | 80005 | 2 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,1,2,2-Tetrachloroethane (UG/L) | 80205 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,1,2,2-Tetrachloroethane (UG/L) | 80005 | 2 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,1,2,2-Tetrachloroethane (UG/L) | 80105 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,1,2-Trichloroethane (UG/L) | 80205 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,1,2-Trichloroethane (UG/L) | 80005 | 2 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,1,2-Trichloroethane (UG/L) | 80105 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,1-Dichloroethene (UG/L) | 80205 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,1-Dichloroethene (UG/L) | 80005 | 1.985 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,1-Dichloroethene (UG/L) | 80105 | 2.015 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2,4-Trichlorobenzene (UG/L) | 80205 | 1.929 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2,4-Trichlorobenzene (UG/L) | 80105 | -2 | 20.59 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2,4-Trichlorobenzene (UG/L) | 80005 | -2 | 20.59 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2-Dibromo-3-chloropropane (UG/L) | 80205 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2-Dibromo-3-chloropropane (UG/L) | 80005 | 2 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2-Dibromo-3-chloropropane (UG/L) | 80105 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2-Dibromoethane (UG/L) | 80205 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2-Dibromoethane (UG/L) | 80005 | 2 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2-Dibromoethane (UG/L) | 80105 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2-Dichlorobenzene (UG/L) | 80205 | -4.044 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2-Dichlorobenzene (UG/L) | 80105 | -2.015 | 20.59 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2-Dichlorobenzene (UG/L) | 80005 | -2.059 | 20.59 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2-Dichloroethane (UG/L) | 80205 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2-Dichloroethane (UG/L) | 80005 | 2 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2-Dichloroethane (UG/L) | 80105 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2-Dichloropropane (UG/L) | 80205 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2-Dichloropropane (UG/L) | 80005 | 2 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,2-Dichloropropane (UG/L) | 80105 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,3-Dichlorobenzene (UG/L) | 80205 | 5.886 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,3-Dichlorobenzene (UG/L) | 80105 | 4.059 | 20.59 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,3-Dichlorobenzene (UG/L) | 80005 | 10.03 | 20.59 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,4-Dichlorobenzene (UG/L) | 80205 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,4-Dichlorobenzene (UG/L) | 80005 | 2 | 20.59 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 1,4-Dichlorobenzene (UG/L) | 80105 | 2.029 | 20.59 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 2, 4-Dimethylphenol (ug/L) | 80205 | 2.015 | 19.99 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 2, 4-Dimethylphenol (ug/L) | 80005 | 0 | 19.99 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 2, 4-Dimethylphenol (ug/L) | 80105 | 4.063 | 20.14 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 2,4,5-Trichlorophenol (UG/L) | 80205 | 2 | 19.37 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |

# OLF: Analysis of Variance

Facility: Rocky Flats  Client: DOE LM  Data File: RFLMA RCRA wells, SWD&CPro  Printed 3/9/2014, 4:43 PM

| Constituent | Well | Calc. | Crit. | Sig. | Alpha | Transform | ANOVA Sig. | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|
| 2,4,5-Trichlorophenol (UG/L) | 80105 | 4.033 | 19.53 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 2,4,5-Trichlorophenol (UG/L) | 80005 | 0 | 19.37 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 2,4,6-Trichlorophenol (UG/L) | 80205 | 2 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 2,4,6-Trichlorophenol (UG/L) | 80105 | 4.03 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 2,4,6-Trichlorophenol (UG/L) | 80005 | 0 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 2,4-Dichlorophenol (UG/L) | 80205 | 2 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 2,4-Dichlorophenol (UG/L) | 80105 | 4.03 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 2,4-Dichlorophenol (UG/L) | 80005 | 0 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 2,4-Dinitrophenol (UG/L) | 80205 | 1.985 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 2,4-Dinitrophenol (UG/L) | 80105 | 4.045 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 2,4-Dinitrophenol (UG/L) | 80005 | 0 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 2,4-Dinitrotoluene (UG/L) | 80205 | 2 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 2,4-Dinitrotoluene (UG/L) | 80105 | 4.03 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 2,4-Dinitrotoluene (UG/L) | 80005 | 0 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 2,6-Dinitrotoluene (UG/L) | 80205 | 2 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 2,6-Dinitrotoluene (UG/L) | 80105 | 4.03 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 2,6-Dinitrotoluene (UG/L) | 80005 | 0 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 2-Chloronaphthalene (UG/L) | 80205 | 2 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 2-Chloronaphthalene (UG/L) | 80105 | 4.03 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 2-Chloronaphthalene (UG/L) | 80005 | 0 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 2-Chlorophenol (UG/L) | 80205 | 2 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 2-Chlorophenol (UG/L) | 80105 | 4.03 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 2-Chlorophenol (UG/L) | 80005 | 0 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 3,3`-Dichlorobenzidine (UG/L) | 80205 | 1.985 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 3,3`-Dichlorobenzidine (UG/L) | 80105 | 2.076 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 3,3`-Dichlorobenzidine (UG/L) | 80005 | -0.1181 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 4,6-Dinitro-2-methyl phenol (UG/L) | 80205 | 2 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 4,6-Dinitro-2-methyl phenol (UG/L) | 80105 | 4.03 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 4,6-Dinitro-2-methyl phenol (UG/L) | 80005 | 0 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 4-Chloro-3-methylphenol (UG/L) | 80205 | 1.895 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 4-Chloro-3-methylphenol (UG/L) | 80105 | 1.864 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 4-Chloro-3-methylphenol (UG/L) | 80005 | -0.06105 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 4-Nitrophenol (UG/L) | 80205 | 2 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 4-Nitrophenol (UG/L) | 80105 | 4.03 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| 4-Nitrophenol (UG/L) | 80005 | 0 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Acenaphthene (UG/L) | 80205 | 1.88 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Acenaphthene (UG/L) | 80105 | 1.879 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Acenaphthene (UG/L) | 80005 | -0.06105 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Anthracene (UG/L) | 80205 | 1.895 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Anthracene (UG/L) | 80105 | 1.864 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |

# OLF: Analysis of Variance

Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro Printed 3/9/2014, 4:43 PM

| Constituent | Well | Calc. | Crit. | Sig. | Alpha | Transform | ANOVA Sig. | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|
| Anthracene (UG/L) | 80005 | -0.06105 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Arsenic (UG/L) | 80205 | -0.7527 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Arsenic (UG/L) | 80105 | -2.988 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Arsenic (UG/L) | 80005 | 1.394 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Benz[a]anthracene (ug/L) | 80205 | 2.015 | 19.99 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Benz[a]anthracene (ug/L) | 80005 | 0 | 19.99 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Benz[a]anthracene (ug/L) | 80105 | 4.063 | 20.14 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Benzene (UG/L) | 80205 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Benzene (UG/L) | 80005 | 2 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Benzene (UG/L) | 80105 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Benzo[a]pyrene (UG/L) | 80205 | 2 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Benzo[a]pyrene (UG/L) | 80105 | 4.03 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Benzo[a]pyrene (UG/L) | 80005 | 0 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Benzo[b]fluoranthene (UG/L) | 80205 | 2 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Benzo[b]fluoranthene (UG/L) | 80105 | 4.03 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Benzo[b]fluoranthene (UG/L) | 80005 | 0 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Benzo[g,h,i]Perylene (UG/L) | 80205 | 2 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Benzo[g,h,i]Perylene (UG/L) | 80105 | 4.03 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Benzo[g,h,i]Perylene (UG/L) | 80005 | 0 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Benzo[k]fluoranthene (UG/L) | 80205 | 2 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Benzo[k]fluoranthene (UG/L) | 80105 | 4.03 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Benzo[k]fluoranthene (UG/L) | 80005 | 0 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Beryllium (UG/L) | 80205 | -0.2709 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Beryllium (UG/L) | 80105 | -2.271 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Beryllium (UG/L) | 80005 | -2.271 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Bis[2-chloroethyl] ether (UG/L) | 80205 | 2 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Bis[2-chloroethyl] ether (UG/L) | 80105 | 4.03 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Bis[2-chloroethyl] ether (UG/L) | 80005 | 0 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Bis[2-chloroisopropyl] ether (UG/L) | 80205 | -0.1084 | 19.99 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Bis[2-chloroisopropyl] ether (UG/L) | 80105 | 1.938 | 20.14 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Bis[2-chloroisopropyl] ether (UG/L) | 80005 | -2.078 | 19.99 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Bis[2-ethylhexyl] phthalate (UG/L) | 80205 | -8.615 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Bis[2-ethylhexyl] phthalate (UG/L) | 80105 | -6.394 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Bis[2-ethylhexyl] phthalate (UG/L) | 80005 | -10.44 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| **Boron (ug/L)** | **80005** | **35.11** | **20.14** | **Yes** | **0.01667** | **n/a** | **Yes** | **0.05** | **NP (normality)** |
| **Boron (ug/L)** | **80205** | **63.18** | **20.14** | **Yes** | **0.01667** | **n/a** | **Yes** | **0.05** | **NP (normality)** |
| **Boron (ug/L)** | **80105** | **96.5** | **20.14** | **Yes** | **0.01667** | **n/a** | **Yes** | **0.05** | **NP (normality)** |
| Bromodichloromethane (UG/L) | 80205 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Bromodichloromethane (UG/L) | 80005 | 2 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Bromodichloromethane (UG/L) | 80105 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |

# OLF: Analysis of Variance

Facility: Rocky Flats  Client: DOE LM  Data File: RFLMA RCRA wells, SWD&CPro  Printed 3/9/2014, 4:43 PM

| Constituent | Well | Calc. | Crit. | Sig. | Alpha | Transform | ANOVA Sig. | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|
| Bromoform (UG/L) | 80205 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Bromoform (UG/L) | 80005 | 2 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Bromoform (UG/L) | 80105 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Bromomethane (UG/L) | 80205 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Bromomethane (UG/L) | 80005 | 2 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Bromomethane (UG/L) | 80105 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Butyl benzyl phthalate (UG/L) | 80205 | 1.985 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Butyl benzyl phthalate (UG/L) | 80105 | 4.045 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Butyl benzyl phthalate (UG/L) | 80005 | 0 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Cadmium (UG/L) | 80205 | 3.878 | 20.44 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| Cadmium (UG/L) | 80105 | -12.24 | 20.44 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| Cadmium (UG/L) | 80005 | -18.05 | 20.44 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| Carbon tetrachloride (UG/L) | 80205 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Carbon tetrachloride (UG/L) | 80105 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Carbon tetrachloride (UG/L) | 80005 | 2 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Chlorobenzene (UG/L) | 80205 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Chlorobenzene (UG/L) | 80005 | 2 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Chlorobenzene (UG/L) | 80105 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Chlorodibromomethane (UG/L) | 80205 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Chlorodibromomethane (UG/L) | 80005 | 2 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Chlorodibromomethane (UG/L) | 80105 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Chloroform (UG/L) | 80205 | -14.07 | 20.44 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| Chloroform (UG/L) | 80105 | -14.07 | 20.44 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| Chloroform (UG/L) | 80005 | -12.15 | 20.44 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| Chloromethane (UG/L) | 80205 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Chloromethane (UG/L) | 80105 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Chloromethane (UG/L) | 80005 | 2 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Chromium (UG/L) | 80205 | -8.242 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Chromium (UG/L) | 80105 | -10.37 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Chromium (UG/L) | 80005 | -8.036 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Chrysene (UG/L) | 80205 | 2.044 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Chrysene (UG/L) | 80105 | 3.97 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Chrysene (UG/L) | 80005 | 1.926 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| cis-1,2-Dichloroethene (UG/L) | 80205 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| cis-1,2-Dichloroethene (UG/L) | 80005 | 2 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| cis-1,2-Dichloroethene (UG/L) | 80105 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Copper (UG/L) | 80205 | 11.17 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Copper (UG/L) | 80105 | 1.849 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Copper (UG/L) | 80005 | 6.29 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Dibenz[a,h]anthracene (UG/L) | 80205 | 2 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |

# OLF: Analysis of Variance

Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro Printed 3/9/2014, 4:43 PM

| Constituent | Well | Calc. | Crit. | Sig. | Alpha | Transform | ANOVA Sig. | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|
| Dibenz[a,h]anthracene (UG/L) | 80105 | 4.03 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Dibenz[a,h]anthracene (UG/L) | 80005 | 0 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Diethyl phthalate (UG/L) | 80205 | 1.879 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Diethyl phthalate (UG/L) | 80105 | 5.909 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Diethyl phthalate (UG/L) | 80005 | -0.1502 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Dimethyl phthalate (UG/L) | 80205 | 1.985 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Dimethyl phthalate (UG/L) | 80105 | 4.045 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Dimethyl phthalate (UG/L) | 80005 | 0 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Di-n-butyl phthalate (UG/L) | 80205 | 1.985 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Di-n-butyl phthalate (UG/L) | 80105 | 4.045 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Di-n-butyl phthalate (UG/L) | 80005 | 0 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Ethylbenzene (UG/L) | 80205 | 0 | 17.9 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Ethylbenzene (UG/L) | 80005 | 2 | 17.9 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Ethylbenzene (UG/L) | 80105 | 0 | 17.9 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Fluoranthene (UG/L) | 80205 | 2 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Fluoranthene (UG/L) | 80105 | 4.03 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Fluoranthene (UG/L) | 80005 | 0 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Fluorene (UG/L) | 80205 | 2 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Fluorene (UG/L) | 80105 | 4.03 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Fluorene (UG/L) | 80005 | 0 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Hexachlorobenzene (UG/L) | 80205 | 2 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Hexachlorobenzene (UG/L) | 80105 | 4.03 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Hexachlorobenzene (UG/L) | 80005 | 0 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Hexachlorobutadiene (UG/L) | 80205 | -2.116 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Hexachlorobutadiene (UG/L) | 80105 | -4.059 | 20.59 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Hexachlorobutadiene (UG/L) | 80005 | -2.059 | 20.59 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Hexachlorocyclopentadiene (UG/L) | 80205 | 1.971 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Hexachlorocyclopentadiene (UG/L) | 80105 | 4.061 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Hexachlorocyclopentadiene (UG/L) | 80005 | 0 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Hexachloroethane (UG/L) | 80205 | 1.968 | 19.37 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Hexachloroethane (UG/L) | 80105 | 4.017 | 19.53 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Hexachloroethane (UG/L) | 80005 | 2.016 | 19.37 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Indeno[1,2,3-cd]pyrene (UG/L) | 80205 | 2 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Indeno[1,2,3-cd]pyrene (UG/L) | 80105 | 4.03 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Indeno[1,2,3-cd]pyrene (UG/L) | 80005 | 0 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Isophorone (UG/L) | 80205 | 1.985 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Isophorone (UG/L) | 80105 | 4.045 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Isophorone (UG/L) | 80005 | 0 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Lead (UG/L) | 80205 | 7.936 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Lead (UG/L) | 80105 | 1.539 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |

# OLF: Analysis of Variance

Facility: Rocky Flats  Client: DOE LM  Data File: RFLMA RCRA wells, SWD&CPro  Printed 3/9/2014, 4:43 PM

| Constituent | Well | Calc. | Crit. | Sig. | Alpha | Transform | ANOVA Sig. | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|
| Lead (UG/L) | 80005 | 3.701 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| m,p-Xylene (ug/L) | 80205 | -1.929 | 9.445 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| m,p-Xylene (ug/L) | 80105 | 0 | 9.075 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| m,p-Xylene (ug/L) | 80005 | -1.929 | 9.075 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Mercury (UG/L) | 80205 | -8.302 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Mercury (UG/L) | 80105 | -8.302 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Mercury (UG/L) | 80005 | -8.302 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Methylene chloride (UG/L) | 80205 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Methylene chloride (UG/L) | 80005 | 6 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Methylene chloride (UG/L) | 80105 | 4 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Naphthalene (UG/L) | 80205 | -2.116 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Naphthalene (UG/L) | 80105 | -4.059 | 20.59 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Naphthalene (UG/L) | 80005 | -2.059 | 20.59 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| **Nickel (UG/L)** | **80205** | **23.81** | **20.44** | **Yes** | **0.01667** | **n/a** | **Yes** | **0.05** | **NP (normality)** |
| Nickel (UG/L) | 80105 | -11.1 | 20.44 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| Nickel (UG/L) | 80005 | -10.66 | 20.44 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| Nitrobenzene (UG/L) | 80205 | 2 | 19.37 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Nitrobenzene (UG/L) | 80105 | 4.033 | 19.53 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Nitrobenzene (UG/L) | 80005 | 0 | 19.37 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| N-Nitrosodi-n-propylamine (UG/L) | 80205 | 2 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| N-Nitrosodi-n-propylamine (UG/L) | 80105 | 4.03 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| N-Nitrosodi-n-propylamine (UG/L) | 80005 | 0 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| N-Nitrosodiphenylamine (UG/L) | 80205 | 1.983 | 19.05 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| N-Nitrosodiphenylamine (UG/L) | 80105 | 4.052 | 19.21 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| N-Nitrosodiphenylamine (UG/L) | 80005 | 0 | 19.05 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Pentachlorophenol (UG/L) | 80205 | 2 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Pentachlorophenol (UG/L) | 80105 | 4.03 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Pentachlorophenol (UG/L) | 80005 | 0 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Phenol (UG/L) | 80205 | 2 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Phenol (UG/L) | 80105 | 4.03 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Phenol (UG/L) | 80005 | 0 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Pyrene (UG/L) | 80205 | 1.986 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Pyrene (UG/L) | 80105 | 2.136 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Pyrene (UG/L) | 80005 | -0.05838 | 20.29 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Selenium (UG/L) | 80205 | 16.95 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Selenium (UG/L) | 80105 | 0.5539 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Selenium (UG/L) | 80005 | 3.672 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Silver (UG/L) | 80205 | 1.865 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Silver (UG/L) | 80105 | -2.076 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Silver (UG/L) | 80005 | -2.076 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |

# OLF: Analysis of Variance

Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro Printed 3/9/2014, 4:43 PM

| Constituent | Well | Calc. | Crit. | Sig. | Alpha | Transform | ANOVA Sig. | Alpha | Method |
|---|---|---|---|---|---|---|---|---|---|
| Styrene (UG/L) | 80205 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Styrene (UG/L) | 80005 | 2 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Styrene (UG/L) | 80105 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Tetrachloroethene (UG/L) | 80205 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Tetrachloroethene (UG/L) | 80105 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Tetrachloroethene (UG/L) | 80005 | 2 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Toluene (UG/L) | 80205 | -2 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Toluene (UG/L) | 80105 | 0.02941 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Toluene (UG/L) | 80005 | -0.02941 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Total Xylenes (UG/L) | 80205 | 0 | 18.56 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Total Xylenes (UG/L) | 80005 | 2 | 18.56 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Total Xylenes (UG/L) | 80105 | 0 | 18.56 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| trans-1,2-Dichloroethene (UG/L) | 80205 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| trans-1,2-Dichloroethene (UG/L) | 80005 | 2 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| trans-1,2-Dichloroethene (UG/L) | 80105 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| trans-1,3-dichloropropene (UG/L) | 80205 | 0 | 19.84 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| trans-1,3-dichloropropene (UG/L) | 80005 | 2 | 19.84 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| trans-1,3-dichloropropene (UG/L) | 80105 | 0 | 19.84 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Trichloroethene (UG/L) | 80205 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Trichloroethene (UG/L) | 80005 | 4 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Trichloroethene (UG/L) | 80105 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| **Uranium (ug/L)** | **80105** | **20.83** | **20.14** | **Yes** | **0.01667** | **n/a** | **Yes** | **0.05** | **NP (normality)** |
| **Uranium (ug/L)** | **80205** | **72.02** | **20.14** | **Yes** | **0.01667** | **n/a** | **Yes** | **0.05** | **NP (normality)** |
| Uranium (ug/L) | 80005 | 8.501 | 20.14 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| Vinyl chloride (UG/L) | 80205 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Vinyl chloride (UG/L) | 80005 | 2 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Vinyl chloride (UG/L) | 80105 | 0 | 20.44 | No | 0.01667 | n/a | No | 0.05 | NP (normality) |
| Zinc (UG/L) | 80205 | 6.425 | 20.44 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| Zinc (UG/L) | 80105 | -15.41 | 20.44 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |
| Zinc (UG/L) | 80005 | -5.09 | 20.44 | No | 0.01667 | n/a | Yes | 0.05 | NP (normality) |

#### B.3.2.3 PLF and OLF S-K Plots and Summary Tables

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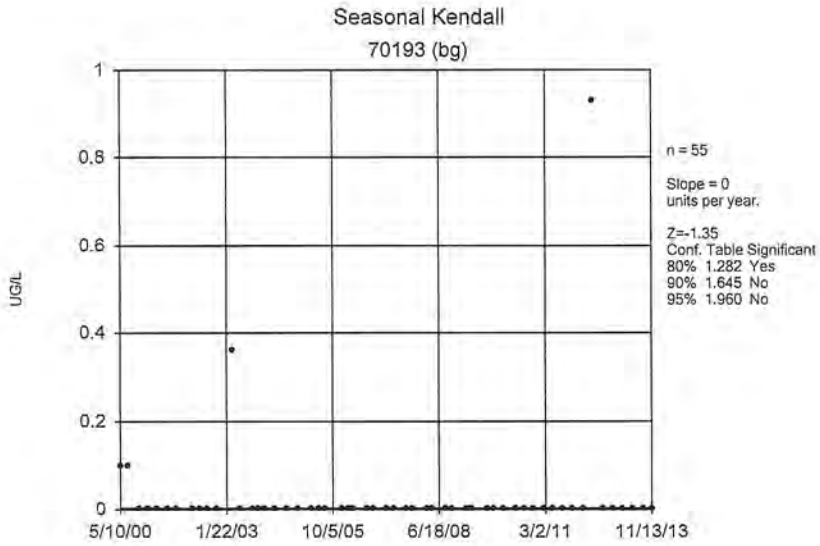


Constituent: 1,1,1-Trichloroethane Analysis Run 3/9/2014 4:43 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

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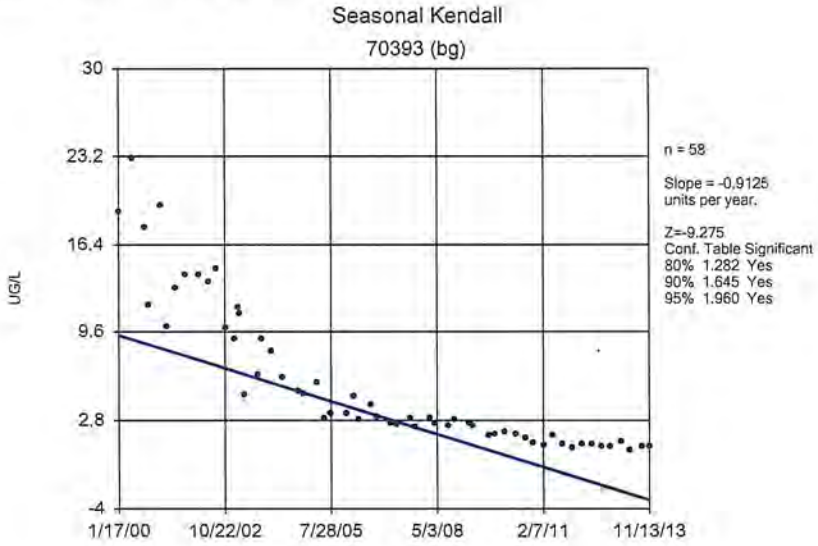
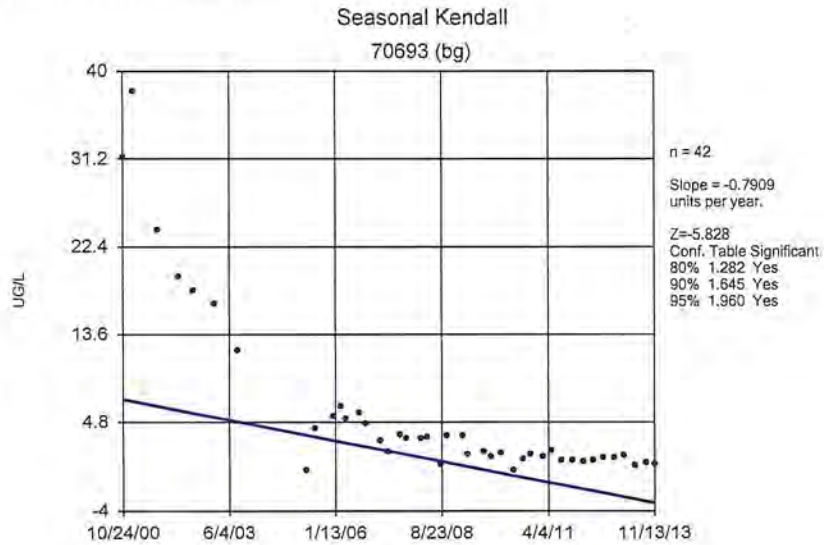



Constituent: 1,1,1-Trichloroethane Analysis Run 3/9/2014 4:43 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA




Constituent: 1,1,1-Trichloroethane Analysis Run 3/9/2014 4:43 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

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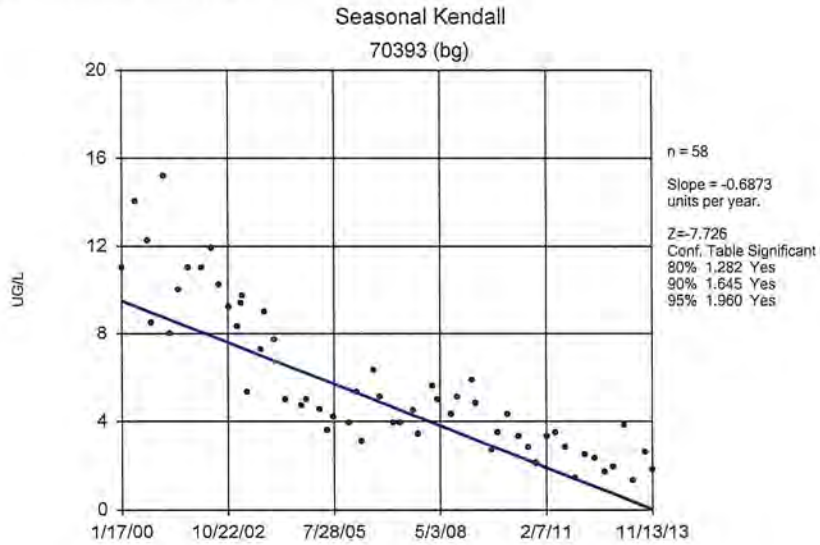


Constituent: 1,1-Dichloroethene Analysis Run 3/9/2014 4:44 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

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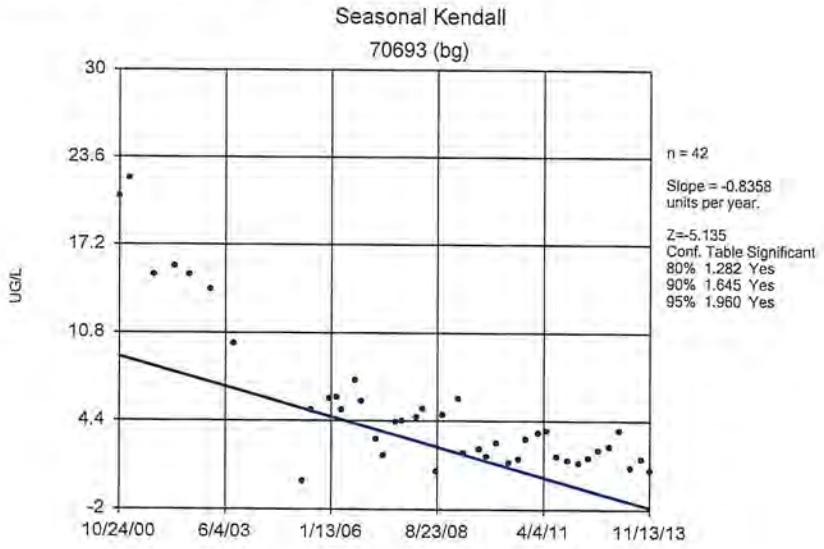
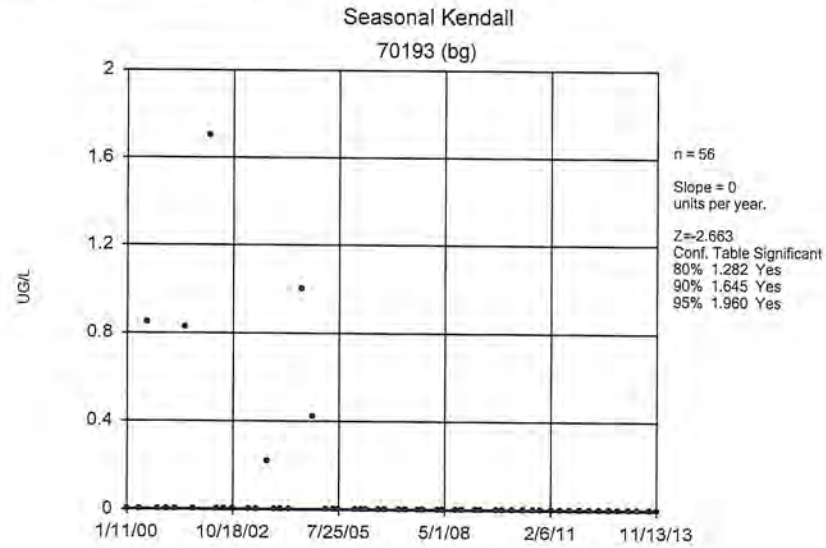



Constituent: 1,1-Dichloroethene Analysis Run 3/9/2014 4:44 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA




Constituent: Arsenic Analysis Run 3/9/2014 4:48 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

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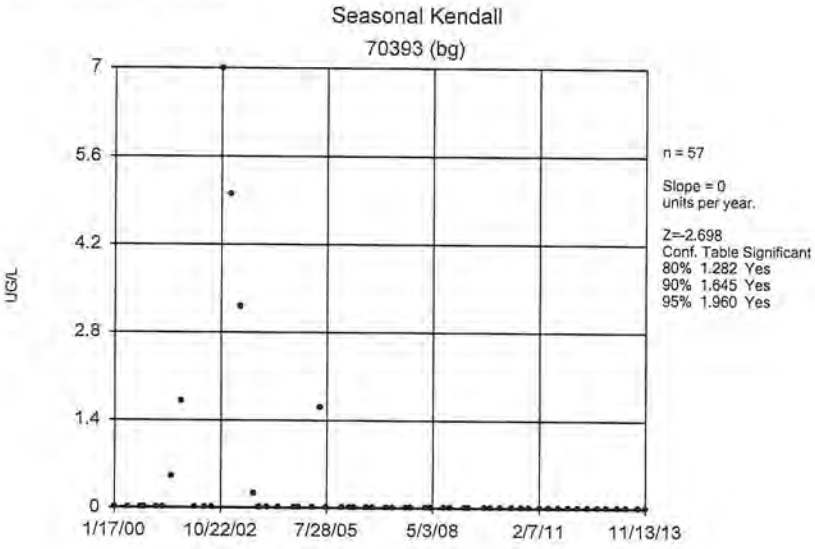


Constituent: Arsenic Analysis Run 3/9/2014 4:48 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

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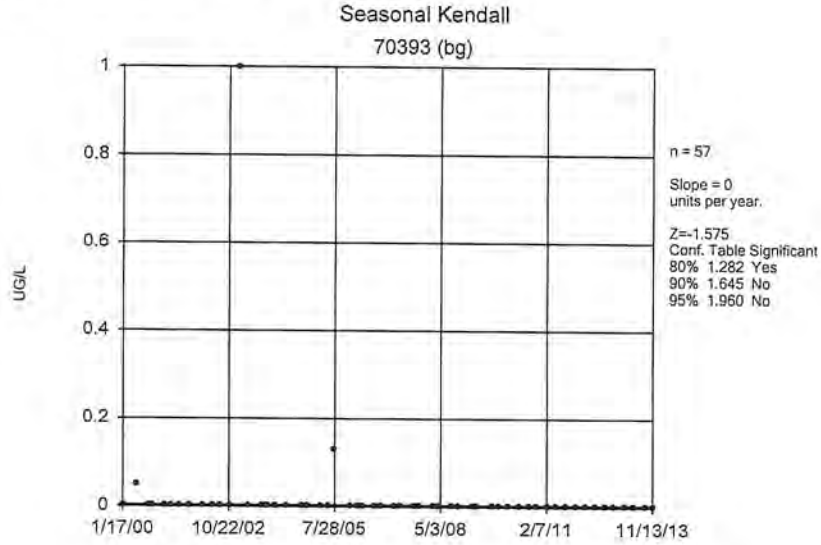


Constituent: Beryllium Analysis Run 3/9/2014 4:49 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

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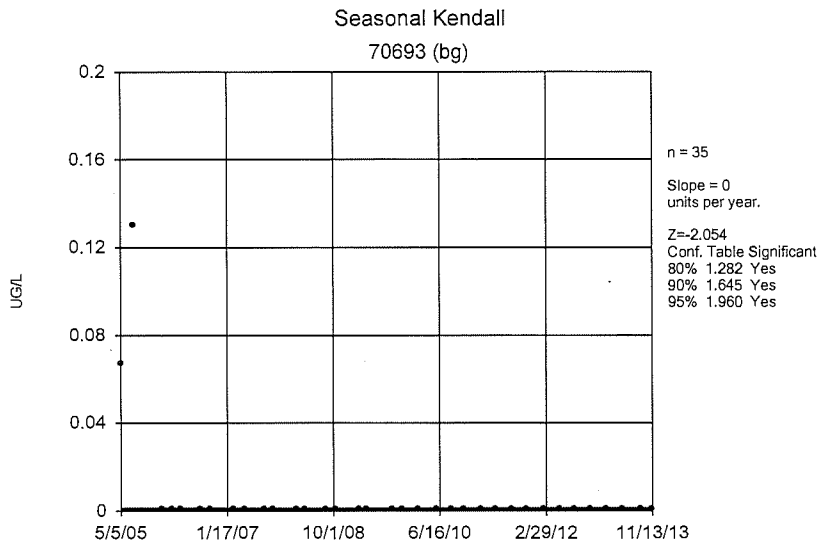


Constituent: Beryllium Analysis Run 3/9/2014 4:49 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

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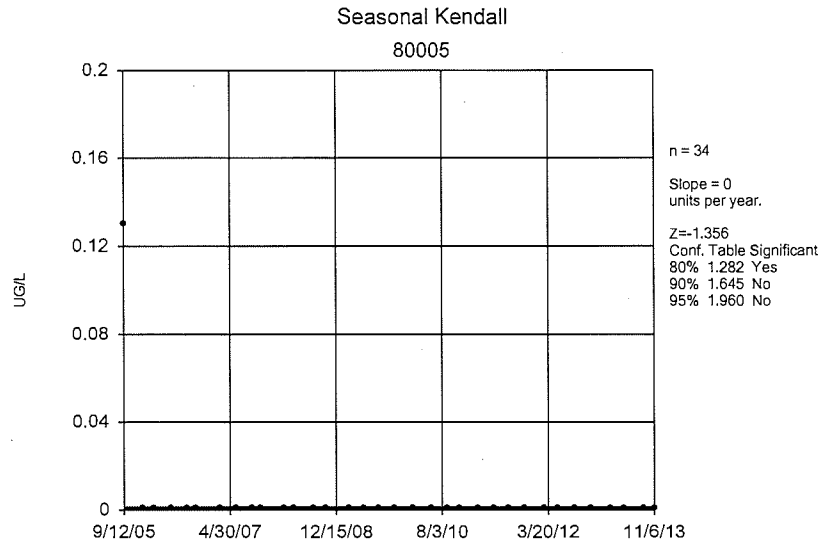
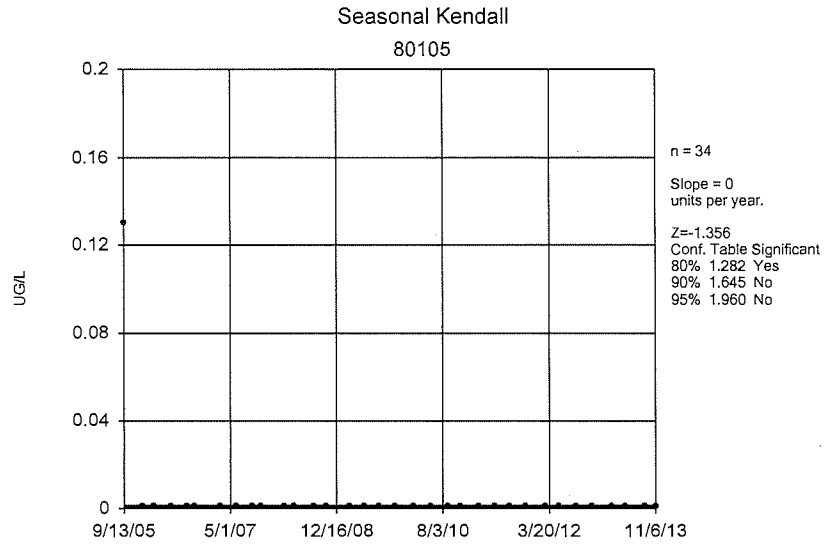


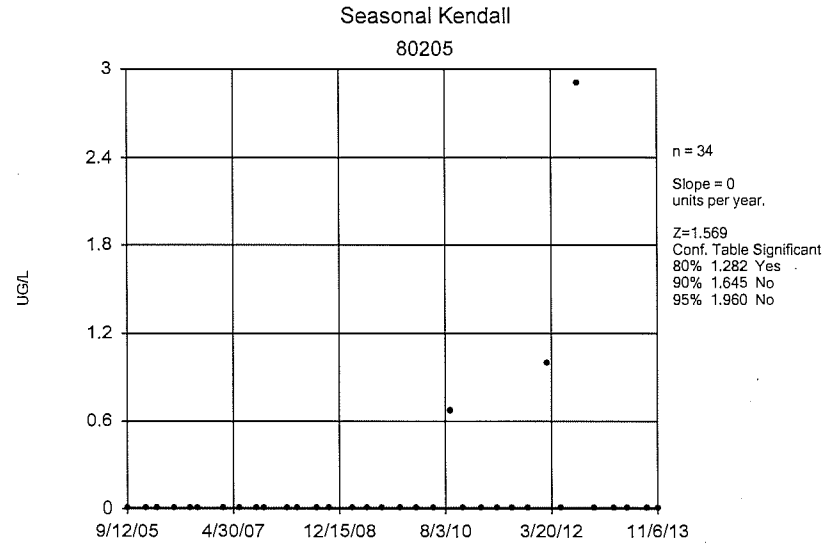

Constituent: Beryllium Analysis Run 3/9/2014 4:49 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



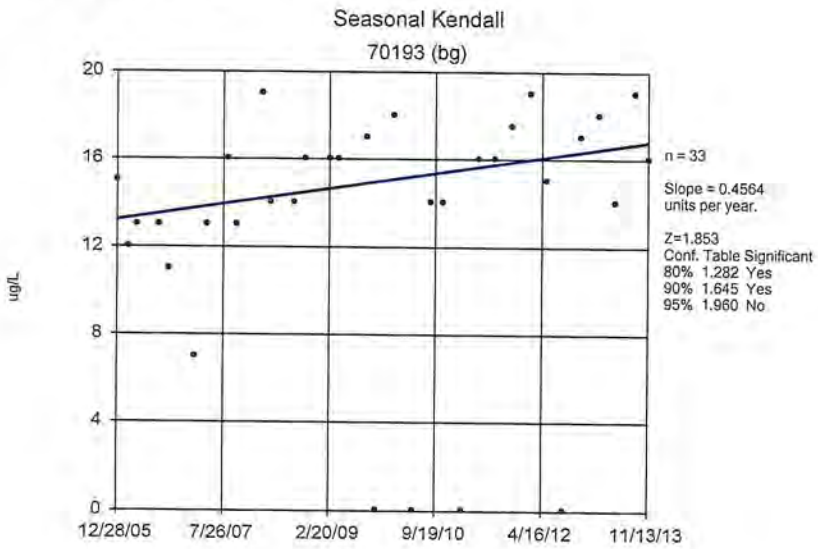

Constituent: Beryllium Analysis Run 3/9/2014 4:49 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



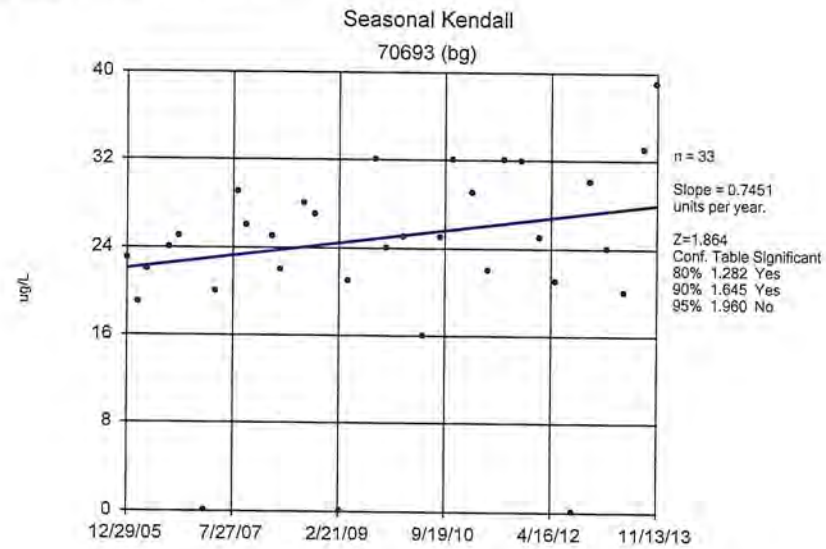

Constituent: Bis[2-ethylhexyl] phthalate Analysis Run 3/9/2014 4:49 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



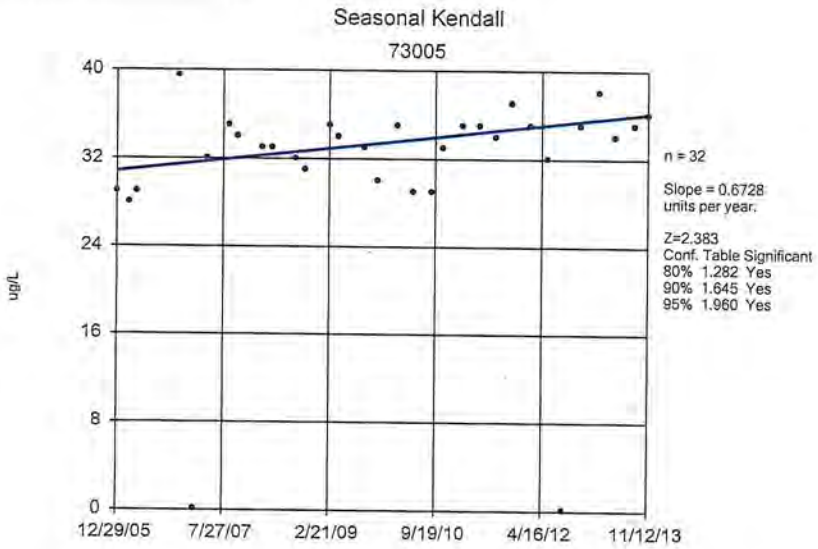

Constituent: Boron Analysis Run 3/9/2014 4:49 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



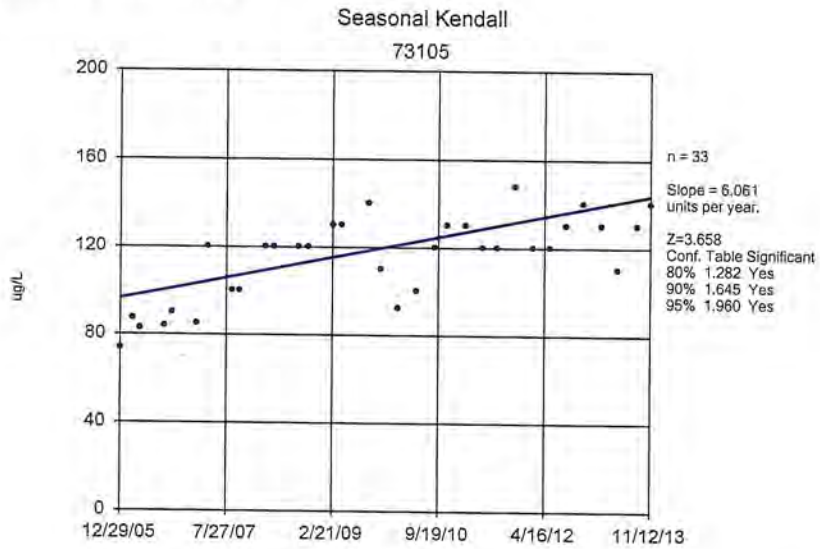

Constituent: Boron Analysis Run 3/9/2014 4:49 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



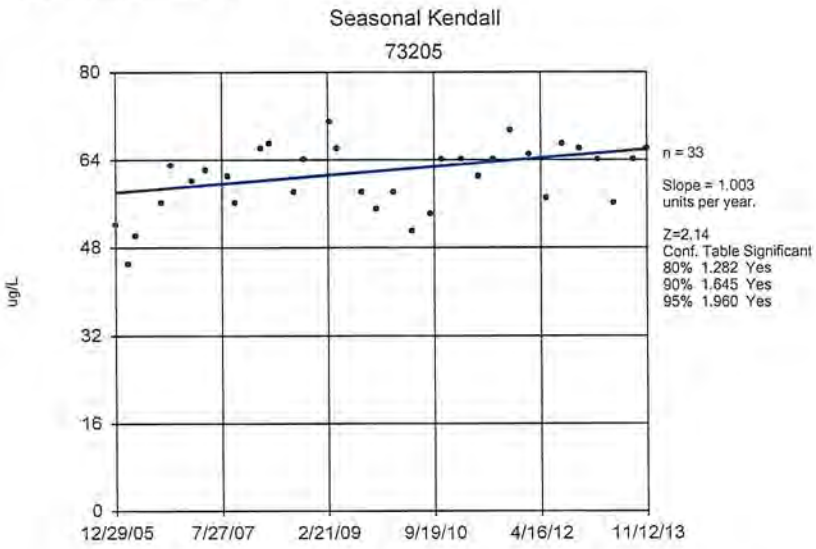

Constituent: Boron Analysis Run 3/9/2014 4:49 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



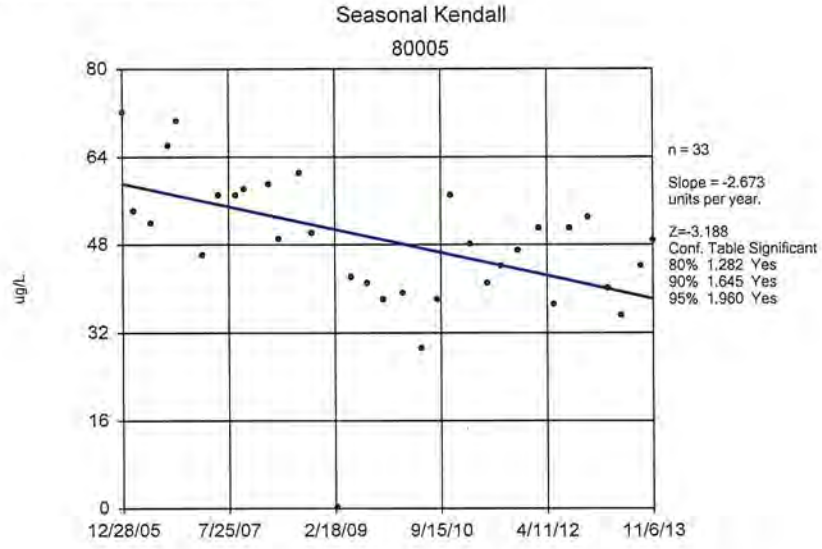

Constituent: Boron Analysis Run 3/9/2014 4:49 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



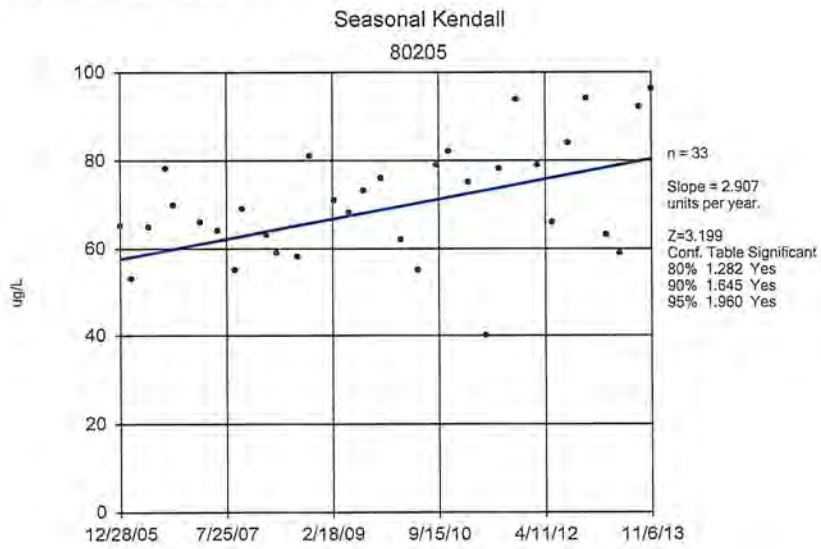

Constituent: Boron Analysis Run 3/9/2014 4:49 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



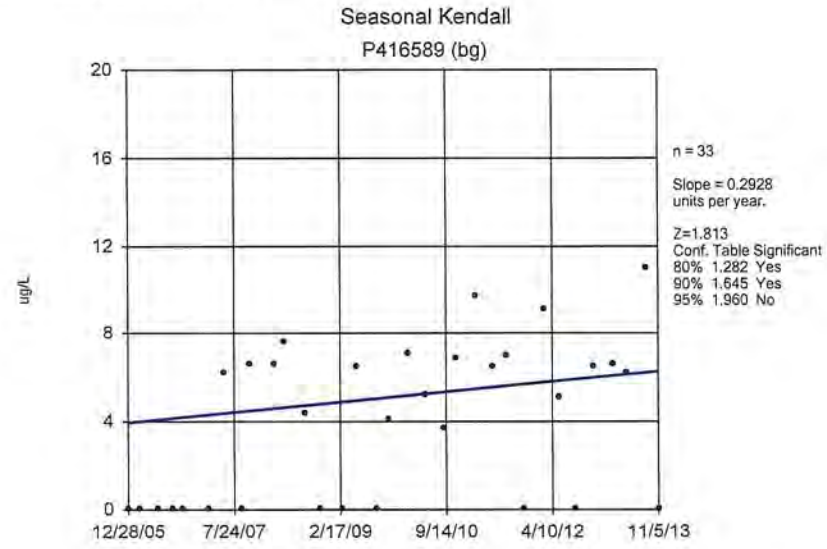

Constituent: Boron Analysis Run 3/9/2014 4:49 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



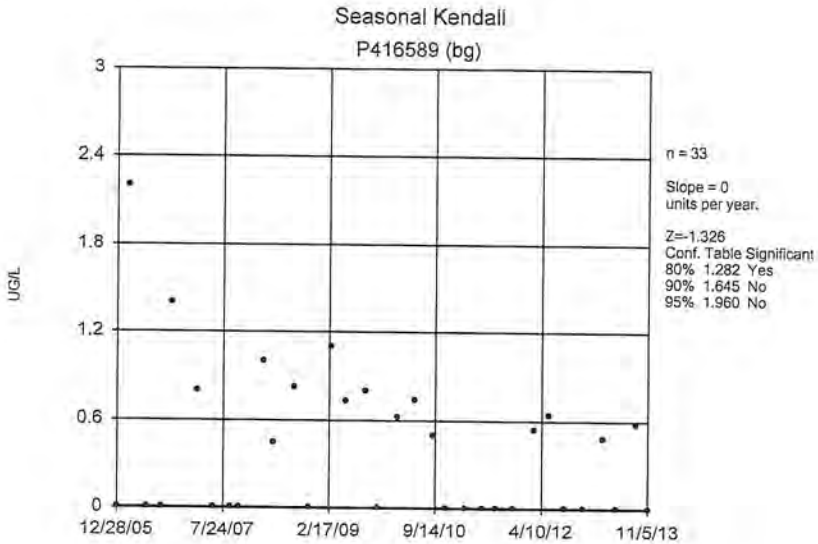

Constituent: Boron Analysis Run 3/9/2014 4:50 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



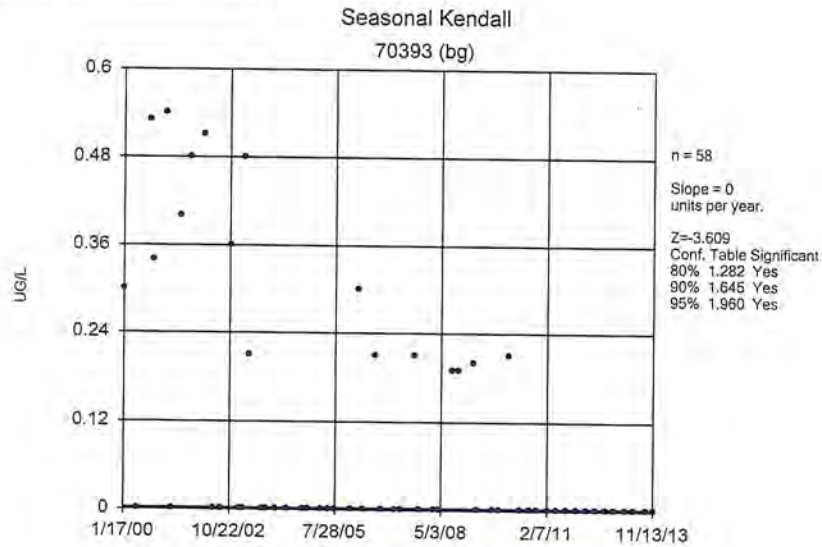

Constituent: Boron Analysis Run 3/9/2014 4:50 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



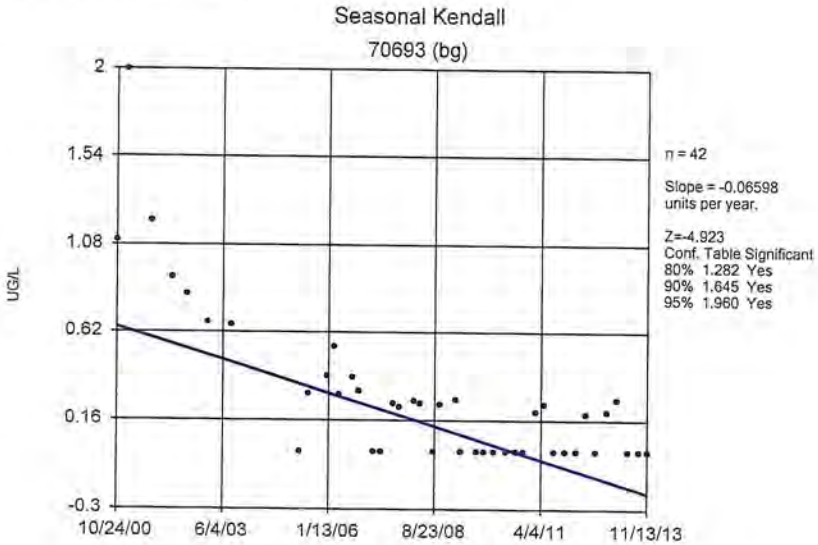

Constituent: Cadmium Analysis Run 3/9/2014 4:50 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



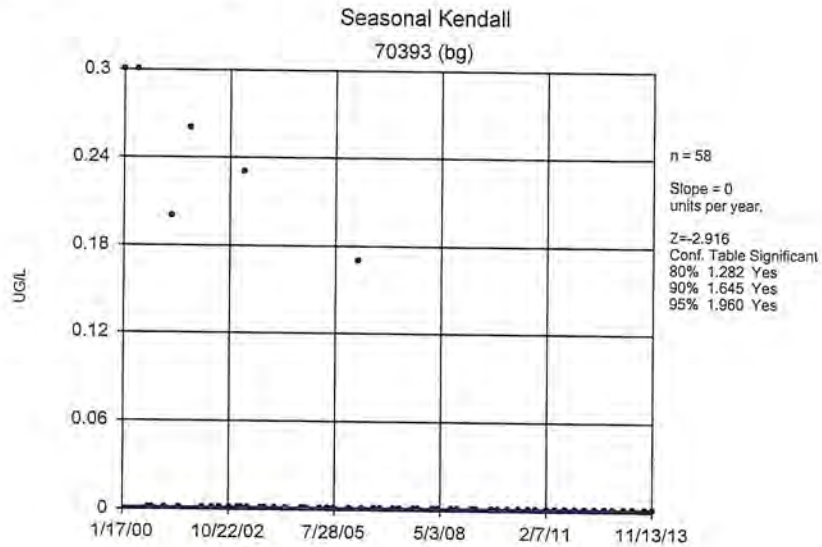

Constituent: Carbon tetrachloride Analysis Run 3/9/2014 4:50 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



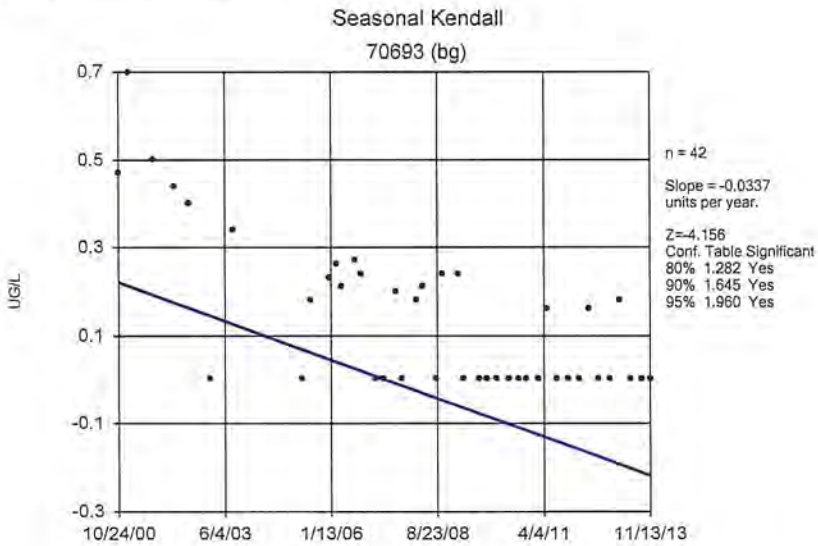

Constituent: Carbon tetrachloride Analysis Run 3/9/2014 4:50 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



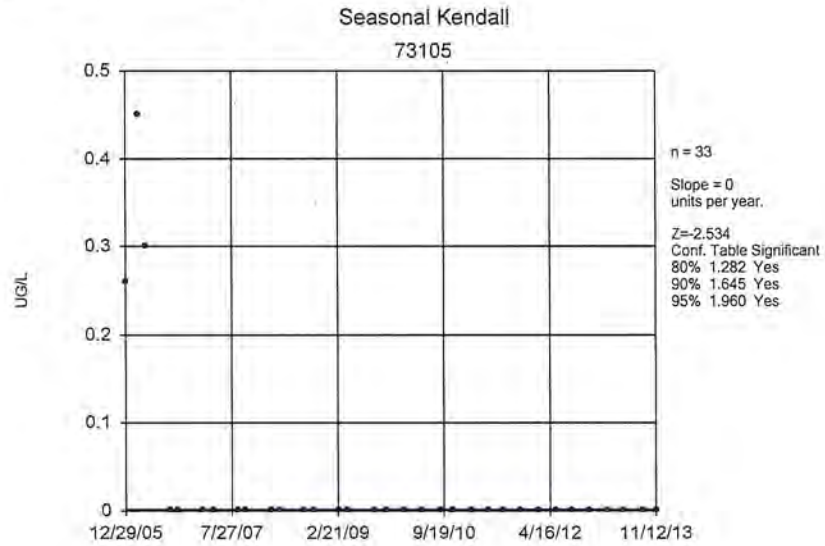

Constituent: Chloroform Analysis Run 3/9/2014 4:51 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



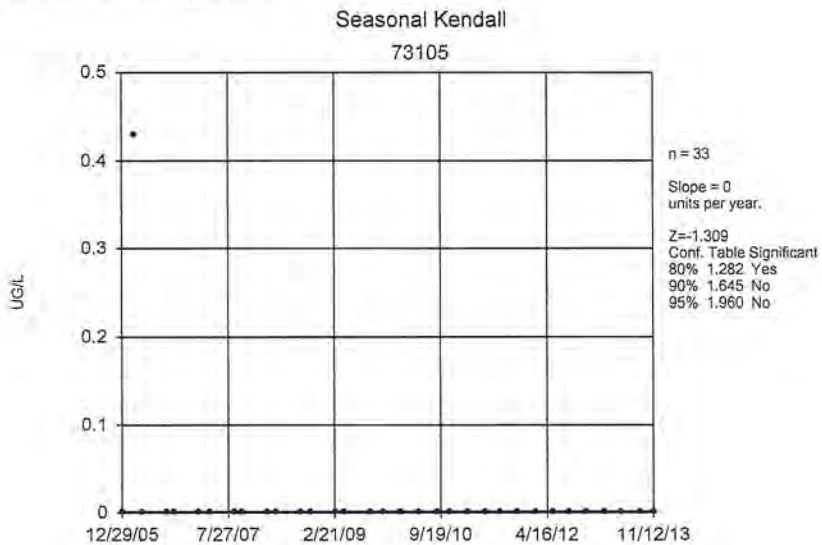

Constituent: Chloroform Analysis Run 3/9/2014 4:51 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



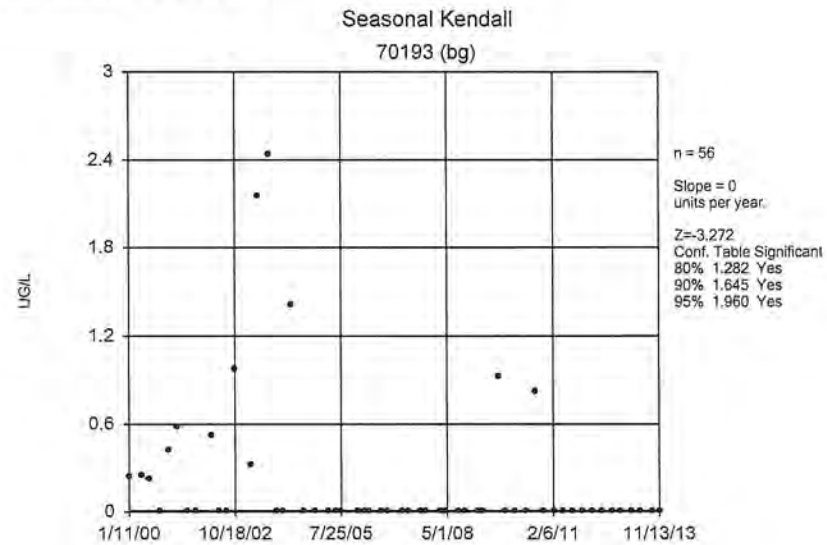

Constituent: Chloroform Analysis Run 3/9/2014 4:51 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



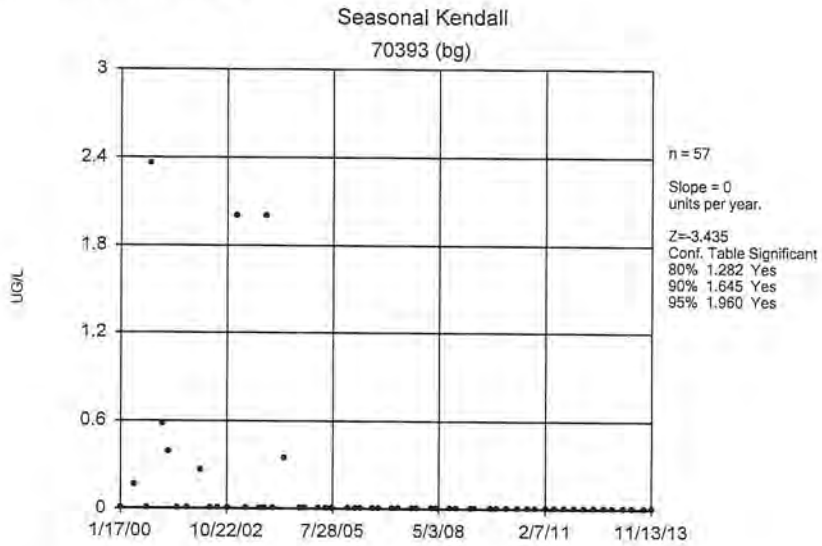

Constituent: Chloromethane Analysis Run 3/9/2014 4:51 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



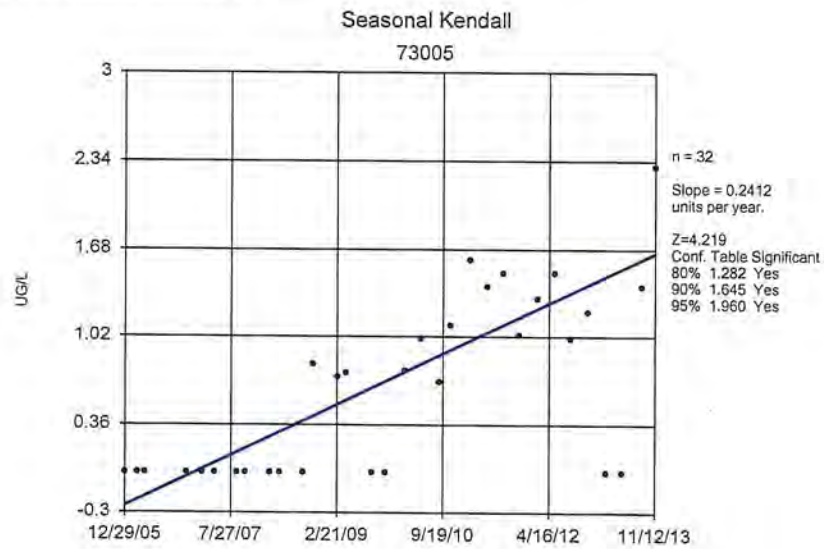

Constituent: Chromium Analysis Run 3/9/2014 4:52 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA




Constituent: Chromium Analysis Run 3/9/2014 4:52 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA

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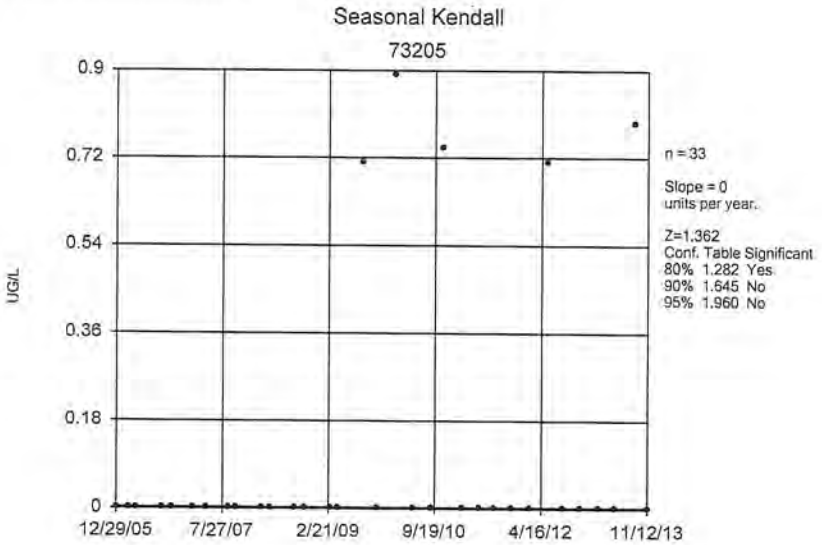
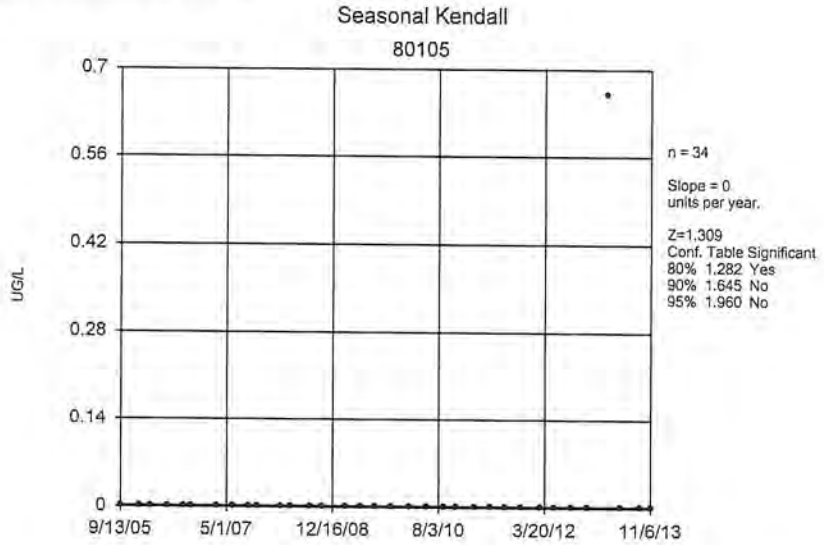
Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



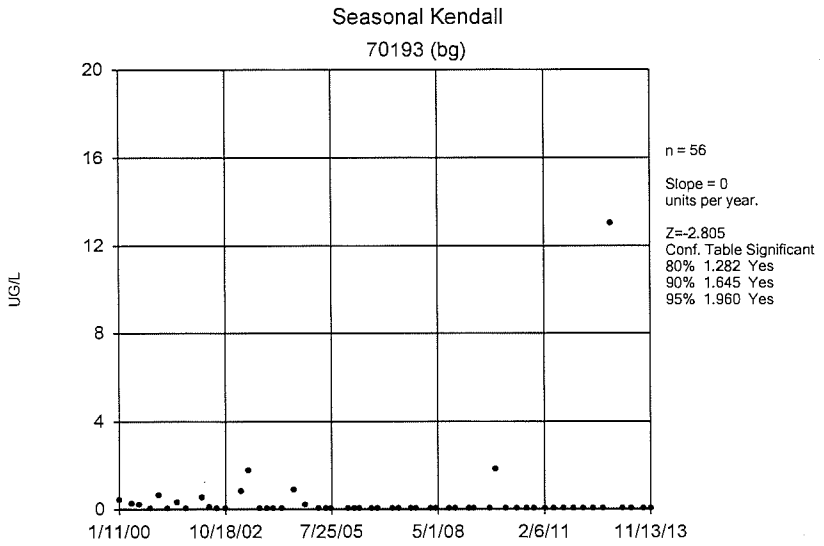

Constituent: Chromium Analysis Run 3/9/2014 4:52 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



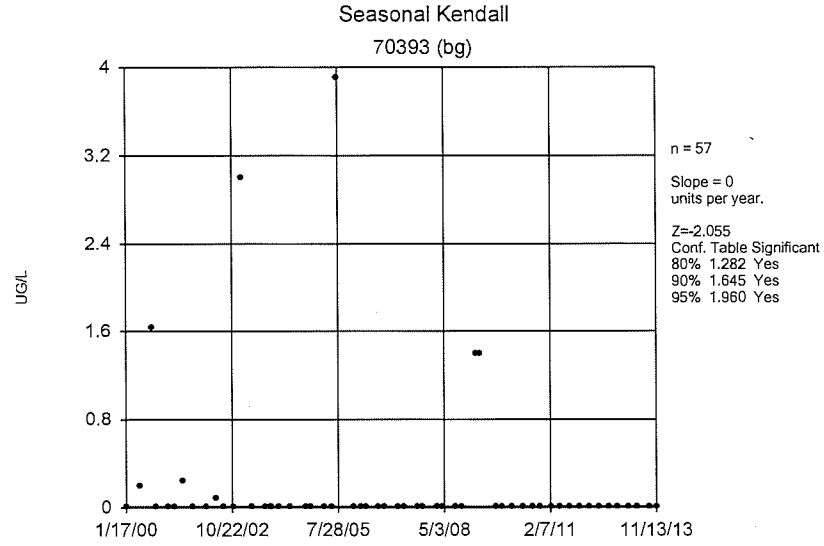

Constituent: Chromium Analysis Run 3/9/2014 4:52 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



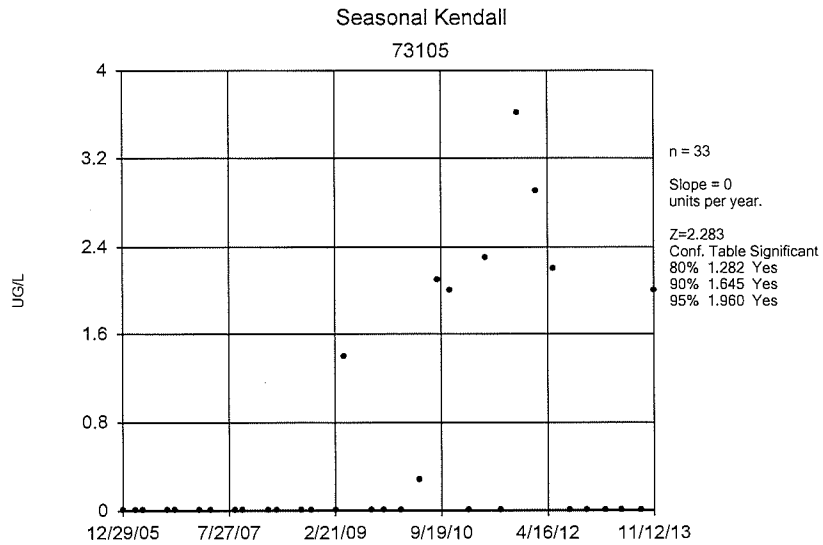

Constituent: Copper Analysis Run 3/9/2014 4:52 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



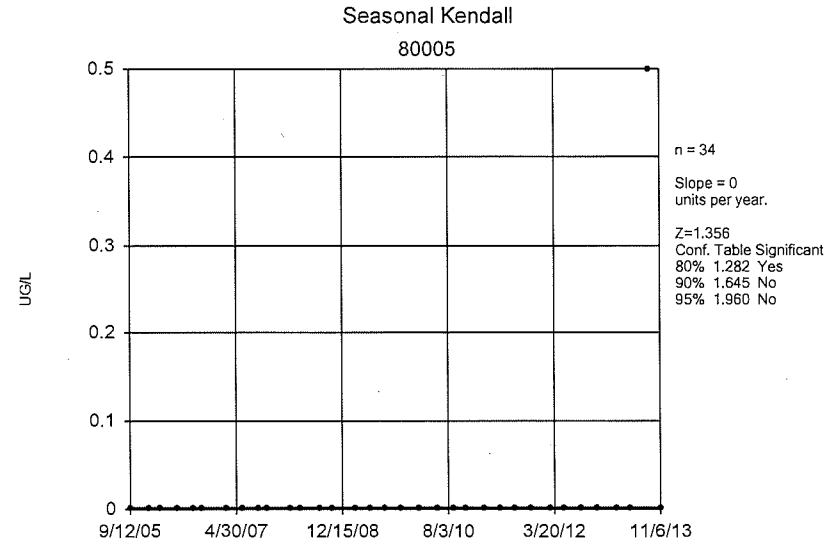

Constituent: Copper Analysis Run 3/9/2014 4:52 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA




Constituent: Copper Analysis Run 3/9/2014 4:52 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA




Constituent: Diethyl phthalate Analysis Run 3/9/2014 4:52 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

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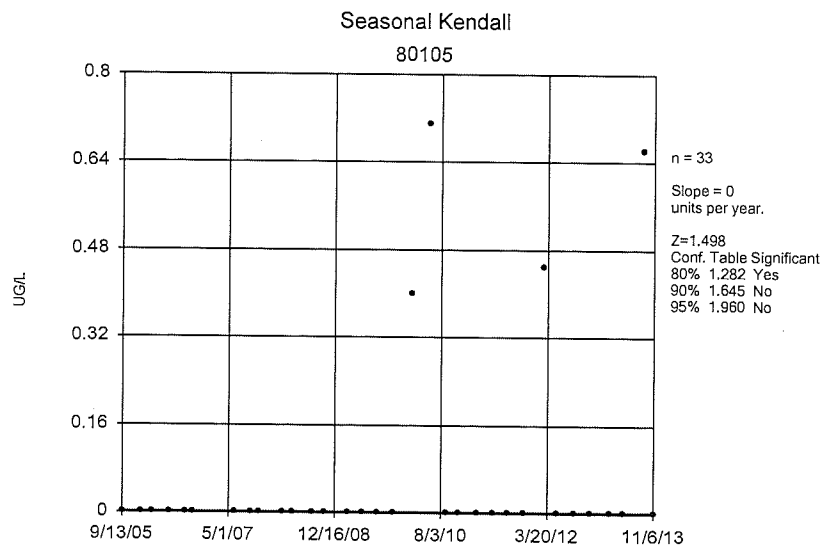
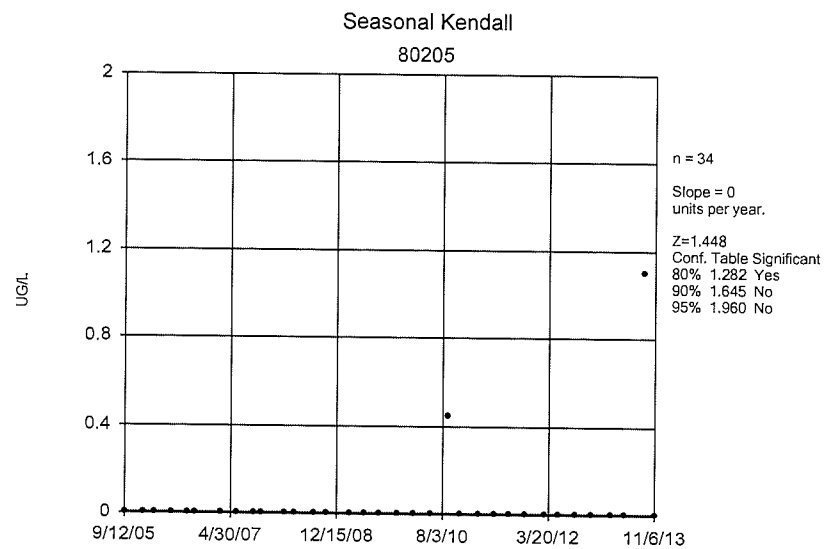


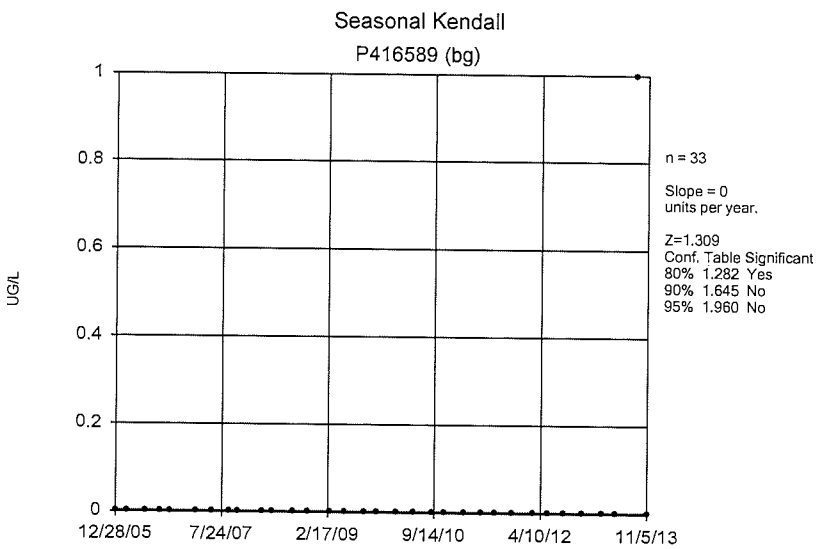

Constituent: Diethyl phthalate Analysis Run 3/9/2014 4:52 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



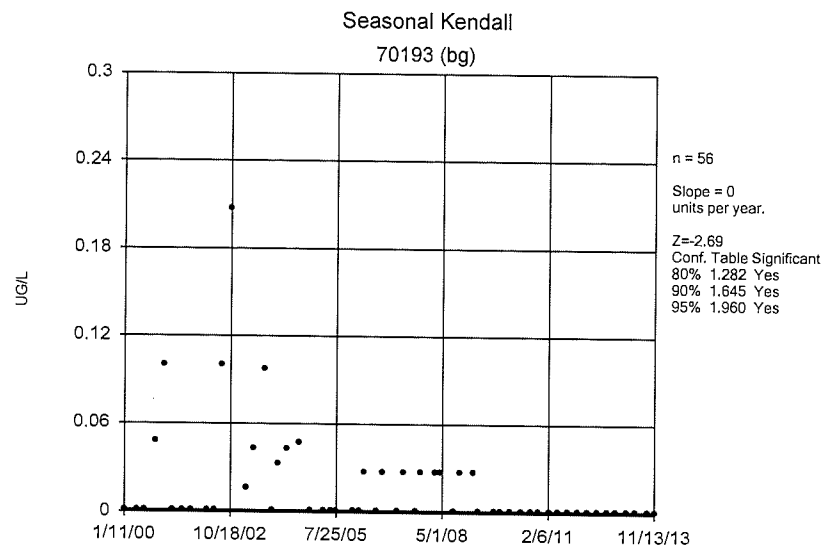

Constituent: Diethyl phthalate Analysis Run 3/9/2014 4:52 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



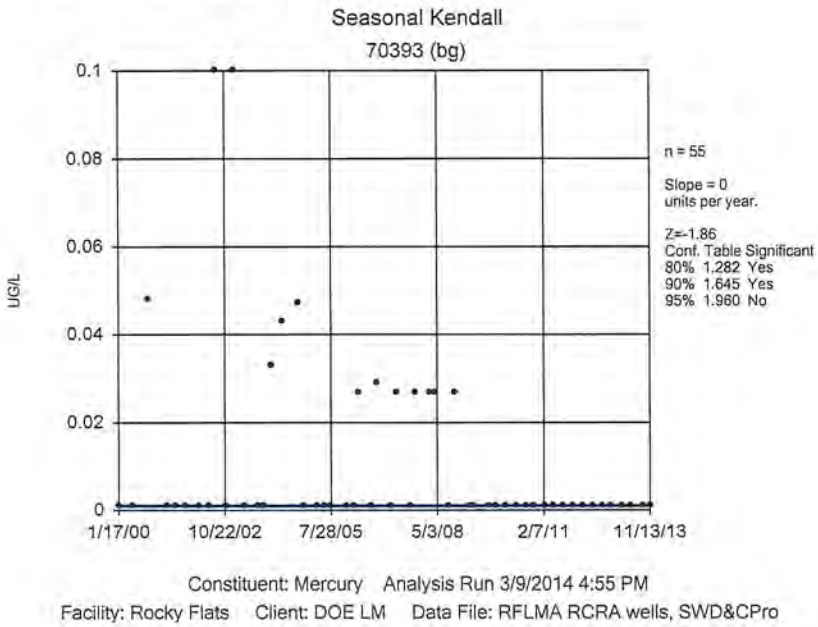

Constituent: Diethyl phthalate Analysis Run 3/9/2014 4:52 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA

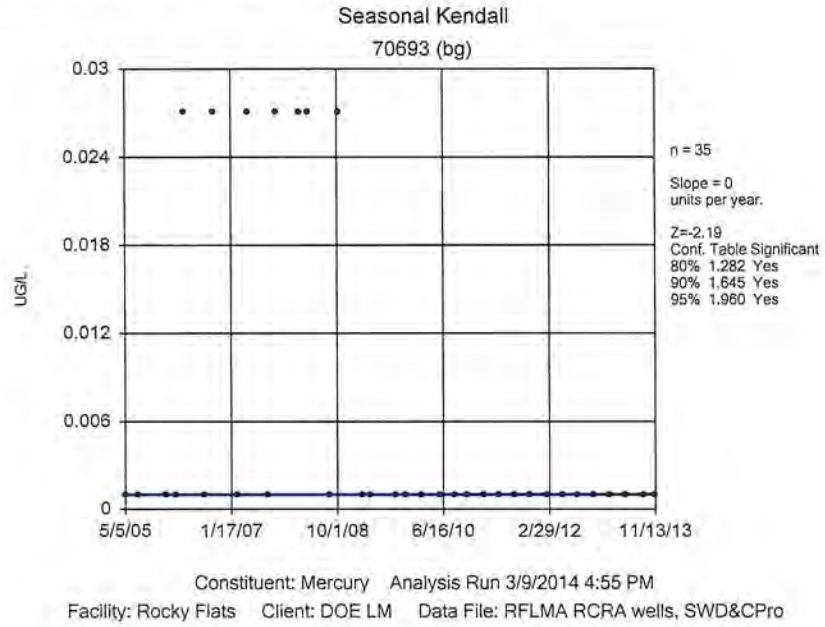



Constituent: Mercury Analysis Run 3/9/2014 4:55 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

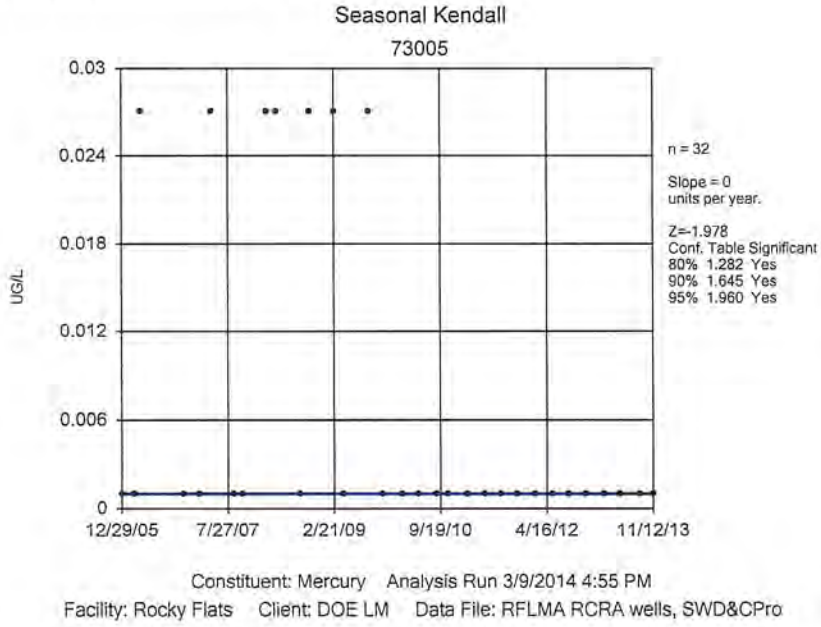
Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



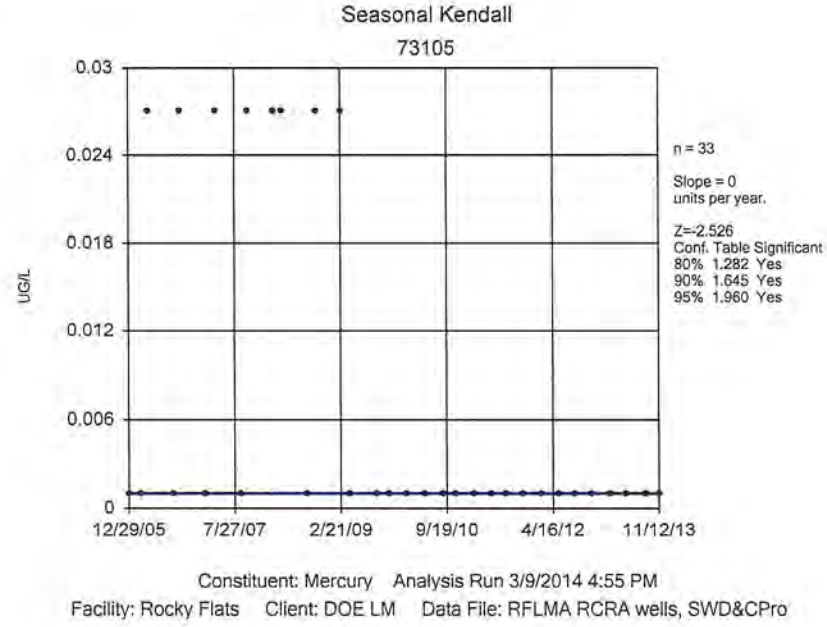

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



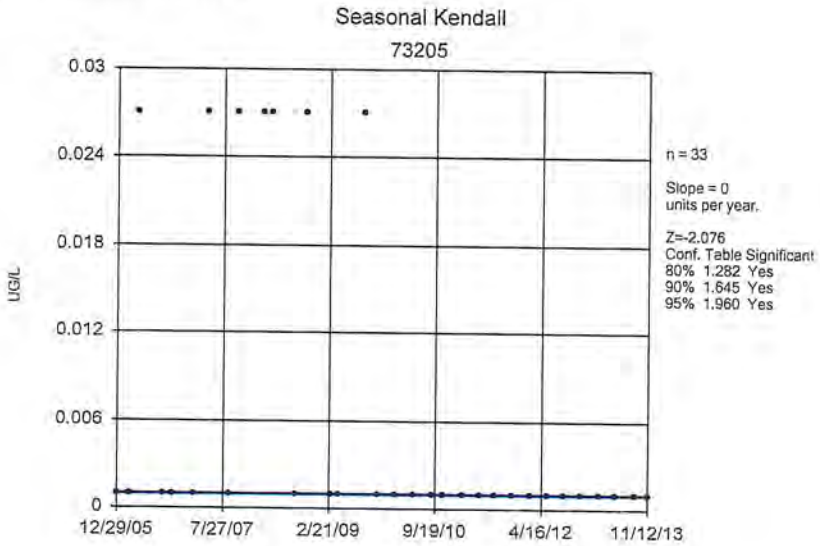

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA




Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA

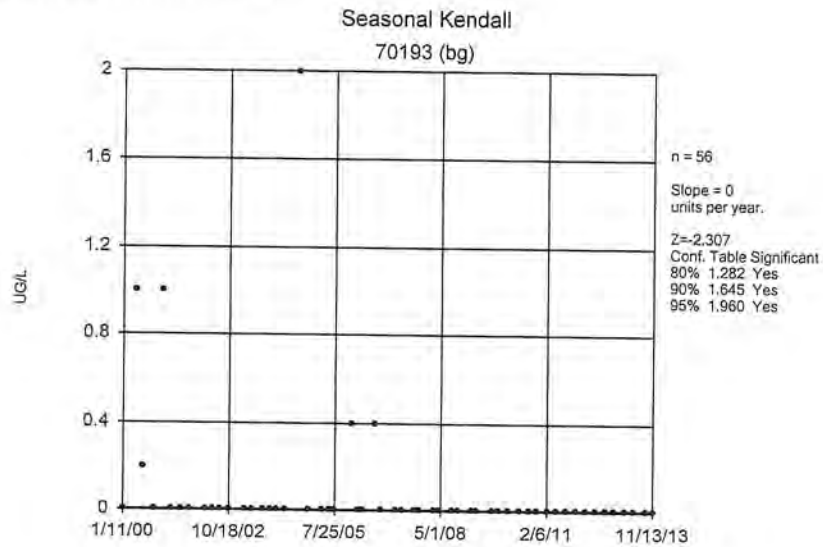


Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



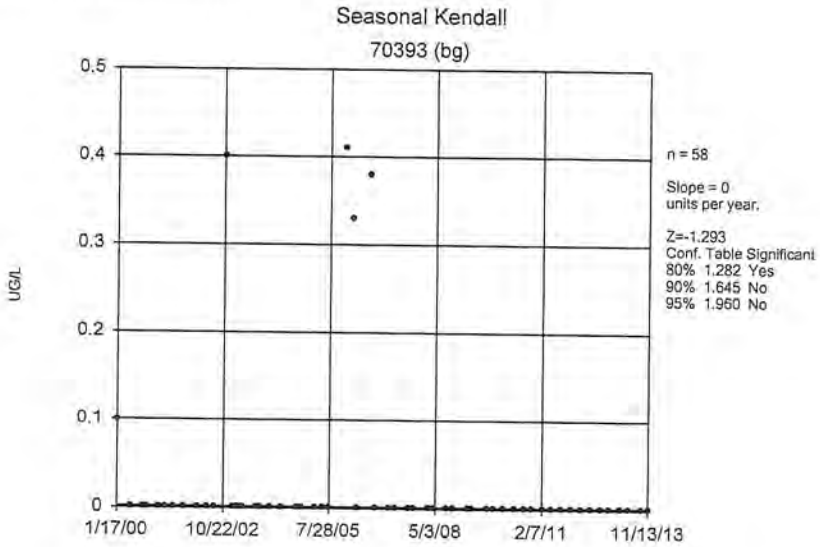

Constituent: Mercury Analysis Run 3/9/2014 4:55 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



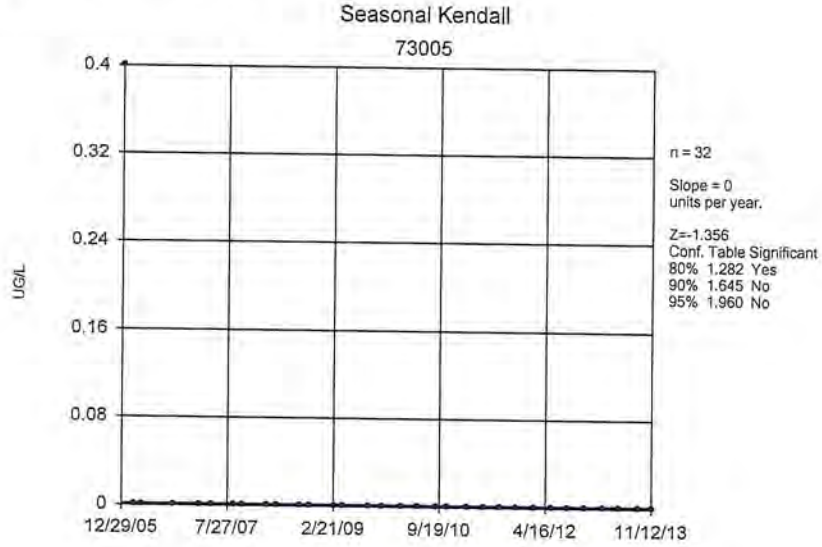

Constituent: Methylene chloride Analysis Run 3/9/2014 4:55 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



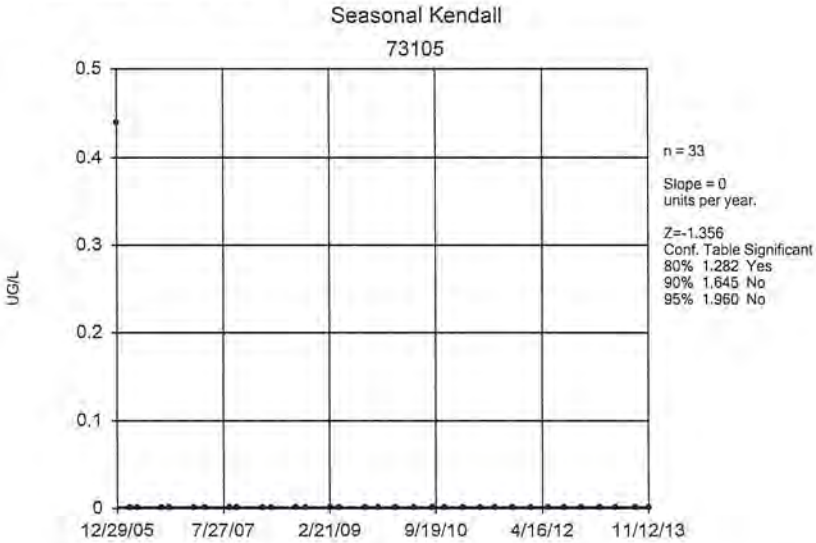

Constituent: Methylene chloride Analysis Run 3/9/2014 4:55 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



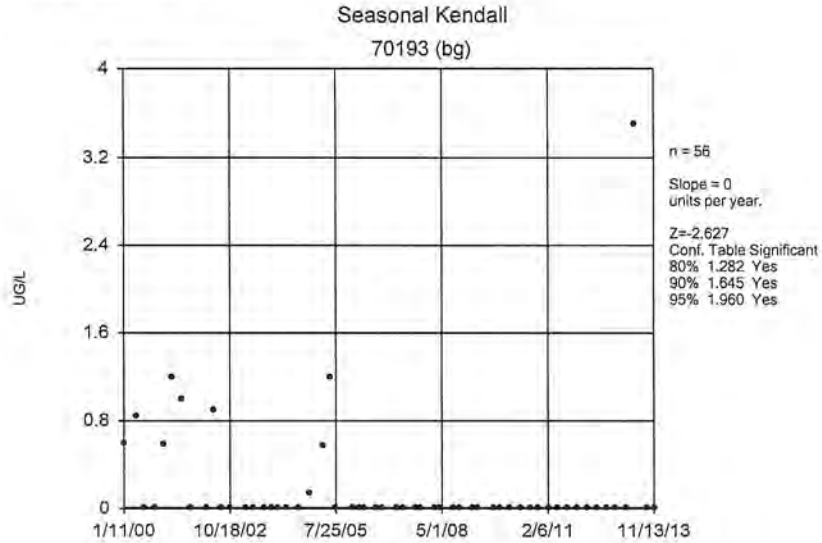

Constituent: Methylene chloride Analysis Run 3/9/2014 4:55 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



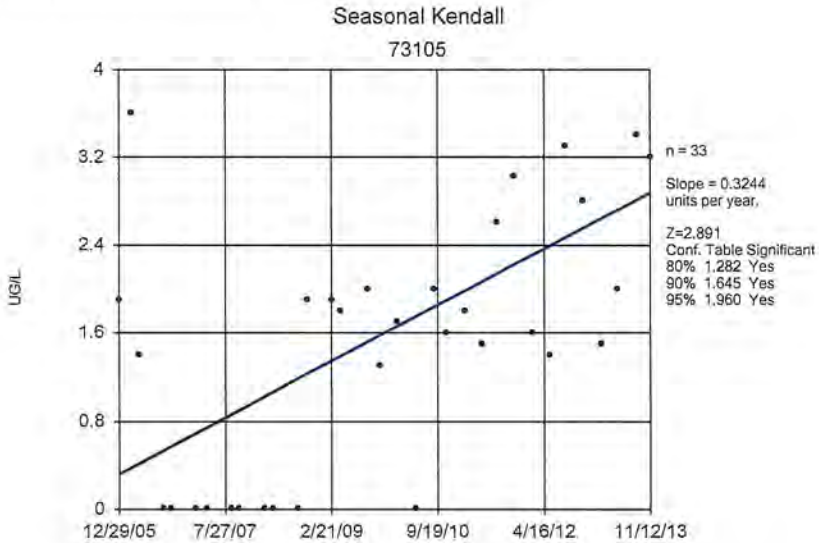

Constituent: Methylene chloride Analysis Run 3/9/2014 4:55 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA




Constituent: Nickel Analysis Run 3/9/2014 4:55 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA




Constituent: Nickel Analysis Run 3/9/2014 4:56 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

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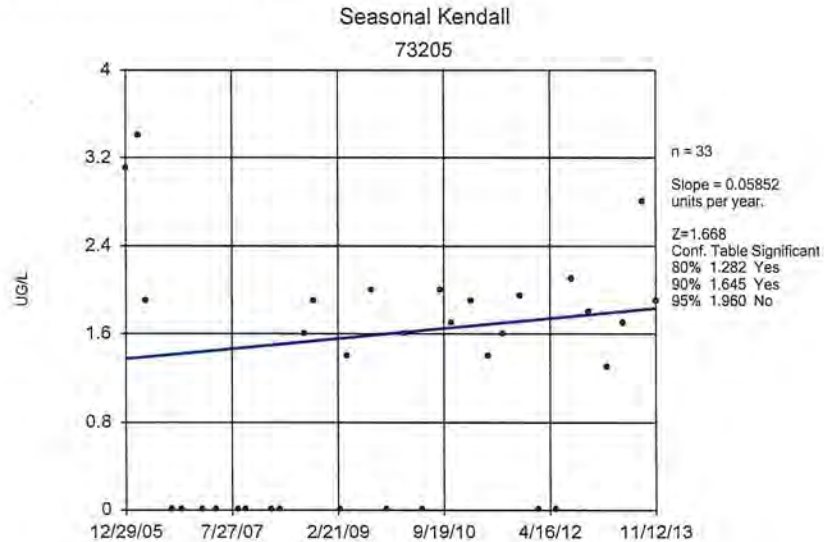
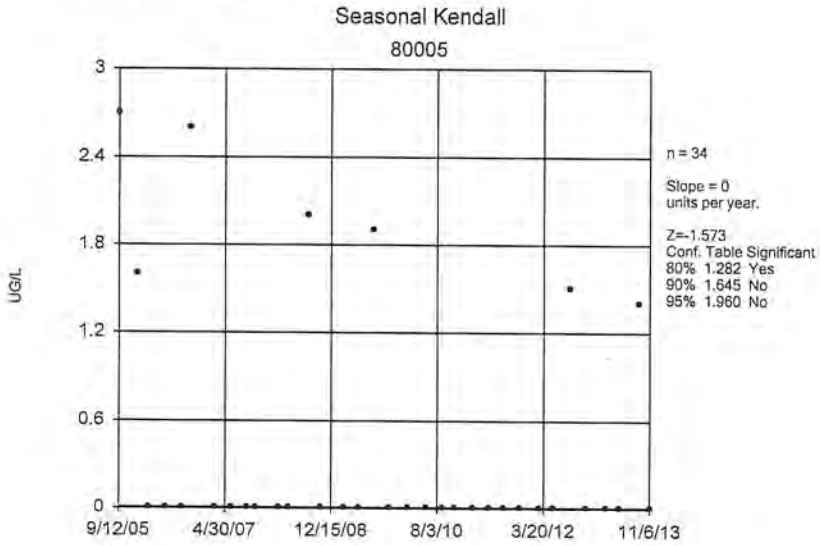


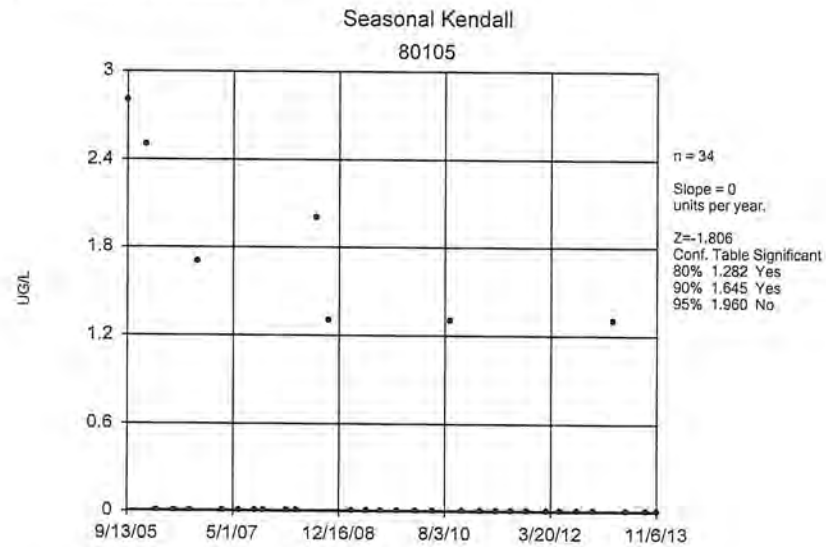

Constituent: Nickel Analysis Run 3/9/2014 4:56 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



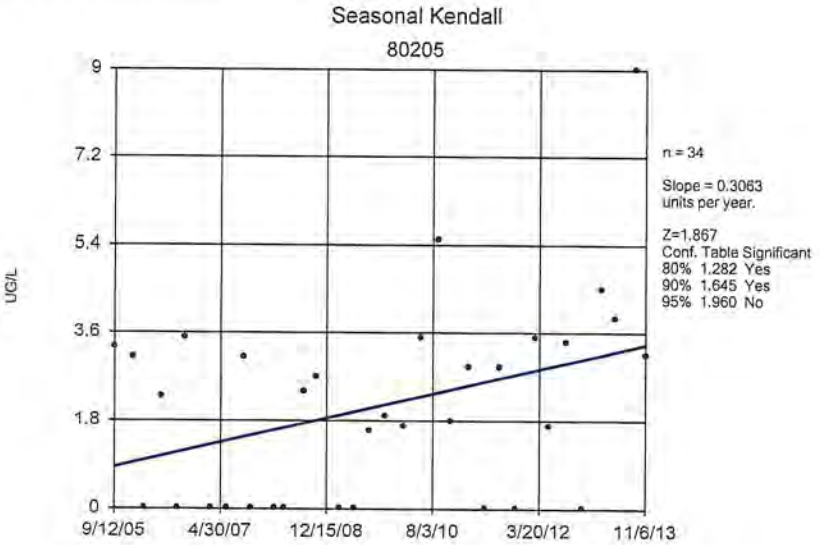

Constituent: Nickel Analysis Run 3/9/2014 4:56 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



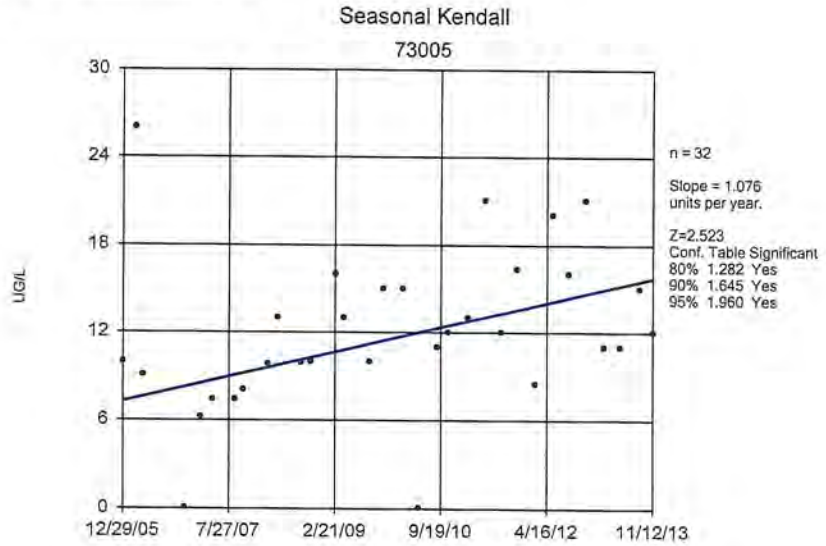

Constituent: Nickel Analysis Run 3/9/2014 4:56 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



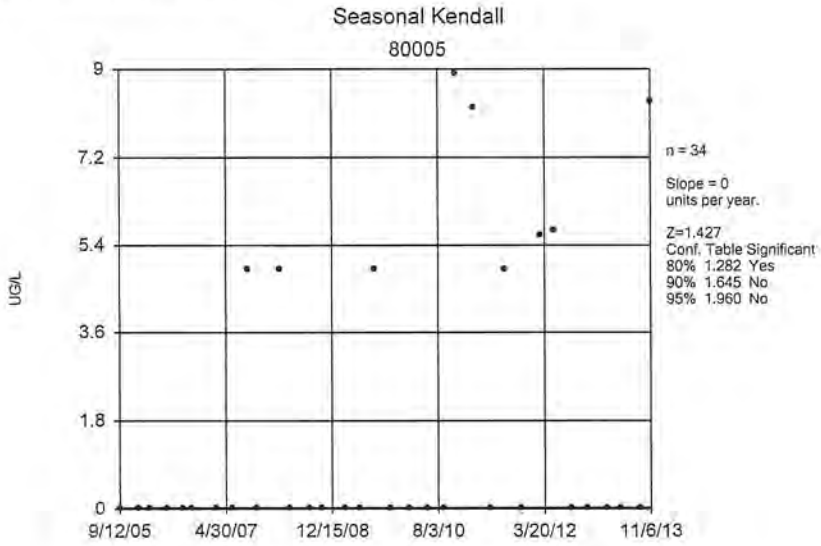

Constituent: Nickel Analysis Run 3/9/2014 4:56 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



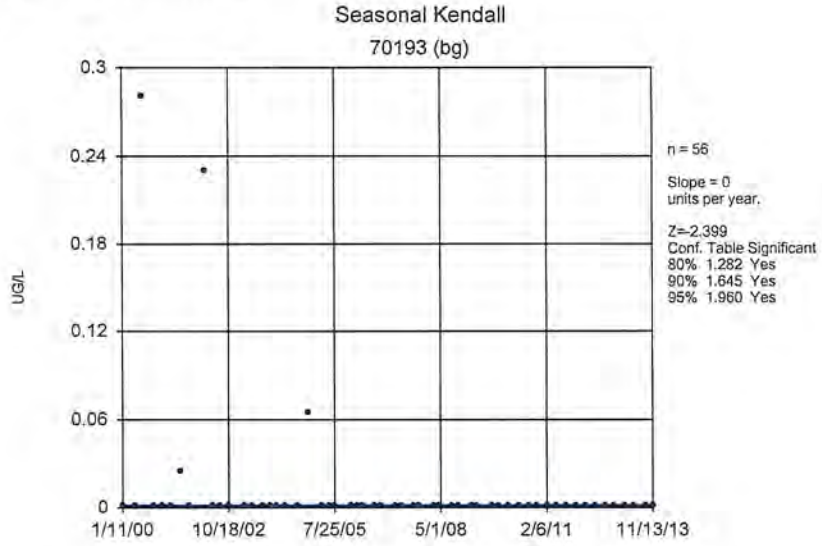

Constituent: Selenium Analysis Run 3/9/2014 4:57 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



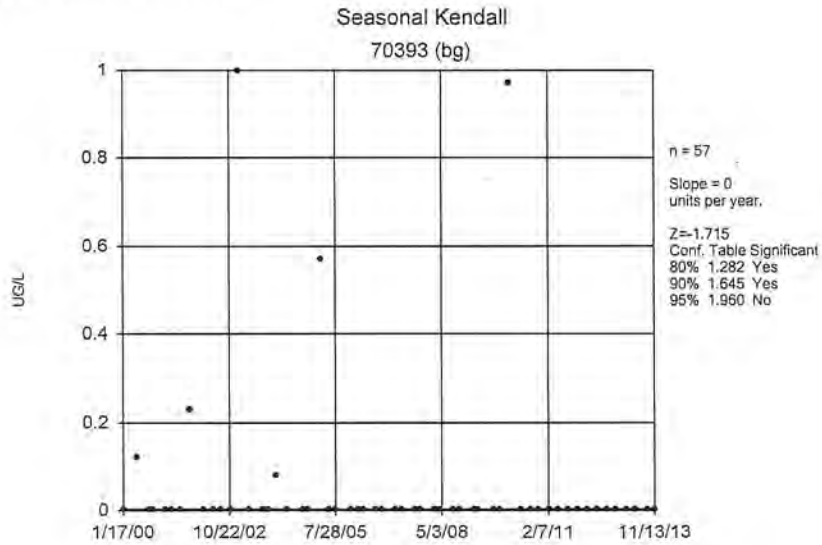

Constituent: Selenium Analysis Run 3/9/2014 4:57 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



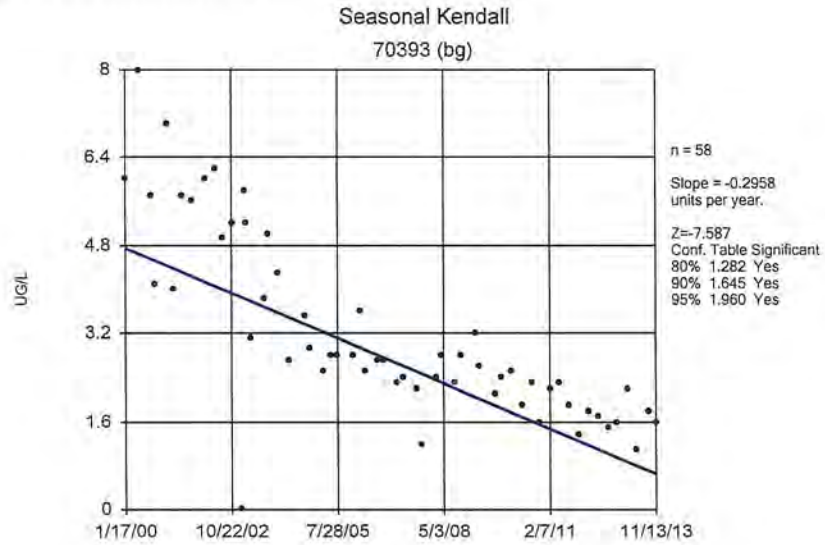

Constituent: Silver Analysis Run 3/9/2014 4:57 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



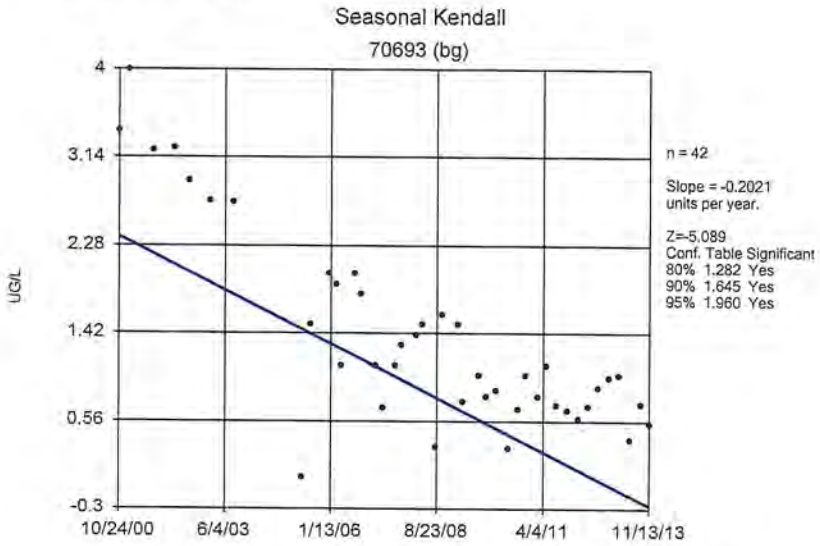

Constituent: Silver Analysis Run 3/9/2014 4:57 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



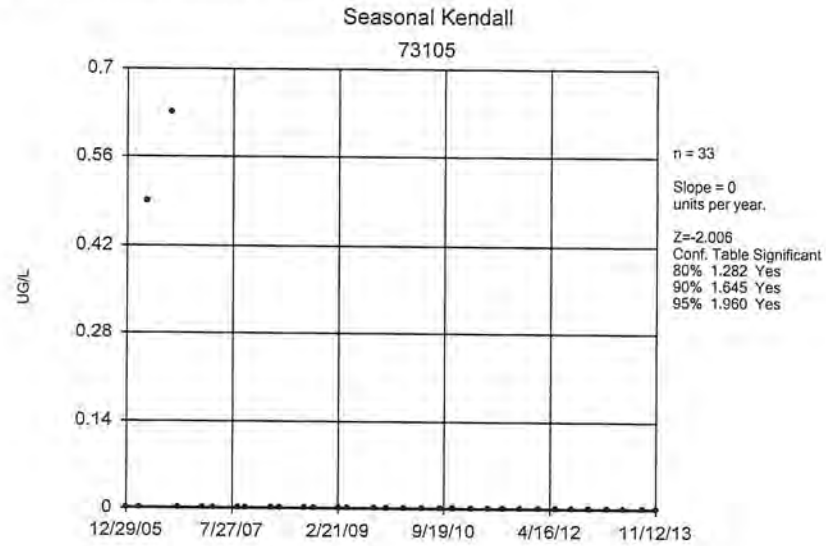

Constituent: Tetrachloroethene Analysis Run 3/9/2014 4:57 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



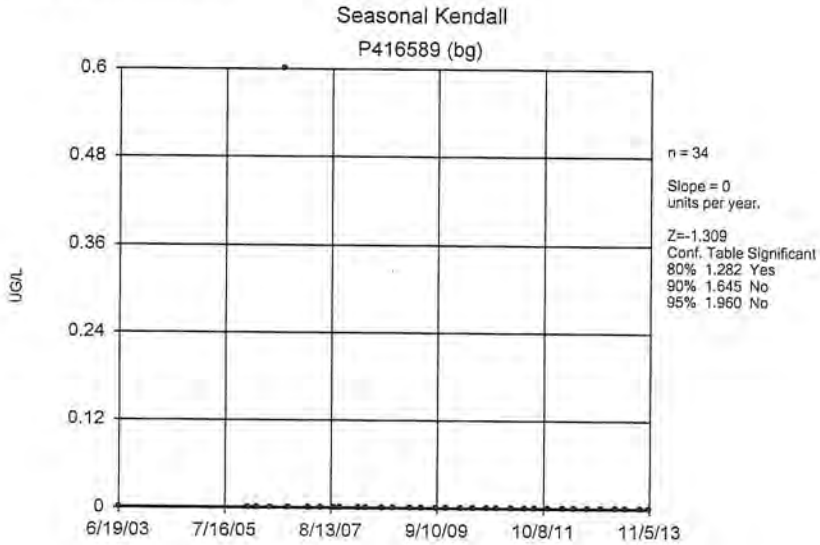

Constituent: Tetrachloroethene Analysis Run 3/9/2014 4:57 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



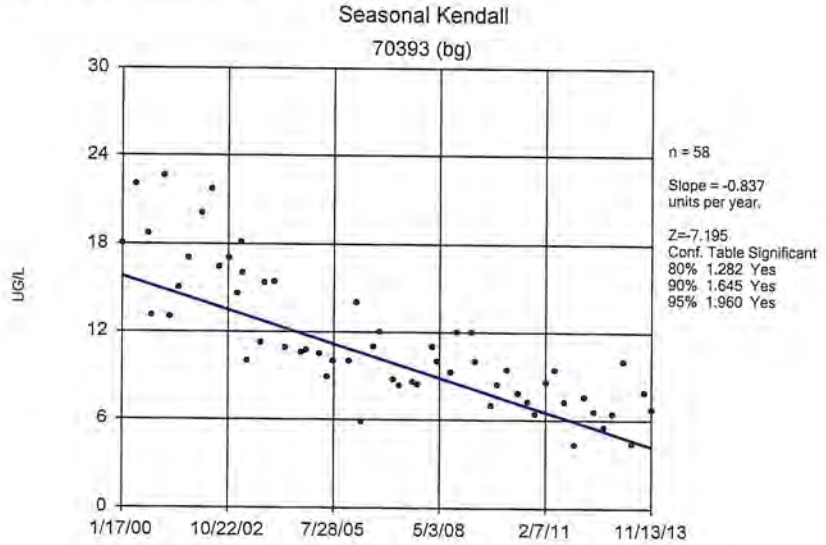

Constituent: Toluene Analysis Run 3/9/2014 4:58 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



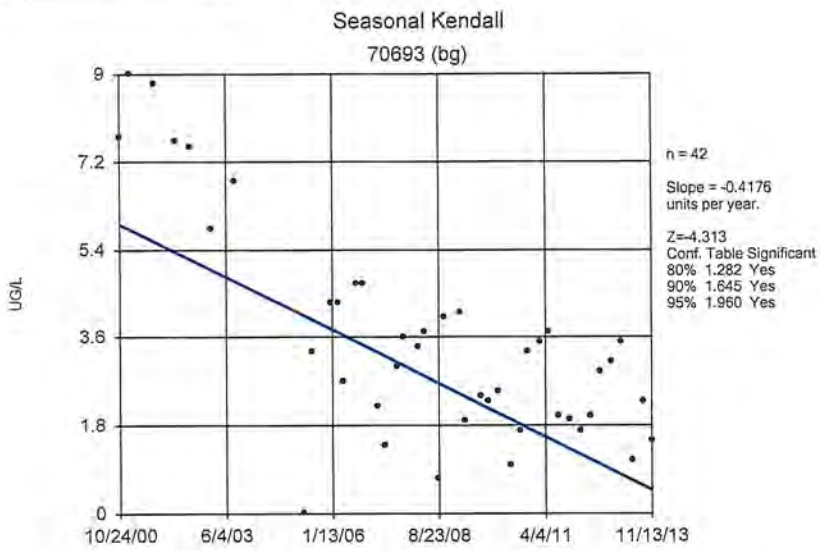

Constituent: Toluene Analysis Run 3/9/2014 4:58 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



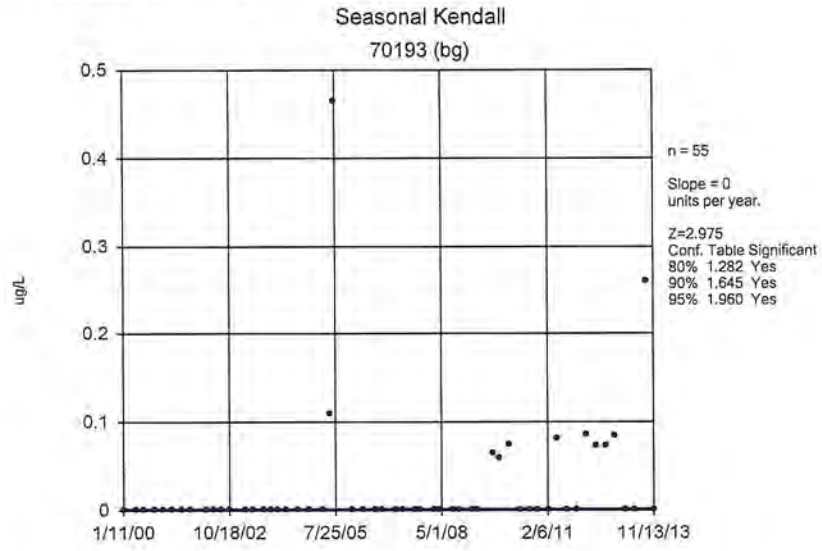

Constituent: Trichloroethene Analysis Run 3/9/2014 4:59 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



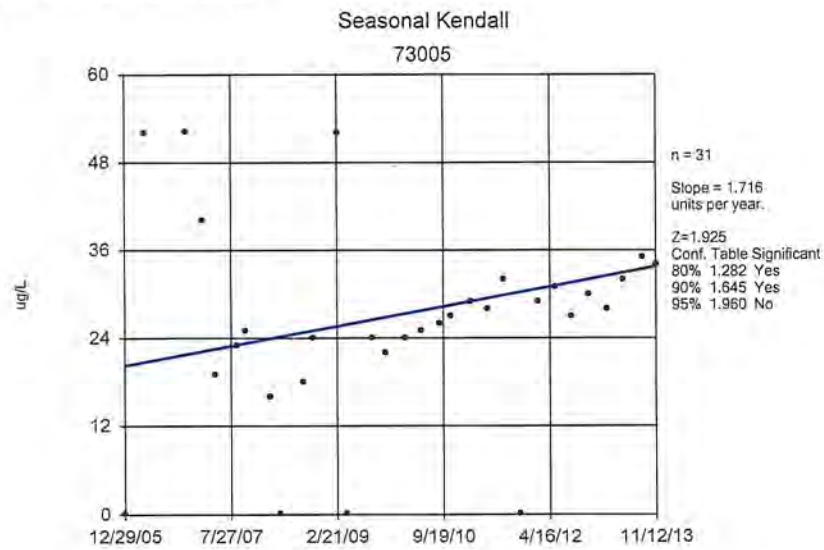

Constituent: Trichloroethene Analysis Run 3/9/2014 4:59 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



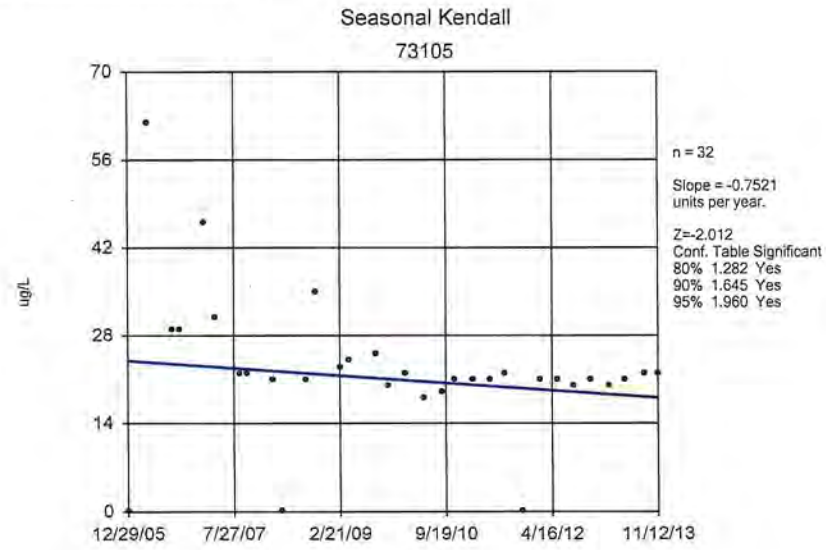

Constituent: Uranium Analysis Run 3/9/2014 4:59 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



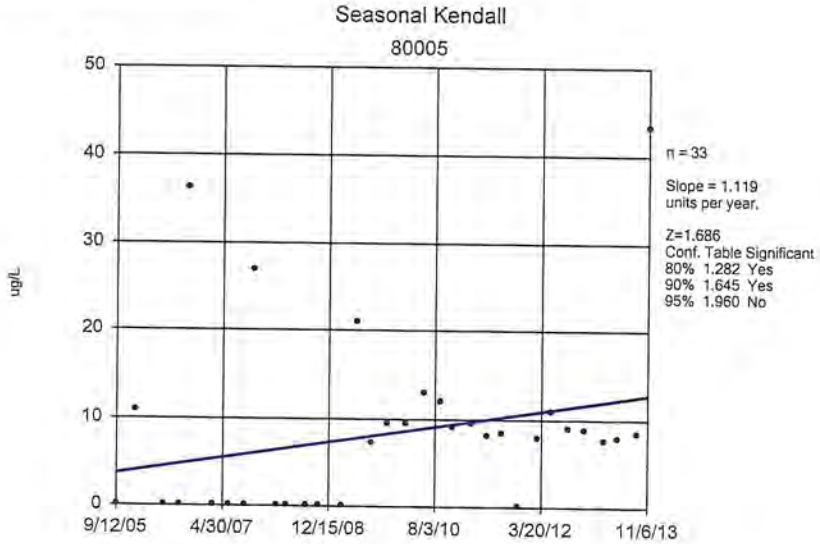

Constituent: Uranium Analysis Run 3/9/2014 4:59 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



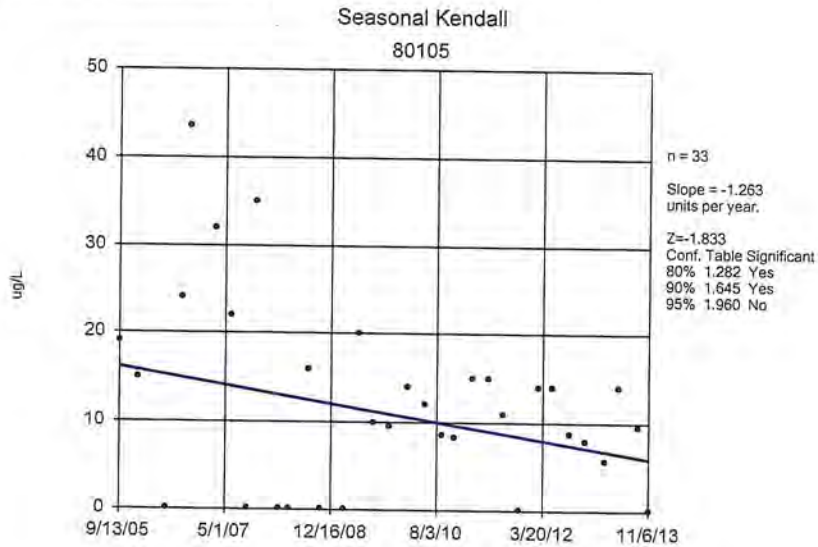

Constituent: Uranium Analysis Run 3/9/2014 4:59 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



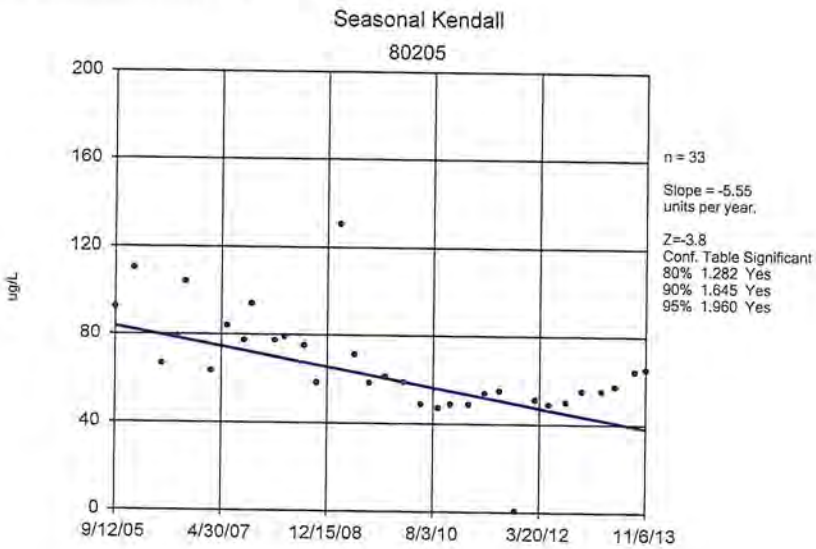

Constituent: Uranium Analysis Run 3/9/2014 4:59 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



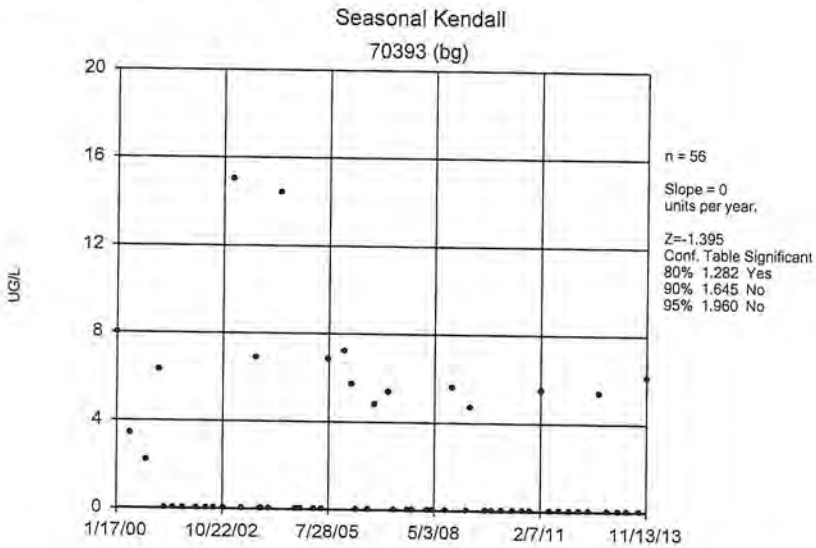

Constituent: Uranium Analysis Run 3/9/2014 4:59 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA



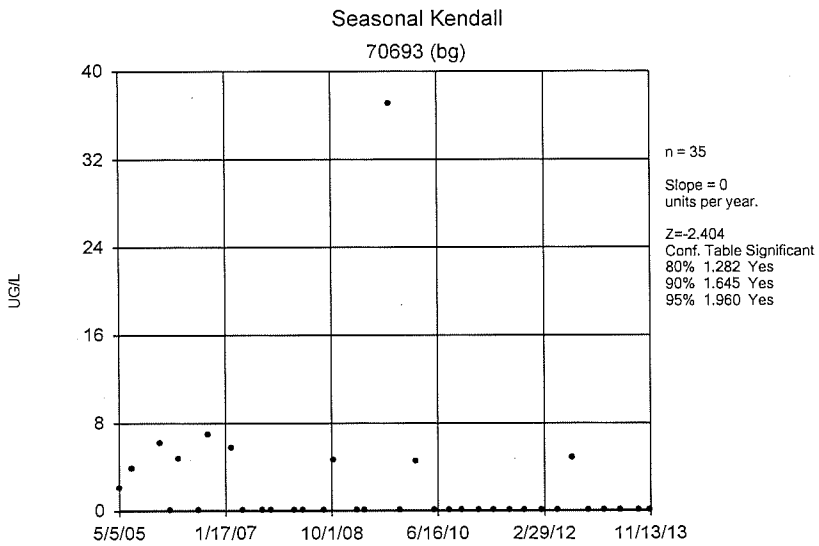

Constituent: Uranium Analysis Run 3/9/2014 4:59 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE. EPA




Constituent: Zinc Analysis Run 3/9/2014 4:59 PM
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

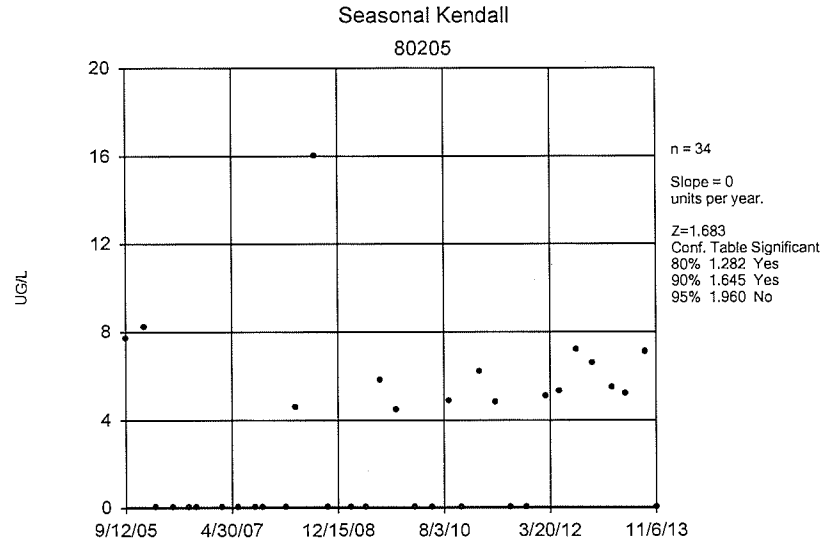
Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA




Constituent: Zinc Analysis Run 3/9/2014 4:59 PM

Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA




Constituent: Zinc Analysis Run 3/9/2014 5:00 PM

Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro

# RCRA Wells: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro Printed 3/9/2014, 5:02 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| **1,1,1-Trichloroethane (UG/L)** | **70193 (bg)** | **55** | **0** | **-1.35** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| **1,1,1-Trichloroethane (UG/L)** | **70393 (bg)** | **58** | **-0.9125** | **-9.275** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **1,1,1-Trichloroethane (UG/L)** | **70693 (bg)** | **42** | **-0.7909** | **-5.828** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| 1,1,1-Trichloroethane (UG/L) | 73005 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,1-Trichloroethane (UG/L) | 73105 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,1-Trichloroethane (UG/L) | 73205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,1-Trichloroethane (UG/L) | 80005 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,1-Trichloroethane (UG/L) | 80105 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,1-Trichloroethane (UG/L) | 80205 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,1-Trichloroethane (UG/L) | P416589 (bg) | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 70193 (bg) | 56 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 70393 (bg) | 58 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 70693 (bg) | 42 | 0 | 0.9682 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 73005 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 73105 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 73205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 80105 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | 80205 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | P416589 (bg) | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | 70193 (bg) | 56 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | 70393 (bg) | 58 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | 70693 (bg) | 42 | 0 | 0.9682 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | 73005 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | 73105 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | 73205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | 80105 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | 80205 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | P416589 (bg) | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1-Dichloroethene (UG/L) | 70193 (bg) | 56 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **1,1-Dichloroethene (UG/L)** | **70393 (bg)** | **58** | **-0.6873** | **-7.726** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **1,1-Dichloroethene (UG/L)** | **70693 (bg)** | **42** | **-0.8358** | **-5.135** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| 1,1-Dichloroethene (UG/L) | 73005 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1-Dichloroethene (UG/L) | 73105 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1-Dichloroethene (UG/L) | 73205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1-Dichloroethene (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1-Dichloroethene (UG/L) | 80105 | 34 | 0 | 0.4364 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1-Dichloroethene (UG/L) | 80205 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1-Dichloroethene (UG/L) | P416589 (bg) | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |

# RCRA Wells: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro Printed 3/9/2014, 5:02 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,2,4-Trichlorobenzene (UG/L) | 70193 (bg) | 56 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2,4-Trichlorobenzene (UG/L) | 70393 (bg) | 58 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2,4-Trichlorobenzene (UG/L) | 70693 (bg) | 42 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2,4-Trichlorobenzene (UG/L) | 73005 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2,4-Trichlorobenzene (UG/L) | 73105 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2,4-Trichlorobenzene (UG/L) | 73205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2,4-Trichlorobenzene (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2,4-Trichlorobenzene (UG/L) | 80105 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2,4-Trichlorobenzene (UG/L) | 80205 | 35 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2,4-Trichlorobenzene (UG/L) | P416589 (bg) | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 70193 (bg) | 55 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 70393 (bg) | 56 | 0 | -1.203 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 70693 (bg) | 40 | 0 | 0.9682 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 73005 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 73105 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 73205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 80105 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | 80205 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (UG/L) | P416589 (bg) | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 70193 (bg) | 56 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 70393 (bg) | 58 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 70693 (bg) | 42 | 0 | 0.9682 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 73005 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 73105 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 73205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 80105 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | 80205 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | P416589 (bg) | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | 70193 (bg) | 56 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | 70393 (bg) | 58 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | 70693 (bg) | 42 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | 73005 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | 73105 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | 73205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | 80105 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | 80205 | 35 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | P416589 (bg) | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |

# RCRA Wells: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro Printed 3/9/2014, 5:02 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,2-Dichloroethane (UG/L) | 70193 (bg) | 56 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 70393 (bg) | 57 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 70693 (bg) | 42 | 0 | 0.9682 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 73005 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 73105 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 73205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 80105 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | 80205 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | P416589 (bg) | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 70193 (bg) | 56 | 0 | 0.9923 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 70393 (bg) | 58 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 70693 (bg) | 42 | 0 | 0.9682 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 73005 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 73105 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 73205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 80105 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | 80205 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | P416589 (bg) | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | 70193 (bg) | 56 | 0 | 1.208 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | 70393 (bg) | 58 | 0 | 0.1141 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | 70693 (bg) | 42 | 0 | 0.3392 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | 73005 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | 73105 | 33 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | 73205 | 33 | 0 | -0.225 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | 80005 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | 80105 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | 80205 | 35 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | P416589 (bg) | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | 70193 (bg) | 56 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | 70393 (bg) | 58 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | 70693 (bg) | 42 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | 73005 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | 73105 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | 73205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | 80105 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | 80205 | 35 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | P416589 (bg) | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |

# RCRA Wells: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro Printed 3/9/2014, 5:02 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| 2, 4-Dimethylphenol (ug/L) | 80005 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2, 4-Dimethylphenol (ug/L) | 80105 | 32 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2, 4-Dimethylphenol (ug/L) | 80205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2, 4-Dimethylphenol (ug/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2,4,5-Trichlorophenol (UG/L) | 80005 | 31 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2,4,5-Trichlorophenol (UG/L) | 80105 | 30 | 0 | 0.451 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2,4,5-Trichlorophenol (UG/L) | 80205 | 31 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2,4,5-Trichlorophenol (UG/L) | P416589 (bg) | 30 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2,4,6-Trichlorophenol (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2,4,6-Trichlorophenol (UG/L) | 80105 | 33 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2,4,6-Trichlorophenol (UG/L) | 80205 | 34 | 0 | 0.1936 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2,4,6-Trichlorophenol (UG/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2,4-Dichlorophenol (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2,4-Dichlorophenol (UG/L) | 80105 | 33 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2,4-Dichlorophenol (UG/L) | 80205 | 34 | 0 | 0.1936 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2,4-Dichlorophenol (UG/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2,4-Dinitrophenol (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2,4-Dinitrophenol (UG/L) | 80105 | 33 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2,4-Dinitrophenol (UG/L) | 80205 | 34 | 0 | 0.1936 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2,4-Dinitrophenol (UG/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2,4-Dinitrotoluene (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2,4-Dinitrotoluene (UG/L) | 80105 | 33 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2,4-Dinitrotoluene (UG/L) | 80205 | 34 | 0 | 0.1936 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2,4-Dinitrotoluene (UG/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2,6-Dinitrotoluene (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2,6-Dinitrotoluene (UG/L) | 80105 | 33 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2,6-Dinitrotoluene (UG/L) | 80205 | 34 | 0 | 0.1936 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2,6-Dinitrotoluene (UG/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2-Chloronaphthalene (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2-Chloronaphthalene (UG/L) | 80105 | 33 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2-Chloronaphthalene (UG/L) | 80205 | 34 | 0 | 0.1936 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2-Chloronaphthalene (UG/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2-Chlorophenol (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2-Chlorophenol (UG/L) | 80105 | 33 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2-Chlorophenol (UG/L) | 80205 | 34 | 0 | 0.1936 | 1.282 | No | 1.645 | No | 1.960 | No |
| 2-Chlorophenol (UG/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 3,3`-Dichlorobenzidine (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 3,3`-Dichlorobenzidine (UG/L) | 80105 | 33 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| 3,3`-Dichlorobenzidine (UG/L) | 80205 | 34 | 0 | 0.2897 | 1.282 | No | 1.645 | No | 1.960 | No |
| 3,3`-Dichlorobenzidine (UG/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |

# RCRA Wells: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro Printed 3/9/2014, 5:02 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| 4,6-Dinitro-2-methyl phenol (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 4,6-Dinitro-2-methyl phenol (UG/L) | 80105 | 33 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| 4,6-Dinitro-2-methyl phenol (UG/L) | 80205 | 34 | 0 | 0.1936 | 1.282 | No | 1.645 | No | 1.960 | No |
| 4,6-Dinitro-2-methyl phenol (UG/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 4-Chloro-3-methylphenol (UG/L) | 80005 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 4-Chloro-3-methylphenol (UG/L) | 80105 | 33 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| 4-Chloro-3-methylphenol (UG/L) | 80205 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 4-Chloro-3-methylphenol (UG/L) | P416589 (bg) | 33 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 4-Nitrophenol (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 4-Nitrophenol (UG/L) | 80105 | 33 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| 4-Nitrophenol (UG/L) | 80205 | 34 | 0 | 0.1936 | 1.282 | No | 1.645 | No | 1.960 | No |
| 4-Nitrophenol (UG/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Acenaphthene (UG/L) | 80005 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Acenaphthene (UG/L) | 80105 | 33 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| Acenaphthene (UG/L) | 80205 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Acenaphthene (UG/L) | P416589 (bg) | 33 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Anthracene (UG/L) | 80005 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Anthracene (UG/L) | 80105 | 33 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| Anthracene (UG/L) | 80205 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Anthracene (UG/L) | P416589 (bg) | 33 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Arsenic (UG/L)** | **70193 (bg)** | **56** | **0** | **-2.663** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Arsenic (UG/L)** | **70393 (bg)** | **57** | **0** | **-2.698** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Arsenic (UG/L) | 70693 (bg) | 35 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Arsenic (UG/L) | 73005 | 32 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Arsenic (UG/L) | 73105 | 33 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Arsenic (UG/L) | 73205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Arsenic (UG/L) | 80005 | 34 | 0 | -1.043 | 1.282 | No | 1.645 | No | 1.960 | No |
| Arsenic (UG/L) | 80105 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Arsenic (UG/L) | 80205 | 34 | 0 | -1.232 | 1.282 | No | 1.645 | No | 1.960 | No |
| Arsenic (UG/L) | P416589 (bg) | 33 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Benz[a]anthracene (ug/L) | 80005 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benz[a]anthracene (ug/L) | 80105 | 32 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benz[a]anthracene (ug/L) | 80205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benz[a]anthracene (ug/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzene (UG/L) | 70193 (bg) | 56 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzene (UG/L) | 70393 (bg) | 58 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzene (UG/L) | 70693 (bg) | 42 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzene (UG/L) | 73005 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzene (UG/L) | 73105 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzene (UG/L) | 73205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |

# RCRA Wells: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro Printed 3/9/2014, 5:02 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzene (UG/L) | 80105 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzene (UG/L) | 80205 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzene (UG/L) | P416589 (bg) | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzo[a]pyrene (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzo[a]pyrene (UG/L) | 80105 | 33 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzo[a]pyrene (UG/L) | 80205 | 34 | 0 | 0.1936 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzo[a]pyrene (UG/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzo[b]fluoranthene (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzo[b]fluoranthene (UG/L) | 80105 | 33 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzo[b]fluoranthene (UG/L) | 80205 | 34 | 0 | 0.1936 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzo[b]fluoranthene (UG/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzo[g,h,i]Perylene (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzo[g,h,i]Perylene (UG/L) | 80105 | 33 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzo[g,h,i]Perylene (UG/L) | 80205 | 34 | 0 | 0.1936 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzo[g,h,i]Perylene (UG/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzo[k]fluoranthene (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzo[k]fluoranthene (UG/L) | 80105 | 33 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzo[k]fluoranthene (UG/L) | 80205 | 34 | 0 | 0.1936 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzo[k]fluoranthene (UG/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Beryllium (UG/L) | 70193 (bg) | 56 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Beryllium (UG/L)** | **70393 (bg)** | **57** | **0** | **-1.575** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| **Beryllium (UG/L)** | **70693 (bg)** | **35** | **0** | **-2.054** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Beryllium (UG/L) | 73005 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Beryllium (UG/L) | 73105 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Beryllium (UG/L) | 73205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Beryllium (UG/L)** | **80005** | **34** | **0** | **-1.356** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| **Beryllium (UG/L)** | **80105** | **34** | **0** | **-1.356** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Beryllium (UG/L) | 80205 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Beryllium (UG/L) | P416589 (bg) | 33 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Bis[2-chloroethyl] ether (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bis[2-chloroethyl] ether (UG/L) | 80105 | 33 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bis[2-chloroethyl] ether (UG/L) | 80205 | 34 | 0 | 0.1936 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bis[2-chloroethyl] ether (UG/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bis[2-chloroisopropyl] ether (UG/L) | 80005 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bis[2-chloroisopropyl] ether (UG/L) | 80105 | 32 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bis[2-chloroisopropyl] ether (UG/L) | 80205 | 33 | 0 | 0.1936 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bis[2-chloroisopropyl] ether (UG/L) | P416589 (bg) | 32 | 0 | 0.8729 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bis[2-ethylhexyl] phthalate (UG/L) | 80005 | 34 | 0 | 0.9585 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bis[2-ethylhexyl] phthalate (UG/L) | 80105 | 33 | 0 | 0.2533 | 1.282 | No | 1.645 | No | 1.960 | No |

# RCRA Wells: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro Printed 3/9/2014, 5:02 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| **Bis[2-ethylhexyl] phthalate (UG/L)** | **80205** | **34** | **0** | **1.569** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Bis[2-ethylhexyl] phthalate (UG/L) | P416589 (bg) | 33 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Boron (ug/L)** | **70193 (bg)** | **33** | **0.4564** | **1.853** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **No** |
| Boron (ug/L) | 70393 (bg) | 33 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Boron (ug/L)** | **70693 (bg)** | **33** | **0.7451** | **1.864** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **No** |
| **Boron (ug/L)** | **73005** | **32** | **0.6728** | **2.383** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Boron (ug/L)** | **73105** | **33** | **6.061** | **3.658** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Boron (ug/L)** | **73205** | **33** | **1.003** | **2.14** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Boron (ug/L)** | **80005** | **33** | **-2.673** | **-3.188** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Boron (ug/L) | 80105 | 33 | 0.6351 | 1.161 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Boron (ug/L)** | **80205** | **33** | **2.907** | **3.199** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Boron (ug/L)** | **P416589 (bg)** | **33** | **0.2928** | **1.813** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **No** |
| Bromodichloromethane (UG/L) | 70193 (bg) | 56 | 0 | 0.9923 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | 70393 (bg) | 58 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | 70693 (bg) | 42 | 0 | 0.9682 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | 73005 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | 73105 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | 73205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | 80105 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | 80205 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | P416589 (bg) | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 70193 (bg) | 56 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 70393 (bg) | 58 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 70693 (bg) | 42 | 0 | 0.9682 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 73005 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 73105 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 73205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 80105 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | 80205 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | P416589 (bg) | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | 70193 (bg) | 56 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | 70393 (bg) | 57 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | 70693 (bg) | 42 | 0 | 0.9682 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | 73005 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | 73105 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | 73205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | 80105 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |

# RCRA Wells: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro Printed 3/9/2014, 5:02 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| Bromomethane (UG/L) | 80205 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | P416589 (bg) | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Butyl benzyl phthalate (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Butyl benzyl phthalate (UG/L) | 80105 | 33 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| Butyl benzyl phthalate (UG/L) | 80205 | 34 | 0 | 0.1936 | 1.282 | No | 1.645 | No | 1.960 | No |
| Butyl benzyl phthalate (UG/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Cadmium (UG/L) | 70193 (bg) | 56 | 0 | 0.1471 | 1.282 | No | 1.645 | No | 1.960 | No |
| Cadmium (UG/L) | 70393 (bg) | 57 | 0 | -0.36 | 1.282 | No | 1.645 | No | 1.960 | No |
| Cadmium (UG/L) | 70693 (bg) | 35 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Cadmium (UG/L) | 73005 | 32 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Cadmium (UG/L) | 73105 | 33 | 0 | 0.5794 | 1.282 | No | 1.645 | No | 1.960 | No |
| Cadmium (UG/L) | 73205 | 33 | 0 | 0.3461 | 1.282 | No | 1.645 | No | 1.960 | No |
| Cadmium (UG/L) | 80005 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Cadmium (UG/L) | 80105 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Cadmium (UG/L) | 80205 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Cadmium (UG/L)** | **P416589 (bg)** | **33** | **0** | **-1.326** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Carbon tetrachloride (UG/L) | 70193 (bg) | 56 | 0 | 0.9923 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Carbon tetrachloride (UG/L)** | **70393 (bg)** | **58** | **0** | **-3.609** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Carbon tetrachloride (UG/L)** | **70693 (bg)** | **42** | **-0.06598** | **-4.923** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Carbon tetrachloride (UG/L) | 73005 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Carbon tetrachloride (UG/L) | 73105 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Carbon tetrachloride (UG/L) | 73205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Carbon tetrachloride (UG/L) | 80005 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Carbon tetrachloride (UG/L) | 80105 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Carbon tetrachloride (UG/L) | 80205 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Carbon tetrachloride (UG/L) | P416589 (bg) | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorobenzene (UG/L) | 70193 (bg) | 56 | 0 | 0.5729 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorobenzene (UG/L) | 70393 (bg) | 58 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorobenzene (UG/L) | 70693 (bg) | 42 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorobenzene (UG/L) | 73005 | 32 | 0 | 0.4364 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorobenzene (UG/L) | 73105 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorobenzene (UG/L) | 73205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorobenzene (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorobenzene (UG/L) | 80105 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorobenzene (UG/L) | 80205 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorobenzene (UG/L) | P416589 (bg) | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | 70193 (bg) | 56 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | 70393 (bg) | 58 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | 70693 (bg) | 42 | 0 | 0.9682 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | 73005 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |

# RCRA Wells: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro Printed 3/9/2014, 5:02 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| Chlorodibromomethane (UG/L) | 73105 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | 73205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | 80105 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | 80205 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (UG/L) | P416589 (bg) | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloroform (UG/L) | 70193 (bg) | 56 | 0 | 0.9923 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Chloroform (UG/L)** | **70393 (bg)** | **58** | **0** | **-2.916** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Chloroform (UG/L)** | **70693 (bg)** | **42** | **-0.0337** | **-4.156** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Chloroform (UG/L) | 73005 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Chloroform (UG/L)** | **73105** | **33** | **0** | **-2.534** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Chloroform (UG/L) | 73205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloroform (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloroform (UG/L) | 80105 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloroform (UG/L) | 80205 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloroform (UG/L) | P416589 (bg) | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | 70193 (bg) | 56 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | 70393 (bg) | 58 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | 70693 (bg) | 42 | 0 | 0.9682 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | 73005 | 32 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Chloromethane (UG/L)** | **73105** | **33** | **0** | **-1.309** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Chloromethane (UG/L) | 73205 | 33 | 0 | -1.08 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | 80005 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | 80105 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | 80205 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | P416589 (bg) | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Chromium (UG/L)** | **70193 (bg)** | **56** | **0** | **-3.272** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Chromium (UG/L)** | **70393 (bg)** | **57** | **0** | **-3.435** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Chromium (UG/L) | 70693 (bg) | 35 | 0 | 0.9682 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Chromium (UG/L)** | **73005** | **32** | **0.2412** | **4.219** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Chromium (UG/L) | 73105 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Chromium (UG/L)** | **73205** | **33** | **0** | **1.362** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Chromium (UG/L) | 80005 | 34 | 0 | 0.5794 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Chromium (UG/L)** | **80105** | **34** | **0** | **1.309** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Chromium (UG/L) | 80205 | 34 | 0 | -1.159 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chromium (UG/L) | P416589 (bg) | 33 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Chrysene (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chrysene (UG/L) | 80105 | 33 | 0 | 0.5427 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chrysene (UG/L) | 80205 | 34 | 0 | 0.1464 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chrysene (UG/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |

# RCRA Wells: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro Printed 3/9/2014, 5:02 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| cis-1,2-Dichloroethene (UG/L) | 70193 (bg) | 56 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| cis-1,2-Dichloroethene (UG/L) | 70393 (bg) | 58 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| cis-1,2-Dichloroethene (UG/L) | 70693 (bg) | 42 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| cis-1,2-Dichloroethene (UG/L) | 73005 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| cis-1,2-Dichloroethene (UG/L) | 73105 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| cis-1,2-Dichloroethene (UG/L) | 73205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| cis-1,2-Dichloroethene (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| cis-1,2-Dichloroethene (UG/L) | 80105 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| cis-1,2-Dichloroethene (UG/L) | 80205 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| cis-1,2-Dichloroethene (UG/L) | P416589 (bg) | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Copper (UG/L)** | **70193 (bg)** | **56** | **0** | **-2.805** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Copper (UG/L)** | **70393 (bg)** | **57** | **0** | **-2.055** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Copper (UG/L) | 70693 (bg) | 35 | 0 | 0.379 | 1.282 | No | 1.645 | No | 1.960 | No |
| Copper (UG/L) | 73005 | 32 | 0 | 1.096 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Copper (UG/L)** | **73105** | **33** | **0** | **2.283** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Copper (UG/L) | 73205 | 33 | 0 | 0.8109 | 1.282 | No | 1.645 | No | 1.960 | No |
| Copper (UG/L) | 80005 | 34 | 0 | 1.043 | 1.282 | No | 1.645 | No | 1.960 | No |
| Copper (UG/L) | 80105 | 34 | 0 | 0.5837 | 1.282 | No | 1.645 | No | 1.960 | No |
| Copper (UG/L) | 80205 | 34 | 0 | 0.6611 | 1.282 | No | 1.645 | No | 1.960 | No |
| Copper (UG/L) | P416589 (bg) | 33 | 0 | 0.225 | 1.282 | No | 1.645 | No | 1.960 | No |
| Dibenz[a,h]anthracene (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Dibenz[a,h]anthracene (UG/L) | 80105 | 33 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| Dibenz[a,h]anthracene (UG/L) | 80205 | 34 | 0 | 0.1936 | 1.282 | No | 1.645 | No | 1.960 | No |
| Dibenz[a,h]anthracene (UG/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Diethyl phthalate (UG/L)** | **80005** | **34** | **0** | **1.356** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| **Diethyl phthalate (UG/L)** | **80105** | **33** | **0** | **1.498** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| **Diethyl phthalate (UG/L)** | **80205** | **34** | **0** | **1.448** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| **Diethyl phthalate (UG/L)** | **P416589 (bg)** | **33** | **0** | **1.309** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Dimethyl phthalate (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Dimethyl phthalate (UG/L) | 80105 | 33 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| Dimethyl phthalate (UG/L) | 80205 | 34 | 0 | 0.1936 | 1.282 | No | 1.645 | No | 1.960 | No |
| Dimethyl phthalate (UG/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Di-n-butyl phthalate (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Di-n-butyl phthalate (UG/L) | 80105 | 33 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| Di-n-butyl phthalate (UG/L) | 80205 | 34 | 0 | 0.1936 | 1.282 | No | 1.645 | No | 1.960 | No |
| Di-n-butyl phthalate (UG/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Ethylbenzene (UG/L) | 70193 (bg) | 48 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Ethylbenzene (UG/L) | 70393 (bg) | 50 | 0 | -0.869 | 1.282 | No | 1.645 | No | 1.960 | No |
| Ethylbenzene (UG/L) | 70693 (bg) | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Ethylbenzene (UG/L) | 73005 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |

# RCRA Wells: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro Printed 3/9/2014, 5:02 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| Ethylbenzene (UG/L) | 73105 | 25 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Ethylbenzene (UG/L) | 73205 | 25 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Ethylbenzene (UG/L) | 80005 | 26 | 0 | -0.25 | 1.282 | No | 1.645 | No | 1.960 | No |
| Ethylbenzene (UG/L) | 80105 | 26 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Ethylbenzene (UG/L) | 80205 | 26 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Ethylbenzene (UG/L) | P416589 (bg) | 26 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Fluoranthene (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Fluoranthene (UG/L) | 80105 | 33 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| Fluoranthene (UG/L) | 80205 | 34 | 0 | 0.1936 | 1.282 | No | 1.645 | No | 1.960 | No |
| Fluoranthene (UG/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Fluorene (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Fluorene (UG/L) | 80105 | 33 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| Fluorene (UG/L) | 80205 | 34 | 0 | 0.1936 | 1.282 | No | 1.645 | No | 1.960 | No |
| Fluorene (UG/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobenzene (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobenzene (UG/L) | 80105 | 33 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobenzene (UG/L) | 80205 | 34 | 0 | 0.1936 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobenzene (UG/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | 70193 (bg) | 56 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | 70393 (bg) | 58 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | 70693 (bg) | 42 | 0 | 0.9682 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | 73005 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | 73105 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | 73205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | 80105 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | 80205 | 35 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | P416589 (bg) | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorocyclopentadiene (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorocyclopentadiene (UG/L) | 80105 | 33 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorocyclopentadiene (UG/L) | 80205 | 34 | 0 | 0.1936 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorocyclopentadiene (UG/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachloroethane (UG/L) | 80005 | 31 | 0 | 0.1936 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachloroethane (UG/L) | 80105 | 30 | 0 | 0.451 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachloroethane (UG/L) | 80205 | 31 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachloroethane (UG/L) | P416589 (bg) | 30 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Indeno[1,2,3-cd]pyrene (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Indeno[1,2,3-cd]pyrene (UG/L) | 80105 | 33 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| Indeno[1,2,3-cd]pyrene (UG/L) | 80205 | 34 | 0 | 0.1936 | 1.282 | No | 1.645 | No | 1.960 | No |
| Indeno[1,2,3-cd]pyrene (UG/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |

# RCRA Wells: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro Printed 3/9/2014, 5:02 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| Isophorone (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Isophorone (UG/L) | 80105 | 33 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| Isophorone (UG/L) | 80205 | 34 | 0 | 0.1936 | 1.282 | No | 1.645 | No | 1.960 | No |
| Isophorone (UG/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Lead (UG/L) | 70193 (bg) | 56 | 0 | -1.172 | 1.282 | No | 1.645 | No | 1.960 | No |
| Lead (UG/L) | 70393 (bg) | 57 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Lead (UG/L) | 70693 (bg) | 35 | 0 | -0.796 | 1.282 | No | 1.645 | No | 1.960 | No |
| Lead (UG/L) | 73005 | 32 | 0 | -1.159 | 1.282 | No | 1.645 | No | 1.960 | No |
| Lead (UG/L) | 73105 | 33 | 0 | -1.086 | 1.282 | No | 1.645 | No | 1.960 | No |
| Lead (UG/L) | 73205 | 33 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Lead (UG/L) | 80005 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Lead (UG/L) | 80105 | 34 | 0 | -1.16 | 1.282 | No | 1.645 | No | 1.960 | No |
| Lead (UG/L) | 80205 | 34 | 0 | 0.9748 | 1.282 | No | 1.645 | No | 1.960 | No |
| Lead (UG/L) | P416589 (bg) | 33 | 0 | 0.6576 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Mercury (UG/L)** | **70193 (bg)** | **56** | **0** | **-2.69** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Mercury (UG/L)** | **70393 (bg)** | **55** | **0** | **-1.86** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **No** |
| **Mercury (UG/L)** | **70693 (bg)** | **35** | **0** | **-2.19** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Mercury (UG/L)** | **73005** | **32** | **0** | **-1.978** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Mercury (UG/L)** | **73105** | **33** | **0** | **-2.526** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Mercury (UG/L)** | **73205** | **33** | **0** | **-2.076** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Mercury (UG/L) | 80005 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Mercury (UG/L) | 80105 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Mercury (UG/L) | 80205 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Mercury (UG/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Methylene chloride (UG/L)** | **70193 (bg)** | **56** | **0** | **-2.307** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Methylene chloride (UG/L)** | **70393 (bg)** | **58** | **0** | **-1.293** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Methylene chloride (UG/L) | 70693 (bg) | 42 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Methylene chloride (UG/L)** | **73005** | **32** | **0** | **-1.356** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| **Methylene chloride (UG/L)** | **73105** | **33** | **0** | **-1.356** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Methylene chloride (UG/L) | 73205 | 33 | 0 | -1.159 | 1.282 | No | 1.645 | No | 1.960 | No |
| Methylene chloride (UG/L) | 80005 | 34 | 0 | 0.9279 | 1.282 | No | 1.645 | No | 1.960 | No |
| Methylene chloride (UG/L) | 80105 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Methylene chloride (UG/L) | 80205 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Methylene chloride (UG/L) | P416589 (bg) | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Naphthalene (UG/L) | 70193 (bg) | 56 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Naphthalene (UG/L) | 70393 (bg) | 58 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Naphthalene (UG/L) | 70693 (bg) | 42 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Naphthalene (UG/L) | 73005 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Naphthalene (UG/L) | 73105 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Naphthalene (UG/L) | 73205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |

# RCRA Wells: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro Printed 3/9/2014, 5:02 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| Naphthalene (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Naphthalene (UG/L) | 80105 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Naphthalene (UG/L) | 80205 | 35 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Naphthalene (UG/L) | P416589 (bg) | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Nickel (UG/L)** | **70193 (bg)** | **56** | **0** | **-2.627** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Nickel (UG/L) | 70393 (bg) | 57 | 0 | 0.5292 | 1.282 | No | 1.645 | No | 1.960 | No |
| Nickel (UG/L) | 70693 (bg) | 35 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Nickel (UG/L) | 73005 | 32 | 0 | -1.019 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Nickel (UG/L)** | **73105** | **33** | **0.3244** | **2.891** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Nickel (UG/L)** | **73205** | **33** | **0.05852** | **1.668** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **No** |
| **Nickel (UG/L)** | **80005** | **34** | **0** | **-1.573** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| **Nickel (UG/L)** | **80105** | **34** | **0** | **-1.806** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **No** |
| **Nickel (UG/L)** | **80205** | **34** | **0.3063** | **1.867** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **No** |
| Nickel (UG/L) | P416589 (bg) | 33 | 0 | 0.293 | 1.282 | No | 1.645 | No | 1.960 | No |
| Nitrobenzene (UG/L) | 80005 | 31 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Nitrobenzene (UG/L) | 80105 | 30 | 0 | 0.451 | 1.282 | No | 1.645 | No | 1.960 | No |
| Nitrobenzene (UG/L) | 80205 | 31 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Nitrobenzene (UG/L) | P416589 (bg) | 30 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| N-Nitrosodi-n-propylamine (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| N-Nitrosodi-n-propylamine (UG/L) | 80105 | 33 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| N-Nitrosodi-n-propylamine (UG/L) | 80205 | 34 | 0 | 0.1936 | 1.282 | No | 1.645 | No | 1.960 | No |
| N-Nitrosodi-n-propylamine (UG/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| N-Nitrosodiphenylamine (UG/L) | 80005 | 30 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| N-Nitrosodiphenylamine (UG/L) | 80105 | 29 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| N-Nitrosodiphenylamine (UG/L) | 80205 | 30 | 0 | 0.1936 | 1.282 | No | 1.645 | No | 1.960 | No |
| N-Nitrosodiphenylamine (UG/L) | P416589 (bg) | 29 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Pentachlorophenol (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Pentachlorophenol (UG/L) | 80105 | 33 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| Pentachlorophenol (UG/L) | 80205 | 34 | 0 | 0.1936 | 1.282 | No | 1.645 | No | 1.960 | No |
| Pentachlorophenol (UG/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Phenol (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Phenol (UG/L) | 80105 | 33 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| Phenol (UG/L) | 80205 | 34 | 0 | 0.1936 | 1.282 | No | 1.645 | No | 1.960 | No |
| Phenol (UG/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Pyrene (UG/L) | 80005 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Pyrene (UG/L) | 80105 | 33 | 0 | 0.7605 | 1.282 | No | 1.645 | No | 1.960 | No |
| Pyrene (UG/L) | 80205 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Pyrene (UG/L) | P416589 (bg) | 33 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Selenium (UG/L) | 70193 (bg) | 56 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Selenium (UG/L) | 70393 (bg) | 57 | 0 | 0.2643 | 1.282 | No | 1.645 | No | 1.960 | No |

# RCRA Wells: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro Printed 3/9/2014, 5:02 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| Selenium (UG/L) | 70693 (bg) | 35 | 0 | 0.5367 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Selenium (UG/L)** | **73005** | **32** | **1.076** | **2.523** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Selenium (UG/L) | 73105 | 33 | 0 | 0.5782 | 1.282 | No | 1.645 | No | 1.960 | No |
| Selenium (UG/L) | 73205 | 33 | 3.206 | 0.4761 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Selenium (UG/L)** | **80005** | **34** | **0** | **1.427** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Selenium (UG/L) | 80105 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Selenium (UG/L) | 80205 | 34 | 0 | 0.0... | 1.282 | No | 1.645 | No | 1.960 | No |
| Selenium (UG/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Silver (UG/L)** | **70193 (bg)** | **56** | **0** | **-2.399** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Silver (UG/L)** | **70393 (bg)** | **57** | **0** | **-1.715** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **No** |
| Silver (UG/L) | 70693 (bg) | 35 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Silver (UG/L) | 73005 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Silver (UG/L) | 73105 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Silver (UG/L) | 73205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Silver (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Silver (UG/L) | 80105 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Silver (UG/L) | 80205 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Silver (UG/L) | P416589 (bg) | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Styrene (UG/L) | 70193 (bg) | 56 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Styrene (UG/L) | 70393 (bg) | 58 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Styrene (UG/L) | 70693 (bg) | 42 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Styrene (UG/L) | 73005 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Styrene (UG/L) | 73105 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Styrene (UG/L) | 73205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Styrene (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Styrene (UG/L) | 80105 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Styrene (UG/L) | 80205 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Styrene (UG/L) | P416589 (bg) | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Tetrachloroethene (UG/L) | 70193 (bg) | 56 | 0 | 0.6599 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Tetrachloroethene (UG/L)** | **70393 (bg)** | **58** | **-0.2958** | **-7.587** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Tetrachloroethene (UG/L)** | **70693 (bg)** | **42** | **-0.2021** | **-5.089** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Tetrachloroethene (UG/L) | 73005 | 32 | 0 | 0.4364 | 1.282 | No | 1.645 | No | 1.960 | No |
| Tetrachloroethene (UG/L) | 73105 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Tetrachloroethene (UG/L) | 73205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Tetrachloroethene (UG/L) | 80005 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Tetrachloroethene (UG/L) | 80105 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Tetrachloroethene (UG/L) | 80205 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Tetrachloroethene (UG/L) | P416589 (bg) | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Toluene (UG/L) | 70193 (bg) | 56 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Toluene (UG/L) | 70393 (bg) | 58 | 0 | -1.1 | 1.282 | No | 1.645 | No | 1.960 | No |

# RCRA Wells: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro Printed 3/9/2014, 5:02 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| Toluene (UG/L) | 70693 (bg) | 42 | 0 | -1.002 | 1.282 | No | 1.645 | No | 1.960 | No |
| Toluene (UG/L) | 73005 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Toluene (UG/L)** | **73105** | **33** | **0** | **-2.006** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Toluene (UG/L) | 73205 | 33 | 0 | -1.08 | 1.282 | No | 1.645 | No | 1.960 | No |
| Toluene (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Toluene (UG/L) | 80105 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Toluene (UG/L) | 80205 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Toluene (UG/L)** | **P416589 (bg)** | **34** | **0** | **-1.309** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Total Xylenes (UG/L) | 70193 (bg) | 50 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Total Xylenes (UG/L) | 70393 (bg) | 52 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Total Xylenes (UG/L) | 70693 (bg) | 36 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Total Xylenes (UG/L) | 73005 | 27 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Total Xylenes (UG/L) | 73105 | 27 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Total Xylenes (UG/L) | 73205 | 28 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Total Xylenes (UG/L) | 80005 | 28 | 0 | -0.25 | 1.282 | No | 1.645 | No | 1.960 | No |
| Total Xylenes (UG/L) | 80105 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Total Xylenes (UG/L) | 80205 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Total Xylenes (UG/L) | P416589 (bg) | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,2-Dichloroethene (UG/L) | 70193 (bg) | 56 | 0 | 0.9923 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,2-Dichloroethene (UG/L) | 70393 (bg) | 58 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,2-Dichloroethene (UG/L) | 70693 (bg) | 42 | 0 | 0.9682 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,2-Dichloroethene (UG/L) | 73005 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,2-Dichloroethene (UG/L) | 73105 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,2-Dichloroethene (UG/L) | 73205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,2-Dichloroethene (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,2-Dichloroethene (UG/L) | 80105 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,2-Dichloroethene (UG/L) | 80205 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,2-Dichloroethene (UG/L) | P416589 (bg) | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 70193 (bg) | 54 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 70393 (bg) | 56 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 70693 (bg) | 40 | 0 | 0.9682 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 73005 | 31 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 73105 | 31 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 73205 | 31 | 0 | -0.25 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 80005 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 80105 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | 80205 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | P416589 (bg) | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Trichloroethene (UG/L) | 70193 (bg) | 56 | 0 | -0.077 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Trichloroethene (UG/L)** | **70393 (bg)** | **58** | **-0.837** | **-7.195** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |

# RCRA Wells: Seasonal Kendall

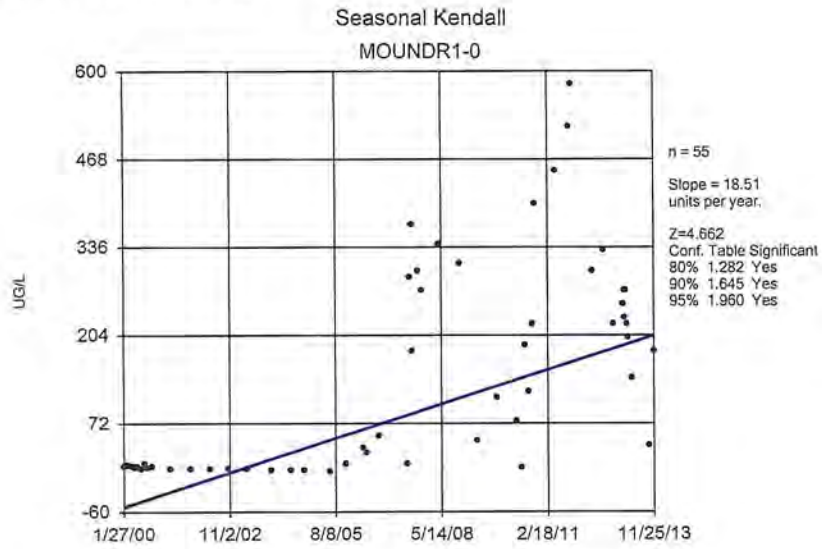
Facility: Rocky Flats Client: DOE LM Data File: RFLMA RCRA wells, SWD&CPro Printed 3/9/2014, 5:02 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| **Trichloroethene (UG/L)** | **70693 (bg)** | **42** | **-0.4176** | **-4.313** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Trichloroethene (UG/L) | 73005 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Trichloroethene (UG/L) | 73105 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Trichloroethene (UG/L) | 73205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Trichloroethene (UG/L) | 80005 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Trichloroethene (UG/L) | 80105 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Trichloroethene (UG/L) | 80205 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Trichloroethene (UG/L) | P416589 (bg) | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Uranium (ug/L)** | **70193 (bg)** | **55** | **0** | **2.975** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Uranium (ug/L) | 70393 (bg) | 57 | 0 | 1.016 | 1.282 | No | 1.645 | No | 1.960 | No |
| Uranium (ug/L) | 70693 (bg) | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Uranium (ug/L)** | **73005** | **31** | **1.716** | **1.925** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **No** |
| **Uranium (ug/L)** | **73105** | **32** | **-0.7521** | **-2.012** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Uranium (ug/L) | 73205 | 32 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Uranium (ug/L)** | **80005** | **33** | **1.119** | **1.686** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **No** |
| **Uranium (ug/L)** | **80105** | **33** | **-1.263** | **-1.833** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **No** |
| **Uranium (ug/L)** | **80205** | **33** | **-5.55** | **-3.8** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Uranium (ug/L) | P416589 (bg) | 32 | 0.02581 | 0.6866 | 1.282 | No | 1.645 | No | 1.960 | No |
| Vinyl chloride (UG/L) | 70193 (bg) | 56 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Vinyl chloride (UG/L) | 70393 (bg) | 58 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Vinyl chloride (UG/L) | 70693 (bg) | 42 | 0 | 0.9682 | 1.282 | No | 1.645 | No | 1.960 | No |
| Vinyl chloride (UG/L) | 73005 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Vinyl chloride (UG/L) | 73105 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Vinyl chloride (UG/L) | 73205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Vinyl chloride (UG/L) | 80005 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Vinyl chloride (UG/L) | 80105 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Vinyl chloride (UG/L) | 80205 | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Vinyl chloride (UG/L) | P416589 (bg) | 34 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Zinc (UG/L) | 70193 (bg) | 55 | 0 | -0.6 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Zinc (UG/L)** | **70393 (bg)** | **56** | **0** | **-1.395** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| **Zinc (UG/L)** | **70693 (bg)** | **35** | **0** | **-2.404** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Zinc (UG/L) | 73005 | 32 | 0 | -1.255 | 1.282 | No | 1.645 | No | 1.960 | No |
| Zinc (UG/L) | 73105 | 33 | 0.02153 | 0.2381 | 1.282 | No | 1.645 | No | 1.960 | No |
| Zinc (UG/L) | 73205 | 33 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Zinc (UG/L) | 80005 | 34 | 0 | 0.8928 | 1.282 | No | 1.645 | No | 1.960 | No |
| Zinc (UG/L) | 80105 | 34 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Zinc (UG/L)** | **80205** | **34** | **0** | **1.683** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **No** |
| Zinc (UG/L) | P416589 (bg) | 33 | 0 | -1.024 | 1.282 | No | 1.645 | No | 1.960 | No |

### B.3.3 S-K Results for Goundwater Treatment System Influent

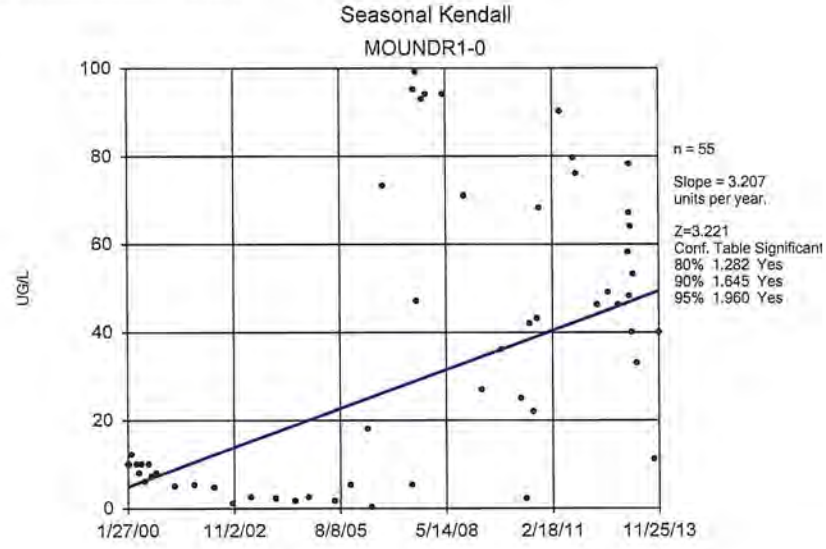
#### B.3.3.1 MSPTS Influent

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



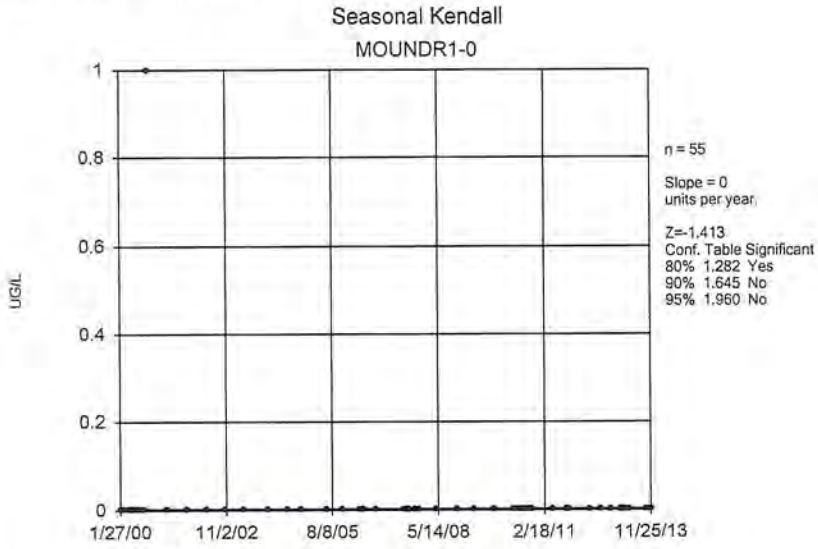

Constituent: 1,1,1-Trichloroethane Analysis Run 3/3/2014 3:13 PM
Facility: Rocky Flats Client: DOE LM Data File: MSPTS, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



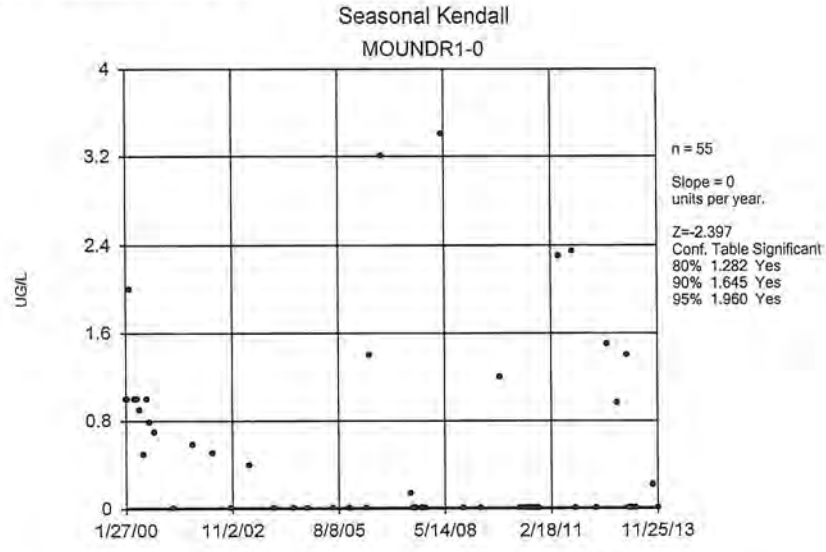

Constituent: 1,1-Dichloroethene Analysis Run 3/3/2014 3:13 PM
Facility: Rocky Flats Client: DOE LM Data File: MSPTS, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



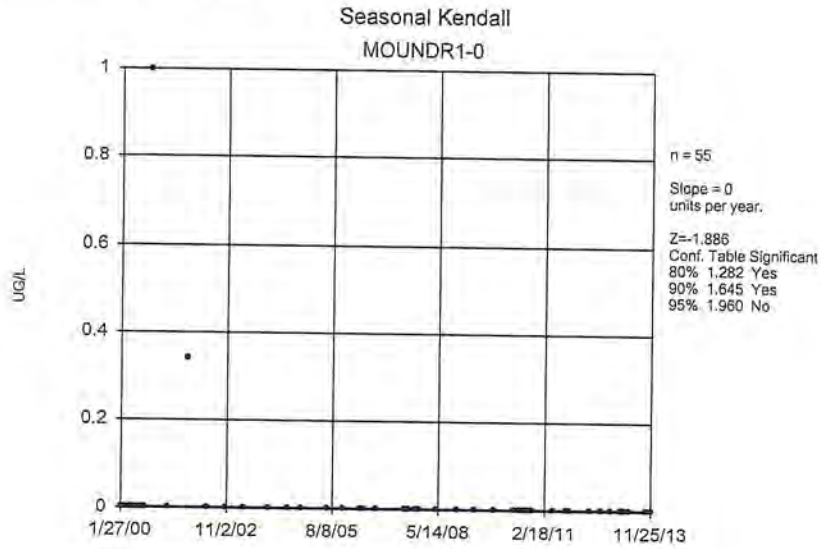

Constituent: 1,2-Dichlorobenzene Analysis Run 3/3/2014 3:13 PM
Facility: Rocky Flats Client: DOE LM Data File: MSPTS, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA



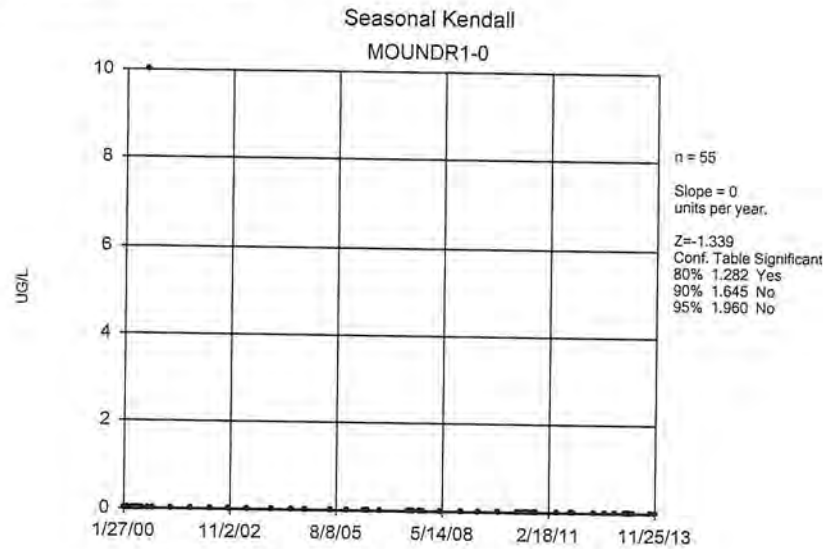

Constituent: 1,2-Dichloroethane Analysis Run 3/3/2014 3:13 PM
Facility: Rocky Flats Client: DOE LM Data File: MSPTS, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA




Constituent: 1,4-Dichlorobenzene Analysis Run 3/3/2014 3:13 PM
Facility: Rocky Flats Client: DOE LM Data File: MSPTS, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA




Constituent: Bromomethane Analysis Run 3/3/2014 3:14 PM
Facility: Rocky Flats Client: DOE LM Data File: MSPTS, SWD&CPro

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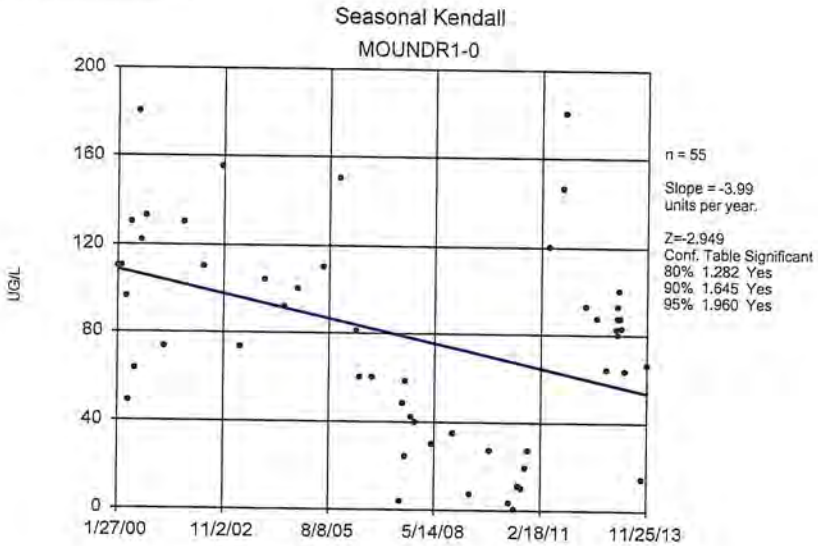


Constituent: Carbon tetrachloride Analysis Run 3/3/2014 3:14 PM
Facility: Rocky Flats Client: DOE LM Data File: MSPTS, SWD&CPro

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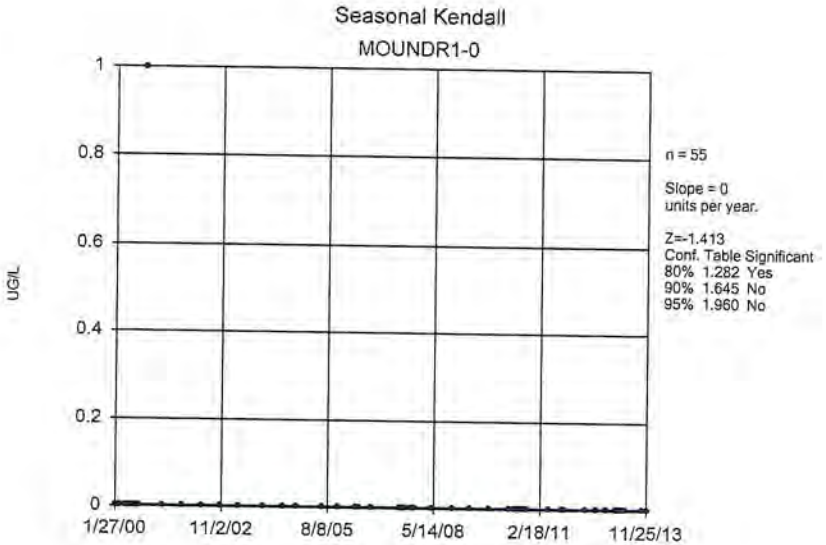


Constituent: Chlorobenzene Analysis Run 3/3/2014 3:14 PM
Facility: Rocky Flats Client: DOE LM Data File: MSPTS, SWD&CPro

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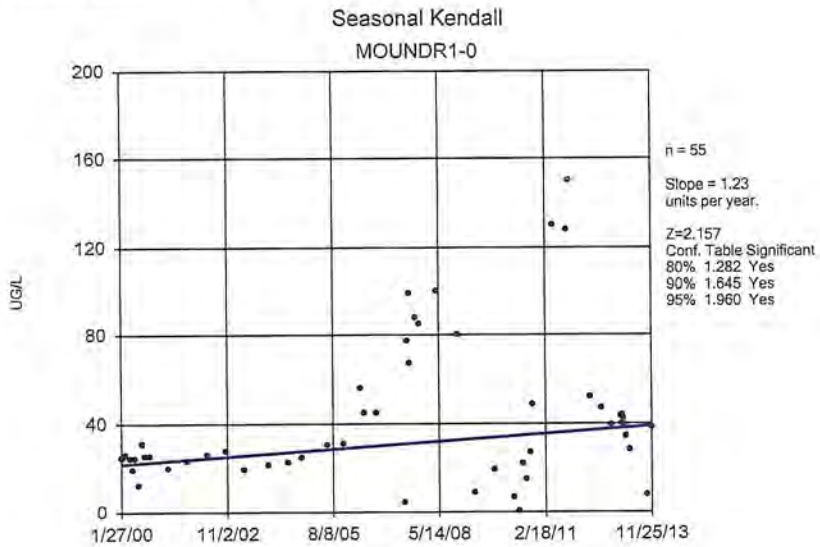


Constituent: Chloroform Analysis Run 3/3/2014 3:14 PM
Facility: Rocky Flats Client: DOE LM Data File: MSPTS, SWD&CPro

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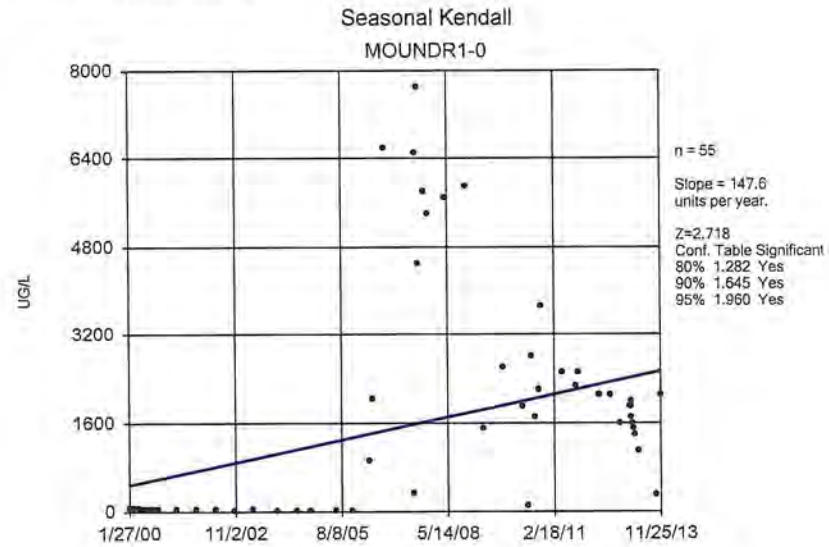


Constituent: cis-1,2-Dichloroethene Analysis Run 3/3/2014 3:14 PM
Facility: Rocky Flats Client: DOE LM Data File: MSPTS, SWD&CPro

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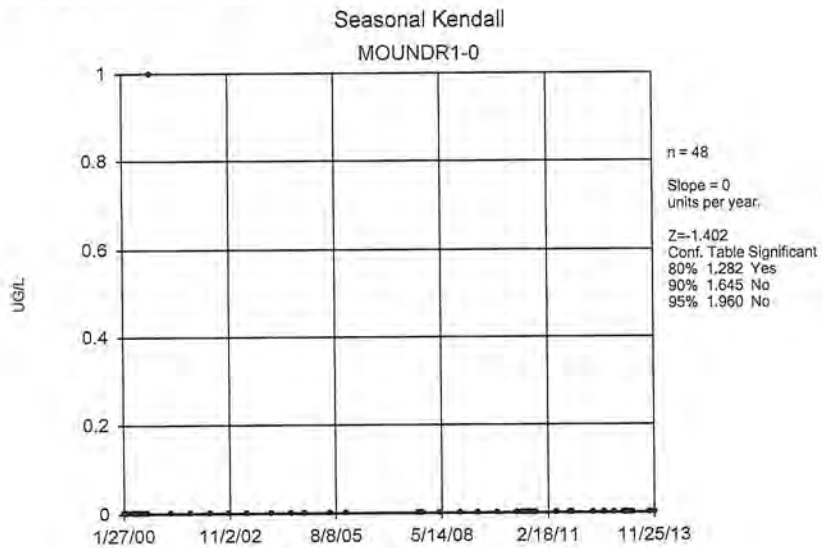


Constituent: Ethylbenzene Analysis Run 3/3/2014 3:14 PM
Facility: Rocky Flats Client: DOE LM Data File: MSPTS, SWD&CPro

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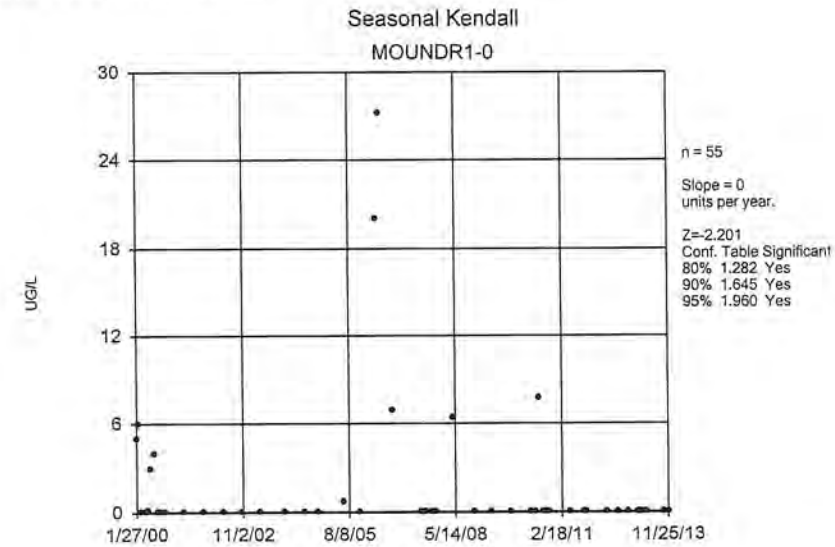
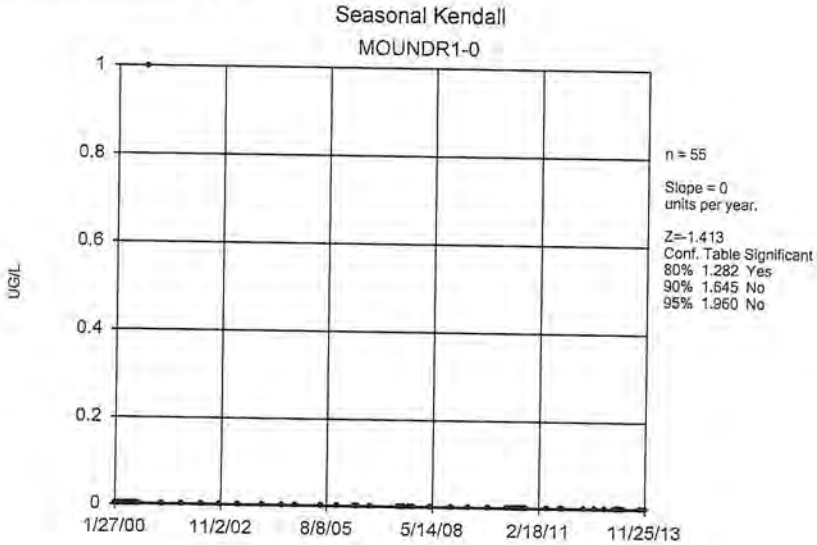


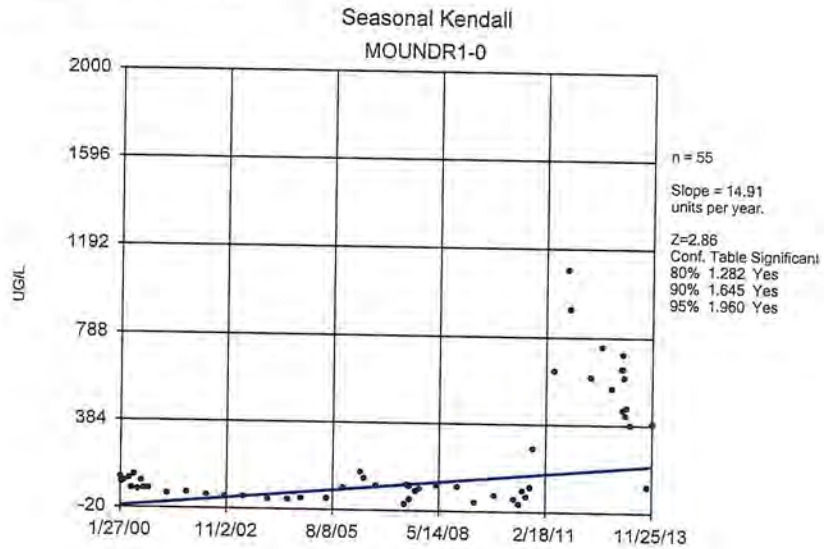

Constituent: Methylene chloride Analysis Run 3/3/2014 3:14 PM
Facility: Rocky Flats Client: DOE LM Data File: MSPTS, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA




Constituent: Styrene Analysis Run 3/3/2014 3:14 PM
Facility: Rocky Flats Client: DOE LM Data File: MSPTS, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA




Constituent: Tetrachloroethene Analysis Run 3/3/2014 3:14 PM
Facility: Rocky Flats Client: DOE LM Data File: MSPTS, SWD&CPro

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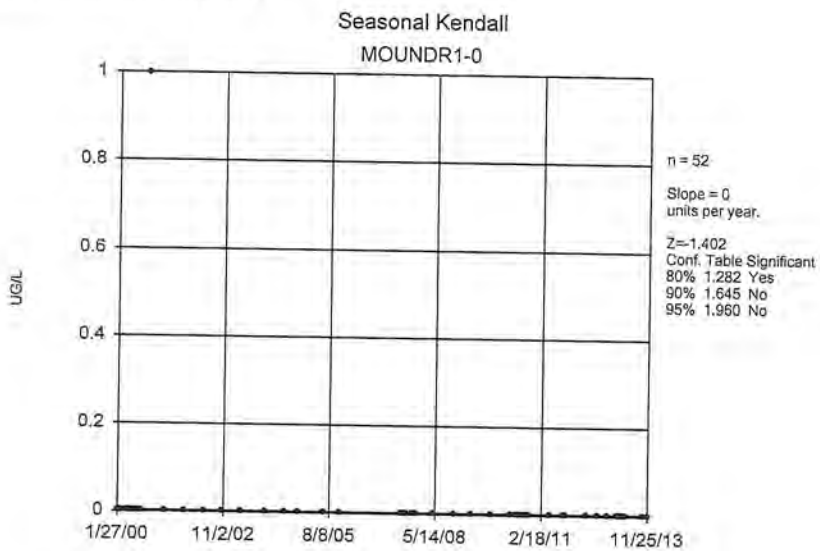


Constituent: Total Xylenes Analysis Run 3/3/2014 3:14 PM
Facility: Rocky Flats Client: DOE LM Data File: MSPTS, SWD&CPro

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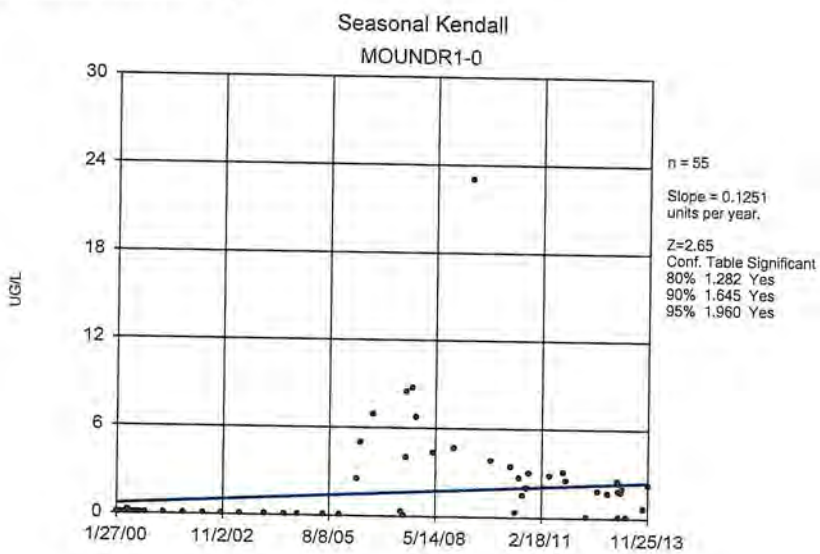
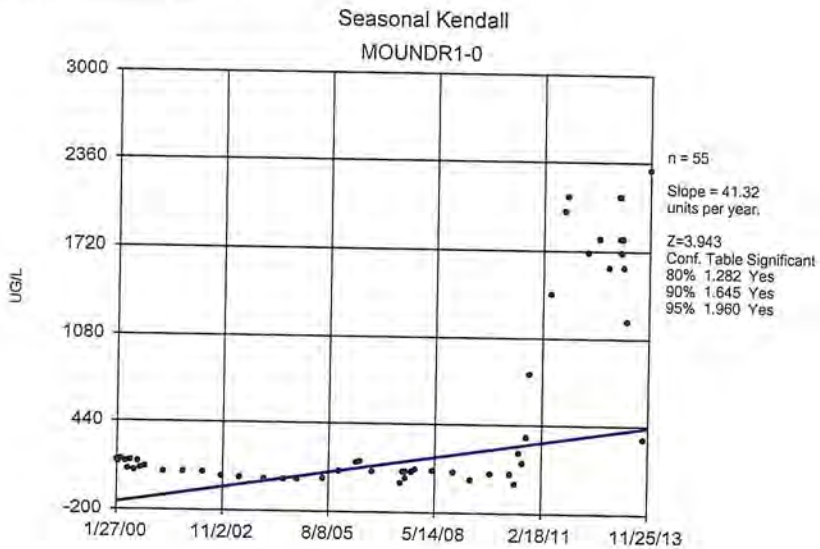


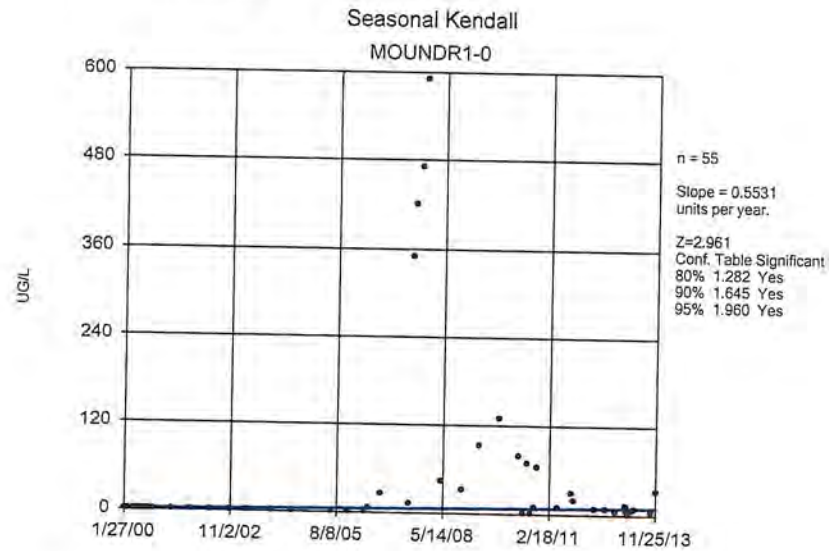

Constituent: trans-1,2-Dichloroethene Analysis Run 3/3/2014 3:14 PM
Facility: Rocky Flats Client: DOE LM Data File: MSPTS, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA




Constituent: Trichloroethene Analysis Run 3/3/2014 3:14 PM
Facility: Rocky Flats Client: DOE LM Data File: MSPTS, SWD&CPro

Sanitas™ v.9.4.32 Sanitas software licensed to DOE, EPA




Constituent: Vinyl chloride Analysis Run 3/3/2014 3:14 PM
Facility: Rocky Flats Client: DOE LM Data File: MSPTS, SWD&CPro

# MSPTS Influent, 2000-2013: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: MSPTS, SWD&CPro Printed 3/3/2014, 3:18 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| **1,1,1-Trichloroethane (UG/L)** | **MOUNDR1-0** | **55** | **18.51** | **4.662** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| 1,1,2,2-Tetrachloroethane (UG/L) | MOUNDR1-0 | 55 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | MOUNDR1-0 | 55 | 0 | 0.584 | 1.282 | No | 1.645 | No | 1.960 | No |
| **1,1-Dichloroethene (UG/L)** | **MOUNDR1-0** | **55** | **3.207** | **3.221** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| 1,2,4-Trichlorobenzene (UG/L) | MOUNDR1-0 | 55 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (ug/L) | MOUNDR1-0 | 35 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | MOUNDR1-0 | 55 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **1,2-Dichlorobenzene (UG/L)** | **MOUNDR1-0** | **55** | **0** | **-1.413** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| **1,2-Dichloroethane (UG/L)** | **MOUNDR1-0** | **55** | **0** | **-2.397** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| 1,2-Dichloropropane (UG/L) | MOUNDR1-0 | 55 | 0 | 0.2329 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | MOUNDR1-0 | 55 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **1,4-Dichlorobenzene (UG/L)** | **MOUNDR1-0** | **55** | **0** | **-1.886** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **No** |
| Benzene (UG/L) | MOUNDR1-0 | 55 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | MOUNDR1-0 | 55 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | MOUNDR1-0 | 55 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Bromomethane (UG/L)** | **MOUNDR1-0** | **55** | **0** | **-1.339** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| **Carbon tetrachloride (UG/L)** | **MOUNDR1-0** | **55** | **-3.99** | **-2.949** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Chlorobenzene (UG/L)** | **MOUNDR1-0** | **55** | **0** | **-1.413** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Chlorodibromomethane (ug/L) | MOUNDR1-0 | 35 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Chloroform (UG/L)** | **MOUNDR1-0** | **55** | **1.23** | **2.157** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Chloromethane (UG/L) | MOUNDR1-0 | 55 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **cis-1,2-Dichloroethene (UG/L)** | **MOUNDR1-0** | **55** | **147.6** | **2.718** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| DIBROMOCHLOROMETHANE (UG/L) | MOUNDR1-0 | 20 | 0 | 0.2023 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Ethylbenzene (UG/L)** | **MOUNDR1-0** | **48** | **0** | **-1.402** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Hexachlorobutadiene (UG/L) | MOUNDR1-0 | 55 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Methylene chloride (UG/L)** | **MOUNDR1-0** | **55** | **0** | **-2.201** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Naphthalene (UG/L) | MOUNDR1-0 | 55 | 0 | -1.121 | 1.282 | No | 1.645 | No | 1.960 | No |
| PROPANE, 1,2-DIBROMO-3-CHLORO- (UG/L) | MOUNDR1-0 | 18 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Styrene (UG/L)** | **MOUNDR1-0** | **55** | **0** | **-1.413** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| **Tetrachloroethene (UG/L)** | **MOUNDR1-0** | **55** | **14.91** | **2.86** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Toluene (UG/L) | MOUNDR1-0 | 55 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Total Xylenes (UG/L)** | **MOUNDR1-0** | **52** | **0** | **-1.402** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| **trans-1,2-Dichloroethene (UG/L)** | **MOUNDR1-0** | **55** | **0.1251** | **2.65** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| trans-1,3-dichloropropene (UG/L) | MOUNDR1-0 | 55 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Trichloroethene (UG/L)** | **MOUNDR1-0** | **55** | **41.32** | **3.943** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Vinyl chloride (UG/L)** | **MOUNDR1-0** | **55** | **0.5531** | **2.961** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |

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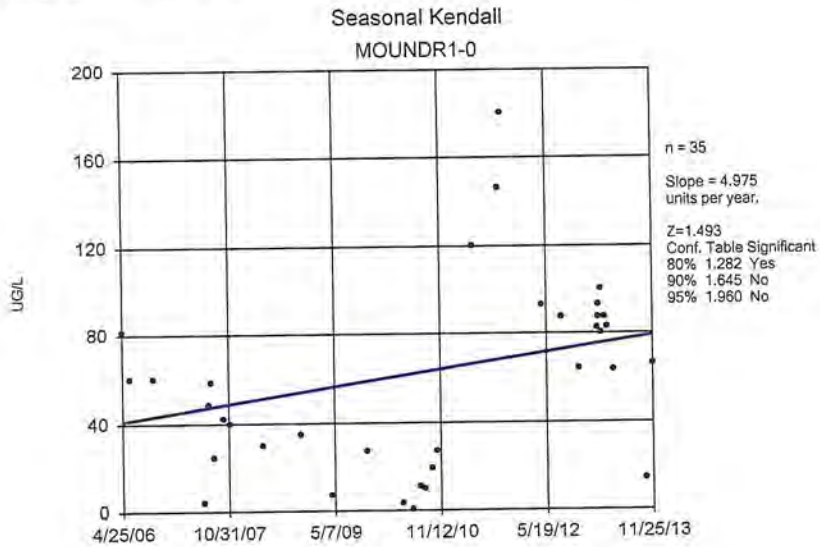


Constituent: Carbon tetrachloride Analysis Run 3/3/2014 3:19 PM
Facility: Rocky Flats Client: DOE LM Data File: MSPTS, SWD&CPro

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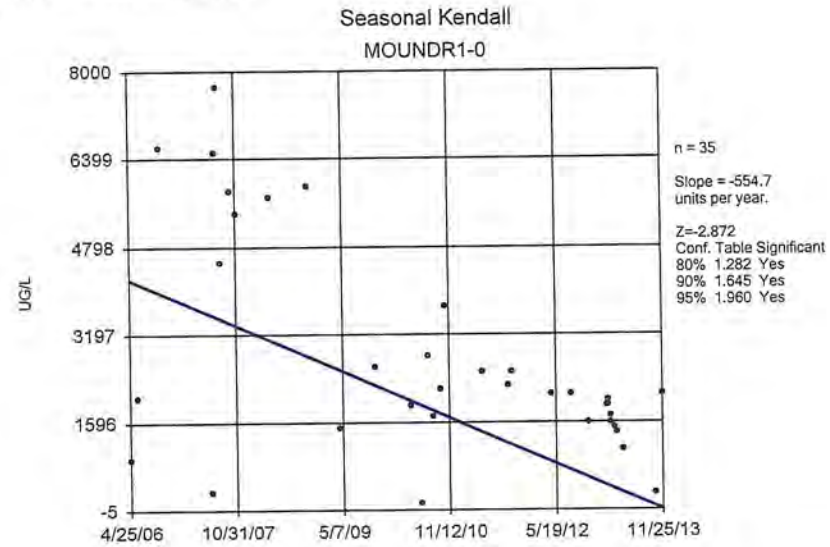


Constituent: cis-1,2-Dichloroethene Analysis Run 3/3/2014 3:19 PM
Facility: Rocky Flats Client: DOE LM Data File: MSPTS, SWD&CPro

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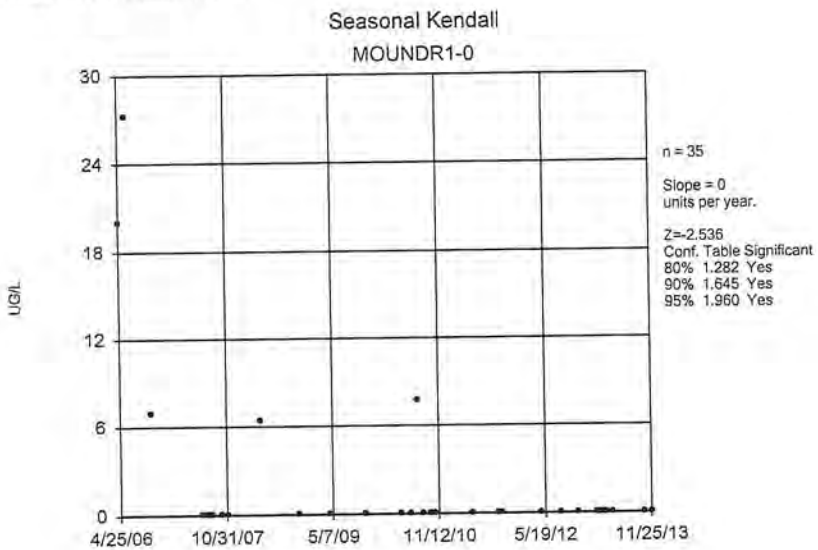


Constituent: Methylene chloride Analysis Run 3/3/2014 3:19 PM
Facility: Rocky Flats Client: DOE LM Data File: MSPTS, SWD&CPro

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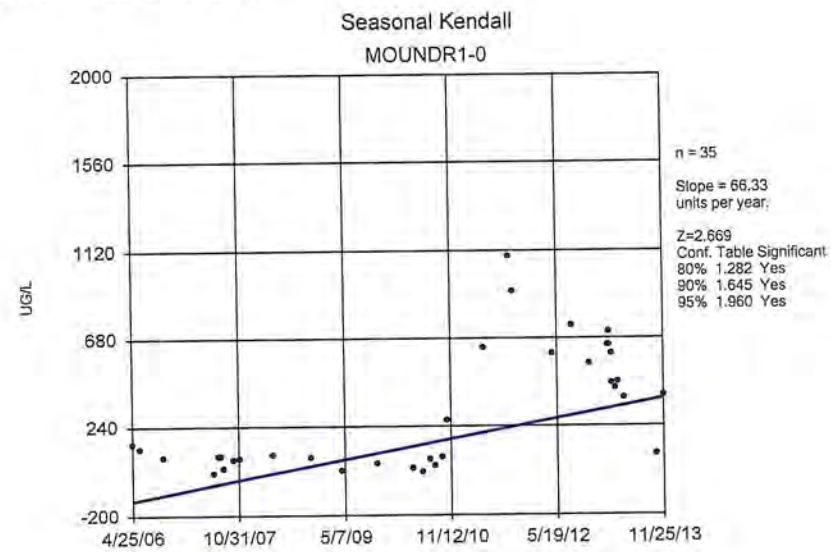


Constituent: Tetrachloroethene Analysis Run 3/3/2014 3:19 PM
Facility: Rocky Flats Client: DOE LM Data File: MSPTS, SWD&CPro

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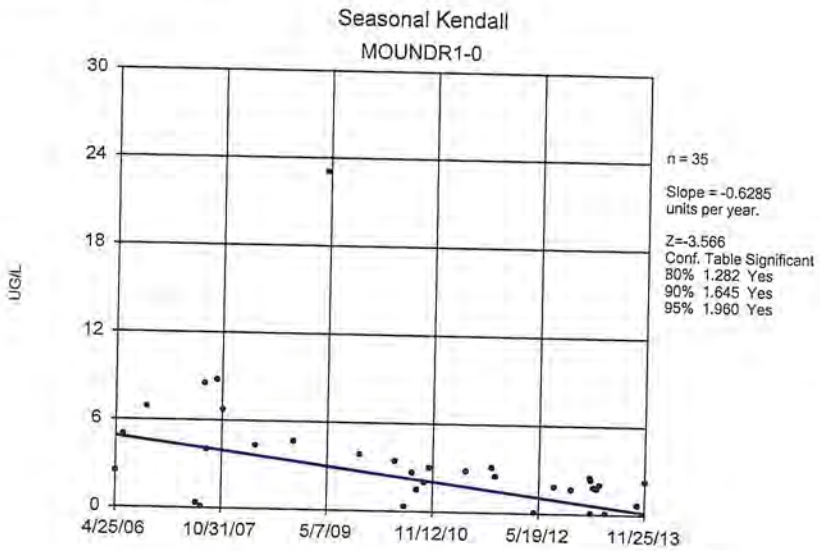


Constituent: trans-1,2-Dichloroethene Analysis Run 3/3/2014 3:19 PM
Facility: Rocky Flats Client: DOE LM Data File: MSPTS, SWD&CPro

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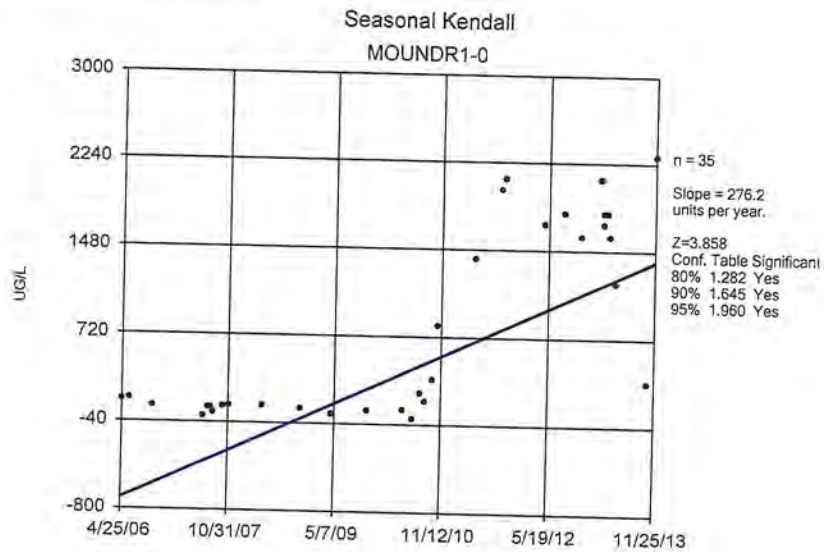


Constituent: Trichloroethene Analysis Run 3/3/2014 3:19 PM
Facility: Rocky Flats Client: DOE LM Data File: MSPTS, SWD&CPro

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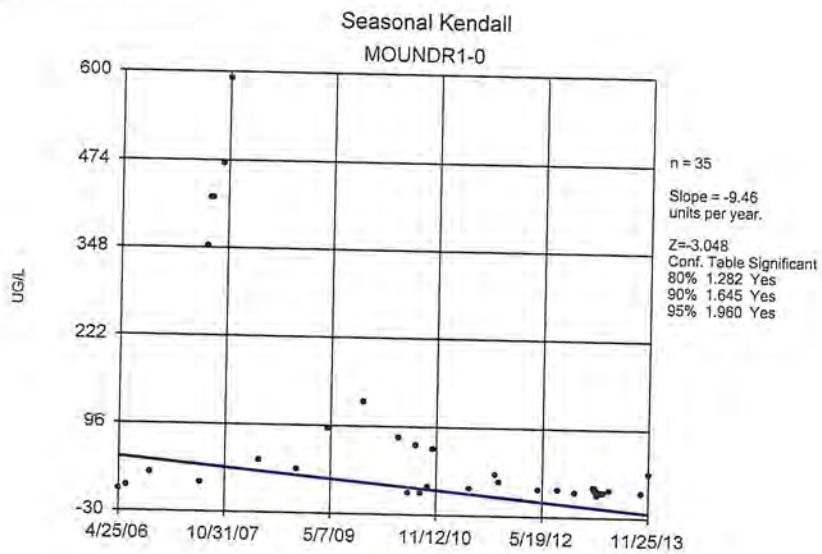


Constituent: Vinyl chloride Analysis Run 3/3/2014 3:19 PM
Facility: Rocky Flats Client: DOE LM Data File: MSPTS, SWD&CPro

# MSPTS Influent, 2006-2013: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: MSPTS, SWD&CPro Printed 3/3/2014, 3:23 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane (UG/L) | MOUNDR1-0 | 35 | 15.59 | 0.8347 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | MOUNDR1-0 | 35 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | MOUNDR1-0 | 35 | 0 | -0.362 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1-Dichloroethene (UG/L) | MOUNDR1-0 | 35 | -1.319 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2,4-Trichlorobenzene (UG/L) | MOUNDR1-0 | 35 | 0 | 1.158 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (ug/L) | MOUNDR1-0 | 35 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | MOUNDR1-0 | 35 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | MOUNDR1-0 | 35 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | MOUNDR1-0 | 35 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | MOUNDR1-0 | 35 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | MOUNDR1-0 | 35 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | MOUNDR1-0 | 35 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzene (UG/L) | MOUNDR1-0 | 35 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | MOUNDR1-0 | 35 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | MOUNDR1-0 | 35 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | MOUNDR1-0 | 35 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Carbon tetrachloride (UG/L)** | **MOUNDR1-0** | **35** | **4.975** | **1.493** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Chlorobenzene (UG/L) | MOUNDR1-0 | 35 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (ug/L) | MOUNDR1-0 | 35 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloroform (UG/L) | MOUNDR1-0 | 35 | -3.067 | -1.148 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chloromethane (UG/L) | MOUNDR1-0 | 35 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **cis-1,2-Dichloroethene (UG/L)** | **MOUNDR1-0** | **35** | **-554.7** | **-2.872** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Ethylbenzene (UG/L) | MOUNDR1-0 | 28 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | MOUNDR1-0 | 35 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Methylene chloride (UG/L)** | **MOUNDR1-0** | **35** | **0** | **-2.536** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Naphthalene (UG/L) | MOUNDR1-0 | 35 | 0 | -1.275 | 1.282 | No | 1.645 | No | 1.960 | No |
| Styrene (UG/L) | MOUNDR1-0 | 35 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Tetrachloroethene (UG/L)** | **MOUNDR1-0** | **35** | **66.33** | **2.669** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Toluene (UG/L) | MOUNDR1-0 | 35 | 0 | 0.7414 | 1.282 | No | 1.645 | No | 1.960 | No |
| Total Xylenes (UG/L) | MOUNDR1-0 | 32 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **trans-1,2-Dichloroethene (UG/L)** | **MOUNDR1-0** | **35** | **-0.6285** | **-3.566** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| trans-1,3-dichloropropene (UG/L) | MOUNDR1-0 | 35 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Trichloroethene (UG/L)** | **MOUNDR1-0** | **35** | **276.2** | **3.858** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Vinyl chloride (UG/L)** | **MOUNDR1-0** | **35** | **-9.46** | **-3.048** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |

#### B.3.3.2 ETPTS Influent

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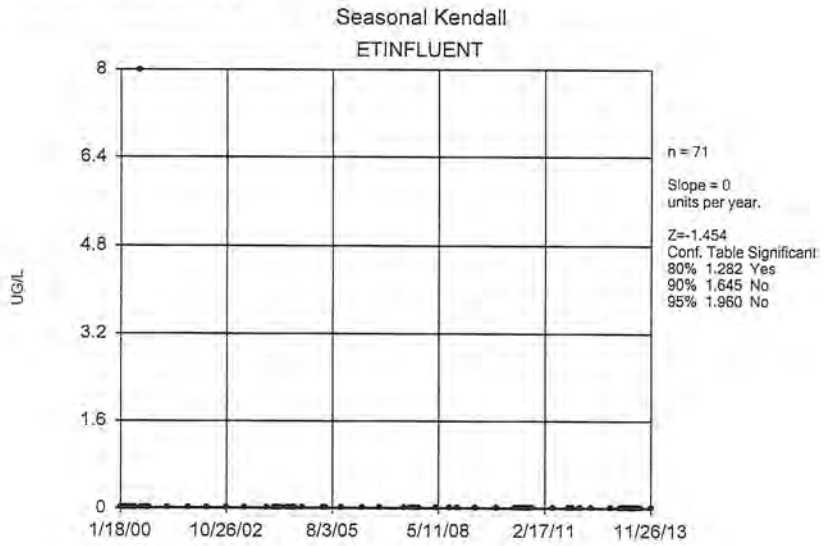


Constituent: 1,1,2-Trichloroethane Analysis Run 4/2/2014 4:42 PM
Facility: Rocky Flats Client: DOE LM Data File: ETPTS, SWD&CPro

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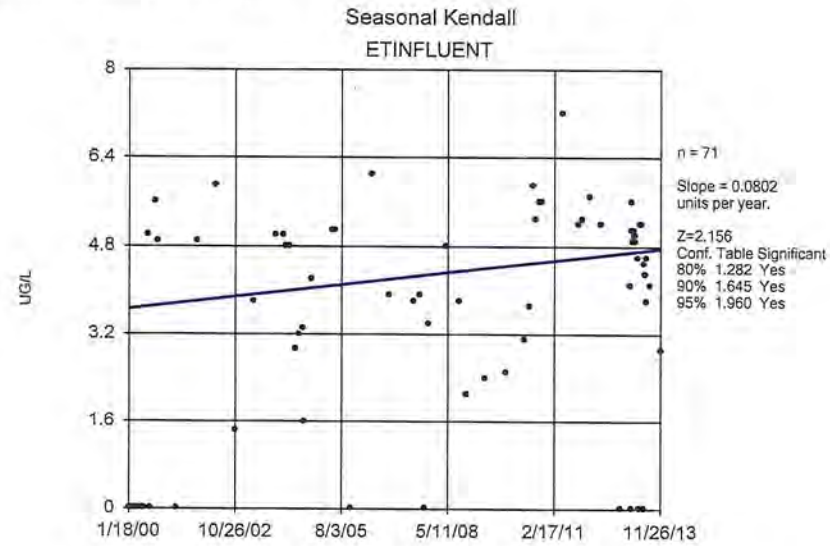


Constituent: 1,1-Dichloroethene Analysis Run 4/2/2014 4:42 PM
Facility: Rocky Flats Client: DOE LM Data File: ETPTS, SWD&CPro

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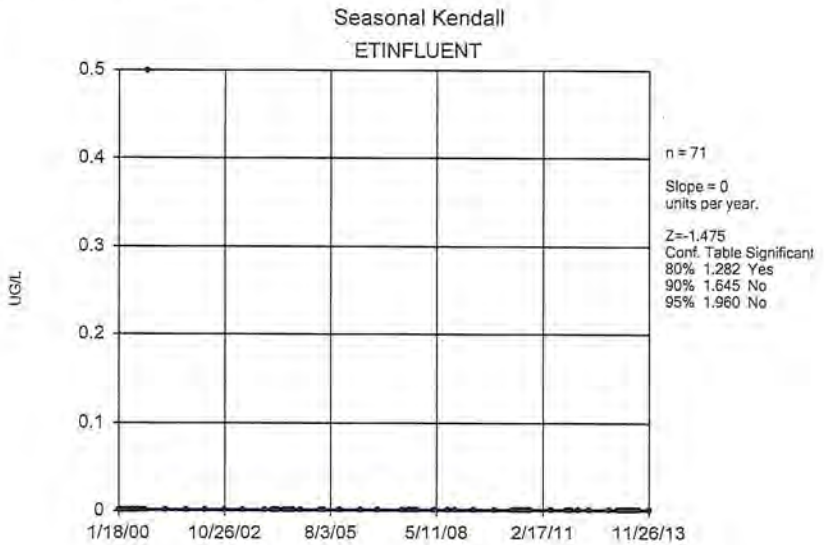


Constituent: 1,2,4-Trichlorobenzene Analysis Run 4/2/2014 4:42 PM
Facility: Rocky Flats Client: DOE LM Data File: ETPTS, SWD&CPro

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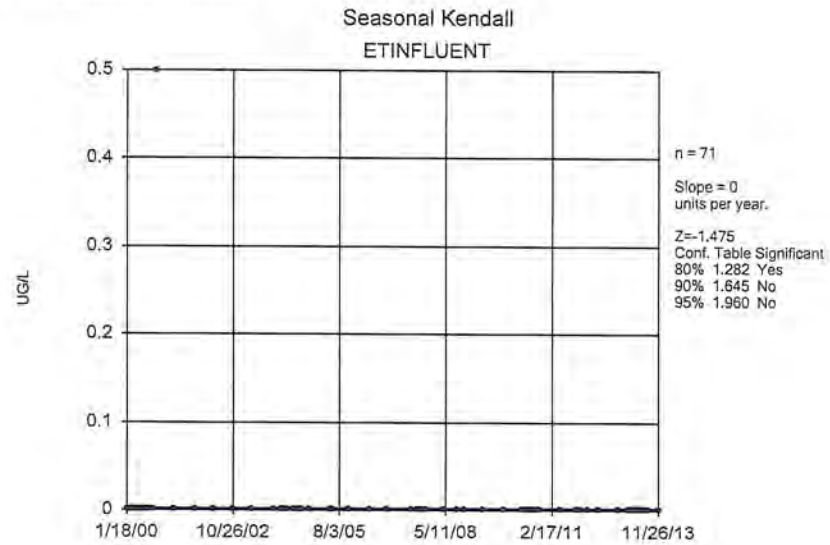


Constituent: 1,2-Dichlorobenzene Analysis Run 4/2/2014 4:42 PM
Facility: Rocky Flats Client: DOE LM Data File: ETPTS, SWD&CPro

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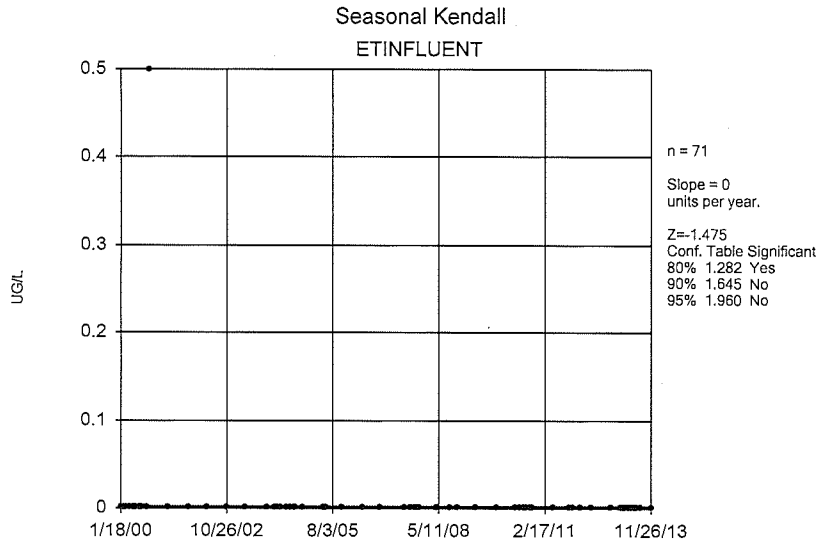


Constituent: 1,3-Dichlorobenzene Analysis Run 4/2/2014 4:42 PM
Facility: Rocky Flats Client: DOE LM Data File: ETPTS, SWD&CPro

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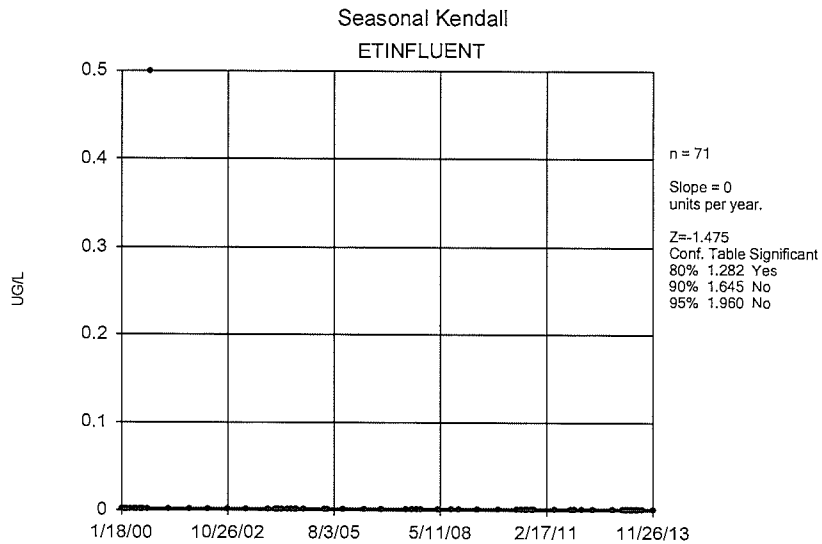


Constituent: 1,4-Dichlorobenzene Analysis Run 4/2/2014 4:42 PM
Facility: Rocky Flats Client: DOE LM Data File: ETPTS, SWD&CPro

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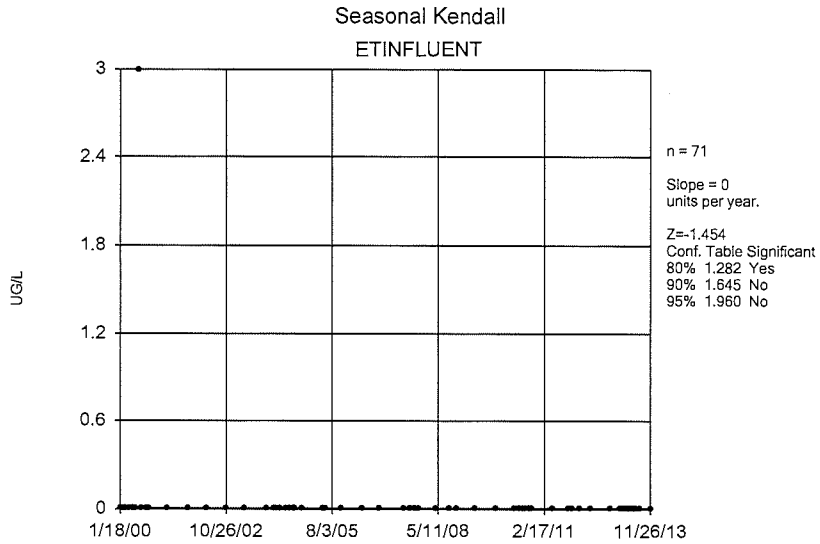


Constituent: Bromodichloromethane Analysis Run 4/2/2014 4:42 PM
Facility: Rocky Flats Client: DOE LM Data File: ETPTS, SWD&CPro

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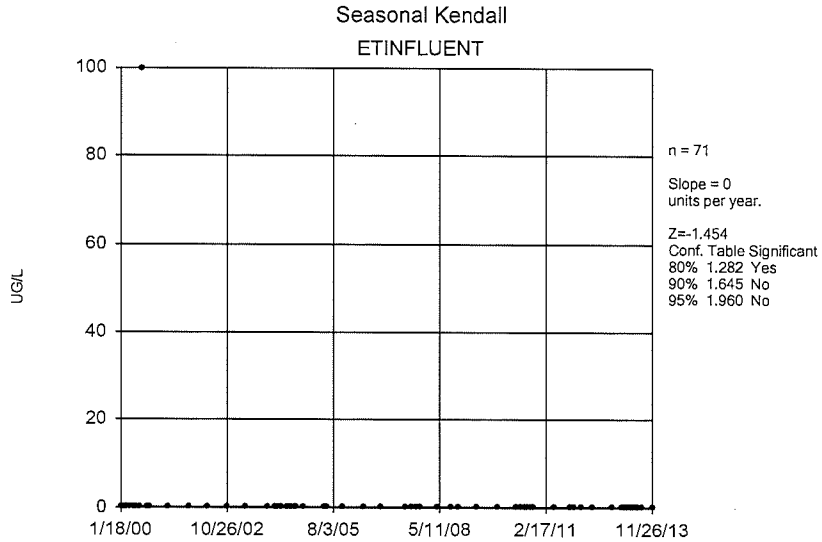


Constituent: Bromomethane Analysis Run 4/2/2014 4:42 PM
Facility: Rocky Flats Client: DOE LM Data File: ETPTS, SWD&CPro

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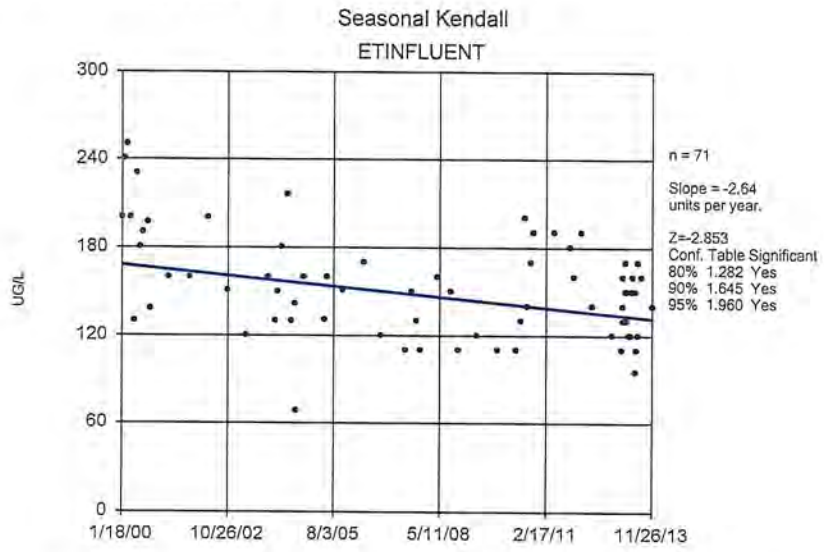


Constituent: Carbon tetrachloride Analysis Run 4/2/2014 4:42 PM
Facility: Rocky Flats Client: DOE LM Data File: ETPTS, SWD&CPro

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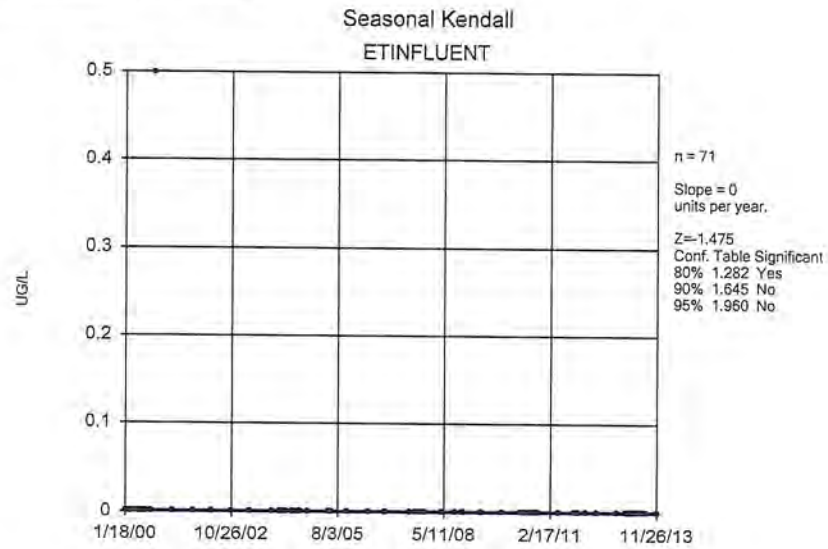


Constituent: Chlorobenzene Analysis Run 4/2/2014 4:42 PM
Facility: Rocky Flats Client: DOE LM Data File: ETPTS, SWD&CPro

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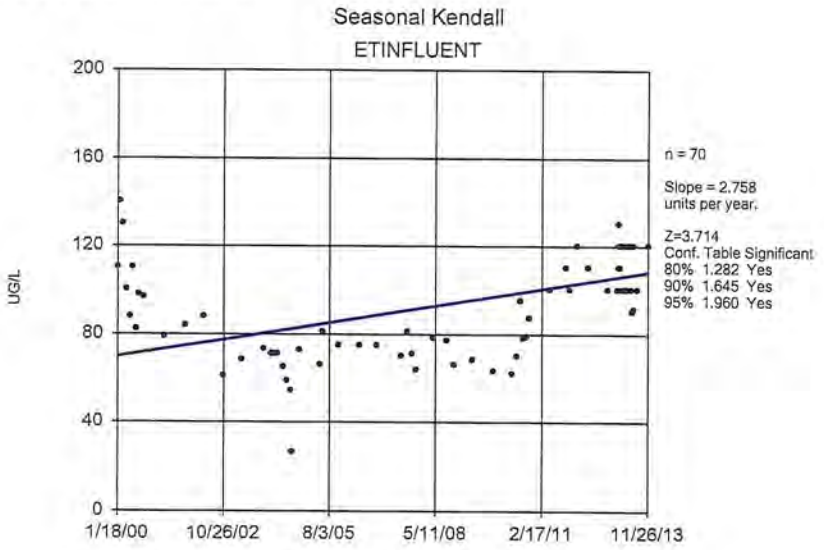


Constituent: Chloroform Analysis Run 4/2/2014 4:42 PM
Facility: Rocky Flats Client: DOE LM Data File: ETPTS, SWD&CPro

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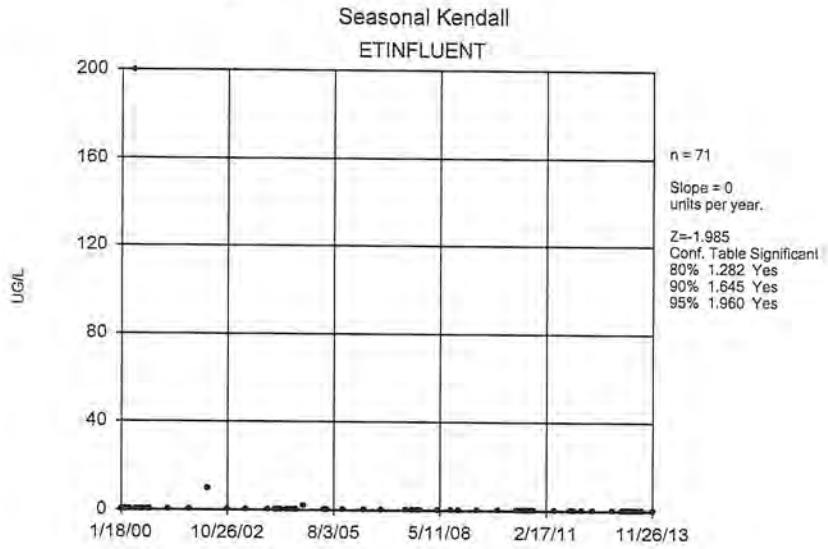


Constituent: Chloromethane Analysis Run 4/2/2014 4:42 PM
Facility: Rocky Flats Client: DOE LM Data File: ETPTS, SWD&CPro

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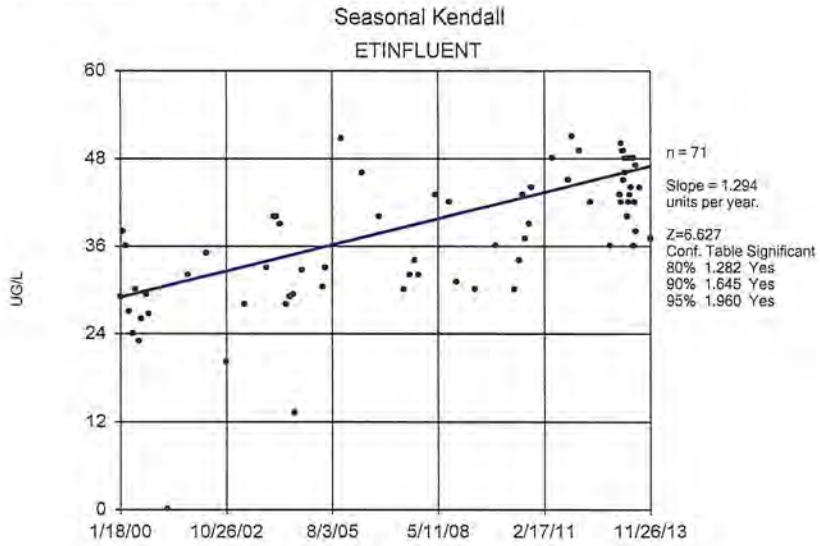


Constituent: cis-1,2-Dichloroethene Analysis Run 4/2/2014 4:42 PM
Facility: Rocky Flats Client: DOE LM Data File: ETPTS, SWD&CPro

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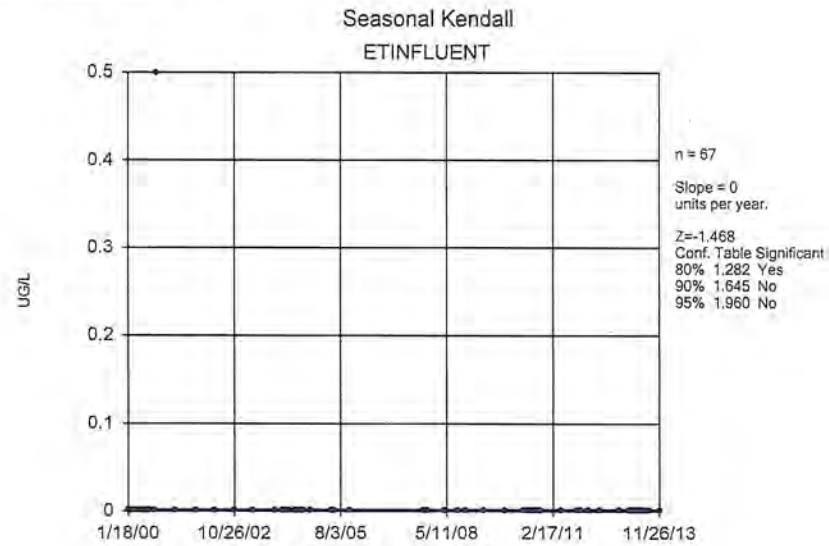


Constituent: Ethylbenzene Analysis Run 4/2/2014 4:42 PM
Facility: Rocky Flats Client: DOE LM Data File: ETPTS, SWD&CPro

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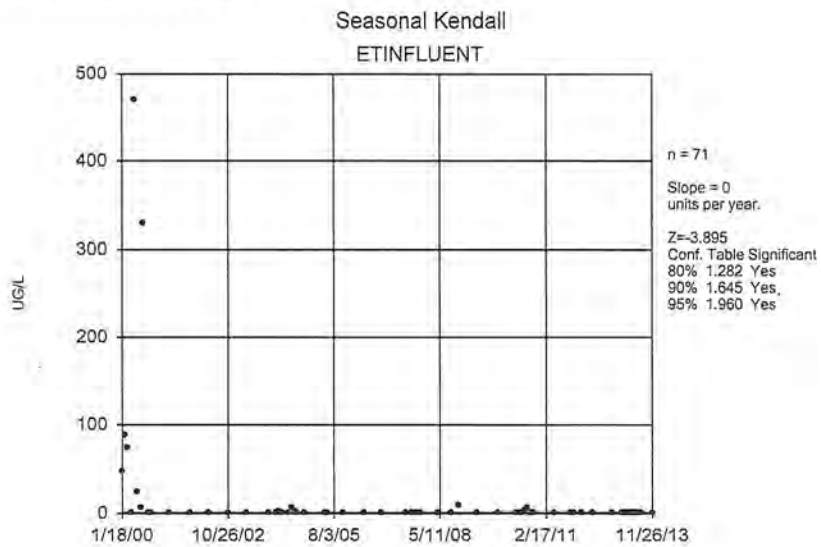


Constituent: Methylene chloride Analysis Run 4/2/2014 4:42 PM
Facility: Rocky Flats Client: DOE LM Data File: ETPTS, SWD&CPro

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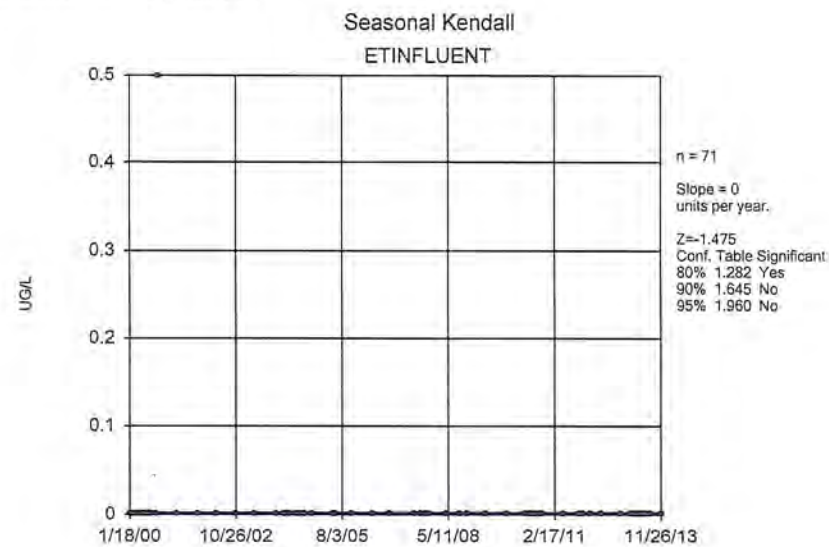


Constituent: Styrene Analysis Run 4/2/2014 4:42 PM
Facility: Rocky Flats Client: DOE LM Data File: ETPTS, SWD&CPro

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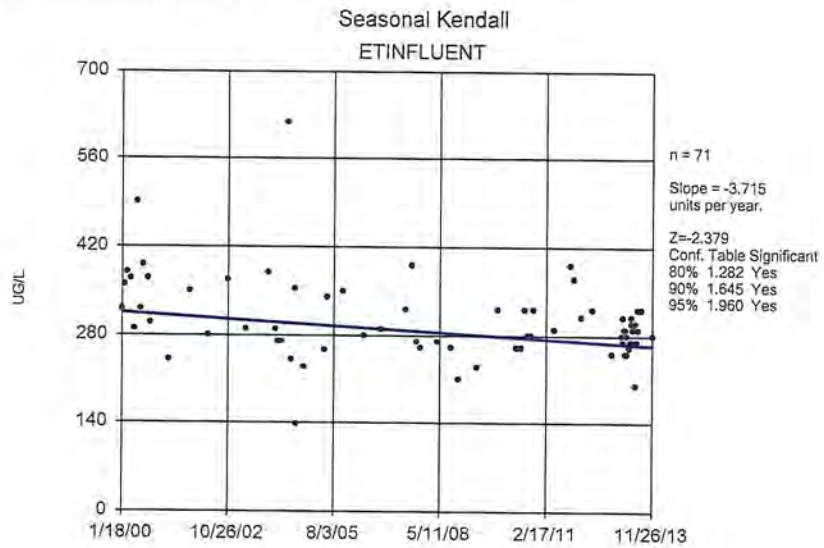


Constituent: Tetrachloroethene Analysis Run 4/2/2014 4:42 PM
Facility: Rocky Flats Client: DOE LM Data File: ETPTS, SWD&CPro

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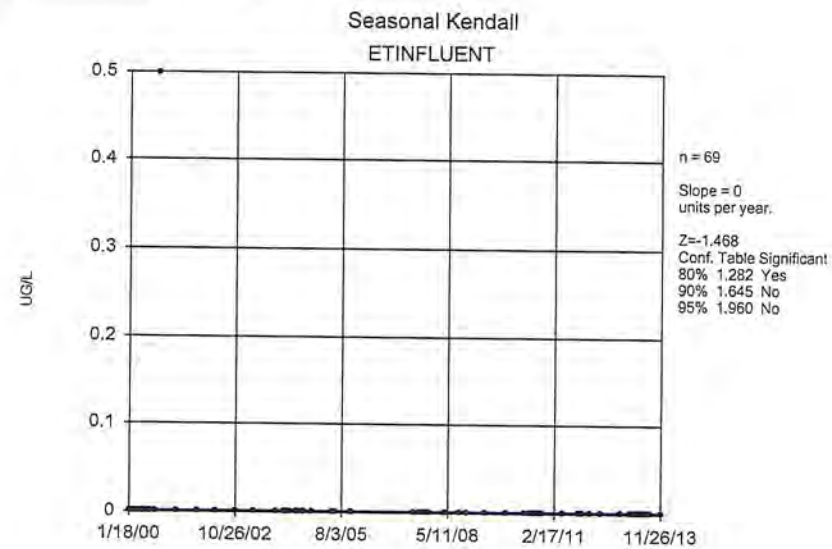


Constituent: Total Xylenes Analysis Run 4/2/2014 4:42 PM
Facility: Rocky Flats Client: DOE LM Data File: ETPTS, SWD&CPro

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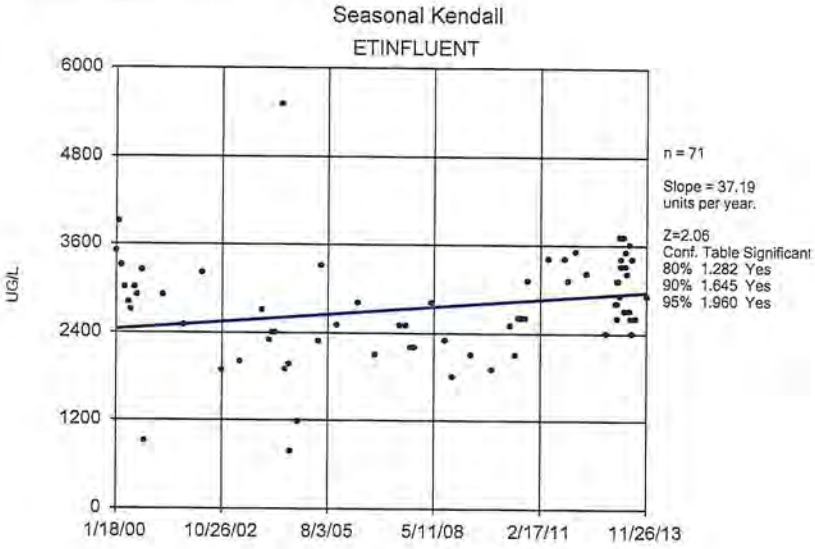


Constituent: Trichloroethene Analysis Run 4/2/2014 4:42 PM
Facility: Rocky Flats Client: DOE LM Data File: ETPTS, SWD&CPro

# ETPTS Influent, 2000-2013: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: ETPTS, SWD&CPro Printed 4/2/2014, 4:47 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane (UG/L) | ETINFLUENT | 71 | -0.04766 | -1.236 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2,2-Tetrachloroethane (UG/L) | ETINFLUENT | 71 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **1,1,2-Trichloroethane (UG/L)** | **ETINFLUENT** | **71** | **0** | **-1.454** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| **1,1-Dichloroethene (UG/L)** | **ETINFLUENT** | **71** | **0.0802** | **2.156** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **1,2,4-Trichlorobenzene (UG/L)** | **ETINFLUENT** | **71** | **0** | **-1.475** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| 1,2-Dibromo-3-chloropropane (ug/L) | ETINFLUENT | 44 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | ETINFLUENT | 71 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **1,2-Dichlorobenzene (UG/L)** | **ETINFLUENT** | **71** | **0** | **-1.475** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| 1,2-Dichloroethane (UG/L) | ETINFLUENT | 71 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | ETINFLUENT | 71 | 0 | -1.078 | 1.282 | No | 1.645 | No | 1.960 | No |
| **1,3-Dichlorobenzene (UG/L)** | **ETINFLUENT** | **71** | **0** | **-1.475** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| **1,4-Dichlorobenzene (UG/L)** | **ETINFLUENT** | **71** | **0** | **-1.475** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Benzene (UG/L) | ETINFLUENT | 71 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Bromodichloromethane (UG/L)** | **ETINFLUENT** | **71** | **0** | **-1.454** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Bromoform (UG/L) | ETINFLUENT | 71 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Bromomethane (UG/L)** | **ETINFLUENT** | **71** | **0** | **-1.454** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| **Carbon tetrachloride (UG/L)** | **ETINFLUENT** | **71** | **-2.64** | **-2.853** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Chlorobenzene (UG/L)** | **ETINFLUENT** | **71** | **0** | **-1.475** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Chlorodibromomethane (ug/L) | ETINFLUENT | 44 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Chloroform (UG/L)** | **ETINFLUENT** | **70** | **2.758** | **3.714** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Chloromethane (UG/L)** | **ETINFLUENT** | **71** | **0** | **-1.985** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **cis-1,2-Dichloroethene (UG/L)** | **ETINFLUENT** | **71** | **1.294** | **6.627** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| DIBROMOCHLOROMETHANE (UG/L) | ETINFLUENT | 27 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Ethylbenzene (UG/L)** | **ETINFLUENT** | **67** | **0** | **-1.468** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Hexachlorobutadiene (UG/L) | ETINFLUENT | 71 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Methylene chloride (UG/L)** | **ETINFLUENT** | **71** | **0** | **-3.895** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Naphthalene (UG/L) | ETINFLUENT | 71 | 0 | 0.1497 | 1.282 | No | 1.645 | No | 1.960 | No |
| PROPANE, 1,2-DIBROMO-3-CHLORO- (UG/L) | ETINFLUENT | 26 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Styrene (UG/L)** | **ETINFLUENT** | **71** | **0** | **-1.475** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| **Tetrachloroethene (UG/L)** | **ETINFLUENT** | **71** | **-3.715** | **-2.379** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Toluene (UG/L) | ETINFLUENT | 71 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| **Total Xylenes (UG/L)** | **ETINFLUENT** | **69** | **0** | **-1.468** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| trans-1,2-Dichloroethene (UG/L) | ETINFLUENT | 71 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | ETINFLUENT | 71 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Trichloroethene (UG/L)** | **ETINFLUENT** | **71** | **37.19** | **2.06** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Vinyl chloride (UG/L) | ETINFLUENT | 71 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |

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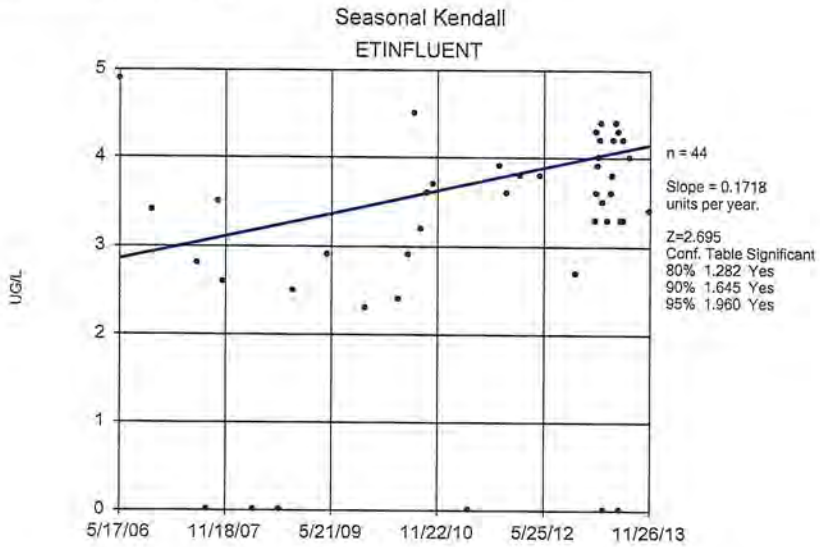


Constituent: 1,1,1-Trichloroethane Analysis Run 4/2/2014 4:48 PM
Facility: Rocky Flats Client: DOE LM Data File: ETPTS, SWD&CPro

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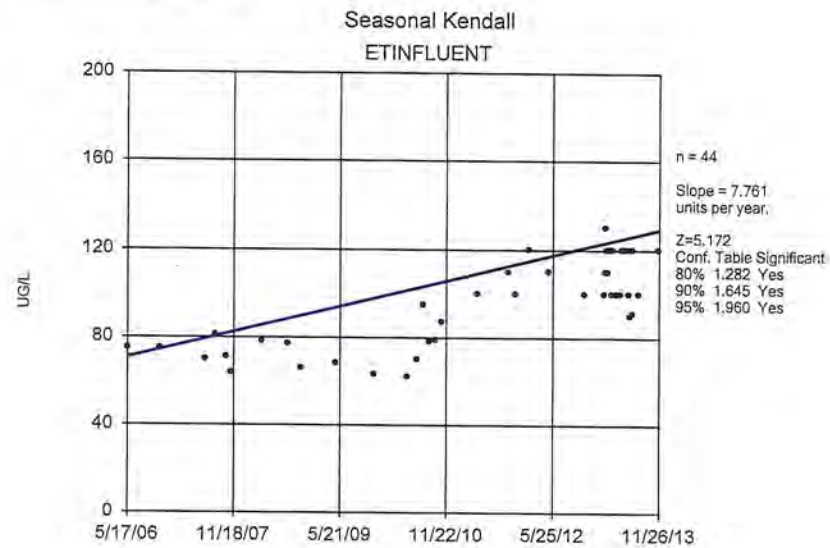


Constituent: Chloroform Analysis Run 4/2/2014 4:48 PM
Facility: Rocky Flats Client: DOE LM Data File: ETPTS, SWD&CPro

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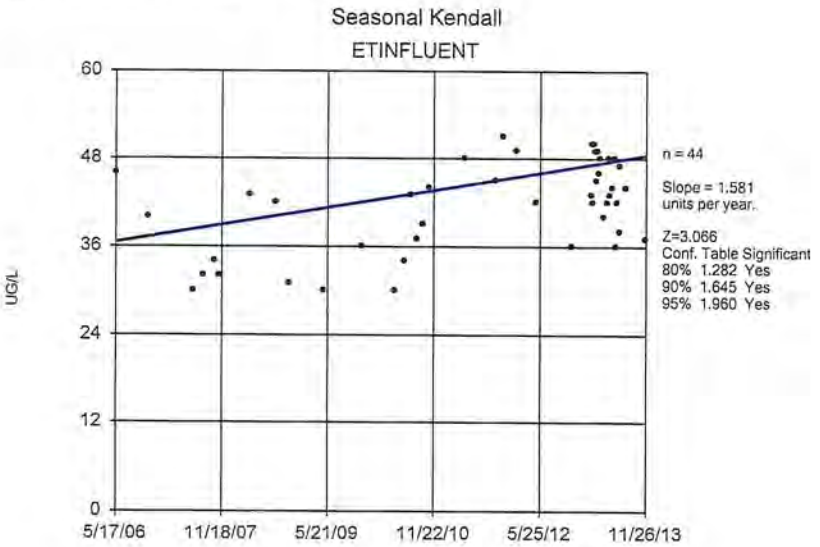


Constituent: cis-1,2-Dichloroethene Analysis Run 4/2/2014 4:48 PM
Facility: Rocky Flats Client: DOE LM Data File: ETPTS, SWD&CPro

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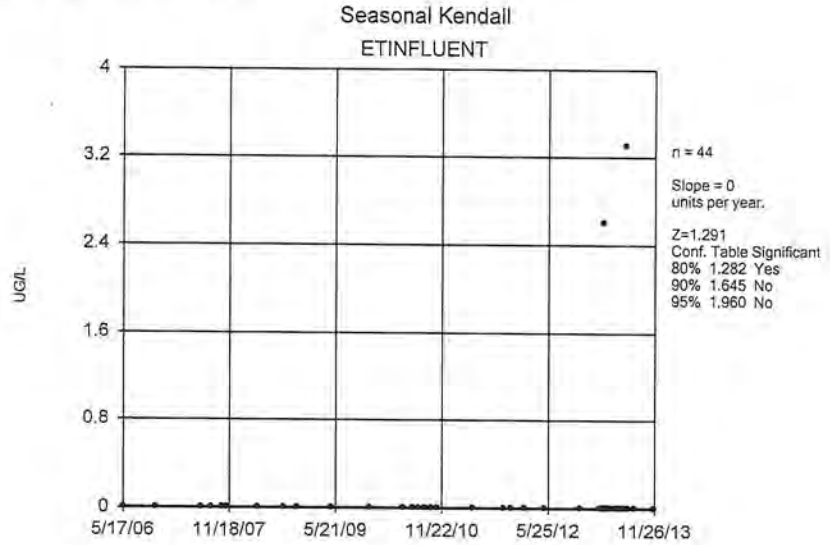


Constituent: Naphthalene Analysis Run 4/2/2014 4:48 PM
Facility: Rocky Flats Client: DOE LM Data File: ETPTS, SWD&CPro

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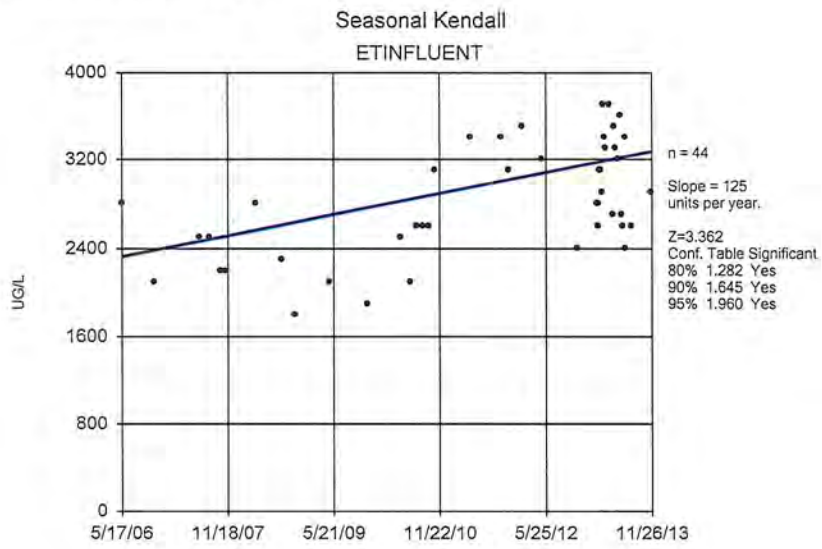


Constituent: Trichloroethene Analysis Run 4/2/2014 4:49 PM
Facility: Rocky Flats Client: DOE LM Data File: ETPTS, SWD&CPro

# ETPTS Influent, 2006-2013: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: ETPTS, SWD&CPro Printed 4/2/2014, 4:50 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| **1,1,1-Trichloroethane (UG/L)** | **ETINFLUENT** | **44** | **0.1718** | **2.695** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| 1,1,2,2-Tetrachloroethane (UG/L) | ETINFLUENT | 44 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1,2-Trichloroethane (UG/L) | ETINFLUENT | 44 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,1-Dichloroethene (UG/L) | ETINFLUENT | 44 | -0.03643 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2,4-Trichlorobenzene (UG/L) | ETINFLUENT | 44 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromo-3-chloropropane (ug/L) | ETINFLUENT | 44 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dibromoethane (UG/L) | ETINFLUENT | 44 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichlorobenzene (UG/L) | ETINFLUENT | 44 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloroethane (UG/L) | ETINFLUENT | 44 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,2-Dichloropropane (UG/L) | ETINFLUENT | 44 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,3-Dichlorobenzene (UG/L) | ETINFLUENT | 44 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| 1,4-Dichlorobenzene (UG/L) | ETINFLUENT | 44 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Benzene (UG/L) | ETINFLUENT | 44 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromodichloromethane (UG/L) | ETINFLUENT | 44 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromoform (UG/L) | ETINFLUENT | 44 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Bromomethane (UG/L) | ETINFLUENT | 44 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Carbon tetrachloride (UG/L) | ETINFLUENT | 44 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorobenzene (UG/L) | ETINFLUENT | 44 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Chlorodibromomethane (ug/L) | ETINFLUENT | 44 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Chloroform (UG/L)** | **ETINFLUENT** | **44** | **7.761** | **5.172** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Chloromethane (UG/L) | ETINFLUENT | 44 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **cis-1,2-Dichloroethene (UG/L)** | **ETINFLUENT** | **44** | **1.581** | **3.066** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Ethylbenzene (UG/L) | ETINFLUENT | 40 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Hexachlorobutadiene (UG/L) | ETINFLUENT | 44 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Methylene chloride (UG/L) | ETINFLUENT | 44 | 0 | -1.26 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Naphthalene (UG/L)** | **ETINFLUENT** | **44** | **0** | **1.291** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |
| Styrene (UG/L) | ETINFLUENT | 44 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| Tetrachloroethene (UG/L) | ETINFLUENT | 44 | 0 | -0.... | 1.282 | No | 1.645 | No | 1.960 | No |
| Toluene (UG/L) | ETINFLUENT | 44 | 0 | 0.8862 | 1.282 | No | 1.645 | No | 1.960 | No |
| Total Xylenes (UG/L) | ETINFLUENT | 42 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,2-Dichloroethene (UG/L) | ETINFLUENT | 44 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| trans-1,3-dichloropropene (UG/L) | ETINFLUENT | 44 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Trichloroethene (UG/L)** | **ETINFLUENT** | **44** | **125** | **3.362** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| Vinyl chloride (UG/L) | ETINFLUENT | 44 | 0 | 0 | 1.282 | No | 1.645 | No | 1.960 | No |

#### B.3.3.3 SPPTS Influent

# SPPTS Influent, 2000-2013: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: SPPTS Influent, SWD&CPro Printed 3/3/2014, 3:51 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| **Nitrate + Nitrite as Nitrogen (mg/L)** | **Influent** | **130** | **29.67** | **10.97** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |
| **Uranium (ug/L)** | **Influent** | **129** | **3.858** | **9.391** | **1.282** | **Yes** | **1.645** | **Yes** | **1.960** | **Yes** |

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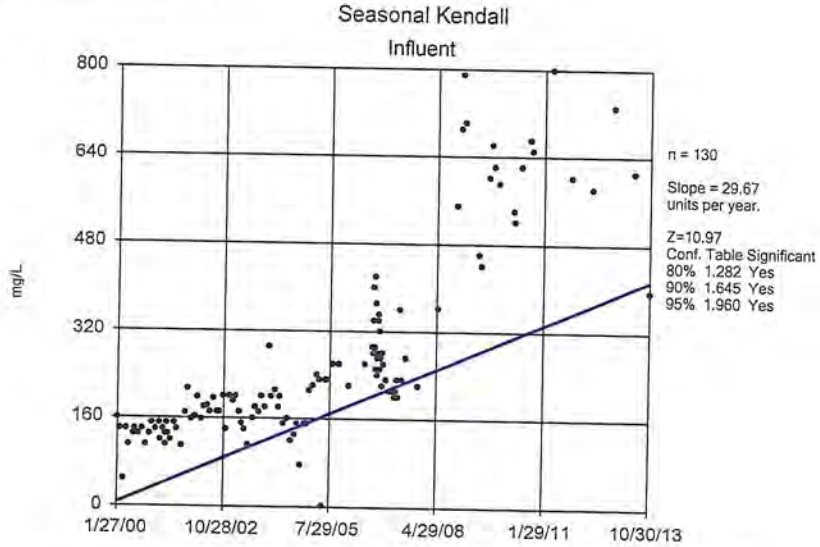


Constituent: Nitrate + Nitrite as Nitrogen Analysis Run 3/3/2014 3:49 PM
Facility: Rocky Flats Client: DOE LM Data File: SPPTS Influent, SWD&CPro

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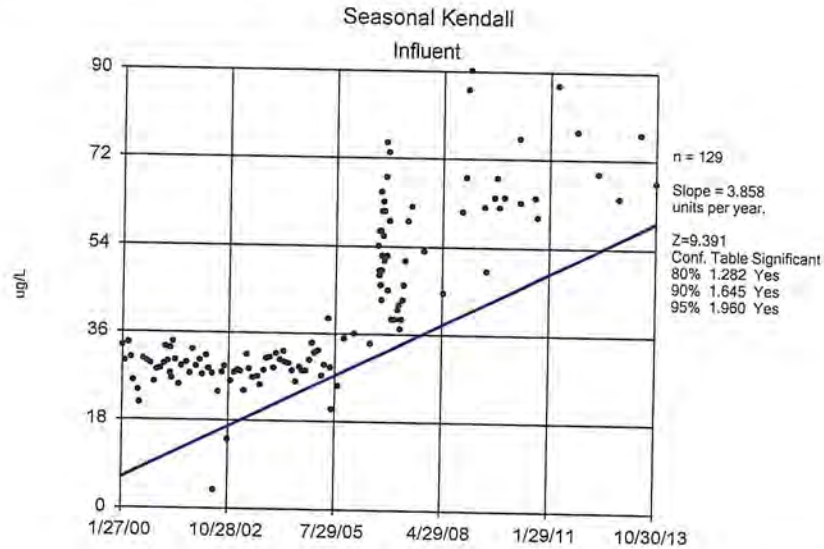


Constituent: Uranium Analysis Run 3/3/2014 3:49 PM
Facility: Rocky Flats Client: DOE LM Data File: SPPTS Influent, SWD&CPro

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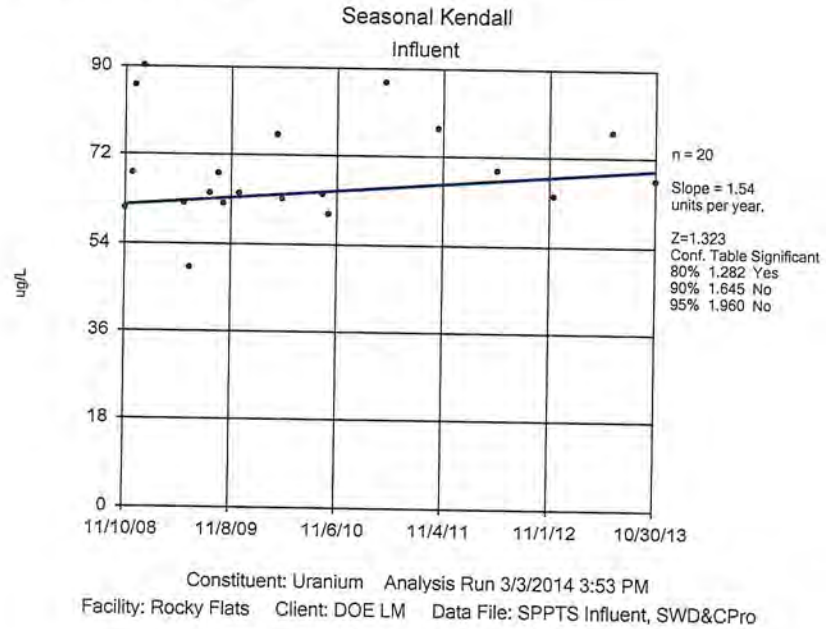



Constituent: Uranium Analysis Run 3/3/2014 3:53 PM

Facility: Rocky Flats Client: DOE LM Data File: SPPTS Influent, SWD&CPro

# SPPTS Influent, Late 2008-2013: Seasonal Kendall

Facility: Rocky Flats Client: DOE LM Data File: SPPTS Influent, SWD&CPro Printed 3/3/2014, 3:55 PM

| Constituent | Well | N | Slope | Z | 80% | Sig. | 90% | Sig. | 95% | Sig. |
|---|---|---|---|---|---|---|---|---|---|---|
| Nitrate + Nitrite as Nitrogen (mg/L) | Influent | 21 | 10.17 | 0.4297 | 1.282 | No | 1.645 | No | 1.960 | No |
| **Uranium (ug/L)** | **Influent** | **20** | **1.54** | **1.323** | **1.282** | **Yes** | **1.645** | **No** | **1.960** | **No** |

## B.4 PARCC Evaluation

This section includes the PARCC tables referenced in Section 3.6 of the report.

*Table B-1. Duplicate Error Ratios (DERs) for Radionuclides*

| Location | Sample Date | Analyte | Real Result | Real 2 Sigma Error | Real Lab Qual | Real Validation | Dup Result | Dup 2 Sigma Error | Dup Lab Qual | Dup Validation | Units | DER |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WOMPOC | 1/10/2013 | Americium-241 | 0.006 | 0.009 | U | | 0.007 | 0.011 | U | | pCi/L | 0.06 |
| WOMPOC | 4/1/2013 | Plutonium-239, 240 | 0.004 | 0.006 | U | | 0.003 | 0.010 | U | | pCi/L | 0.07 |
| WOMPOC | 5/7/2013 | Plutonium-239, 240 | 0.009 | 0.010 | U | | 0.011 | 0.010 | U | | pCi/L | 0.13 |
| GS01 | 3/14/2013 | Plutonium-239, 240 | 0.007 | 0.009 | U | | 0.005 | 0.006 | U | | pCi/L | 0.17 |
| SW027 | 2/4/2013 | Plutonium-239, 240 | 0.111 | 0.024 | H | | 0.104 | 0.023 | H | | pCi/L | 0.21 |
| WOMPOC | 1/10/2013 | Plutonium-239, 240 | -0.001 | 0.007 | U | | 0.002 | 0.005 | U | | pCi/L | 0.36 |
| WOMPOC | 6/6/2013 | Americium-241 | 0.003 | 0.008 | U | | 0.011 | 0.016 | U | | pCi/L | 0.48 |
| WOMPOC | 3/14/2013 | Americium-241 | -0.003 | 0.007 | U | | 0.003 | 0.010 | U | | pCi/L | 0.51 |
| WALPOC | 6/4/2013 | Plutonium-239, 240 | 0.021 | 0.015 | | | 0.031 | 0.013 | | | pCi/L | 0.52 |
| GS10 | 9/16/2013 | Americium-241 | 0.018 | 0.017 | U | | 0.007 | 0.010 | U | | pCi/L | 0.55 |
| WOMPOC | 5/7/2013 | Americium-241 | 0.013 | 0.012 | U | | 0.004 | 0.008 | U | | pCi/L | 0.57 |
| WOMPOC | 3/14/2013 | Plutonium-239, 240 | 0.003 | 0.006 | U | | 0.009 | 0.008 | U | | pCi/L | 0.59 |
| WOMPOC | 4/1/2013 | Americium-241 | 0.005 | 0.008 | U | | 0.013 | 0.010 | U | | pCi/L | 0.62 |
| SW027 | 2/4/2013 | Americium-241 | 0.020 | 0.011 | H | | 0.032 | 0.015 | H | | pCi/L | 0.65 |
| GS01 | 3/14/2013 | Americium-241 | 0.012 | 0.009 | U | | 0.028 | 0.015 | | J | pCi/L | 0.91 |
| WALPOC | 6/4/2013 | Americium-241 | -0.001 | 0.011 | U | | 0.015 | 0.013 | U | | pCi/L | 0.94 |
| GS10 | 12/4/2012 | Americium-241 | 0.034 | 0.023 | | U | 0.074 | 0.035 | | J | pCi/L | 0.95 |
| WOMPOC | 6/6/2013 | Plutonium-239, 240 | 0.019 | 0.017 | U | | 0.056 | 0.023 | | | pCi/L | 1.32 |
| GS10 | 9/16/2013 | Plutonium-239, 240 | 0.020 | 0.014 | | | -0.002 | 0.008 | U | | pCi/L | 1.33 |
| GS10 | 12/4/2012 | Plutonium-239, 240 | 0.014 | 0.014 | U | | 0.050 | 0.018 | | | pCi/L | 1.58 |

*Table B-2. Relative Percent Differences (RPDs) for Metals, VOCs/SVOCs, and Water-Quality Analysis*

| Location | Sample Date | Analyte | Real Result | Real Lab Qual | Real Valid-ation | Dup Result | Dup Lab Qual | Dup Validation | Units | RPD% | Filtered |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 80005 | 9/5/2013 | Nickel | 1.4 | J | F | 1.4 | J | F | µg/L | 0.00 | Yes |
| 80205 | 3/7/2013 | Cadmium | 1.1 | J | FQ | 1.1 | J | FQ | µg/L | 0.00 | Yes |
| 80205 | 3/7/2013 | Boron | 63 | | FQ | 63 | | FQ | µg/L | 0.00 | Yes |
| 00997 | 5/7/2013 | Uranium | 17 | | | 17 | | | µg/L | 0.00 | Yes |
| 79202 | 6/4/2013 | Uranium | 150 | | | 150 | | | µg/L | 0.00 | Yes |
| WALPOC | 6/4/2013 | Uranium | 3.21 | | | 3.21 | | | µg/L | 0.00 | No |
| 80205 | 11/6/2013 | Boron | 96.2 | | FQ | 96.1 | | FQ | µg/L | 0.10 | Yes |
| GS05 | 1/17/2013 | Zinc | 53.1 | | | 53 | | | µg/L | 0.19 | Yes |
| 10304 | 10/23/2013 | Uranium | 22.6 | N | F | 22.5 | N | F | µg/L | 0.44 | Yes |
| 37505 | 5/15/2013 | Uranium | 9.65 | | F | 9.59 | | F | µg/L | 0.62 | Yes |
| GS01 | 3/14/2013 | Uranium | 4.35 | * | | 4.41 | * | | µg/L | 1.37 | No |
| 22205 | 6/6/2013 | Uranium | 69 | | | 68 | | | µg/L | 1.46 | Yes |
| WOMPOC | 5/7/2013 | Uranium | 1.41 | | | 1.44 | | | µg/L | 2.11 | No |
| 80205 | 3/7/2013 | Nickel | 4.5 | J | FQ | 4.6 | J | FQ | µg/L | 2.20 | Yes |
| 80005 | 9/5/2013 | Boron | 44 | | F | 45 | | F | µg/L | 2.25 | Yes |
| SPOUT | 12/24/2013 | Uranium | 45 | | | 44 | | | µg/L | 2.25 | No |
| 80005 | 9/5/2013 | Uranium | 8.4 | | F | 8.6 | | F | µg/L | 2.35 | Yes |
| GS10 | 9/16/2013 | Uranium | 12.8 | | | 12.5 | | | µg/L | 2.37 | No |
| P210089 | 10/30/2013 | Uranium | 34.1 | | FQ | 33.1 | | FQ | µg/L | 2.98 | Yes |
| 79102 | 10/29/2013 | Uranium | 576 | | F | 595 | | F | µg/L | 3.25 | Yes |
| WOMPOC | 3/14/2013 | Uranium | 3.39 | * | | 3.51 | * | | µg/L | 3.48 | No |
| 80205 | 3/7/2013 | Zinc | 5.5 | J | FQ | 5.3 | J | FQ | µg/L | 3.70 | Yes |
| WOMPOC | 1/10/2013 | Uranium | 3.96 | | | 4.11 | | | µg/L | 3.72 | No |
| WOMPOC | 4/1/2013 | Uranium | 2.78 | | | 2.89 | | | µg/L | 3.88 | No |
| GS10 | 12/4/2012 | Uranium | 12 | EN | J | 12.6 | EN | | µg/L | 4.88 | No |
| 99405 | 10/16/2013 | Uranium | 400 | | FQ | 380 | | FQ | µg/L | 5.13 | Yes |
| 23296 | 5/7/2013 | Uranium | 19 | | FQ | 20 | | FQ | µg/L | 5.13 | Yes |
| SW027 | 2/4/2013 | Uranium | 1.86 | | | 1.96 | | | µg/L | 5.24 | No |

*Table B-2 (continued). Relative Percent Differences (RPDs) for Metals, VOCs/SVOCs, and Water-Quality Analysis*

| Location | Sample Date | Analyte | Real Result | Real Lab Qual | Real Valid-ation | Dup Result | Dup Lab Qual | Dup Validation | Units | RPD% | Filtered |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 80205 | 3/7/2013 | Uranium | 55 | | FQJ | 52 | | FQJ | µg/L | 5.61 | Yes |
| 73205 | 11/12/2013 | Selenium | 420 | | F | 450 | | F | µg/L | 6.90 | Yes |
| GS05 | 1/17/2013 | Arsenic | 10.7 | B | | 11.5 | B | | µg/L | 7.21 | No |
| 73205 | 11/12/2013 | Boron | 66 | | F | 71 | | F | µg/L | 7.30 | Yes |
| GS05 | 1/17/2013 | Nickel | 6.14 | B | | 6.67 | B | | µg/L | 8.27 | Yes |
| GS05 | 1/17/2013 | Boron | 21.3 | B | | 23.2 | B | | µg/L | 8.54 | No |
| WOMPOC | 6/6/2013 | Uranium | 6.78 | | | 7.43 | | | µg/L | 9.15 | No |
| 73205 | 11/12/2013 | Uranium | 110 | | F | 100 | | F | µg/L | 9.52 | Yes |
| 73205 | 11/12/2013 | Nickel | 1.9 | J | F | 2.1 | J | F | µg/L | 10.00 | Yes |
| 80205 | 11/6/2013 | Nickel | 3.14 | B | FQ | 2.78 | B | FQ | µg/L | 12.16 | Yes |
| 73205 | 11/12/2013 | Zinc | 5.5 | J | F | 4.7 | J | F | µg/L | 15.69 | Yes |
| GS05 | 1/17/2013 | Chromium | 4.39 | B | | 5.62 | B | | µg/L | 24.58 | No |
| 73205 | 11/12/2013 | Copper | 1.7 | J | F | 2.3 | J | F | µg/L | 30.00 | Yes |
| GS05 | 1/17/2013 | Uranium | 3.46 | | J | 4.74 | | J | µg/L | 31.22 | No |
| | | | | | | | | | | | |
| 99405 | 10/16/2013 | Nitrate + Nitrite as Nitrogen | 1.6 | | FQ | 1.6 | | FQ | mg/L | 0.00 | No |
| 00997 | 5/7/2013 | Nitrate + Nitrite as Nitrogen | 2.4 | | J | 2.4 | | J | mg/L | 0.00 | No |
| 22205 | 6/6/2013 | Nitrate + Nitrite as Nitrogen | 86 | | | 86 | | | mg/L | 0.00 | No |
| WALPOC | 9/13/2013 | Nitrate + Nitrite as Nitrogen | 0.9 | B | | 0.9 | B | | mg/L | 0.00 | No |
| GS10 | 9/16/2013 | Hardness | 307 | | | 305 | | | mg/L | 0.65 | No |
| GS10 | 12/4/2012 | Hardness | 584 | | | 588 | | | mg/L | 0.68 | No |
| P210089 | 10/30/2013 | Nitrate + Nitrite as Nitrogen | 292 | | FQ | 289 | | FQ | mg/L | 1.03 | No |
| 79102 | 10/29/2013 | Nitrate + Nitrite as Nitrogen | 690 | | F | 675 | | F | mg/L | 2.20 | No |
| SW027 | 2/4/2013 | Hardness | 170 | H | J | 166 | H | J | mg/L | 2.38 | No |
| 37505 | 5/15/2013 | Nitrate + Nitrite as Nitrogen | 3.64 | | F | 3.73 | | F | mg/L | 2.44 | No |
| GS13 | 12/24/2013 | Nitrate + Nitrite as Nitrogen | 51 | | | 53 | | | mg/L | 3.85 | No |
| WALPOC | 12/17/2013 | Nitrate + Nitrite as Nitrogen | 2.2 | | | 2.3 | | | mg/L | 4.44 | No |
| SPOUT | 12/24/2013 | Nitrate + Nitrite as Nitrogen | 460 | | | 560 | | | mg/L | 19.61 | No |
| 79202 | 6/4/2013 | Nitrate + Nitrite as Nitrogen | 810 | | J | 630 | | J | mg/L | 25.00 | No |

*Table B-2 (continued). Relative Percent Differences (RPDs) for Metals, VOCs/SVOCs, and Water-Quality Analysis*

| Location | Sample Date | Analyte | Real Result | Real Lab Qual | Real Valid-ation | Dup Result | Dup Lab Qual | Dup Validation | Units | RPD% | Filtered |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 91105 | 5/7/2013 | Trichloroethene | 18000 | | | 18000 | | | µg/L | 0.00 | No |
| 99405 | 10/16/2013 | Trichloroethene | 17 | | FQJ | 17 | | FQJ | µg/L | 0.00 | No |
| 79202 | 6/4/2013 | Trichloroethene | 19 | | | 19 | | | µg/L | 0.00 | No |
| 33604 | 5/14/2013 | trans-1,2-Dichloroethene | 47 | J | FQ | 47 | J | FQ | µg/L | 0.00 | No |
| 45608 | 10/15/2013 | 1,1,1-Trichloroethane | 0.22 | J | F | 0.22 | J | F | µg/L | 0.00 | No |
| 45608 | 10/15/2013 | Trichloroethene | 27 | | F | 27 | | F | µg/L | 0.00 | No |
| 45608 | 10/15/2013 | Vinyl chloride | 17 | | F | 17 | | F | µg/L | 0.00 | No |
| 33604 | 5/14/2013 | Trichloroethene | 105 | J | FQ | 106 | J | FQ | µg/L | 0.95 | No |
| 45608 | 10/15/2013 | trans-1,2-Dichloroethene | 0.78 | J | F | 0.79 | J | F | µg/L | 1.27 | No |
| 22205 | 6/6/2013 | 1,3-Dichlorobenzene | 0.59 | J | | 0.6 | J | | µg/L | 1.68 | No |
| 33604 | 5/14/2013 | cis-1,2-Dichloroethene | 3190 | | FQ | 3270 | | FQ | µg/L | 2.48 | No |
| 45608 | 10/15/2013 | 1,2,4-Trichlorobenzene | 0.38 | J | F | 0.39 | J | F | µg/L | 2.60 | No |
| 79102 | 10/29/2013 | Tetrachloroethene | 5.7 | J | FJ | 5.5 | J | F | µg/L | 3.57 | No |
| 91105 | 5/7/2013 | Chloroform | 540 | | | 560 | | | µg/L | 3.64 | No |
| 33604 | 5/14/2013 | Vinyl chloride | 1550 | | FQ | 1610 | | FQ | µg/L | 3.80 | No |
| 79202 | 6/4/2013 | cis-1,2-Dichloroethene | 4.6 | | | 4.4 | | | µg/L | 4.44 | No |
| 79202 | 6/4/2013 | Carbon tetrachloride | 4.4 | | | 4.2 | | | µg/L | 4.65 | No |
| 79102 | 10/29/2013 | cis-1,2-Dichloroethene | 8.1 | J | F | 8.5 | J | F | µg/L | 4.82 | No |
| 91105 | 5/7/2013 | Tetrachloroethene | 730 | | | 770 | | | µg/L | 5.33 | No |
| 45608 | 10/15/2013 | Tetrachloroethene | 1.8 | | F | 1.9 | | F | µg/L | 5.41 | No |
| 45608 | 10/15/2013 | cis-1,2-Dichloroethene | 180 | | F | 190 | | F | µg/L | 5.41 | No |
| 79202 | 6/4/2013 | Vinyl chloride | 0.91 | J | | 0.86 | J | | µg/L | 5.65 | No |
| 18199 | 5/14/2013 | Chloroform | 418 | J | F | 394 | J | F | µg/L | 5.91 | No |
| 45608 | 10/15/2013 | 1,3-Dichlorobenzene | 0.17 | J | F | 0.16 | J | F | µg/L | 6.06 | No |
| 79102 | 10/29/2013 | Trichloroethene | 219 | | FJ | 233 | | F | µg/L | 6.19 | No |
| 91105 | 5/7/2013 | 1,1,1-Trichloroethane | 3000 | | | 3200 | | | µg/L | 6.45 | No |
| 45608 | 10/15/2013 | 1,1-Dichloroethene | 1.4 | | F | 1.5 | | F | µg/L | 6.90 | No |
| 79202 | 6/4/2013 | Chloroform | 5.8 | | | 5.4 | | | µg/L | 7.14 | No |
| 91105 | 5/7/2013 | cis-1,2-Dichloroethene | 5800 | | | 5400 | | | µg/L | 7.14 | No |

*Table B-2 (continued). Relative Percent Differences (RPDs) for Metals, VOCs/SVOCs, and Water-Quality Analysis*

| Location | Sample Date | Analyte | Real Result | Real Lab Qual | Real Valid-ation | Dup Result | Dup Lab Qual | Dup Validation | Units | RPD% | Filtered |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 79102 | 10/29/2013 | Chloroform | 67.8 | | F | 73.1 | | F | µg/L | 7.52 | No |
| 18199 | 5/14/2013 | Carbon tetrachloride | 3600 | | F | 3310 | | F | µg/L | 8.39 | No |
| 99405 | 10/16/2013 | cis-1,2-Dichloroethene | 1.2 | | FQ | 1.1 | | FQ | µg/L | 8.70 | No |
| 79202 | 6/4/2013 | Tetrachloroethene | 1.2 | | | 1.1 | | | µg/L | 8.70 | No |
| 91105 | 5/7/2013 | Vinyl chloride | 190 | | | 210 | | | µg/L | 10.00 | No |
| 91105 | 5/7/2013 | 1,1-Dichloroethene | 260 | | | 290 | | | µg/L | 10.91 | No |
| 33604 | 5/14/2013 | Tetrachloroethene | 29 | J | FQ | 34 | J | FQ | µg/L | 15.87 | No |
| 00997 | 5/7/2013 | 1,3-Dichlorobenzene | 0.44 | J | | 0.54 | J | | µg/L | 20.41 | No |
| 23296 | 5/7/2013 | cis-1,2-Dichloroethene | 91 | | JFQ | 74 | | JFQ | µg/L | 20.61 | No |
| 79102 | 10/29/2013 | Carbon tetrachloride | 218 | | FJ | 274 | | FJ | µg/L | 22.76 | No |
| 23296 | 5/7/2013 | Trichloroethene | 1100 | | JFQ | 870 | | JFQ | µg/L | 23.35 | No |
| 23296 | 5/7/2013 | 1,1,1-Trichloroethane | 1.2 | J | FQ | 0.86 | J | FQ | µg/L | 33.01 | No |
| 23296 | 5/7/2013 | Tetrachloroethene | 130 | | JFQ | 93 | | JFQ | µg/L | 33.18 | No |
| 80005 | 9/5/2013 | Diethyl phthalate | 0.5 | J | F | 0.74 | J | F | µg/L | 38.71 | No |
| 23296 | 5/7/2013 | Chloroform | 27 | | JFQ | 16 | | JFQ | µg/L | 51.16 | No |
| 23296 | 5/7/2013 | Carbon tetrachloride | 6.4 | | JFQ | 3.2 | J | JFQ | µg/L | 66.67 | No |
| 23296 | 5/7/2013 | Vinyl chloride | 2.1 | J | JFQ | 0.64 | J | JFQ | µg/L | 106.57 | No |

*Table B-3. Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13085566 | Trichloroethene | MSD | -33.0 | %REC |
| 13115772 | Trichloroethene | MSD | -31.0 | %REC |
| 13095625 | Nitrate+Nitrite as N | MSD | -23.0 | %REC |
| 13095625 | Nitrate+Nitrite as N | MS | -22.0 | %REC |
| 13055328 | Tetrachloroethene | MS | 8.0 | %REC |
| 13115772 | Trichloroethene | MS | 22.0 | %REC |
| 13055340 | Nitrate+Nitrite as N | MS | 35.0 | %REC |
| 13065430 | Trichloroethene | MSD | 37.0 | %REC |
| 13065430 | Tetrachloroethene | MSD | 40.0 | %REC |
| 13065413 | Tetrachloroethene | MSD | 41.0 | %REC |
| 13035157 | Carbon Tetrachloride | MSD | 44.0 | %REC |
| 13065413 | Trichloroethene | MSD | 44.0 | %REC |
| 13045274 | Tetrachloroethene | MSD | 47.0 | %REC |
| 13055340 | Nitrate+Nitrite as N | MSD | 48.0 | %REC |
| 13065430 | Tetrachloroethene | MS | 50.0 | %REC |
| 13025141 | Methylene Chloride | MS | 51.0 | %REC |
| 13115760 | Methylene Chloride | MS | 52.0 | %REC |
| 13065430 | Trichloroethene | MS | 53.0 | %REC |
| 13035157 | 1,1-Dichloroethene | MSD | 54.0 | %REC |
| 13075491 | Trichloroethene | MSD | 54.0 | %REC |
| 13065452 | Trichloroethene | MSD | 55.0 | %REC |
| 13115760 | Bromodichloromethane | MS | 56.0 | %REC |
| 13105677 | Trichloroethene | MSD | 57.0 | %REC |
| 13115772 | Tetrachloroethene | MSD | 57.0 | %REC |
| 13105704 | Chloromethane | MS | 57.3 | %REC |
| 13115760 | 1,3-Dichlorobenzene | MS | 58.0 | %REC |
| 13035157 | 1,1-Dichloroethene | MS | 59.0 | %REC |
| 13115760 | Benzene | MS | 59.0 | %REC |
| 13115760 | Chlorobenzene | MS | 59.0 | %REC |
| 13115760 | Chloroform | MS | 59.0 | %REC |
| 13035157 | Carbon Tetrachloride | MS | 60.0 | %REC |
| 13115760 | 1,1-Dichloroethene | MS | 60.0 | %REC |
| 13025141 | Methylene Chloride | MSD | 60.0 | %REC |
| 13115760 | 1,2-Dichloropropane | MS | 61.0 | %REC |
| 13115760 | Ethylbenzene | MS | 61.0 | %REC |
| 13075486 | Trichloroethene | MSD | 61.0 | %REC |
| 13115760 | trans-1,2-Dichloroethene | MS | 62.0 | %REC |
| 13025103 | Methylene Chloride | MS | 63.0 | %REC |
| 13025103 | Methylene Chloride | MS | 63.0 | %REC |
| 13115760 | 1,1,1-Trichloroethane | MS | 63.0 | %REC |
| 13105689 | Uranium | MS | 63.6 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13055306 | Nitrate+Nitrite as N | MS | 64.0 | %REC |
| 13055306 | Nitrate+Nitrite as N | MSD | 64.0 | %REC |
| 13055341 | Trichloroethene | MS | 64.0 | %REC |
| 13115760 | Trichloroethene | MS | 64.0 | %REC |
| 13115760 | Tetrachloroethene | MS | 65.0 | %REC |
| 13115760 | Toluene | MS | 65.0 | %REC |
| 13075486 | Methylene Chloride | MSD | 65.0 | %REC |
| 13045274 | Tetrachloroethene | MS | 66.0 | %REC |
| 13105677 | Methylene Chloride | MS | 66.0 | %REC |
| 13115722 | Methylene Chloride | MS | 66.0 | %REC |
| 13045233 | Methylene Chloride | MS | 67.0 | %REC |
| 13115760 | Carbon Tetrachloride | MS | 67.0 | %REC |
| 13055335 | Methylene Chloride | MSD | 67.0 | %REC |
| 13075491 | Methylene Chloride | MSD | 67.0 | %REC |
| 13105704 | Chloromethane | MSD | 67.4 | %REC |
| 13055341 | Tetrachloroethene | MS | 68.0 | %REC |
| 13105677 | Methylene Chloride | MSD | 68.0 | %REC |
| 13055297 | Methylene Chloride | MS | 69.0 | %REC |
| 13055297 | Methylene Chloride | MSD | 69.0 | %REC |
| 13115722 | Methylene Chloride | MSD | 69.0 | %REC |
| 13105704 | Vinyl Chloride | MS | 69.1 | %REC |
| 13055335 | Methylene Chloride | MS | 70.0 | %REC |
| 13055341 | Trichloroethene | MSD | 70.0 | %REC |
| 13025111 | Chloroform | MS | 72.0 | %REC |
| 13055328 | Benzene | MS | 72.0 | %REC |
| 13075471 | Methylene Chloride | MS | 72.0 | %REC |
| 13055335 | 1,1-Dichloroethene | MSD | 72.0 | %REC |
| 13105677 | Tetrachloroethene | MSD | 72.0 | %REC |
| 13115772 | 1,1-Dichloroethene | MSD | 72.0 | %REC |
| 13085548 | 1,1-Dichloroethene | MS | 73.0 | %REC |
| 13035198 | Methylene Chloride | MSD | 73.0 | %REC |
| 13055335 | Benzene | MSD | 73.0 | %REC |
| 13055374 | Tetrachloroethene | MSD | 73.0 | %REC |
| 13075491 | Tetrachloroethene | MSD | 73.0 | %REC |
| 13105677 | 1,1,1-Trichloroethane | MSD | 73.0 | %REC |
| 13055328 | 1,3-Dichlorobenzene | MS | 74.0 | %REC |
| 13055328 | Carbon Tetrachloride | MS | 74.0 | %REC |
| 13055328 | Methylene Chloride | MS | 74.0 | %REC |
| 13025103 | Methylene Chloride | MSD | 74.0 | %REC |
| 13025103 | Methylene Chloride | MSD | 74.0 | %REC |
| 13055335 | trans-1,2-Dichloroethene | MSD | 74.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13075471 | Methylene Chloride | MSD | 74.0 | %REC |
| 13085566 | Tetrachloroethene | MSD | 74.0 | %REC |
| 13055339 | Nitrate+Nitrite as N | MSD | 75.0 | %REC |
| 13055335 | Benzene | MS | 75.0 | %REC |
| 13065452 | Trichloroethene | MS | 75.0 | %REC |
| 13025111 | Chloroform | MSD | 75.0 | %REC |
| 13055335 | Chlorobenzene | MSD | 75.0 | %REC |
| 13055335 | Methylene Chloride | MSD | 75.0 | %REC |
| 13055335 | Toluene | MSD | 75.0 | %REC |
| 13055335 | Trichloroethene | MSD | 75.0 | %REC |
| 13105677 | Ethylbenzene | MSD | 75.0 | %REC |
| 13115772 | Ethylbenzene | MSD | 75.0 | %REC |
| 13055309 | Nitrate+Nitrite as N | MS | 76.0 | %REC |
| 13055328 | Ethylbenzene | MS | 76.0 | %REC |
| 13055335 | 1,1-Dichloroethene | MS | 76.0 | %REC |
| 13055335 | Chlorobenzene | MS | 76.0 | %REC |
| 13055335 | Toluene | MS | 76.0 | %REC |
| 13055335 | trans-1,2-Dichloroethene | MS | 76.0 | %REC |
| 13025111 | Carbon Tetrachloride | MSD | 76.0 | %REC |
| 13055335 | Ethylbenzene | MSD | 76.0 | %REC |
| 13105677 | Carbon Tetrachloride | MSD | 76.0 | %REC |
| 13105677 | Chlorobenzene | MSD | 76.0 | %REC |
| 13115772 | 1,3-Dichlorobenzene | MSD | 76.0 | %REC |
| 13105704 | Vinyl Chloride | MSD | 76.1 | %REC |
| 13115725 | Mercury | MS | 76.8 | %REC |
| 13115725 | 1,2-Dibromo-3-chloropropane | MSD | 76.9 | %REC |
| 13055339 | Nitrate+Nitrite as N | MS | 77.0 | %REC |
| 13025111 | Methylene Chloride | MS | 77.0 | %REC |
| 13025116 | Tetrachloroethene | MS | 77.0 | %REC |
| 13025141 | Carbon Tetrachloride | MS | 77.0 | %REC |
| 13055328 | Chloroform | MS | 77.0 | %REC |
| 13115772 | 1,1-Dichloroethene | MS | 77.0 | %REC |
| 13025141 | Carbon Tetrachloride | MSD | 77.0 | %REC |
| 13065452 | Chloroform | MSD | 77.0 | %REC |
| 13075486 | 1,1-Dichloroethene | MSD | 77.0 | %REC |
| 13075486 | 1,2-Dichloropropane | MSD | 77.0 | %REC |
| 13075486 | Chloroform | MSD | 77.0 | %REC |
| 13105677 | 1,3-Dichlorobenzene | MSD | 77.0 | %REC |
| 13105677 | Benzene | MSD | 77.0 | %REC |
| 13105704 | Bromomethane | MS | 77.2 | %REC |
| 13055328 | Chlorobenzene | MS | 78.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13055335 | Ethylbenzene | MS | 78.0 | %REC |
| 13055335 | Trichloroethene | MS | 78.0 | %REC |
| 13065378 | Methylene Chloride | MS | 78.0 | %REC |
| 13065430 | Methylene Chloride | MS | 78.0 | %REC |
| 13105677 | 1,1,1-Trichloroethane | MS | 78.0 | %REC |
| 13105677 | Methylene Chloride | MS | 78.0 | %REC |
| 13105677 | Tetrachloroethene | MS | 78.0 | %REC |
| 13055341 | Tetrachloroethene | MSD | 78.0 | %REC |
| 13075486 | Benzene | MSD | 78.0 | %REC |
| 13105704 | Bromomethane | MSD | 78.0 | %REC |
| 13115725 | 1,2-Dibromo-3-chloropropane | MS | 78.7 | %REC |
| 13045278 | Mercury | MSD | 79.0 | %REC |
| 13115722 | Mercury | MSD | 79.0 | %REC |
| 13055375 | Nitrate+Nitrite as N | MS | 79.0 | %REC |
| 13025131 | Tetrachloroethene | MS | 79.0 | %REC |
| 13035157 | 1,2-Dichloropropane | MS | 79.0 | %REC |
| 13055328 | 1,2-Dichloropropane | MS | 79.0 | %REC |
| 13055335 | Tetrachloroethene | MS | 79.0 | %REC |
| 13075486 | Methylene Chloride | MS | 79.0 | %REC |
| 13105677 | Ethylbenzene | MS | 79.0 | %REC |
| 13115722 | Bromodichloromethane | MS | 79.0 | %REC |
| 13115772 | 1,3-Dichlorobenzene | MS | 79.0 | %REC |
| 13125786 | Methylene Chloride | MS | 79.0 | %REC |
| 13025111 | Methylene Chloride | MSD | 79.0 | %REC |
| 13025141 | 1,1,1-Trichloroethane | MSD | 79.0 | %REC |
| 13045233 | Methylene Chloride | MSD | 79.0 | %REC |
| 13055297 | Chlorobenzene | MSD | 79.0 | %REC |
| 13055297 | Ethylbenzene | MSD | 79.0 | %REC |
| 13055335 | 1,1,1-Trichloroethane | MSD | 79.0 | %REC |
| 13055335 | 1,3-Dichlorobenzene | MSD | 79.0 | %REC |
| 13055335 | Tetrachloroethene | MSD | 79.0 | %REC |
| 13105677 | Bromodichloromethane | MSD | 79.0 | %REC |
| 13105677 | Chloroform | MSD | 79.0 | %REC |
| 13105677 | trans-1,2-Dichloroethene | MSD | 79.0 | %REC |
| 13115772 | 1,1,1-Trichloroethane | MSD | 79.0 | %REC |
| 13115772 | Chlorobenzene | MSD | 79.0 | %REC |
| 13115725 | Bromoform | MSD | 79.2 | %REC |
| 13025141 | Beryllium | MS | 80.0 | %REC |
| 13115722 | Mercury | MS | 80.0 | %REC |
| 13025141 | 1,1,1-Trichloroethane | MS | 80.0 | %REC |
| 13055328 | Toluene | MS | 80.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13055328 | trans-1,2-Dichloroethene | MS | 80.0 | %REC |
| 13055374 | Trichloroethene | MS | 80.0 | %REC |
| 13105677 | Benzene | MS | 80.0 | %REC |
| 13105677 | Chlorobenzene | MS | 80.0 | %REC |
| 13105677 | Chloroform | MS | 80.0 | %REC |
| 13125786 | Ethylbenzene | MS | 80.0 | %REC |
| 13055335 | Carbon Tetrachloride | MSD | 80.0 | %REC |
| 13075486 | trans-1,2-Dichloroethene | MSD | 80.0 | %REC |
| 13105677 | Chloroform | MSD | 80.0 | %REC |
| 13105677 | Methylene Chloride | MSD | 80.0 | %REC |
| 13115725 | Methylene Chloride | MSD | 80.3 | %REC |
| 13045288 | Bromoform | MS | 80.7 | %REC |
| 13045278 | Mercury | MSD | 81.0 | %REC |
| 13085570 | Nitrate+Nitrite as N | MS | 81.0 | %REC |
| 13105677 | 1,3-Dichlorobenzene | MS | 81.0 | %REC |
| 13105677 | Carbon Tetrachloride | MS | 81.0 | %REC |
| 13125786 | 1,3-Dichlorobenzene | MS | 81.0 | %REC |
| 13025106 | Trichloroethene | MSD | 81.0 | %REC |
| 13035158 | Tetrachloroethene | MSD | 81.0 | %REC |
| 13055297 | 1,2-Dichloropropane | MSD | 81.0 | %REC |
| 13055335 | Chloroform | MSD | 81.0 | %REC |
| 13075471 | Carbon Tetrachloride | MSD | 81.0 | %REC |
| 13075486 | Bromodichloromethane | MSD | 81.0 | %REC |
| 13115725 | Bromoform | MS | 81.3 | %REC |
| 13105704 | Methylene Chloride | MSD | 81.9 | %REC |
| 13045278 | Mercury | MS | 82.0 | %REC |
| 13105685 | Uranium | MSD | 82.0 | %REC |
| 13115722 | Nitrate+Nitrite as N | MS | 82.0 | %REC |
| 13085570 | Nitrate+Nitrite as N | MSD | 82.0 | %REC |
| 13115722 | Nitrate+Nitrite as N | MSD | 82.0 | %REC |
| 13025103 | 1,3-Dichlorobenzene | MS | 82.0 | %REC |
| 13025103 | 1,3-Dichlorobenzene | MS | 82.0 | %REC |
| 13055309 | Methylene Chloride | MS | 82.0 | %REC |
| 13055328 | 1,1,1-Trichloroethane | MS | 82.0 | %REC |
| 13055328 | Bromodichloromethane | MS | 82.0 | %REC |
| 13055335 | 1,3-Dichlorobenzene | MS | 82.0 | %REC |
| 13065452 | 1,1-Dichloroethene | MS | 82.0 | %REC |
| 13065452 | Benzene | MS | 82.0 | %REC |
| 13065452 | Carbon Tetrachloride | MS | 82.0 | %REC |
| 13085563 | Ethylbenzene | MS | 82.0 | %REC |
| 13105677 | Bromodichloromethane | MS | 82.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13105677 | Chloroform | MS | 82.0 | %REC |
| 13105677 | trans-1,2-Dichloroethene | MS | 82.0 | %REC |
| 13105677 | Trichloroethene | MS | 82.0 | %REC |
| 13115772 | Ethylbenzene | MS | 82.0 | %REC |
| 13125786 | Tetrachloroethene | MS | 82.0 | %REC |
| 13025116 | Tetrachloroethene | MSD | 82.0 | %REC |
| 13035157 | 1,2-Dichloropropane | MSD | 82.0 | %REC |
| 13055297 | 1,3-Dichlorobenzene | MSD | 82.0 | %REC |
| 13055297 | Tetrachloroethene | MSD | 82.0 | %REC |
| 13075471 | Bromodichloromethane | MSD | 82.0 | %REC |
| 13075486 | Toluene | MSD | 82.0 | %REC |
| 13085563 | Ethylbenzene | MSD | 82.0 | %REC |
| 13045288 | Bromoform | MS | 82.4 | %REC |
| 13115725 | Methylene Chloride | MS | 82.4 | %REC |
| 13045278 | Mercury | MS | 83.0 | %REC |
| 13025141 | Chloroform | MS | 83.0 | %REC |
| 13055297 | 1,2-Dichloropropane | MS | 83.0 | %REC |
| 13055328 | 1,1-Dichloroethene | MS | 83.0 | %REC |
| 13055335 | 1,1,1-Trichloroethane | MS | 83.0 | %REC |
| 13055335 | Chloroform | MS | 83.0 | %REC |
| 13065430 | 1,3-Dichlorobenzene | MS | 83.0 | %REC |
| 13065452 | 1,1,1-Trichloroethane | MS | 83.0 | %REC |
| 13065452 | Bromodichloromethane | MS | 83.0 | %REC |
| 13075471 | Bromodichloromethane | MS | 83.0 | %REC |
| 13075491 | Methylene Chloride | MS | 83.0 | %REC |
| 13085563 | 1,3-Dichlorobenzene | MS | 83.0 | %REC |
| 13115722 | 1,3-Dichlorobenzene | MS | 83.0 | %REC |
| 13115722 | Benzene | MS | 83.0 | %REC |
| 13025141 | Tetrachloroethene | MSD | 83.0 | %REC |
| 13055297 | Toluene | MSD | 83.0 | %REC |
| 13075471 | 1,1,1-Trichloroethane | MSD | 83.0 | %REC |
| 13075471 | 1,1-Dichloroethene | MSD | 83.0 | %REC |
| 13105704 | 1,2-Dibromo-3-chloropropane | MSD | 83.0 | %REC |
| 13115722 | 1,3-Dichlorobenzene | MSD | 83.0 | %REC |
| 13115722 | Bromodichloromethane | MSD | 83.0 | %REC |
| 13115725 | 1,3-Dichlorobenzene | MSD | 83.4 | %REC |
| 13115725 | 1,4-Dichlorobenzene | MSD | 83.7 | %REC |
| 13015076 | Beryllium | MS | 84.0 | %REC |
| 13025141 | Lead | MS | 84.0 | %REC |
| 13025116 | Ethylbenzene | MS | 84.0 | %REC |
| 13025116 | Ethylbenzene | MS | 84.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13025122 | Methylene Chloride | MS | 84.0 | %REC |
| 13045288 | Vinyl Chloride | MS | 84.0 | %REC |
| 13055309 | Carbon Tetrachloride | MS | 84.0 | %REC |
| 13055309 | Methylene Chloride | MS | 84.0 | %REC |
| 13065430 | Chlorobenzene | MS | 84.0 | %REC |
| 13065452 | Chloroform | MS | 84.0 | %REC |
| 13075471 | Carbon Tetrachloride | MS | 84.0 | %REC |
| 13075471 | Chloroform | MS | 84.0 | %REC |
| 13075491 | Trichloroethene | MS | 84.0 | %REC |
| 13115722 | 1,2-Dichloropropane | MS | 84.0 | %REC |
| 13115722 | Chlorobenzene | MS | 84.0 | %REC |
| 13125786 | Benzene | MS | 84.0 | %REC |
| 13025141 | Ethylbenzene | MSD | 84.0 | %REC |
| 13055297 | Benzene | MSD | 84.0 | %REC |
| 13055335 | Bromodichloromethane | MSD | 84.0 | %REC |
| 13065430 | 1,3-Dichlorobenzene | MSD | 84.0 | %REC |
| 13065430 | Chlorobenzene | MSD | 84.0 | %REC |
| 13065452 | 1,1-Dichloroethene | MSD | 84.0 | %REC |
| 13075471 | Benzene | MSD | 84.0 | %REC |
| 13085563 | 1,3-Dichlorobenzene | MSD | 84.0 | %REC |
| 13105677 | 1,2-Dichloropropane | MSD | 84.0 | %REC |
| 13115722 | Benzene | MSD | 84.0 | %REC |
| 13115722 | Chlorobenzene | MSD | 84.0 | %REC |
| 13115722 | Ethylbenzene | MSD | 84.0 | %REC |
| 13115772 | Toluene | MSD | 84.0 | %REC |
| 13115725 | 1,2-Dichlorobenzene | MSD | 84.1 | %REC |
| 13045288 | Bromoform | MSD | 84.2 | %REC |
| 13045288 | 1,2-Dibromo-3-chloropropane | MS | 84.3 | %REC |
| 13115725 | 1,4-Dichlorobenzene | MS | 84.7 | %REC |
| 13105704 | Uranium | MS | 84.9 | %REC |
| 13055335 | Nickel | MS | 85.0 | %REC |
| 13085550 | Uranium | MS | 85.0 | %REC |
| 13015076 | Beryllium | MSD | 85.0 | %REC |
| 13025116 | 1,3-Dichlorobenzene | MS | 85.0 | %REC |
| 13025116 | 1,3-Dichlorobenzene | MS | 85.0 | %REC |
| 13025141 | Ethylbenzene | MS | 85.0 | %REC |
| 13035198 | Methylene Chloride | MS | 85.0 | %REC |
| 13055309 | 1,2-Dichloropropane | MS | 85.0 | %REC |
| 13055309 | Methylene Chloride | MS | 85.0 | %REC |
| 13055309 | Toluene | MS | 85.0 | %REC |
| 13055335 | Bromodichloromethane | MS | 85.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13055335 | Carbon Tetrachloride | MS | 85.0 | %REC |
| 13065452 | 1,2-Dichloropropane | MS | 85.0 | %REC |
| 13065452 | Toluene | MS | 85.0 | %REC |
| 13075471 | 1,1,1-Trichloroethane | MS | 85.0 | %REC |
| 13075471 | 1,1-Dichloroethene | MS | 85.0 | %REC |
| 13075471 | 1,2-Dichloropropane | MS | 85.0 | %REC |
| 13125786 | 1,1-Dichloroethene | MS | 85.0 | %REC |
| 13025131 | Tetrachloroethene | MSD | 85.0 | %REC |
| 13025141 | Chloroform | MSD | 85.0 | %REC |
| 13025141 | Trichloroethene | MSD | 85.0 | %REC |
| 13055297 | Trichloroethene | MSD | 85.0 | %REC |
| 13055335 | 1,2-Dichloropropane | MSD | 85.0 | %REC |
| 13065452 | Benzene | MSD | 85.0 | %REC |
| 13065452 | Carbon Tetrachloride | MSD | 85.0 | %REC |
| 13075471 | 1,2-Dichloropropane | MSD | 85.0 | %REC |
| 13075471 | Chloroform | MSD | 85.0 | %REC |
| 13075471 | Toluene | MSD | 85.0 | %REC |
| 13075486 | 1,1,1-Trichloroethane | MSD | 85.0 | %REC |
| 13075486 | Tetrachloroethene | MSD | 85.0 | %REC |
| 13085563 | Chlorobenzene | MSD | 85.0 | %REC |
| 13105677 | Toluene | MSD | 85.0 | %REC |
| 13115722 | Tetrachloroethene | MSD | 85.0 | %REC |
| 13115725 | 1,3-Dichlorobenzene | MS | 85.3 | %REC |
| 13115725 | 1,2,4-Trichlorobenzene | MSD | 85.3 | %REC |
| 13115725 | 1,2-Dichlorobenzene | MS | 85.4 | %REC |
| 13045288 | Chloromethane | MS | 85.8 | %REC |
| 13115725 | Chlorobenzene | MSD | 85.8 | %REC |
| 13015059 | Cadmium | MS | 85.9 | %REC |
| 13025141 | Nickel | MS | 86.0 | %REC |
| 13055335 | Beryllium | MS | 86.0 | %REC |
| 13055335 | Chromium | MS | 86.0 | %REC |
| 13055335 | Copper | MS | 86.0 | %REC |
| 13055335 | Lead | MS | 86.0 | %REC |
| 13085550 | Mercury | MS | 86.0 | %REC |
| 13025141 | Beryllium | MSD | 86.0 | %REC |
| 13085550 | Mercury | MSD | 86.0 | %REC |
| 13035203 | Nitrate+Nitrite as N | MS | 86.0 | %REC |
| 13125842 | Nitrate+Nitrite as N | MSD | 86.0 | %REC |
| 13025138 | 1,3-Dichlorobenzene | MS | 86.0 | %REC |
| 13025138 | Chlorobenzene | MS | 86.0 | %REC |
| 13025141 | Tetrachloroethene | MS | 86.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13045233 | 1,2-Dichloropropane | MS | 86.0 | %REC |
| 13045233 | Tetrachloroethene | MS | 86.0 | %REC |
| 13045288 | 1,1,2,2-Tetrachloroethane | MS | 86.0 | %REC |
| 13055309 | Chlorobenzene | MS | 86.0 | %REC |
| 13055309 | Trichloroethene | MS | 86.0 | %REC |
| 13065430 | 1,2-Dichloropropane | MS | 86.0 | %REC |
| 13075471 | Benzene | MS | 86.0 | %REC |
| 13075471 | Toluene | MS | 86.0 | %REC |
| 13115722 | 1,1,1-Trichloroethane | MS | 86.0 | %REC |
| 13115722 | Chloroform | MS | 86.0 | %REC |
| 13115725 | 1,2,4-Trichlorobenzene | MS | 86.0 | %REC |
| 13115772 | 1,1,1-Trichloroethane | MS | 86.0 | %REC |
| 13115772 | Chlorobenzene | MS | 86.0 | %REC |
| 13025141 | Benzene | MSD | 86.0 | %REC |
| 13025141 | trans-1,2-Dichloroethene | MSD | 86.0 | %REC |
| 13045288 | Bromoform | MSD | 86.0 | %REC |
| 13055309 | Carbon Tetrachloride | MSD | 86.0 | %REC |
| 13055309 | Tetrachloroethene | MSD | 86.0 | %REC |
| 13055328 | Tetrachloroethene | MSD | 86.0 | %REC |
| 13065430 | 1,1-Dichloroethene | MSD | 86.0 | %REC |
| 13065430 | Benzene | MSD | 86.0 | %REC |
| 13065430 | Ethylbenzene | MSD | 86.0 | %REC |
| 13065452 | 1,1,1-Trichloroethane | MSD | 86.0 | %REC |
| 13065452 | Bromodichloromethane | MSD | 86.0 | %REC |
| 13075486 | Ethylbenzene | MSD | 86.0 | %REC |
| 13075491 | 1,3-Dichlorobenzene | MSD | 86.0 | %REC |
| 13105704 | 1,1,2,2-Tetrachloroethane | MSD | 86.0 | %REC |
| 13115722 | 1,1,1-Trichloroethane | MSD | 86.0 | %REC |
| 13115722 | 1,2-Dichloropropane | MSD | 86.0 | %REC |
| 13115725 | Total Xylenes | MSD | 86.0 | %REC |
| 13045288 | 1,2,4-Trichlorobenzene | MS | 86.1 | %REC |
| 13045288 | 1,2,4-Trichlorobenzene | MS | 86.2 | %REC |
| 13045288 | Naphthalene | MS | 86.3 | %REC |
| 13115725 | Naphthalene | MS | 86.4 | %REC |
| 13015059 | Silver | MS | 86.5 | %REC |
| 13115725 | Ethylbenzene | MSD | 86.7 | %REC |
| 13115725 | Styrene | MSD | 86.7 | %REC |
| 13025141 | Chromium | MS | 87.0 | %REC |
| 13055335 | Nickel | MSD | 87.0 | %REC |
| 13015060 | Nitrate+Nitrite as N | MS | 87.0 | %REC |
| 13125842 | Nitrate+Nitrite as N | MS | 87.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13125842 | Nitrate+Nitrite as N | MS | 87.0 | %REC |
| 13025111 | Carbon Tetrachloride | MS | 87.0 | %REC |
| 13025138 | Tetrachloroethene | MS | 87.0 | %REC |
| 13025141 | Benzene | MS | 87.0 | %REC |
| 13025141 | Bromodichloromethane | MS | 87.0 | %REC |
| 13025141 | trans-1,2-Dichloroethene | MS | 87.0 | %REC |
| 13045233 | Chlorobenzene | MS | 87.0 | %REC |
| 13055297 | 1,3-Dichlorobenzene | MS | 87.0 | %REC |
| 13055309 | 1,1,1-Trichloroethane | MS | 87.0 | %REC |
| 13055309 | Benzene | MS | 87.0 | %REC |
| 13055335 | 1,2-Dichloropropane | MS | 87.0 | %REC |
| 13055335 | Methylene Chloride | MS | 87.0 | %REC |
| 13065430 | 1,1-Dichloroethene | MS | 87.0 | %REC |
| 13065430 | Benzene | MS | 87.0 | %REC |
| 13065430 | Ethylbenzene | MS | 87.0 | %REC |
| 13085563 | Chlorobenzene | MS | 87.0 | %REC |
| 13105677 | 1,2-Dichloropropane | MS | 87.0 | %REC |
| 13115722 | Ethylbenzene | MS | 87.0 | %REC |
| 13115722 | Tetrachloroethene | MS | 87.0 | %REC |
| 13115722 | Toluene | MS | 87.0 | %REC |
| 13115722 | Trichloroethene | MS | 87.0 | %REC |
| 13115740 | 1,1-Dichloroethene | MS | 87.0 | %REC |
| 13115772 | Tetrachloroethene | MS | 87.0 | %REC |
| 13025141 | Chlorobenzene | MSD | 87.0 | %REC |
| 13045288 | Vinyl Chloride | MSD | 87.0 | %REC |
| 13055309 | Toluene | MSD | 87.0 | %REC |
| 13065378 | Methylene Chloride | MSD | 87.0 | %REC |
| 13065430 | trans-1,2-Dichloroethene | MSD | 87.0 | %REC |
| 13065452 | 1,2-Dichloropropane | MSD | 87.0 | %REC |
| 13065452 | Tetrachloroethene | MSD | 87.0 | %REC |
| 13075471 | Trichloroethene | MSD | 87.0 | %REC |
| 13075486 | Chlorobenzene | MSD | 87.0 | %REC |
| 13075491 | Chlorobenzene | MSD | 87.0 | %REC |
| 13085563 | Tetrachloroethene | MSD | 87.0 | %REC |
| 13115722 | Toluene | MSD | 87.0 | %REC |
| 13115722 | Trichloroethene | MSD | 87.0 | %REC |
| 13115772 | Carbon Tetrachloride | MSD | 87.0 | %REC |
| 13115772 | trans-1,2-Dichloroethene | MSD | 87.0 | %REC |
| 13115725 | Toluene | MSD | 87.2 | %REC |
| 13115725 | 1,1,2,2-Tetrachloroethane | MSD | 87.3 | %REC |
| 13045288 | Chloromethane | MSD | 87.4 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13115725 | Tetrachloroethene | MSD | 87.4 | %REC |
| 13095621 | Uranium | MS | 87.5 | %REC |
| 13115725 | Hexachlorobutadiene | MSD | 87.6 | %REC |
| 13115725 | Total Xylenes | MS | 87.7 | %REC |
| 13115725 | 1,1-Dichloroethene | MSD | 87.8 | %REC |
| 13115725 | Naphthalene | MSD | 87.8 | %REC |
| 13015076 | Chromium | MS | 88.0 | %REC |
| 13025122 | Zinc | MS | 88.0 | %REC |
| 13025136 | Uranium | MS | 88.0 | %REC |
| 13055335 | Arsenic | MS | 88.0 | %REC |
| 13055335 | Boron | MS | 88.0 | %REC |
| 13055335 | Selenium | MS | 88.0 | %REC |
| 13055335 | Zinc | MS | 88.0 | %REC |
| 13025136 | Uranium | MSD | 88.0 | %REC |
| 13015076 | Toluene | MS | 88.0 | %REC |
| 13025141 | Trichloroethene | MS | 88.0 | %REC |
| 13035157 | Benzene | MS | 88.0 | %REC |
| 13055297 | Benzene | MS | 88.0 | %REC |
| 13055297 | Chlorobenzene | MS | 88.0 | %REC |
| 13055297 | Toluene | MS | 88.0 | %REC |
| 13055309 | Bromodichloromethane | MS | 88.0 | %REC |
| 13055309 | Bromodichloromethane | MS | 88.0 | %REC |
| 13055309 | Chloroform | MS | 88.0 | %REC |
| 13065452 | trans-1,2-Dichloroethene | MS | 88.0 | %REC |
| 13075486 | 1,2-Dichloropropane | MS | 88.0 | %REC |
| 13115722 | trans-1,2-Dichloroethene | MS | 88.0 | %REC |
| 13115725 | Styrene | MS | 88.0 | %REC |
| 13125786 | 1,2-Dichloropropane | MS | 88.0 | %REC |
| 13125786 | Bromodichloromethane | MS | 88.0 | %REC |
| 13125786 | Chloroform | MS | 88.0 | %REC |
| 13015076 | Toluene | MSD | 88.0 | %REC |
| 13025141 | 1,3-Dichlorobenzene | MSD | 88.0 | %REC |
| 13055297 | trans-1,2-Dichloroethene | MSD | 88.0 | %REC |
| 13055309 | Benzene | MSD | 88.0 | %REC |
| 13065430 | 1,2-Dichloropropane | MSD | 88.0 | %REC |
| 13065452 | Toluene | MSD | 88.0 | %REC |
| 13075471 | trans-1,2-Dichloroethene | MSD | 88.0 | %REC |
| 13105677 | 1,1-Dichloroethene | MSD | 88.0 | %REC |
| 13115722 | Chloroform | MSD | 88.0 | %REC |
| 13125786 | Methylene Chloride | MSD | 88.0 | %REC |
| 13045288 | 1,2-Dichlorobenzene | MS | 88.1 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13045288 | 1,4-Dichlorobenzene | MS | 88.1 | %REC |
| 13115725 | Chlorobenzene | MS | 88.1 | %REC |
| 13045288 | Bromomethane | MSD | 88.1 | %REC |
| 13115725 | 1,1,1-Trichloroethane | MSD | 88.3 | %REC |
| 13045288 | 1,3-Dichlorobenzene | MS | 88.4 | %REC |
| 13115725 | Carbon Tetrachloride | MSD | 88.4 | %REC |
| 13045288 | 1,1,2,2-Tetrachloroethane | MS | 88.5 | %REC |
| 13045288 | 1,3-Dichlorobenzene | MS | 88.5 | %REC |
| 13115725 | Toluene | MS | 88.5 | %REC |
| 13045288 | 1,4-Dichlorobenzene | MS | 88.6 | %REC |
| 13105704 | 1,2-Dibromo-3-chloropropane | MS | 88.6 | %REC |
| 13115725 | Ethylbenzene | MS | 88.6 | %REC |
| 13115725 | Hexachlorobutadiene | MS | 88.6 | %REC |
| 13115725 | 1,2-Dibromoethane | MSD | 88.6 | %REC |
| 13105674 | Uranium | MS | 88.7 | %REC |
| 13115725 | Benzene | MSD | 88.7 | %REC |
| 13025136 | Uranium | MS | 89.0 | %REC |
| 13025141 | Boron | MS | 89.0 | %REC |
| 13025141 | Cadmium | MS | 89.0 | %REC |
| 13055335 | Cadmium | MS | 89.0 | %REC |
| 13055335 | Silver | MS | 89.0 | %REC |
| 13015076 | Chromium | MSD | 89.0 | %REC |
| 13055335 | Beryllium | MSD | 89.0 | %REC |
| 13055335 | Chromium | MSD | 89.0 | %REC |
| 13055335 | Lead | MSD | 89.0 | %REC |
| 13085550 | Uranium | MSD | 89.0 | %REC |
| 13035203 | Nitrate+Nitrite as N | MSD | 89.0 | %REC |
| 13055375 | Nitrate+Nitrite as N | MSD | 89.0 | %REC |
| 13095612 | Nitrate+Nitrite as N | MSD | 89.0 | %REC |
| 13025111 | 1,3-Dichlorobenzene | MS | 89.0 | %REC |
| 13025141 | Chlorobenzene | MS | 89.0 | %REC |
| 13035157 | Methylene Chloride | MS | 89.0 | %REC |
| 13035198 | 1,3-Dichlorobenzene | MS | 89.0 | %REC |
| 13055297 | Bromodichloromethane | MS | 89.0 | %REC |
| 13055309 | Ethylbenzene | MS | 89.0 | %REC |
| 13055309 | Tetrachloroethene | MS | 89.0 | %REC |
| 13055341 | 1,1-Dichloroethene | MS | 89.0 | %REC |
| 13065430 | trans-1,2-Dichloroethene | MS | 89.0 | %REC |
| 13065452 | Methylene Chloride | MS | 89.0 | %REC |
| 13075471 | trans-1,2-Dichloroethene | MS | 89.0 | %REC |
| 13075471 | Trichloroethene | MS | 89.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13085563 | Tetrachloroethene | MS | 89.0 | %REC |
| 13105677 | Toluene | MS | 89.0 | %REC |
| 13025141 | 1,2-Dichloropropane | MSD | 89.0 | %REC |
| 13035198 | trans-1,2-Dichloroethene | MSD | 89.0 | %REC |
| 13055309 | 1,1,1-Trichloroethane | MSD | 89.0 | %REC |
| 13055309 | Methylene Chloride | MSD | 89.0 | %REC |
| 13055335 | Chlorobenzene | MSD | 89.0 | %REC |
| 13055335 | Tetrachloroethene | MSD | 89.0 | %REC |
| 13055335 | Toluene | MSD | 89.0 | %REC |
| 13065430 | Methylene Chloride | MSD | 89.0 | %REC |
| 13075491 | Chloroform | MSD | 89.0 | %REC |
| 13075491 | Ethylbenzene | MSD | 89.0 | %REC |
| 13085550 | Methylene Chloride | MSD | 89.0 | %REC |
| 13115722 | trans-1,2-Dichloroethene | MSD | 89.0 | %REC |
| 13115772 | Benzene | MSD | 89.0 | %REC |
| 13045288 | Tetrachloroethene | MS | 89.3 | %REC |
| 13045288 | 1,2-Dibromo-3-chloropropane | MSD | 89.3 | %REC |
| 13045288 | 1,4-Dichlorobenzene | MSD | 89.3 | %REC |
| 13115725 | Dibromochloromethane | MSD | 89.4 | %REC |
| 13045288 | 1,3-Dichlorobenzene | MSD | 89.5 | %REC |
| 13045288 | 1,4-Dichlorobenzene | MSD | 89.5 | %REC |
| 13105704 | Bromoform | MSD | 89.5 | %REC |
| 13045288 | 1,2-Dibromo-3-chloropropane | MS | 89.6 | %REC |
| 13045288 | 1,3-Dichlorobenzene | MSD | 89.7 | %REC |
| 13115725 | Tetrachloroethene | MS | 89.8 | %REC |
| 13045288 | Chloromethane | MS | 89.9 | %REC |
| 13105704 | 1,1,2,2-Tetrachloroethane | MS | 89.9 | %REC |
| 13015076 | Arsenic | MS | 90.0 | %REC |
| 13025122 | Nickel | MS | 90.0 | %REC |
| 13025141 | Copper | MS | 90.0 | %REC |
| 13025141 | Zinc | MS | 90.0 | %REC |
| 13085545 | Silver | MS | 90.0 | %REC |
| 13025122 | Zinc | MSD | 90.0 | %REC |
| 13025141 | Lead | MSD | 90.0 | %REC |
| 13025141 | Mercury | MSD | 90.0 | %REC |
| 13055335 | Copper | MSD | 90.0 | %REC |
| 13095612 | Nitrate+Nitrite as N | MS | 90.0 | %REC |
| 13095613 | Nitrate+Nitrite as N | MSD | 90.0 | %REC |
| 13125842 | Nitrate+Nitrite as N | MSD | 90.0 | %REC |
| 13015076 | Tetrachloroethene | MS | 90.0 | %REC |
| 13025103 | Bromodichloromethane | MS | 90.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13025103 | Bromodichloromethane | MS | 90.0 | %REC |
| 13025103 | Carbon Tetrachloride | MS | 90.0 | %REC |
| 13025103 | Carbon Tetrachloride | MS | 90.0 | %REC |
| 13025106 | Trichloroethene | MS | 90.0 | %REC |
| 13025106 | Trichloroethene | MS | 90.0 | %REC |
| 13025115 | Ethylbenzene | MS | 90.0 | %REC |
| 13025115 | Methylene Chloride | MS | 90.0 | %REC |
| 13025116 | Tetrachloroethene | MS | 90.0 | %REC |
| 13025141 | 1,2-Dichloropropane | MS | 90.0 | %REC |
| 13025141 | 1,3-Dichlorobenzene | MS | 90.0 | %REC |
| 13045233 | Benzene | MS | 90.0 | %REC |
| 13045233 | Bromodichloromethane | MS | 90.0 | %REC |
| 13055297 | Ethylbenzene | MS | 90.0 | %REC |
| 13065430 | Bromodichloromethane | MS | 90.0 | %REC |
| 13065430 | Chloroform | MS | 90.0 | %REC |
| 13075486 | 1,3-Dichlorobenzene | MS | 90.0 | %REC |
| 13075486 | Chlorobenzene | MS | 90.0 | %REC |
| 13085563 | Methylene Chloride | MS | 90.0 | %REC |
| 13115722 | Carbon Tetrachloride | MS | 90.0 | %REC |
| 13115725 | 1,1-Dichloroethene | MS | 90.0 | %REC |
| 13115740 | Methylene Chloride | MS | 90.0 | %REC |
| 13115772 | Toluene | MS | 90.0 | %REC |
| 13125786 | trans-1,2-Dichloroethene | MS | 90.0 | %REC |
| 13025115 | Trichloroethene | MSD | 90.0 | %REC |
| 13025141 | Bromodichloromethane | MSD | 90.0 | %REC |
| 13055297 | Bromodichloromethane | MSD | 90.0 | %REC |
| 13055309 | Bromodichloromethane | MSD | 90.0 | %REC |
| 13055309 | trans-1,2-Dichloroethene | MSD | 90.0 | %REC |
| 13055335 | Bromodichloromethane | MSD | 90.0 | %REC |
| 13055341 | 1,1-Dichloroethene | MSD | 90.0 | %REC |
| 13055374 | Chlorobenzene | MSD | 90.0 | %REC |
| 13065430 | Chloroform | MSD | 90.0 | %REC |
| 13065430 | Toluene | MSD | 90.0 | %REC |
| 13075491 | 1,1-Dichloroethene | MSD | 90.0 | %REC |
| 13075491 | Toluene | MSD | 90.0 | %REC |
| 13105704 | 1,1,2-Trichloroethane | MSD | 90.0 | %REC |
| 13115722 | Carbon Tetrachloride | MSD | 90.0 | %REC |
| 13115740 | 1,1-Dichloroethene | MSD | 90.0 | %REC |
| 13045288 | Vinyl Chloride | MS | 90.1 | %REC |
| 13115725 | trans-1,2-Dichloroethene | MSD | 90.1 | %REC |
| 13045288 | 1,2-Dichlorobenzene | MS | 90.2 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13045288 | Naphthalene | MS | 90.2 | %REC |
| 13045288 | 1,2,4-Trichlorobenzene | MSD | 90.2 | %REC |
| 13045288 | 1,2-Dichlorobenzene | MSD | 90.2 | %REC |
| 13105704 | Benzene | MSD | 90.2 | %REC |
| 13085545 | Uranium | MS | 90.3 | %REC |
| 13115725 | 1,1,1-Trichloroethane | MS | 90.3 | %REC |
| 13045288 | 1,2-Dichlorobenzene | MSD | 90.3 | %REC |
| 13045288 | Vinyl Chloride | MSD | 90.3 | %REC |
| 13105704 | 1,4-Dichlorobenzene | MSD | 90.3 | %REC |
| 13045288 | 1,2-Dibromo-3-chloropropane | MSD | 90.4 | %REC |
| 13105704 | Methylene Chloride | MS | 90.5 | %REC |
| 13045288 | 1,2,4-Trichlorobenzene | MSD | 90.5 | %REC |
| 13105704 | 1,2-Dichloropropane | MSD | 90.6 | %REC |
| 13105704 | 1,3-Dichlorobenzene | MSD | 90.6 | %REC |
| 13045288 | 1,1,2,2-Tetrachloroethane | MSD | 90.7 | %REC |
| 13045288 | Tetrachloroethene | MSD | 90.7 | %REC |
| 13015076 | Selenium | MS | 91.0 | %REC |
| 13025141 | Mercury | MS | 91.0 | %REC |
| 13085546 | Uranium | MS | 91.0 | %REC |
| 13015076 | Arsenic | MSD | 91.0 | %REC |
| 13015076 | Lead | MSD | 91.0 | %REC |
| 13015076 | Mercury | MSD | 91.0 | %REC |
| 13025141 | Nickel | MSD | 91.0 | %REC |
| 13055335 | Arsenic | MSD | 91.0 | %REC |
| 13055335 | Boron | MSD | 91.0 | %REC |
| 13055335 | Cadmium | MSD | 91.0 | %REC |
| 13055335 | Selenium | MSD | 91.0 | %REC |
| 13055335 | Silver | MSD | 91.0 | %REC |
| 13055335 | Zinc | MSD | 91.0 | %REC |
| 13015076 | Benzene | MS | 91.0 | %REC |
| 13025103 | Chloroform | MS | 91.0 | %REC |
| 13025103 | Chloroform | MS | 91.0 | %REC |
| 13025115 | Tetrachloroethene | MS | 91.0 | %REC |
| 13025115 | Trichloroethene | MS | 91.0 | %REC |
| 13025116 | Chlorobenzene | MS | 91.0 | %REC |
| 13025116 | Chlorobenzene | MS | 91.0 | %REC |
| 13025131 | Ethylbenzene | MS | 91.0 | %REC |
| 13045233 | Toluene | MS | 91.0 | %REC |
| 13045233 | trans-1,2-Dichloroethene | MS | 91.0 | %REC |
| 13045278 | Trichloroethene | MS | 91.0 | %REC |
| 13045288 | 1,1,2-Trichloroethane | MS | 91.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13055297 | Trichloroethene | MS | 91.0 | %REC |
| 13055309 | 1,1,1-Trichloroethane | MS | 91.0 | %REC |
| 13055309 | 1,3-Dichlorobenzene | MS | 91.0 | %REC |
| 13055309 | Benzene | MS | 91.0 | %REC |
| 13055309 | Carbon Tetrachloride | MS | 91.0 | %REC |
| 13055309 | Toluene | MS | 91.0 | %REC |
| 13055309 | trans-1,2-Dichloroethene | MS | 91.0 | %REC |
| 13055335 | Bromodichloromethane | MS | 91.0 | %REC |
| 13055341 | 1,3-Dichlorobenzene | MS | 91.0 | %REC |
| 13075486 | Ethylbenzene | MS | 91.0 | %REC |
| 13115722 | 1,1-Dichloroethene | MS | 91.0 | %REC |
| 13115772 | trans-1,2-Dichloroethene | MS | 91.0 | %REC |
| 13125786 | 1,1,1-Trichloroethane | MS | 91.0 | %REC |
| 13015076 | Benzene | MSD | 91.0 | %REC |
| 13015076 | Tetrachloroethene | MSD | 91.0 | %REC |
| 13025116 | 1,3-Dichlorobenzene | MSD | 91.0 | %REC |
| 13025116 | 1,3-Dichlorobenzene | MSD | 91.0 | %REC |
| 13045288 | Tetrachloroethene | MSD | 91.0 | %REC |
| 13055328 | Benzene | MSD | 91.0 | %REC |
| 13055335 | Chloroform | MSD | 91.0 | %REC |
| 13065413 | Chlorobenzene | MSD | 91.0 | %REC |
| 13065430 | 1,1,1-Trichloroethane | MSD | 91.0 | %REC |
| 13065430 | Bromodichloromethane | MSD | 91.0 | %REC |
| 13065452 | Methylene Chloride | MSD | 91.0 | %REC |
| 13075491 | trans-1,2-Dichloroethene | MSD | 91.0 | %REC |
| 13085538 | Tetrachloroethene | MSD | 91.0 | %REC |
| 13085548 | 1,1-Dichloroethene | MSD | 91.0 | %REC |
| 13085563 | Methylene Chloride | MSD | 91.0 | %REC |
| 13105704 | Toluene | MSD | 91.0 | %REC |
| 13115760 | Chlorobenzene | MSD | 91.0 | %REC |
| 13125786 | 1,3-Dichlorobenzene | MSD | 91.0 | %REC |
| 13055304 | Boron | MS | 91.1 | %REC |
| 13045288 | 1,1,2-Trichloroethane | MSD | 91.1 | %REC |
| 13115725 | 1,2-Dichloropropane | MSD | 91.1 | %REC |
| 13115725 | Chloroform | MSD | 91.1 | %REC |
| 13115725 | Trichloroethene | MSD | 91.1 | %REC |
| 13045288 | 1,1,2-Trichloroethane | MS | 91.2 | %REC |
| 13045288 | Chlorobenzene | MS | 91.2 | %REC |
| 13045288 | Toluene | MS | 91.2 | %REC |
| 13045288 | Bromomethane | MS | 91.3 | %REC |
| 13115725 | Dibromochloromethane | MS | 91.3 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13055327 | Chromium | MS | 91.4 | %REC |
| 13045288 | 1,1,2,2-Tetrachloroethane | MSD | 91.4 | %REC |
| 13115725 | cis-1,2-Dichloroethene | MSD | 91.4 | %REC |
| 13095621 | Uranium | MS | 91.5 | %REC |
| 13095627 | Uranium | MS | 91.5 | %REC |
| 13115725 | Carbon Tetrachloride | MS | 91.5 | %REC |
| 13105704 | Chlorobenzene | MSD | 91.6 | %REC |
| 13045288 | 1,1,2-Trichloroethane | MSD | 91.7 | %REC |
| 13115725 | 1,1,2,2-Tetrachloroethane | MS | 91.8 | %REC |
| 13045288 | Chlorobenzene | MSD | 91.8 | %REC |
| 13045288 | Toluene | MSD | 91.8 | %REC |
| 13105704 | 1,2-Dichlorobenzene | MSD | 91.8 | %REC |
| 13115725 | 1,2-Dichloroethane | MSD | 91.8 | %REC |
| 13105674 | Zinc | MS | 91.9 | %REC |
| 13105704 | Bromoform | MS | 91.9 | %REC |
| 13045288 | Hexachlorobutadiene | MSD | 91.9 | %REC |
| 13115725 | 1,1,2-Trichloroethane | MSD | 91.9 | %REC |
| 13115725 | trans-1,3-Dichloropropene | MSD | 91.9 | %REC |
| 13015076 | Mercury | MS | 92.0 | %REC |
| 13015076 | Nickel | MS | 92.0 | %REC |
| 13105677 | Uranium | MS | 92.0 | %REC |
| 13125842 | Uranium | MS | 92.0 | %REC |
| 13015076 | Selenium | MSD | 92.0 | %REC |
| 13025141 | Chromium | MSD | 92.0 | %REC |
| 13045275 | Nitrate+Nitrite as N | MS | 92.0 | %REC |
| 13015060 | Nitrate+Nitrite as N | MSD | 92.0 | %REC |
| 13045224 | Nitrate+Nitrite as N | MSD | 92.0 | %REC |
| 13045275 | Nitrate+Nitrite as N | MSD | 92.0 | %REC |
| 13065394 | Nitrate+Nitrite as N | MSD | 92.0 | %REC |
| 13025103 | 1,1,1-Trichloroethane | MS | 92.0 | %REC |
| 13025103 | 1,1,1-Trichloroethane | MS | 92.0 | %REC |
| 13025103 | Benzene | MS | 92.0 | %REC |
| 13025103 | Benzene | MS | 92.0 | %REC |
| 13025103 | Toluene | MS | 92.0 | %REC |
| 13025103 | Toluene | MS | 92.0 | %REC |
| 13025103 | Trichloroethene | MS | 92.0 | %REC |
| 13025103 | Trichloroethene | MS | 92.0 | %REC |
| 13025138 | Ethylbenzene | MS | 92.0 | %REC |
| 13025141 | 1,1-Dichloroethene | MS | 92.0 | %REC |
| 13045233 | 1,3-Dichlorobenzene | MS | 92.0 | %REC |
| 13055309 | 1,2-Dichloropropane | MS | 92.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13055309 | 1,2-Dichloropropane | MS | 92.0 | %REC |
| 13055309 | Chlorobenzene | MS | 92.0 | %REC |
| 13055309 | Chloroform | MS | 92.0 | %REC |
| 13065430 | Toluene | MS | 92.0 | %REC |
| 13085548 | Methylene Chloride | MS | 92.0 | %REC |
| 13085563 | 1,1-Dichloroethene | MS | 92.0 | %REC |
| 13115725 | 1,2-Dibromoethane | MS | 92.0 | %REC |
| 13115725 | Benzene | MS | 92.0 | %REC |
| 13115740 | Benzene | MS | 92.0 | %REC |
| 13125786 | Trichloroethene | MS | 92.0 | %REC |
| 13015076 | Trichloroethene | MSD | 92.0 | %REC |
| 13025116 | Ethylbenzene | MSD | 92.0 | %REC |
| 13025116 | Ethylbenzene | MSD | 92.0 | %REC |
| 13025141 | 1,1-Dichloroethene | MSD | 92.0 | %REC |
| 13025141 | Toluene | MSD | 92.0 | %REC |
| 13035157 | Benzene | MSD | 92.0 | %REC |
| 13035157 | Methylene Chloride | MSD | 92.0 | %REC |
| 13035198 | 1,1-Dichloroethene | MSD | 92.0 | %REC |
| 13055335 | 1,1-Dichloroethene | MSD | 92.0 | %REC |
| 13055335 | 1,3-Dichlorobenzene | MSD | 92.0 | %REC |
| 13055374 | Ethylbenzene | MSD | 92.0 | %REC |
| 13075486 | Carbon Tetrachloride | MSD | 92.0 | %REC |
| 13115740 | Methylene Chloride | MSD | 92.0 | %REC |
| 13125786 | Benzene | MSD | 92.0 | %REC |
| 13045288 | Naphthalene | MSD | 92.2 | %REC |
| 13105704 | Naphthalene | MSD | 92.3 | %REC |
| 13045288 | Toluene | MSD | 92.4 | %REC |
| 13115748 | Uranium | MS | 92.5 | %REC |
| 13045288 | Tetrachloroethene | MS | 92.5 | %REC |
| 13105704 | Naphthalene | MS | 92.5 | %REC |
| 13115725 | trans-1,2-Dichloroethene | MS | 92.5 | %REC |
| 13105674 | Selenium | MS | 92.6 | %REC |
| 13105689 | NO2+NO3 as N | MS | 92.7 | %REC |
| 13105704 | NO2+NO3 as N | MS | 92.7 | %REC |
| 13045288 | Chlorobenzene | MSD | 92.7 | %REC |
| 13045288 | Naphthalene | MSD | 92.8 | %REC |
| 13105674 | Cadmium | MS | 92.9 | %REC |
| 13015076 | Copper | MS | 93.0 | %REC |
| 13015076 | Lead | MS | 93.0 | %REC |
| 13015076 | Zinc | MS | 93.0 | %REC |
| 13025141 | Arsenic | MS | 93.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13025141 | Selenium | MS | 93.0 | %REC |
| 13025141 | Silver | MS | 93.0 | %REC |
| 13115721 | Uranium | MS | 93.0 | %REC |
| 14025915 | Zinc | MS | 93.0 | %REC |
| 13015076 | Copper | MSD | 93.0 | %REC |
| 13015076 | Nickel | MSD | 93.0 | %REC |
| 13015076 | Zinc | MSD | 93.0 | %REC |
| 13085550 | Uranium | MSD | 93.0 | %REC |
| 13115740 | Mercury | MSD | 93.0 | %REC |
| 13125842 | Uranium | MSD | 93.0 | %REC |
| 14015882 | Uranium | MSD | 93.0 | %REC |
| 14015882 | Uranium | MSD | 93.0 | %REC |
| 13045224 | Nitrate+Nitrite as N | MS | 93.0 | %REC |
| 13015076 | Trichloroethene | MS | 93.0 | %REC |
| 13025103 | 1,2-Dichloropropane | MS | 93.0 | %REC |
| 13025103 | 1,2-Dichloropropane | MS | 93.0 | %REC |
| 13025103 | Chlorobenzene | MS | 93.0 | %REC |
| 13025103 | Chlorobenzene | MS | 93.0 | %REC |
| 13025103 | trans-1,2-Dichloroethene | MS | 93.0 | %REC |
| 13025103 | trans-1,2-Dichloroethene | MS | 93.0 | %REC |
| 13025106 | 1,3-Dichlorobenzene | MS | 93.0 | %REC |
| 13025106 | 1,3-Dichlorobenzene | MS | 93.0 | %REC |
| 13025116 | Toluene | MS | 93.0 | %REC |
| 13025116 | Toluene | MS | 93.0 | %REC |
| 13025130 | Ethylbenzene | MS | 93.0 | %REC |
| 13025138 | trans-1,2-Dichloroethene | MS | 93.0 | %REC |
| 13045233 | Chloroform | MS | 93.0 | %REC |
| 13045278 | 1,2-Dichloropropane | MS | 93.0 | %REC |
| 13055297 | trans-1,2-Dichloroethene | MS | 93.0 | %REC |
| 13055309 | Benzene | MS | 93.0 | %REC |
| 13055309 | Ethylbenzene | MS | 93.0 | %REC |
| 13055309 | Trichloroethene | MS | 93.0 | %REC |
| 13055341 | Ethylbenzene | MS | 93.0 | %REC |
| 13065430 | 1,1,1-Trichloroethane | MS | 93.0 | %REC |
| 13075486 | Benzene | MS | 93.0 | %REC |
| 13085538 | 1,3-Dichlorobenzene | MS | 93.0 | %REC |
| 13085538 | Ethylbenzene | MS | 93.0 | %REC |
| 13085550 | Methylene Chloride | MS | 93.0 | %REC |
| 13085566 | Tetrachloroethene | MS | 93.0 | %REC |
| 13105677 | Chlorobenzene | MS | 93.0 | %REC |
| 13115725 | Trichloroethene | MS | 93.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13115740 | Toluene | MS | 93.0 | %REC |
| 13125786 | Chlorobenzene | MS | 93.0 | %REC |
| 13125786 | Toluene | MS | 93.0 | %REC |
| 13025115 | Ethylbenzene | MSD | 93.0 | %REC |
| 13025138 | 1,3-Dichlorobenzene | MSD | 93.0 | %REC |
| 13035198 | 1,1,1-Trichloroethane | MSD | 93.0 | %REC |
| 13055328 | 1,3-Dichlorobenzene | MSD | 93.0 | %REC |
| 13055374 | Benzene | MSD | 93.0 | %REC |
| 13065413 | 1,3-Dichlorobenzene | MSD | 93.0 | %REC |
| 13065452 | Ethylbenzene | MSD | 93.0 | %REC |
| 13065452 | trans-1,2-Dichloroethene | MSD | 93.0 | %REC |
| 13075486 | 1,3-Dichlorobenzene | MSD | 93.0 | %REC |
| 13115722 | 1,1-Dichloroethene | MSD | 93.0 | %REC |
| 13115772 | Chloroform | MSD | 93.0 | %REC |
| 13115772 | Methylene Chloride | MSD | 93.0 | %REC |
| 13045226 | Uranium | MS | 93.1 | %REC |
| 13105674 | Boron | MS | 93.1 | %REC |
| 13045288 | Bromomethane | MS | 93.2 | %REC |
| 13045288 | Hexachlorobutadiene | MS | 93.2 | %REC |
| 13045288 | Hexachlorobutadiene | MS | 93.2 | %REC |
| 13105704 | Total Xylenes | MSD | 93.2 | %REC |
| 13045288 | 1,2-Dibromoethane | MS | 93.4 | %REC |
| 13115725 | 1,2-Dichloropropane | MS | 93.4 | %REC |
| 13105704 | 1,2-Dibromoethane | MSD | 93.4 | %REC |
| 13045288 | Toluene | MS | 93.5 | %REC |
| 13115725 | Bromodichloromethane | MSD | 93.5 | %REC |
| 13055304 | Chromium | MS | 93.6 | %REC |
| 13045288 | Total Xylenes | MS | 93.6 | %REC |
| 13045288 | Bromomethane | MSD | 93.6 | %REC |
| 13105666 | Mercury | MS | 93.7 | %REC |
| 13045288 | Total Xylenes | MSD | 93.7 | %REC |
| 13115725 | Chloroform | MS | 93.8 | %REC |
| 13045288 | Chloromethane | MSD | 93.8 | %REC |
| 13055304 | Zinc | MS | 93.9 | %REC |
| 13045288 | Ethylbenzene | MS | 93.9 | %REC |
| 13025122 | Lead | MS | 94.0 | %REC |
| 13055339 | Uranium | MS | 94.0 | %REC |
| 13075472 | Uranium | MS | 94.0 | %REC |
| 13085550 | Uranium | MS | 94.0 | %REC |
| 13115722 | Uranium | MS | 94.0 | %REC |
| 13115740 | Mercury | MS | 94.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13125842 | Uranium | MS | 94.0 | %REC |
| 13125842 | Uranium | MS | 94.0 | %REC |
| 14025915 | Beryllium | MS | 94.0 | %REC |
| 14025915 | Nickel | MS | 94.0 | %REC |
| 13025122 | Nickel | MSD | 94.0 | %REC |
| 13075472 | Uranium | MSD | 94.0 | %REC |
| 13085550 | Lead | MSD | 94.0 | %REC |
| 13085550 | Zinc | MSD | 94.0 | %REC |
| 13065394 | Nitrate+Nitrite as N | MS | 94.0 | %REC |
| 13015076 | Chlorobenzene | MS | 94.0 | %REC |
| 13015076 | Chloroform | MS | 94.0 | %REC |
| 13025106 | Methylene Chloride | MS | 94.0 | %REC |
| 13025106 | Methylene Chloride | MS | 94.0 | %REC |
| 13025111 | Bromodichloromethane | MS | 94.0 | %REC |
| 13025115 | Carbon Tetrachloride | MS | 94.0 | %REC |
| 13025131 | 1,3-Dichlorobenzene | MS | 94.0 | %REC |
| 13025138 | Methylene Chloride | MS | 94.0 | %REC |
| 13025138 | Trichloroethene | MS | 94.0 | %REC |
| 13035157 | Toluene | MS | 94.0 | %REC |
| 13035197 | Methylene Chloride | MS | 94.0 | %REC |
| 13035211 | Bromodichloromethane | MS | 94.0 | %REC |
| 13045278 | 1,3-Dichlorobenzene | MS | 94.0 | %REC |
| 13045278 | Chlorobenzene | MS | 94.0 | %REC |
| 13045288 | 1,2-Dibromoethane | MS | 94.0 | %REC |
| 13045288 | Chlorobenzene | MS | 94.0 | %REC |
| 13055297 | Tetrachloroethene | MS | 94.0 | %REC |
| 13055309 | Chlorobenzene | MS | 94.0 | %REC |
| 13055309 | Chloroform | MS | 94.0 | %REC |
| 13055309 | Ethylbenzene | MS | 94.0 | %REC |
| 13055341 | Bromodichloromethane | MS | 94.0 | %REC |
| 13055374 | Chlorobenzene | MS | 94.0 | %REC |
| 13065452 | Ethylbenzene | MS | 94.0 | %REC |
| 13085538 | Chlorobenzene | MS | 94.0 | %REC |
| 13085548 | Benzene | MS | 94.0 | %REC |
| 13015076 | Chloroform | MSD | 94.0 | %REC |
| 13025115 | Methylene Chloride | MSD | 94.0 | %REC |
| 13025115 | Tetrachloroethene | MSD | 94.0 | %REC |
| 13025138 | Chlorobenzene | MSD | 94.0 | %REC |
| 13025139 | Tetrachloroethene | MSD | 94.0 | %REC |
| 13045233 | Tetrachloroethene | MSD | 94.0 | %REC |
| 13045288 | Hexachlorobutadiene | MSD | 94.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13055297 | Chloroform | MSD | 94.0 | %REC |
| 13055309 | 1,2-Dichloropropane | MSD | 94.0 | %REC |
| 13055309 | Ethylbenzene | MSD | 94.0 | %REC |
| 13055374 | 1,3-Dichlorobenzene | MSD | 94.0 | %REC |
| 13065430 | Carbon Tetrachloride | MSD | 94.0 | %REC |
| 13075491 | Benzene | MSD | 94.0 | %REC |
| 13085563 | 1,1-Dichloroethene | MSD | 94.0 | %REC |
| 13105704 | 1,2,4-Trichlorobenzene | MSD | 94.0 | %REC |
| 13115740 | Benzene | MSD | 94.0 | %REC |
| 13115760 | Methylene Chloride | MSD | 94.0 | %REC |
| 13125786 | Chlorobenzene | MSD | 94.0 | %REC |
| 13055304 | Nickel | MS | 94.1 | %REC |
| 13045288 | Benzene | MSD | 94.1 | %REC |
| 13055304 | Uranium | MS | 94.2 | %REC |
| 13105704 | 1,1-Dichloroethene | MSD | 94.3 | %REC |
| 13045285 | Chromium | MS | 94.4 | %REC |
| 13065444 | Selenium | MS | 94.5 | %REC |
| 13075521 | Chromium | MS | 94.5 | %REC |
| 13115725 | cis-1,2-Dichloroethene | MS | 94.5 | %REC |
| 13055304 | Selenium | MS | 94.6 | %REC |
| 13055343 | Uranium | MS | 94.6 | %REC |
| 13115725 | trans-1,3-Dichloropropene | MS | 94.7 | %REC |
| 13025122 | Chromium | MS | 95.0 | %REC |
| 13025122 | Selenium | MS | 95.0 | %REC |
| 13045278 | Lead | MS | 95.0 | %REC |
| 13085550 | Lead | MS | 95.0 | %REC |
| 13085550 | Zinc | MS | 95.0 | %REC |
| 13095625 | Uranium | MS | 95.0 | %REC |
| 13115722 | Mercury | MS | 95.0 | %REC |
| 13115755 | Uranium | MS | 95.0 | %REC |
| 13125786 | Arsenic | MS | 95.0 | %REC |
| 14015882 | Mercury | MS | 95.0 | %REC |
| 14015882 | Uranium | MS | 95.0 | %REC |
| 13015076 | Uranium | MSD | 95.0 | %REC |
| 13025141 | Cadmium | MSD | 95.0 | %REC |
| 13025141 | Zinc | MSD | 95.0 | %REC |
| 13085550 | Selenium | MSD | 95.0 | %REC |
| 13125786 | Arsenic | MSD | 95.0 | %REC |
| 13125842 | Uranium | MSD | 95.0 | %REC |
| 14025915 | Beryllium | MSD | 95.0 | %REC |
| 14025915 | Nickel | MSD | 95.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 14025915 | Zinc | MSD | 95.0 | %REC |
| 13085570 | Nitrate+Nitrite as N | MS | 95.0 | %REC |
| 13085570 | Nitrate+Nitrite as N | MSD | 95.0 | %REC |
| 13015076 | Methylene Chloride | MS | 95.0 | %REC |
| 13025103 | Ethylbenzene | MS | 95.0 | %REC |
| 13025103 | Ethylbenzene | MS | 95.0 | %REC |
| 13025111 | Chlorobenzene | MS | 95.0 | %REC |
| 13025130 | 1,2-Dichloropropane | MS | 95.0 | %REC |
| 13025138 | Benzene | MS | 95.0 | %REC |
| 13025138 | Toluene | MS | 95.0 | %REC |
| 13025139 | 1,3-Dichlorobenzene | MS | 95.0 | %REC |
| 13025141 | Toluene | MS | 95.0 | %REC |
| 13045233 | Ethylbenzene | MS | 95.0 | %REC |
| 13045233 | Trichloroethene | MS | 95.0 | %REC |
| 13045278 | Methylene Chloride | MS | 95.0 | %REC |
| 13045278 | Tetrachloroethene | MS | 95.0 | %REC |
| 13055309 | trans-1,2-Dichloroethene | MS | 95.0 | %REC |
| 13055335 | Chlorobenzene | MS | 95.0 | %REC |
| 13055335 | Tetrachloroethene | MS | 95.0 | %REC |
| 13055341 | Carbon Tetrachloride | MS | 95.0 | %REC |
| 13055341 | Chlorobenzene | MS | 95.0 | %REC |
| 13075486 | Bromodichloromethane | MS | 95.0 | %REC |
| 13075491 | 1,3-Dichlorobenzene | MS | 95.0 | %REC |
| 13085538 | 1,1,1-Trichloroethane | MS | 95.0 | %REC |
| 13085538 | Bromodichloromethane | MS | 95.0 | %REC |
| 13085538 | Carbon Tetrachloride | MS | 95.0 | %REC |
| 13085548 | trans-1,2-Dichloroethene | MS | 95.0 | %REC |
| 13105677 | 1,1-Dichloroethene | MS | 95.0 | %REC |
| 13105677 | Bromodichloromethane | MS | 95.0 | %REC |
| 13115740 | Bromodichloromethane | MS | 95.0 | %REC |
| 13115740 | trans-1,2-Dichloroethene | MS | 95.0 | %REC |
| 13115772 | Benzene | MS | 95.0 | %REC |
| 13115772 | Carbon Tetrachloride | MS | 95.0 | %REC |
| 13115772 | Methylene Chloride | MS | 95.0 | %REC |
| 13015076 | 1,3-Dichlorobenzene | MSD | 95.0 | %REC |
| 13025111 | 1,3-Dichlorobenzene | MSD | 95.0 | %REC |
| 13025116 | Tetrachloroethene | MSD | 95.0 | %REC |
| 13025122 | Methylene Chloride | MSD | 95.0 | %REC |
| 13025131 | Ethylbenzene | MSD | 95.0 | %REC |
| 13035211 | Bromodichloromethane | MSD | 95.0 | %REC |
| 13045233 | 1,2-Dichloropropane | MSD | 95.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13045233 | Chlorobenzene | MSD | 95.0 | %REC |
| 13045274 | Chloroform | MSD | 95.0 | %REC |
| 13045288 | Ethylbenzene | MSD | 95.0 | %REC |
| 13055309 | Chlorobenzene | MSD | 95.0 | %REC |
| 13055309 | Chloroform | MSD | 95.0 | %REC |
| 13055309 | Methylene Chloride | MSD | 95.0 | %REC |
| 13055335 | trans-1,2-Dichloroethene | MSD | 95.0 | %REC |
| 13075471 | Ethylbenzene | MSD | 95.0 | %REC |
| 13085538 | 1,1-Dichloroethene | MSD | 95.0 | %REC |
| 13085538 | 1,3-Dichlorobenzene | MSD | 95.0 | %REC |
| 13085538 | Carbon Tetrachloride | MSD | 95.0 | %REC |
| 13105677 | 1,3-Dichlorobenzene | MSD | 95.0 | %REC |
| 13105677 | Chlorobenzene | MSD | 95.0 | %REC |
| 13115760 | 1,1-Dichloroethene | MSD | 95.0 | %REC |
| 13115760 | 1,3-Dichlorobenzene | MSD | 95.0 | %REC |
| 13115760 | Benzene | MSD | 95.0 | %REC |
| 13115760 | Bromodichloromethane | MSD | 95.0 | %REC |
| 13115772 | Bromodichloromethane | MSD | 95.0 | %REC |
| 13125786 | Ethylbenzene | MSD | 95.0 | %REC |
| 13055304 | Silver | MS | 95.1 | %REC |
| 13045288 | 1,2-Dibromoethane | MSD | 95.1 | %REC |
| 13095621 | Cadmium | MS | 95.2 | %REC |
| 13095627 | Cadmium | MS | 95.2 | %REC |
| 13045288 | Methylene Chloride | MS | 95.2 | %REC |
| 13105704 | trans-1,2-Dichloroethene | MSD | 95.2 | %REC |
| 13095608 | Chromium | MS | 95.3 | %REC |
| 13045288 | Benzene | MS | 95.3 | %REC |
| 13105704 | Styrene | MSD | 95.4 | %REC |
| 13045288 | Total Xylenes | MSD | 95.5 | %REC |
| 13055343 | Selenium | MS | 95.6 | %REC |
| 13115725 | 1,1,2-Trichloroethane | MS | 95.6 | %REC |
| 13055304 | Cadmium | MS | 95.8 | %REC |
| 13045288 | 1,2-Dichloropropane | MSD | 95.8 | %REC |
| 13045288 | Methylene Chloride | MSD | 95.9 | %REC |
| 13105704 | Ethylbenzene | MSD | 95.9 | %REC |
| 13025122 | Beryllium | MS | 96.0 | %REC |
| 13025122 | Boron | MS | 96.0 | %REC |
| 13025122 | Cadmium | MS | 96.0 | %REC |
| 13045285 | Cadmium | MS | 96.0 | %REC |
| 13065438 | Uranium | MS | 96.0 | %REC |
| 13065444 | Boron | MS | 96.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13085550 | Nickel | MS | 96.0 | %REC |
| 13085550 | Selenium | MS | 96.0 | %REC |
| 13085563 | Lead | MS | 96.0 | %REC |
| 14015882 | Beryllium | MS | 96.0 | %REC |
| 14015882 | Uranium | MS | 96.0 | %REC |
| 13025141 | Boron | MSD | 96.0 | %REC |
| 13025141 | Copper | MSD | 96.0 | %REC |
| 13045278 | Lead | MSD | 96.0 | %REC |
| 13085550 | Boron | MSD | 96.0 | %REC |
| 13085550 | Nickel | MSD | 96.0 | %REC |
| 13085563 | Lead | MSD | 96.0 | %REC |
| 13115722 | Mercury | MSD | 96.0 | %REC |
| 13115740 | Zinc | MSD | 96.0 | %REC |
| 13065378 | Nitrate+Nitrite as N | MS | 96.0 | %REC |
| 13105677 | Nitrate+Nitrite as N | MSD | 96.0 | %REC |
| 13015076 | 1,1,1-Trichloroethane | MS | 96.0 | %REC |
| 13015076 | 1,3-Dichlorobenzene | MS | 96.0 | %REC |
| 13025115 | Chlorobenzene | MS | 96.0 | %REC |
| 13025131 | Chlorobenzene | MS | 96.0 | %REC |
| 13025138 | 1,2-Dichloropropane | MS | 96.0 | %REC |
| 13025138 | Bromodichloromethane | MS | 96.0 | %REC |
| 13025138 | Chloroform | MS | 96.0 | %REC |
| 13035157 | Chlorobenzene | MS | 96.0 | %REC |
| 13035157 | Ethylbenzene | MS | 96.0 | %REC |
| 13045278 | Ethylbenzene | MS | 96.0 | %REC |
| 13055309 | 1,3-Dichlorobenzene | MS | 96.0 | %REC |
| 13055309 | Toluene | MS | 96.0 | %REC |
| 13055374 | Benzene | MS | 96.0 | %REC |
| 13075471 | Ethylbenzene | MS | 96.0 | %REC |
| 13075486 | 1,1-Dichloroethene | MS | 96.0 | %REC |
| 13075491 | 1,1-Dichloroethene | MS | 96.0 | %REC |
| 13075491 | Chlorobenzene | MS | 96.0 | %REC |
| 13085538 | 1,1-Dichloroethene | MS | 96.0 | %REC |
| 13085548 | Ethylbenzene | MS | 96.0 | %REC |
| 13085548 | Toluene | MS | 96.0 | %REC |
| 13105677 | 1,3-Dichlorobenzene | MS | 96.0 | %REC |
| 13115740 | 1,1,1-Trichloroethane | MS | 96.0 | %REC |
| 13115740 | 1,2-Dichloropropane | MS | 96.0 | %REC |
| 13115740 | Ethylbenzene | MS | 96.0 | %REC |
| 13115740 | Tetrachloroethene | MS | 96.0 | %REC |
| 13115740 | Trichloroethene | MS | 96.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13015076 | Methylene Chloride | MSD | 96.0 | %REC |
| 13025103 | Carbon Tetrachloride | MSD | 96.0 | %REC |
| 13025103 | Carbon Tetrachloride | MSD | 96.0 | %REC |
| 13025130 | Ethylbenzene | MSD | 96.0 | %REC |
| 13025131 | 1,3-Dichlorobenzene | MSD | 96.0 | %REC |
| 13035157 | Toluene | MSD | 96.0 | %REC |
| 13035198 | Ethylbenzene | MSD | 96.0 | %REC |
| 13045288 | 1,2-Dibromoethane | MSD | 96.0 | %REC |
| 13055341 | Methylene Chloride | MSD | 96.0 | %REC |
| 13065413 | 1,2-Dichloropropane | MSD | 96.0 | %REC |
| 13065413 | Ethylbenzene | MSD | 96.0 | %REC |
| 13065452 | 1,3-Dichlorobenzene | MSD | 96.0 | %REC |
| 13085538 | 1,1,1-Trichloroethane | MSD | 96.0 | %REC |
| 13085548 | Methylene Chloride | MSD | 96.0 | %REC |
| 13115740 | trans-1,2-Dichloroethene | MSD | 96.0 | %REC |
| 13115760 | Ethylbenzene | MSD | 96.0 | %REC |
| 13125786 | 1,2-Dichloropropane | MSD | 96.0 | %REC |
| 13125786 | Bromodichloromethane | MSD | 96.0 | %REC |
| 13085546 | Zinc | MS | 96.2 | %REC |
| 13115725 | Bromodichloromethane | MS | 96.2 | %REC |
| 13045288 | Ethylbenzene | MSD | 96.2 | %REC |
| 13055302 | Chromium | MS | 96.3 | %REC |
| 13055361 | Chromium | MS | 96.3 | %REC |
| 13045288 | 1,2-Dichloropropane | MS | 96.3 | %REC |
| 13045288 | Total Xylenes | MS | 96.3 | %REC |
| 13115725 | Uranium | MS | 96.4 | %REC |
| 13105704 | 1,3-Dichlorobenzene | MS | 96.4 | %REC |
| 13065393 | Chromium | MS | 96.5 | %REC |
| 13075495 | Boron | MS | 96.5 | %REC |
| 13105704 | 1,2,4-Trichlorobenzene | MS | 96.5 | %REC |
| 13075493 | Uranium | MS | 96.6 | %REC |
| 13085546 | Selenium | MS | 96.6 | %REC |
| 13055343 | Zinc | MS | 96.7 | %REC |
| 13105691 | Chromium | MS | 96.7 | %REC |
| 13115725 | 1,2-Dichloroethane | MS | 96.7 | %REC |
| 13105704 | Tetrachloroethene | MSD | 96.7 | %REC |
| 13055304 | Lead | MS | 96.8 | %REC |
| 14015855 | Uranium | MS | 96.8 | %REC |
| 13105704 | 1,2-Dichlorobenzene | MS | 96.8 | %REC |
| 13115725 | Vinyl Chloride | MS | 96.8 | %REC |
| 13045288 | Trichloroethene | MSD | 96.9 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13015076 | Uranium | MS | 97.0 | %REC |
| 13025122 | Arsenic | MS | 97.0 | %REC |
| 13025141 | Uranium | MS | 97.0 | %REC |
| 13045275 | Uranium | MS | 97.0 | %REC |
| 13045278 | Nickel | MS | 97.0 | %REC |
| 13075521 | Beryllium | MS | 97.0 | %REC |
| 13105685 | Uranium | MS | 97.0 | %REC |
| 13115740 | Zinc | MS | 97.0 | %REC |
| 13115755 | Uranium | MS | 97.0 | %REC |
| 14015882 | Nickel | MS | 97.0 | %REC |
| 14025915 | Arsenic | MS | 97.0 | %REC |
| 14025915 | Cadmium | MS | 97.0 | %REC |
| 13015076 | Silver | MSD | 97.0 | %REC |
| 13025103 | Mercury | MSD | 97.0 | %REC |
| 13025122 | Lead | MSD | 97.0 | %REC |
| 13115722 | Boron | MSD | 97.0 | %REC |
| 13115722 | Zinc | MSD | 97.0 | %REC |
| 13115740 | Beryllium | MSD | 97.0 | %REC |
| 14015882 | Beryllium | MSD | 97.0 | %REC |
| 13015076 | Bromodichloromethane | MS | 97.0 | %REC |
| 13015076 | Ethylbenzene | MS | 97.0 | %REC |
| 13025103 | Tetrachloroethene | MS | 97.0 | %REC |
| 13025103 | Tetrachloroethene | MS | 97.0 | %REC |
| 13025106 | Bromodichloromethane | MS | 97.0 | %REC |
| 13025106 | Bromodichloromethane | MS | 97.0 | %REC |
| 13025115 | 1,3-Dichlorobenzene | MS | 97.0 | %REC |
| 13025122 | Carbon Tetrachloride | MS | 97.0 | %REC |
| 13025130 | Benzene | MS | 97.0 | %REC |
| 13025130 | Chlorobenzene | MS | 97.0 | %REC |
| 13025139 | Chloroform | MS | 97.0 | %REC |
| 13025139 | Ethylbenzene | MS | 97.0 | %REC |
| 13045278 | Benzene | MS | 97.0 | %REC |
| 13045278 | trans-1,2-Dichloroethene | MS | 97.0 | %REC |
| 13045288 | Methylene Chloride | MS | 97.0 | %REC |
| 13055297 | Chloroform | MS | 97.0 | %REC |
| 13055309 | 1,1,1-Trichloroethane | MS | 97.0 | %REC |
| 13055309 | 1,3-Dichlorobenzene | MS | 97.0 | %REC |
| 13055309 | Bromodichloromethane | MS | 97.0 | %REC |
| 13055309 | Tetrachloroethene | MS | 97.0 | %REC |
| 13055309 | Tetrachloroethene | MS | 97.0 | %REC |
| 13055309 | Trichloroethene | MS | 97.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13055335 | 1,3-Dichlorobenzene | MS | 97.0 | %REC |
| 13055335 | Toluene | MS | 97.0 | %REC |
| 13055341 | Methylene Chloride | MS | 97.0 | %REC |
| 13055374 | 1,2-Dichloropropane | MS | 97.0 | %REC |
| 13055374 | Ethylbenzene | MS | 97.0 | %REC |
| 13065378 | Bromodichloromethane | MS | 97.0 | %REC |
| 13065452 | 1,3-Dichlorobenzene | MS | 97.0 | %REC |
| 13075486 | trans-1,2-Dichloroethene | MS | 97.0 | %REC |
| 13075491 | Ethylbenzene | MS | 97.0 | %REC |
| 13075491 | trans-1,2-Dichloroethene | MS | 97.0 | %REC |
| 13085548 | 1,2-Dichloropropane | MS | 97.0 | %REC |
| 13085548 | Carbon Tetrachloride | MS | 97.0 | %REC |
| 13085548 | Tetrachloroethene | MS | 97.0 | %REC |
| 13125786 | Carbon Tetrachloride | MS | 97.0 | %REC |
| 13015076 | Bromodichloromethane | MSD | 97.0 | %REC |
| 13015076 | Carbon Tetrachloride | MSD | 97.0 | %REC |
| 13015076 | Chlorobenzene | MSD | 97.0 | %REC |
| 13015076 | Ethylbenzene | MSD | 97.0 | %REC |
| 13025103 | 1,3-Dichlorobenzene | MSD | 97.0 | %REC |
| 13025103 | 1,3-Dichlorobenzene | MSD | 97.0 | %REC |
| 13025116 | Chlorobenzene | MSD | 97.0 | %REC |
| 13025116 | Chlorobenzene | MSD | 97.0 | %REC |
| 13025130 | Chlorobenzene | MSD | 97.0 | %REC |
| 13045233 | 1,3-Dichlorobenzene | MSD | 97.0 | %REC |
| 13055309 | 1,2-Dichloropropane | MSD | 97.0 | %REC |
| 13055309 | Benzene | MSD | 97.0 | %REC |
| 13055309 | Chlorobenzene | MSD | 97.0 | %REC |
| 13055309 | Ethylbenzene | MSD | 97.0 | %REC |
| 13055335 | Benzene | MSD | 97.0 | %REC |
| 13055335 | Trichloroethene | MSD | 97.0 | %REC |
| 13055341 | Bromodichloromethane | MSD | 97.0 | %REC |
| 13075491 | Bromodichloromethane | MSD | 97.0 | %REC |
| 13105677 | Ethylbenzene | MSD | 97.0 | %REC |
| 13115740 | Ethylbenzene | MSD | 97.0 | %REC |
| 13115772 | 1,2-Dichloropropane | MSD | 97.0 | %REC |
| 13055304 | Copper | MS | 97.1 | %REC |
| 13065444 | Cadmium | MS | 97.1 | %REC |
| 13065444 | Uranium | MS | 97.1 | %REC |
| 13105704 | 1,4-Dichlorobenzene | MS | 97.1 | %REC |
| 13075493 | Cadmium | MS | 97.2 | %REC |
| 13085545 | Cadmium | MS | 97.2 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13115725 | Lead | MS | 97.3 | %REC |
| 13055343 | Chromium | MS | 97.5 | %REC |
| 13125805 | Uranium | MS | 97.5 | %REC |
| 13075521 | Hardness as CaCO3 | MS | 97.5 | %REC |
| 13045288 | trans-1,3-Dichloropropene | MS | 97.5 | %REC |
| 13105674 | Chromium | MS | 97.6 | %REC |
| 13045288 | Trichloroethene | MS | 97.6 | %REC |
| 13065444 | Mercury | MS | 97.7 | %REC |
| 13125805 | NO2+NO3 as N | MS | 97.7 | %REC |
| 13105704 | 1,1,2-Trichloroethane | MS | 97.7 | %REC |
| 13045287 | Boron | MS | 97.8 | %REC |
| 13055304 | Beryllium | MS | 97.8 | %REC |
| 13075495 | Selenium | MS | 97.8 | %REC |
| 13095608 | Beryllium | MS | 97.8 | %REC |
| 13095621 | Selenium | MS | 97.8 | %REC |
| 13105674 | Uranium | MS | 97.9 | %REC |
| 13015076 | Boron | MS | 98.0 | %REC |
| 13025103 | Mercury | MS | 98.0 | %REC |
| 13045278 | Copper | MS | 98.0 | %REC |
| 13045278 | Uranium | MS | 98.0 | %REC |
| 13055335 | Uranium | MS | 98.0 | %REC |
| 13075493 | Silver | MS | 98.0 | %REC |
| 13085550 | Boron | MS | 98.0 | %REC |
| 13085563 | Beryllium | MS | 98.0 | %REC |
| 13085563 | Zinc | MS | 98.0 | %REC |
| 13105674 | Nickel | MS | 98.0 | %REC |
| 13115722 | Uranium | MS | 98.0 | %REC |
| 13115740 | Beryllium | MS | 98.0 | %REC |
| 14015855 | Cadmium | MS | 98.0 | %REC |
| 14015882 | Zinc | MS | 98.0 | %REC |
| 14025915 | Chromium | MS | 98.0 | %REC |
| 14025915 | Copper | MS | 98.0 | %REC |
| 14025915 | Selenium | MS | 98.0 | %REC |
| 13025122 | Chromium | MSD | 98.0 | %REC |
| 13045278 | Nickel | MSD | 98.0 | %REC |
| 13115722 | Beryllium | MSD | 98.0 | %REC |
| 13115722 | Lead | MSD | 98.0 | %REC |
| 13115722 | Uranium | MSD | 98.0 | %REC |
| 14015882 | Nickel | MSD | 98.0 | %REC |
| 14025915 | Cadmium | MSD | 98.0 | %REC |
| 13095613 | Nitrate+Nitrite as N | MS | 98.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13115740 | Nitrate+Nitrite as N | MSD | 98.0 | %REC |
| 13015076 | Carbon Tetrachloride | MS | 98.0 | %REC |
| 13025106 | Carbon Tetrachloride | MS | 98.0 | %REC |
| 13025106 | Carbon Tetrachloride | MS | 98.0 | %REC |
| 13025106 | Chloroform | MS | 98.0 | %REC |
| 13025106 | Chloroform | MS | 98.0 | %REC |
| 13025106 | Toluene | MS | 98.0 | %REC |
| 13025106 | Toluene | MS | 98.0 | %REC |
| 13025111 | Benzene | MS | 98.0 | %REC |
| 13025111 | trans-1,2-Dichloroethene | MS | 98.0 | %REC |
| 13025115 | 1,1,1-Trichloroethane | MS | 98.0 | %REC |
| 13025115 | 1,2-Dichloropropane | MS | 98.0 | %REC |
| 13025115 | Benzene | MS | 98.0 | %REC |
| 13025115 | Toluene | MS | 98.0 | %REC |
| 13025115 | trans-1,2-Dichloroethene | MS | 98.0 | %REC |
| 13025116 | Benzene | MS | 98.0 | %REC |
| 13025116 | Benzene | MS | 98.0 | %REC |
| 13025130 | Trichloroethene | MS | 98.0 | %REC |
| 13025131 | 1,2-Dichloropropane | MS | 98.0 | %REC |
| 13025131 | Toluene | MS | 98.0 | %REC |
| 13025138 | 1,1,1-Trichloroethane | MS | 98.0 | %REC |
| 13025138 | 1,1-Dichloroethene | MS | 98.0 | %REC |
| 13025138 | Carbon Tetrachloride | MS | 98.0 | %REC |
| 13025139 | Carbon Tetrachloride | MS | 98.0 | %REC |
| 13025139 | Chlorobenzene | MS | 98.0 | %REC |
| 13035197 | Chloroform | MS | 98.0 | %REC |
| 13035197 | Tetrachloroethene | MS | 98.0 | %REC |
| 13035198 | trans-1,2-Dichloroethene | MS | 98.0 | %REC |
| 13045233 | Carbon Tetrachloride | MS | 98.0 | %REC |
| 13055309 | Carbon Tetrachloride | MS | 98.0 | %REC |
| 13055309 | trans-1,2-Dichloroethene | MS | 98.0 | %REC |
| 13055341 | 1,1,1-Trichloroethane | MS | 98.0 | %REC |
| 13055341 | 1,2-Dichloropropane | MS | 98.0 | %REC |
| 13055341 | Benzene | MS | 98.0 | %REC |
| 13055341 | Chloroform | MS | 98.0 | %REC |
| 13055374 | 1,3-Dichlorobenzene | MS | 98.0 | %REC |
| 13065413 | 1,3-Dichlorobenzene | MS | 98.0 | %REC |
| 13065413 | Chlorobenzene | MS | 98.0 | %REC |
| 13075491 | Tetrachloroethene | MS | 98.0 | %REC |
| 13075491 | Toluene | MS | 98.0 | %REC |
| 13085548 | 1,1,1-Trichloroethane | MS | 98.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13085563 | Trichloroethene | MS | 98.0 | %REC |
| 13115740 | 1,3-Dichlorobenzene | MS | 98.0 | %REC |
| 13025103 | Trichloroethene | MSD | 98.0 | %REC |
| 13025103 | Trichloroethene | MSD | 98.0 | %REC |
| 13025111 | Chlorobenzene | MSD | 98.0 | %REC |
| 13025115 | 1,3-Dichlorobenzene | MSD | 98.0 | %REC |
| 13025115 | Chlorobenzene | MSD | 98.0 | %REC |
| 13045288 | cis-1,2-Dichloroethene | MSD | 98.0 | %REC |
| 13055309 | 1,3-Dichlorobenzene | MSD | 98.0 | %REC |
| 13055309 | Chlorobenzene | MSD | 98.0 | %REC |
| 13055309 | Tetrachloroethene | MSD | 98.0 | %REC |
| 13055309 | Trichloroethene | MSD | 98.0 | %REC |
| 13055309 | Trichloroethene | MSD | 98.0 | %REC |
| 13055328 | Chlorobenzene | MSD | 98.0 | %REC |
| 13055328 | Ethylbenzene | MSD | 98.0 | %REC |
| 13055335 | 1,1,1-Trichloroethane | MSD | 98.0 | %REC |
| 13055335 | 1,2-Dichloropropane | MSD | 98.0 | %REC |
| 13055335 | Carbon Tetrachloride | MSD | 98.0 | %REC |
| 13055335 | Ethylbenzene | MSD | 98.0 | %REC |
| 13055341 | Carbon Tetrachloride | MSD | 98.0 | %REC |
| 13065413 | Toluene | MSD | 98.0 | %REC |
| 13075491 | 1,2-Dichloropropane | MSD | 98.0 | %REC |
| 13085538 | Bromodichloromethane | MSD | 98.0 | %REC |
| 13115740 | Tetrachloroethene | MSD | 98.0 | %REC |
| 13115760 | 1,2-Dichloropropane | MSD | 98.0 | %REC |
| 13115760 | Tetrachloroethene | MSD | 98.0 | %REC |
| 13125786 | Chloroform | MSD | 98.0 | %REC |
| 13045285 | Uranium | MS | 98.1 | %REC |
| 13045288 | Ethylbenzene | MS | 98.1 | %REC |
| 13085546 | Chromium | MS | 98.2 | %REC |
| 13095621 | Silver | MS | 98.2 | %REC |
| 13095627 | Silver | MS | 98.2 | %REC |
| 13045288 | trans-1,3-Dichloropropene | MSD | 98.2 | %REC |
| 14015855 | Silver | MS | 98.3 | %REC |
| 13055343 | Hardness as CaCO3 | MS | 98.3 | %REC |
| 13055361 | Hardness as CaCO3 | MS | 98.3 | %REC |
| 13045287 | Chromium | MS | 98.4 | %REC |
| 13125799 | Uranium | MS | 98.4 | %REC |
| 13045288 | Chloroform | MSD | 98.5 | %REC |
| 13065393 | Silver | MS | 98.6 | %REC |
| 13065444 | Nickel | MS | 98.6 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13085546 | Boron | MS | 98.6 | %REC |
| 13125799 | Chromium | MS | 98.6 | %REC |
| 13055304 | Arsenic | MS | 98.7 | %REC |
| 13105665 | Chromium | MS | 98.7 | %REC |
| 13115725 | Nickel | MS | 98.7 | %REC |
| 13105665 | Hardness as CaCO3 | MS | 98.7 | %REC |
| 13105666 | Hardness as CaCO3 | MS | 98.7 | %REC |
| 13045288 | Styrene | MS | 98.7 | %REC |
| 13045287 | Selenium | MS | 98.8 | %REC |
| 13065444 | Zinc | MS | 98.8 | %REC |
| 13045288 | trans-1,2-Dichloroethene | MS | 98.8 | %REC |
| 13055304 | Silver | MS | 98.9 | %REC |
| 13065444 | Beryllium | MS | 98.9 | %REC |
| 14015855 | Chromium | MS | 98.9 | %REC |
| 14015856 | Chromium | MS | 98.9 | %REC |
| 13065444 | Hardness as CaCO3 | MS | 98.9 | %REC |
| 13075455 | Hardness as CaCO3 | MS | 98.9 | %REC |
| 13095608 | Hardness as CaCO3 | MS | 98.9 | %REC |
| 13095609 | Hardness as CaCO3 | MS | 98.9 | %REC |
| 13045288 | Styrene | MSD | 98.9 | %REC |
| 13045288 | trans-1,3-Dichloropropene | MSD | 98.9 | %REC |
| 13025122 | Silver | MS | 99.0 | %REC |
| 13045278 | Zinc | MS | 99.0 | %REC |
| 13075472 | Uranium | MS | 99.0 | %REC |
| 13085550 | Copper | MS | 99.0 | %REC |
| 13085563 | Uranium | MS | 99.0 | %REC |
| 13095621 | Silver | MS | 99.0 | %REC |
| 13105674 | Cadmium | MS | 99.0 | %REC |
| 13115722 | Lead | MS | 99.0 | %REC |
| 13115722 | Nickel | MS | 99.0 | %REC |
| 13115722 | Zinc | MS | 99.0 | %REC |
| 13125786 | Arsenic | MS | 99.0 | %REC |
| 14015882 | Lead | MS | 99.0 | %REC |
| 14025915 | Silver | MS | 99.0 | %REC |
| 13025122 | Beryllium | MSD | 99.0 | %REC |
| 13025122 | Mercury | MSD | 99.0 | %REC |
| 13025122 | Selenium | MSD | 99.0 | %REC |
| 13025141 | Arsenic | MSD | 99.0 | %REC |
| 13045278 | Copper | MSD | 99.0 | %REC |
| 13045278 | Uranium | MSD | 99.0 | %REC |
| 13085550 | Copper | MSD | 99.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13115722 | Nickel | MSD | 99.0 | %REC |
| 13115722 | Uranium | MSD | 99.0 | %REC |
| 14015882 | Mercury | MSD | 99.0 | %REC |
| 14025915 | Arsenic | MSD | 99.0 | %REC |
| 14025915 | Chromium | MSD | 99.0 | %REC |
| 14025915 | Copper | MSD | 99.0 | %REC |
| 14025915 | Selenium | MSD | 99.0 | %REC |
| 14025915 | Silver | MSD | 99.0 | %REC |
| 13055362 | Hardness as CaCO3 | MS | 99.0 | %REC |
| 13065393 | Hardness as CaCO3 | MS | 99.0 | %REC |
| 13085544 | Nitrate+Nitrite as N | MS | 99.0 | %REC |
| 13085545 | Hardness as CaCO3 | MS | 99.0 | %REC |
| 13085546 | Hardness as CaCO3 | MS | 99.0 | %REC |
| 13105710 | Nitrate+Nitrite as N | MS | 99.0 | %REC |
| 13065378 | Nitrate+Nitrite as N | MSD | 99.0 | %REC |
| 13085544 | Nitrate+Nitrite as N | MSD | 99.0 | %REC |
| 13025106 | 1,1,1-Trichloroethane | MS | 99.0 | %REC |
| 13025106 | 1,1,1-Trichloroethane | MS | 99.0 | %REC |
| 13025106 | 1,2-Dichloropropane | MS | 99.0 | %REC |
| 13025106 | 1,2-Dichloropropane | MS | 99.0 | %REC |
| 13025111 | Ethylbenzene | MS | 99.0 | %REC |
| 13025111 | Toluene | MS | 99.0 | %REC |
| 13025116 | trans-1,2-Dichloroethene | MS | 99.0 | %REC |
| 13025116 | trans-1,2-Dichloroethene | MS | 99.0 | %REC |
| 13035157 | 1,3-Dichlorobenzene | MS | 99.0 | %REC |
| 13035157 | trans-1,2-Dichloroethene | MS | 99.0 | %REC |
| 13035198 | Ethylbenzene | MS | 99.0 | %REC |
| 13055309 | 1,1-Dichloroethene | MS | 99.0 | %REC |
| 13065430 | Carbon Tetrachloride | MS | 99.0 | %REC |
| 13065452 | Chlorobenzene | MS | 99.0 | %REC |
| 13075471 | 1,3-Dichlorobenzene | MS | 99.0 | %REC |
| 13075471 | Chlorobenzene | MS | 99.0 | %REC |
| 13085538 | Benzene | MS | 99.0 | %REC |
| 13085563 | 1,2-Dichloropropane | MS | 99.0 | %REC |
| 13085563 | trans-1,2-Dichloroethene | MS | 99.0 | %REC |
| 13105677 | Benzene | MS | 99.0 | %REC |
| 13105677 | Ethylbenzene | MS | 99.0 | %REC |
| 13115740 | Chlorobenzene | MS | 99.0 | %REC |
| 13115740 | Chloroform | MS | 99.0 | %REC |
| 13115772 | Chloroform | MS | 99.0 | %REC |
| 13015076 | 1,1,1-Trichloroethane | MSD | 99.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13025103 | Chloroform | MSD | 99.0 | %REC |
| 13025103 | Chloroform | MSD | 99.0 | %REC |
| 13025106 | 1,1,1-Trichloroethane | MSD | 99.0 | %REC |
| 13025111 | Benzene | MSD | 99.0 | %REC |
| 13025115 | 1,2-Dichloropropane | MSD | 99.0 | %REC |
| 13025115 | Benzene | MSD | 99.0 | %REC |
| 13025115 | Toluene | MSD | 99.0 | %REC |
| 13025130 | Tetrachloroethene | MSD | 99.0 | %REC |
| 13025131 | Chlorobenzene | MSD | 99.0 | %REC |
| 13035198 | Carbon Tetrachloride | MSD | 99.0 | %REC |
| 13035211 | Ethylbenzene | MSD | 99.0 | %REC |
| 13045278 | Tetrachloroethene | MSD | 99.0 | %REC |
| 13045278 | Trichloroethene | MSD | 99.0 | %REC |
| 13055297 | 1,1-Dichloroethene | MSD | 99.0 | %REC |
| 13055309 | 1,1-Dichloroethene | MSD | 99.0 | %REC |
| 13055309 | 1,3-Dichlorobenzene | MSD | 99.0 | %REC |
| 13055309 | Chloroform | MSD | 99.0 | %REC |
| 13055341 | 1,1,1-Trichloroethane | MSD | 99.0 | %REC |
| 13055341 | Chloroform | MSD | 99.0 | %REC |
| 13055374 | 1,2-Dichloropropane | MSD | 99.0 | %REC |
| 13055374 | Toluene | MSD | 99.0 | %REC |
| 13065452 | Chlorobenzene | MSD | 99.0 | %REC |
| 13075471 | Chlorobenzene | MSD | 99.0 | %REC |
| 13085538 | Chlorobenzene | MSD | 99.0 | %REC |
| 13085538 | Toluene | MSD | 99.0 | %REC |
| 13085538 | trans-1,2-Dichloroethene | MSD | 99.0 | %REC |
| 13085563 | Trichloroethene | MSD | 99.0 | %REC |
| 13105677 | Bromodichloromethane | MSD | 99.0 | %REC |
| 13115740 | 1,2-Dichloropropane | MSD | 99.0 | %REC |
| 13125786 | 1,1-Dichloroethene | MSD | 99.0 | %REC |
| 13045285 | Beryllium | MS | 99.1 | %REC |
| 13085546 | Mercury | MS | 99.1 | %REC |
| 13065444 | Chromium | MS | 99.2 | %REC |
| 13105704 | 1,2-Dichloropropane | MS | 99.2 | %REC |
| 13055361 | Uranium | MS | 99.3 | %REC |
| 13065444 | Arsenic | MS | 99.3 | %REC |
| 13085545 | Chromium | MS | 99.3 | %REC |
| 13045288 | Methylene Chloride | MSD | 99.3 | %REC |
| 13045226 | Silver | MS | 99.4 | %REC |
| 13045288 | trans-1,2-Dichloroethene | MSD | 99.4 | %REC |
| 13045226 | Boron | MS | 99.5 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13075493 | Chromium | MS | 99.5 | %REC |
| 13075495 | Boron | MS | 99.5 | %REC |
| 13075495 | Chromium | MS | 99.5 | %REC |
| 13055327 | Hardness as CaCO3 | MS | 99.5 | %REC |
| 13105674 | Hardness as CaCO3 | MS | 99.5 | %REC |
| 13045288 | Benzene | MSD | 99.5 | %REC |
| 13015059 | Chromium | MS | 99.6 | %REC |
| 13075495 | Zinc | MS | 99.6 | %REC |
| 13045285 | Hardness as CaCO3 | MS | 99.6 | %REC |
| 13045287 | Hardness as CaCO3 | MS | 99.6 | %REC |
| 13055302 | Hardness as CaCO3 | MS | 99.6 | %REC |
| 13055304 | Hardness as CaCO3 | MS | 99.6 | %REC |
| 13045288 | Benzene | MS | 99.6 | %REC |
| 13045288 | 1,2-Dichloroethane | MSD | 99.6 | %REC |
| 13055327 | Beryllium | MS | 99.7 | %REC |
| 13075495 | Uranium | MS | 99.7 | %REC |
| 13105674 | Lead | MS | 99.7 | %REC |
| 14015856 | Silver | MS | 99.7 | %REC |
| 13015059 | Hardness as CaCO3 | MS | 99.7 | %REC |
| 13095621 | Hardness as CaCO3 | MS | 99.7 | %REC |
| 13095627 | Hardness as CaCO3 | MS | 99.7 | %REC |
| 13045288 | Chloroform | MS | 99.7 | %REC |
| 13115725 | Vinyl Chloride | MSD | 99.7 | %REC |
| 13065444 | Lead | MS | 99.8 | %REC |
| 13075495 | Nickel | MS | 99.8 | %REC |
| 13105665 | Uranium | MS | 99.8 | %REC |
| 13125799 | Hardness as CaCO3 | MS | 99.8 | %REC |
| 13055343 | Nickel | MS | 99.9 | %REC |
| 13125843 | Hardness as CaCO3 | MS | 99.9 | %REC |
| 13045288 | cis-1,2-Dichloroethene | MS | 99.9 | %REC |
| 13105704 | Benzene | MS | 99.9 | %REC |
| 13015076 | Silver | MS | 100.0 | %REC |
| 13025122 | Mercury | MS | 100.0 | %REC |
| 13045226 | Cadmium | MS | 100.0 | %REC |
| 13045278 | Beryllium | MS | 100.0 | %REC |
| 13045278 | Chromium | MS | 100.0 | %REC |
| 13045278 | Selenium | MS | 100.0 | %REC |
| 13045287 | Beryllium | MS | 100.0 | %REC |
| 13045287 | Cadmium | MS | 100.0 | %REC |
| 13045287 | Lead | MS | 100.0 | %REC |
| 13055304 | Uranium | MS | 100.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13065393 | Beryllium | MS | 100.0 | %REC |
| 13065394 | Uranium | MS | 100.0 | %REC |
| 13075495 | Silver | MS | 100.0 | %REC |
| 13085550 | Chromium | MS | 100.0 | %REC |
| 13105674 | Silver | MS | 100.0 | %REC |
| 13115725 | Cadmium | MS | 100.0 | %REC |
| 13115725 | Selenium | MS | 100.0 | %REC |
| 13115740 | Uranium | MS | 100.0 | %REC |
| 13125839 | Uranium | MS | 100.0 | %REC |
| 13125844 | Uranium | MS | 100.0 | %REC |
| 14015856 | Cadmium | MS | 100.0 | %REC |
| 14015882 | Arsenic | MS | 100.0 | %REC |
| 14015882 | Cadmium | MS | 100.0 | %REC |
| 14015882 | Chromium | MS | 100.0 | %REC |
| 13025122 | Arsenic | MSD | 100.0 | %REC |
| 13025122 | Boron | MSD | 100.0 | %REC |
| 13025122 | Cadmium | MSD | 100.0 | %REC |
| 13025141 | Selenium | MSD | 100.0 | %REC |
| 13025141 | Silver | MSD | 100.0 | %REC |
| 13045278 | Boron | MSD | 100.0 | %REC |
| 13045278 | Chromium | MSD | 100.0 | %REC |
| 13045278 | Selenium | MSD | 100.0 | %REC |
| 13045278 | Zinc | MSD | 100.0 | %REC |
| 13085550 | Arsenic | MSD | 100.0 | %REC |
| 13085550 | Chromium | MSD | 100.0 | %REC |
| 13085563 | Beryllium | MSD | 100.0 | %REC |
| 13085563 | Zinc | MSD | 100.0 | %REC |
| 13115722 | Chromium | MSD | 100.0 | %REC |
| 13115722 | Silver | MSD | 100.0 | %REC |
| 14015882 | Lead | MSD | 100.0 | %REC |
| 13025101 | Nitrate+Nitrite as N | MS | 100.0 | %REC |
| 13065438 | Nitrate+Nitrite as N | MS | 100.0 | %REC |
| 13075493 | Hardness as CaCO3 | MS | 100.0 | %REC |
| 13075507 | Nitrate+Nitrite as N | MS | 100.0 | %REC |
| 14015855 | Hardness as CaCO3 | MS | 100.0 | %REC |
| 14015856 | Hardness as CaCO3 | MS | 100.0 | %REC |
| 13095595 | Nitrate+Nitrite as N | MSD | 100.0 | %REC |
| 13105710 | Nitrate+Nitrite as N | MSD | 100.0 | %REC |
| 13115760 | Nitrate+Nitrite as N | MSD | 100.0 | %REC |
| 13025103 | 1,1-Dichloroethene | MS | 100.0 | %REC |
| 13025103 | 1,1-Dichloroethene | MS | 100.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13025106 | Benzene | MS | 100.0 | %REC |
| 13025106 | Benzene | MS | 100.0 | %REC |
| 13025106 | Chlorobenzene | MS | 100.0 | %REC |
| 13025106 | Chlorobenzene | MS | 100.0 | %REC |
| 13025106 | trans-1,2-Dichloroethene | MS | 100.0 | %REC |
| 13025106 | trans-1,2-Dichloroethene | MS | 100.0 | %REC |
| 13025116 | 1,2-Dichloropropane | MS | 100.0 | %REC |
| 13025116 | 1,2-Dichloropropane | MS | 100.0 | %REC |
| 13025130 | 1,3-Dichlorobenzene | MS | 100.0 | %REC |
| 13025130 | Toluene | MS | 100.0 | %REC |
| 13025131 | Benzene | MS | 100.0 | %REC |
| 13035197 | Benzene | MS | 100.0 | %REC |
| 13035197 | trans-1,2-Dichloroethene | MS | 100.0 | %REC |
| 13035198 | Benzene | MS | 100.0 | %REC |
| 13035198 | Chlorobenzene | MS | 100.0 | %REC |
| 13045278 | Chloroform | MS | 100.0 | %REC |
| 13045288 | trans-1,3-Dichloropropene | MS | 100.0 | %REC |
| 13055335 | Chloroform | MS | 100.0 | %REC |
| 13065378 | 1,1,1-Trichloroethane | MS | 100.0 | %REC |
| 13065378 | 1,3-Dichlorobenzene | MS | 100.0 | %REC |
| 13075491 | Chloroform | MS | 100.0 | %REC |
| 13085538 | Chloroform | MS | 100.0 | %REC |
| 13085538 | trans-1,2-Dichloroethene | MS | 100.0 | %REC |
| 13085548 | Trichloroethene | MS | 100.0 | %REC |
| 13085563 | Benzene | MS | 100.0 | %REC |
| 13105704 | Toluene | MS | 100.0 | %REC |
| 13115772 | Bromodichloromethane | MS | 100.0 | %REC |
| 13025103 | Bromodichloromethane | MSD | 100.0 | %REC |
| 13025103 | Bromodichloromethane | MSD | 100.0 | %REC |
| 13025103 | Chlorobenzene | MSD | 100.0 | %REC |
| 13025103 | Chlorobenzene | MSD | 100.0 | %REC |
| 13025103 | trans-1,2-Dichloroethene | MSD | 100.0 | %REC |
| 13025103 | trans-1,2-Dichloroethene | MSD | 100.0 | %REC |
| 13025106 | 1,3-Dichlorobenzene | MSD | 100.0 | %REC |
| 13025106 | Methylene Chloride | MSD | 100.0 | %REC |
| 13025111 | 1,2-Dichloropropane | MSD | 100.0 | %REC |
| 13025111 | Toluene | MSD | 100.0 | %REC |
| 13025116 | Toluene | MSD | 100.0 | %REC |
| 13025116 | Toluene | MSD | 100.0 | %REC |
| 13025130 | 1,2-Dichloropropane | MSD | 100.0 | %REC |
| 13025130 | 1,3-Dichlorobenzene | MSD | 100.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13025131 | Benzene | MSD | 100.0 | %REC |
| 13025138 | Ethylbenzene | MSD | 100.0 | %REC |
| 13025139 | Carbon Tetrachloride | MSD | 100.0 | %REC |
| 13035197 | Benzene | MSD | 100.0 | %REC |
| 13035197 | Chlorobenzene | MSD | 100.0 | %REC |
| 13035198 | Chlorobenzene | MSD | 100.0 | %REC |
| 13035198 | Tetrachloroethene | MSD | 100.0 | %REC |
| 13035211 | Benzene | MSD | 100.0 | %REC |
| 13035211 | trans-1,2-Dichloroethene | MSD | 100.0 | %REC |
| 13045288 | Bromodichloromethane | MSD | 100.0 | %REC |
| 13045288 | Styrene | MSD | 100.0 | %REC |
| 13055297 | 1,1,1-Trichloroethane | MSD | 100.0 | %REC |
| 13055309 | Chloroform | MSD | 100.0 | %REC |
| 13055309 | Tetrachloroethene | MSD | 100.0 | %REC |
| 13055328 | Toluene | MSD | 100.0 | %REC |
| 13055328 | trans-1,2-Dichloroethene | MSD | 100.0 | %REC |
| 13055341 | Benzene | MSD | 100.0 | %REC |
| 13065413 | 1,1-Dichloroethene | MSD | 100.0 | %REC |
| 13065413 | Bromodichloromethane | MSD | 100.0 | %REC |
| 13075491 | 1,1,1-Trichloroethane | MSD | 100.0 | %REC |
| 13085538 | Benzene | MSD | 100.0 | %REC |
| 13085548 | Benzene | MSD | 100.0 | %REC |
| 13085550 | 1,3-Dichlorobenzene | MSD | 100.0 | %REC |
| 13085563 | Benzene | MSD | 100.0 | %REC |
| 13105677 | Benzene | MSD | 100.0 | %REC |
| 13115740 | 1,1,1-Trichloroethane | MSD | 100.0 | %REC |
| 13115740 | 1,3-Dichlorobenzene | MSD | 100.0 | %REC |
| 13115740 | Chlorobenzene | MSD | 100.0 | %REC |
| 13115760 | Chloroform | MSD | 100.0 | %REC |
| 13035200 | Chromium | MS | 101.0 | %REC |
| 13045226 | Cadmium | MS | 101.0 | %REC |
| 13045226 | Chromium | MS | 101.0 | %REC |
| 13045226 | Lead | MS | 101.0 | %REC |
| 13045226 | Mercury | MS | 101.0 | %REC |
| 13045226 | Nickel | MS | 101.0 | %REC |
| 13045226 | Zinc | MS | 101.0 | %REC |
| 13045278 | Boron | MS | 101.0 | %REC |
| 13045287 | Nickel | MS | 101.0 | %REC |
| 13045287 | Silver | MS | 101.0 | %REC |
| 13045287 | Silver | MS | 101.0 | %REC |
| 13045287 | Uranium | MS | 101.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13045287 | Zinc | MS | 101.0 | %REC |
| 13055335 | Mercury | MS | 101.0 | %REC |
| 13055343 | Boron | MS | 101.0 | %REC |
| 13055343 | Cadmium | MS | 101.0 | %REC |
| 13055361 | Beryllium | MS | 101.0 | %REC |
| 13065444 | Cadmium | MS | 101.0 | %REC |
| 13075495 | Uranium | MS | 101.0 | %REC |
| 13085546 | Nickel | MS | 101.0 | %REC |
| 13085546 | Silver | MS | 101.0 | %REC |
| 13085550 | Arsenic | MS | 101.0 | %REC |
| 13085550 | Uranium | MS | 101.0 | %REC |
| 13085563 | Arsenic | MS | 101.0 | %REC |
| 13085563 | Nickel | MS | 101.0 | %REC |
| 13095608 | Silver | MS | 101.0 | %REC |
| 13105665 | Silver | MS | 101.0 | %REC |
| 13105674 | Beryllium | MS | 101.0 | %REC |
| 13105674 | Silver | MS | 101.0 | %REC |
| 13115722 | Beryllium | MS | 101.0 | %REC |
| 13125799 | Beryllium | MS | 101.0 | %REC |
| 13125799 | Cadmium | MS | 101.0 | %REC |
| 14015882 | Boron | MS | 101.0 | %REC |
| 14025915 | Uranium | MS | 101.0 | %REC |
| 13045278 | Beryllium | MSD | 101.0 | %REC |
| 13085563 | Nickel | MSD | 101.0 | %REC |
| 13085563 | Uranium | MSD | 101.0 | %REC |
| 13115722 | Selenium | MSD | 101.0 | %REC |
| 13115740 | Lead | MSD | 101.0 | %REC |
| 13115740 | Nickel | MSD | 101.0 | %REC |
| 14015882 | Arsenic | MSD | 101.0 | %REC |
| 14015882 | Chromium | MSD | 101.0 | %REC |
| 13035200 | Hardness as CaCO3 | MS | 101.0 | %REC |
| 13045226 | Hardness as CaCO3 | MS | 101.0 | %REC |
| 13045288 | NO2+NO3 as N | MS | 101.0 | %REC |
| 13055375 | Nitrate+Nitrite as N | MS | 101.0 | %REC |
| 13075472 | Nitrate+Nitrite as N | MS | 101.0 | %REC |
| 13115725 | NO2+NO3 as N | MS | 101.0 | %REC |
| 13115760 | Nitrate+Nitrite as N | MS | 101.0 | %REC |
| 13125842 | Nitrate+Nitrite as N | MSD | 101.0 | %REC |
| 13025106 | Ethylbenzene | MS | 101.0 | %REC |
| 13025106 | Ethylbenzene | MS | 101.0 | %REC |
| 13025122 | Trichloroethene | MS | 101.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13025130 | trans-1,2-Dichloroethene | MS | 101.0 | %REC |
| 13035197 | Chlorobenzene | MS | 101.0 | %REC |
| 13045233 | 1,1,1-Trichloroethane | MS | 101.0 | %REC |
| 13045288 | Dibromochloromethane | MS | 101.0 | %REC |
| 13055335 | Trichloroethene | MS | 101.0 | %REC |
| 13055341 | Toluene | MS | 101.0 | %REC |
| 13055341 | trans-1,2-Dichloroethene | MS | 101.0 | %REC |
| 13065378 | 1,1-Dichloroethene | MS | 101.0 | %REC |
| 13065378 | 1,2-Dichloropropane | MS | 101.0 | %REC |
| 13065378 | Chloroform | MS | 101.0 | %REC |
| 13075486 | Toluene | MS | 101.0 | %REC |
| 13085538 | Toluene | MS | 101.0 | %REC |
| 13085548 | Bromodichloromethane | MS | 101.0 | %REC |
| 13085566 | Bromodichloromethane | MS | 101.0 | %REC |
| 13105704 | Chlorobenzene | MS | 101.0 | %REC |
| 13115740 | Carbon Tetrachloride | MS | 101.0 | %REC |
| 13025103 | 1,1,1-Trichloroethane | MSD | 101.0 | %REC |
| 13025103 | 1,1,1-Trichloroethane | MSD | 101.0 | %REC |
| 13025106 | Chloroform | MSD | 101.0 | %REC |
| 13025106 | Ethylbenzene | MSD | 101.0 | %REC |
| 13025106 | trans-1,2-Dichloroethene | MSD | 101.0 | %REC |
| 13025111 | Ethylbenzene | MSD | 101.0 | %REC |
| 13025111 | trans-1,2-Dichloroethene | MSD | 101.0 | %REC |
| 13025115 | trans-1,2-Dichloroethene | MSD | 101.0 | %REC |
| 13025130 | Benzene | MSD | 101.0 | %REC |
| 13035157 | trans-1,2-Dichloroethene | MSD | 101.0 | %REC |
| 13035197 | Methylene Chloride | MSD | 101.0 | %REC |
| 13035198 | Toluene | MSD | 101.0 | %REC |
| 13035211 | 1,1,1-Trichloroethane | MSD | 101.0 | %REC |
| 13035211 | Toluene | MSD | 101.0 | %REC |
| 13045233 | Benzene | MSD | 101.0 | %REC |
| 13045288 | 1,2-Dichloropropane | MSD | 101.0 | %REC |
| 13045288 | Dibromochloromethane | MSD | 101.0 | %REC |
| 13045288 | Trichloroethene | MSD | 101.0 | %REC |
| 13055309 | 1,1,1-Trichloroethane | MSD | 101.0 | %REC |
| 13055309 | Ethylbenzene | MSD | 101.0 | %REC |
| 13055309 | Methylene Chloride | MSD | 101.0 | %REC |
| 13055309 | Toluene | MSD | 101.0 | %REC |
| 13055328 | 1,2-Dichloropropane | MSD | 101.0 | %REC |
| 13055341 | 1,2-Dichloropropane | MSD | 101.0 | %REC |
| 13055341 | 1,3-Dichlorobenzene | MSD | 101.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13055341 | Chlorobenzene | MSD | 101.0 | %REC |
| 13055374 | trans-1,2-Dichloroethene | MSD | 101.0 | %REC |
| 13065413 | Benzene | MSD | 101.0 | %REC |
| 13065430 | 1,3-Dichlorobenzene | MSD | 101.0 | %REC |
| 13075471 | Tetrachloroethene | MSD | 101.0 | %REC |
| 13085538 | Ethylbenzene | MSD | 101.0 | %REC |
| 13085563 | 1,2-Dichloropropane | MSD | 101.0 | %REC |
| 13085563 | trans-1,2-Dichloroethene | MSD | 101.0 | %REC |
| 13105704 | cis-1,2-Dichloroethene | MSD | 101.0 | %REC |
| 13105704 | Dibromochloromethane | MSD | 101.0 | %REC |
| 13115740 | Bromodichloromethane | MSD | 101.0 | %REC |
| 13115740 | Chloroform | MSD | 101.0 | %REC |
| 13115740 | Toluene | MSD | 101.0 | %REC |
| 13115740 | Trichloroethene | MSD | 101.0 | %REC |
| 13125786 | Tetrachloroethene | MSD | 101.0 | %REC |
| 13025122 | Copper | MS | 102.0 | %REC |
| 13035200 | Cadmium | MS | 102.0 | %REC |
| 13045278 | Cadmium | MS | 102.0 | %REC |
| 13045287 | Arsenic | MS | 102.0 | %REC |
| 13045287 | Mercury | MS | 102.0 | %REC |
| 13055302 | Beryllium | MS | 102.0 | %REC |
| 13055304 | Cadmium | MS | 102.0 | %REC |
| 13055327 | Uranium | MS | 102.0 | %REC |
| 13055340 | Selenium | MS | 102.0 | %REC |
| 13055343 | Silver | MS | 102.0 | %REC |
| 13055375 | Uranium | MS | 102.0 | %REC |
| 13065393 | Uranium | MS | 102.0 | %REC |
| 13065444 | Silver | MS | 102.0 | %REC |
| 13065444 | Silver | MS | 102.0 | %REC |
| 13075471 | Mercury | MS | 102.0 | %REC |
| 13075493 | Beryllium | MS | 102.0 | %REC |
| 13075495 | Beryllium | MS | 102.0 | %REC |
| 13075495 | Cadmium | MS | 102.0 | %REC |
| 13075495 | Chromium | MS | 102.0 | %REC |
| 13075495 | Copper | MS | 102.0 | %REC |
| 13075495 | Zinc | MS | 102.0 | %REC |
| 13085545 | Beryllium | MS | 102.0 | %REC |
| 13085546 | Arsenic | MS | 102.0 | %REC |
| 13085546 | Beryllium | MS | 102.0 | %REC |
| 13085546 | Cadmium | MS | 102.0 | %REC |
| 13085550 | Beryllium | MS | 102.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13085563 | Boron | MS | 102.0 | %REC |
| 13095609 | Beryllium | MS | 102.0 | %REC |
| 13095609 | Chromium | MS | 102.0 | %REC |
| 13105665 | Beryllium | MS | 102.0 | %REC |
| 13115722 | Boron | MS | 102.0 | %REC |
| 13115722 | Chromium | MS | 102.0 | %REC |
| 13115740 | Lead | MS | 102.0 | %REC |
| 13125799 | Silver | MS | 102.0 | %REC |
| 13125843 | Nickel | MS | 102.0 | %REC |
| 14015855 | Beryllium | MS | 102.0 | %REC |
| 14015856 | Beryllium | MS | 102.0 | %REC |
| 14015882 | Copper | MS | 102.0 | %REC |
| 14015882 | Selenium | MS | 102.0 | %REC |
| 14015882 | Silver | MS | 102.0 | %REC |
| 13015076 | Boron | MSD | 102.0 | %REC |
| 13015076 | Cadmium | MSD | 102.0 | %REC |
| 13025122 | Silver | MSD | 102.0 | %REC |
| 13075471 | Mercury | MSD | 102.0 | %REC |
| 13085550 | Beryllium | MSD | 102.0 | %REC |
| 13085563 | Arsenic | MSD | 102.0 | %REC |
| 14015882 | Boron | MSD | 102.0 | %REC |
| 14015882 | Cadmium | MSD | 102.0 | %REC |
| 14015882 | Copper | MSD | 102.0 | %REC |
| 14015882 | Zinc | MSD | 102.0 | %REC |
| 14025915 | Uranium | MSD | 102.0 | %REC |
| 13055297 | Nitrate+Nitrite as N | MS | 102.0 | %REC |
| 13095595 | Nitrate+Nitrite as N | MS | 102.0 | %REC |
| 13075472 | Nitrate+Nitrite as N | MSD | 102.0 | %REC |
| 13075507 | Nitrate+Nitrite as N | MSD | 102.0 | %REC |
| 13025111 | 1,2-Dichloropropane | MS | 102.0 | %REC |
| 13025115 | Bromodichloromethane | MS | 102.0 | %REC |
| 13025122 | Tetrachloroethene | MS | 102.0 | %REC |
| 13025130 | Tetrachloroethene | MS | 102.0 | %REC |
| 13035158 | 1,3-Dichlorobenzene | MS | 102.0 | %REC |
| 13035198 | Toluene | MS | 102.0 | %REC |
| 13035211 | Chloroform | MS | 102.0 | %REC |
| 13045278 | Toluene | MS | 102.0 | %REC |
| 13045288 | 1,1,1-Trichloroethane | MS | 102.0 | %REC |
| 13045288 | 1,2-Dichloroethane | MS | 102.0 | %REC |
| 13045288 | 1,2-Dichloropropane | MS | 102.0 | %REC |
| 13045288 | Styrene | MS | 102.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13055335 | 1,1-Dichloroethene | MS | 102.0 | %REC |
| 13055335 | 1,2-Dichloropropane | MS | 102.0 | %REC |
| 13065413 | 1,2-Dichloropropane | MS | 102.0 | %REC |
| 13075486 | Tetrachloroethene | MS | 102.0 | %REC |
| 13075491 | Benzene | MS | 102.0 | %REC |
| 13085548 | 1,3-Dichlorobenzene | MS | 102.0 | %REC |
| 13105677 | 1,2-Dichloropropane | MS | 102.0 | %REC |
| 13015076 | trans-1,2-Dichloroethene | MSD | 102.0 | %REC |
| 13025103 | Toluene | MSD | 102.0 | %REC |
| 13025103 | Toluene | MSD | 102.0 | %REC |
| 13025106 | 1,2-Dichloropropane | MSD | 102.0 | %REC |
| 13025106 | Benzene | MSD | 102.0 | %REC |
| 13025106 | Carbon Tetrachloride | MSD | 102.0 | %REC |
| 13025106 | Chlorobenzene | MSD | 102.0 | %REC |
| 13025106 | Tetrachloroethene | MSD | 102.0 | %REC |
| 13025115 | Carbon Tetrachloride | MSD | 102.0 | %REC |
| 13025130 | Trichloroethene | MSD | 102.0 | %REC |
| 13025131 | Methylene Chloride | MSD | 102.0 | %REC |
| 13025131 | Toluene | MSD | 102.0 | %REC |
| 13025139 | 1,3-Dichlorobenzene | MSD | 102.0 | %REC |
| 13035158 | 1,3-Dichlorobenzene | MSD | 102.0 | %REC |
| 13035197 | Ethylbenzene | MSD | 102.0 | %REC |
| 13035198 | 1,3-Dichlorobenzene | MSD | 102.0 | %REC |
| 13035211 | Carbon Tetrachloride | MSD | 102.0 | %REC |
| 13035211 | Chlorobenzene | MSD | 102.0 | %REC |
| 13035211 | Chloroform | MSD | 102.0 | %REC |
| 13045233 | trans-1,2-Dichloroethene | MSD | 102.0 | %REC |
| 13045288 | 1,1,1-Trichloroethane | MSD | 102.0 | %REC |
| 13045288 | Dibromochloromethane | MSD | 102.0 | %REC |
| 13055309 | 1,1,1-Trichloroethane | MSD | 102.0 | %REC |
| 13055309 | 1,2-Dichloropropane | MSD | 102.0 | %REC |
| 13055309 | Bromodichloromethane | MSD | 102.0 | %REC |
| 13055309 | Bromodichloromethane | MSD | 102.0 | %REC |
| 13055309 | Carbon Tetrachloride | MSD | 102.0 | %REC |
| 13055309 | Carbon Tetrachloride | MSD | 102.0 | %REC |
| 13055328 | 1,1,1-Trichloroethane | MSD | 102.0 | %REC |
| 13055328 | Methylene Chloride | MSD | 102.0 | %REC |
| 13055341 | Ethylbenzene | MSD | 102.0 | %REC |
| 13065430 | Chlorobenzene | MSD | 102.0 | %REC |
| 13065430 | Ethylbenzene | MSD | 102.0 | %REC |
| 13105704 | Hexachlorobutadiene | MSD | 102.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13105704 | trans-1,3-Dichloropropene | MSD | 102.0 | %REC |
| 13115760 | Toluene | MSD | 102.0 | %REC |
| 13115760 | trans-1,2-Dichloroethene | MSD | 102.0 | %REC |
| 13115760 | Trichloroethene | MSD | 102.0 | %REC |
| 13015059 | Beryllium | MS | 103.0 | %REC |
| 13015060 | Uranium | MS | 103.0 | %REC |
| 13025152 | Uranium | MS | 103.0 | %REC |
| 13035200 | Beryllium | MS | 103.0 | %REC |
| 13035200 | Silver | MS | 103.0 | %REC |
| 13035203 | Uranium | MS | 103.0 | %REC |
| 13045226 | Beryllium | MS | 103.0 | %REC |
| 13045226 | Selenium | MS | 103.0 | %REC |
| 13045278 | Arsenic | MS | 103.0 | %REC |
| 13045285 | Silver | MS | 103.0 | %REC |
| 13045287 | Copper | MS | 103.0 | %REC |
| 13055304 | Mercury | MS | 103.0 | %REC |
| 13055327 | Silver | MS | 103.0 | %REC |
| 13055343 | Beryllium | MS | 103.0 | %REC |
| 13055343 | Mercury | MS | 103.0 | %REC |
| 13055361 | Cadmium | MS | 103.0 | %REC |
| 13055361 | Silver | MS | 103.0 | %REC |
| 13065438 | Uranium | MS | 103.0 | %REC |
| 13065444 | Uranium | MS | 103.0 | %REC |
| 13075455 | Uranium | MS | 103.0 | %REC |
| 13075495 | Arsenic | MS | 103.0 | %REC |
| 13075495 | Nickel | MS | 103.0 | %REC |
| 13075495 | Silver | MS | 103.0 | %REC |
| 13085550 | Cadmium | MS | 103.0 | %REC |
| 13085563 | Chromium | MS | 103.0 | %REC |
| 13105665 | Cadmium | MS | 103.0 | %REC |
| 13105674 | Copper | MS | 103.0 | %REC |
| 13115722 | Silver | MS | 103.0 | %REC |
| 13115725 | Beryllium | MS | 103.0 | %REC |
| 13115725 | Zinc | MS | 103.0 | %REC |
| 13115740 | Nickel | MS | 103.0 | %REC |
| 13125843 | Uranium | MS | 103.0 | %REC |
| 13125843 | Uranium | MS | 103.0 | %REC |
| 13125843 | Zinc | MS | 103.0 | %REC |
| 13125844 | Uranium | MS | 103.0 | %REC |
| 14015856 | Uranium | MS | 103.0 | %REC |
| 14015879 | Uranium | MS | 103.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 14025915 | Boron | MS | 103.0 | %REC |
| 14025915 | Lead | MS | 103.0 | %REC |
| 14025915 | Mercury | MS | 103.0 | %REC |
| 14025915 | Uranium | MS | 103.0 | %REC |
| 13045278 | Arsenic | MSD | 103.0 | %REC |
| 13045278 | Cadmium | MSD | 103.0 | %REC |
| 13055335 | Mercury | MSD | 103.0 | %REC |
| 13085550 | Cadmium | MSD | 103.0 | %REC |
| 13085563 | Boron | MSD | 103.0 | %REC |
| 13115722 | Arsenic | MSD | 103.0 | %REC |
| 13115722 | Copper | MSD | 103.0 | %REC |
| 14015882 | Selenium | MSD | 103.0 | %REC |
| 13105677 | Nitrate+Nitrite as N | MS | 103.0 | %REC |
| 13105689 | NO2+NO3 as N | MS | 103.0 | %REC |
| 13105704 | NO2+NO3 as N | MS | 103.0 | %REC |
| 13125842 | Nitrate+Nitrite as N | MS | 103.0 | %REC |
| 13055375 | Nitrate+Nitrite as N | MSD | 103.0 | %REC |
| 13015076 | 1,2-Dichloropropane | MS | 103.0 | %REC |
| 13015076 | trans-1,2-Dichloroethene | MS | 103.0 | %REC |
| 13025122 | 1,1,1-Trichloroethane | MS | 103.0 | %REC |
| 13025122 | 1,3-Dichlorobenzene | MS | 103.0 | %REC |
| 13025131 | trans-1,2-Dichloroethene | MS | 103.0 | %REC |
| 13035211 | 1,3-Dichlorobenzene | MS | 103.0 | %REC |
| 13035211 | Benzene | MS | 103.0 | %REC |
| 13035211 | Ethylbenzene | MS | 103.0 | %REC |
| 13045278 | Bromodichloromethane | MS | 103.0 | %REC |
| 13045288 | Bromodichloromethane | MS | 103.0 | %REC |
| 13045288 | Dibromochloromethane | MS | 103.0 | %REC |
| 13045288 | Trichloroethene | MS | 103.0 | %REC |
| 13055297 | 1,1-Dichloroethene | MS | 103.0 | %REC |
| 13055309 | 1,1-Dichloroethene | MS | 103.0 | %REC |
| 13055374 | Tetrachloroethene | MS | 103.0 | %REC |
| 13055374 | Toluene | MS | 103.0 | %REC |
| 13065378 | Carbon Tetrachloride | MS | 103.0 | %REC |
| 13065378 | Toluene | MS | 103.0 | %REC |
| 13065413 | Ethylbenzene | MS | 103.0 | %REC |
| 13065413 | Tetrachloroethene | MS | 103.0 | %REC |
| 13075471 | Tetrachloroethene | MS | 103.0 | %REC |
| 13075491 | Bromodichloromethane | MS | 103.0 | %REC |
| 13085538 | 1,2-Dichloropropane | MS | 103.0 | %REC |
| 13085538 | Trichloroethene | MS | 103.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13085548 | Chlorobenzene | MS | 103.0 | %REC |
| 13105704 | Total Xylenes | MS | 103.0 | %REC |
| 13115772 | 1,2-Dichloropropane | MS | 103.0 | %REC |
| 13015076 | 1,2-Dichloropropane | MSD | 103.0 | %REC |
| 13025103 | Benzene | MSD | 103.0 | %REC |
| 13025103 | Benzene | MSD | 103.0 | %REC |
| 13025106 | Bromodichloromethane | MSD | 103.0 | %REC |
| 13025106 | Toluene | MSD | 103.0 | %REC |
| 13025115 | 1,1,1-Trichloroethane | MSD | 103.0 | %REC |
| 13025130 | Toluene | MSD | 103.0 | %REC |
| 13025131 | 1,2-Dichloropropane | MSD | 103.0 | %REC |
| 13025131 | trans-1,2-Dichloroethene | MSD | 103.0 | %REC |
| 13035157 | Chloroform | MSD | 103.0 | %REC |
| 13035157 | Ethylbenzene | MSD | 103.0 | %REC |
| 13035157 | Ethylbenzene | MSD | 103.0 | %REC |
| 13035158 | Ethylbenzene | MSD | 103.0 | %REC |
| 13035158 | Toluene | MSD | 103.0 | %REC |
| 13035198 | Benzene | MSD | 103.0 | %REC |
| 13045233 | Bromodichloromethane | MSD | 103.0 | %REC |
| 13045233 | Toluene | MSD | 103.0 | %REC |
| 13045274 | 1,3-Dichlorobenzene | MSD | 103.0 | %REC |
| 13045274 | Carbon Tetrachloride | MSD | 103.0 | %REC |
| 13045274 | Chlorobenzene | MSD | 103.0 | %REC |
| 13045274 | Toluene | MSD | 103.0 | %REC |
| 13045278 | 1,3-Dichlorobenzene | MSD | 103.0 | %REC |
| 13055309 | trans-1,2-Dichloroethene | MSD | 103.0 | %REC |
| 13055328 | 1,1-Dichloroethene | MSD | 103.0 | %REC |
| 13055341 | trans-1,2-Dichloroethene | MSD | 103.0 | %REC |
| 13055374 | Methylene Chloride | MSD | 103.0 | %REC |
| 13065413 | Chloroform | MSD | 103.0 | %REC |
| 13065413 | trans-1,2-Dichloroethene | MSD | 103.0 | %REC |
| 13075471 | 1,3-Dichlorobenzene | MSD | 103.0 | %REC |
| 13085548 | 1,2-Dichloropropane | MSD | 103.0 | %REC |
| 13085548 | Bromodichloromethane | MSD | 103.0 | %REC |
| 13105704 | Trichloroethene | MSD | 103.0 | %REC |
| 13115725 | Chloromethane | MSD | 103.0 | %REC |
| 13115760 | 1,1,1-Trichloroethane | MSD | 103.0 | %REC |
| 13125786 | Toluene | MSD | 103.0 | %REC |
| 13125786 | Trichloroethene | MSD | 103.0 | %REC |
| 13015076 | Cadmium | MS | 104.0 | %REC |
| 13035200 | Uranium | MS | 104.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13035201 | Uranium | MS | 104.0 | %REC |
| 13045226 | Silver | MS | 104.0 | %REC |
| 13045278 | Silver | MS | 104.0 | %REC |
| 13045287 | Cadmium | MS | 104.0 | %REC |
| 13055302 | Uranium | MS | 104.0 | %REC |
| 13055343 | Arsenic | MS | 104.0 | %REC |
| 13055343 | Copper | MS | 104.0 | %REC |
| 13055343 | Lead | MS | 104.0 | %REC |
| 13065378 | Uranium | MS | 104.0 | %REC |
| 13065393 | Cadmium | MS | 104.0 | %REC |
| 13075495 | Lead | MS | 104.0 | %REC |
| 13075495 | Lead | MS | 104.0 | %REC |
| 13075495 | Mercury | MS | 104.0 | %REC |
| 13085546 | Copper | MS | 104.0 | %REC |
| 13085546 | Lead | MS | 104.0 | %REC |
| 13085550 | Silver | MS | 104.0 | %REC |
| 13085563 | Silver | MS | 104.0 | %REC |
| 13105674 | Mercury | MS | 104.0 | %REC |
| 13105677 | Uranium | MS | 104.0 | %REC |
| 13115722 | Selenium | MS | 104.0 | %REC |
| 13115725 | Chromium | MS | 104.0 | %REC |
| 13115725 | Silver | MS | 104.0 | %REC |
| 13125843 | Chromium | MS | 104.0 | %REC |
| 13055335 | Uranium | MSD | 104.0 | %REC |
| 13085550 | Silver | MSD | 104.0 | %REC |
| 13085563 | Chromium | MSD | 104.0 | %REC |
| 13085563 | Silver | MSD | 104.0 | %REC |
| 14015882 | Silver | MSD | 104.0 | %REC |
| 14025915 | Boron | MSD | 104.0 | %REC |
| 14025915 | Lead | MSD | 104.0 | %REC |
| 14025915 | Uranium | MSD | 104.0 | %REC |
| 13045276 | Nitrate+Nitrite as N | MS | 104.0 | %REC |
| 13025131 | Methylene Chloride | MS | 104.0 | %REC |
| 13025139 | Tetrachloroethene | MS | 104.0 | %REC |
| 13035158 | Benzene | MS | 104.0 | %REC |
| 13035158 | Bromodichloromethane | MS | 104.0 | %REC |
| 13035158 | Chlorobenzene | MS | 104.0 | %REC |
| 13035158 | Ethylbenzene | MS | 104.0 | %REC |
| 13035158 | Toluene | MS | 104.0 | %REC |
| 13035211 | 1,1,1-Trichloroethane | MS | 104.0 | %REC |
| 13035211 | Carbon Tetrachloride | MS | 104.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13035211 | Toluene | MS | 104.0 | %REC |
| 13035211 | trans-1,2-Dichloroethene | MS | 104.0 | %REC |
| 13045288 | 1,1-Dichloroethene | MS | 104.0 | %REC |
| 13055335 | Benzene | MS | 104.0 | %REC |
| 13055335 | Ethylbenzene | MS | 104.0 | %REC |
| 13055374 | Methylene Chloride | MS | 104.0 | %REC |
| 13065378 | Benzene | MS | 104.0 | %REC |
| 13065378 | Chlorobenzene | MS | 104.0 | %REC |
| 13065378 | Ethylbenzene | MS | 104.0 | %REC |
| 13075486 | Chloroform | MS | 104.0 | %REC |
| 13085563 | Chloroform | MS | 104.0 | %REC |
| 13085566 | 1,1-Dichloroethene | MS | 104.0 | %REC |
| 13085566 | trans-1,2-Dichloroethene | MS | 104.0 | %REC |
| 13105704 | 1,2-Dibromoethane | MS | 104.0 | %REC |
| 13025103 | 1,2-Dichloropropane | MSD | 104.0 | %REC |
| 13025103 | 1,2-Dichloropropane | MSD | 104.0 | %REC |
| 13025103 | Tetrachloroethene | MSD | 104.0 | %REC |
| 13025103 | Tetrachloroethene | MSD | 104.0 | %REC |
| 13025115 | Bromodichloromethane | MSD | 104.0 | %REC |
| 13025138 | Bromodichloromethane | MSD | 104.0 | %REC |
| 13025139 | Chlorobenzene | MSD | 104.0 | %REC |
| 13035157 | Chlorobenzene | MSD | 104.0 | %REC |
| 13035158 | Benzene | MSD | 104.0 | %REC |
| 13035158 | Chloroform | MSD | 104.0 | %REC |
| 13035211 | 1,3-Dichlorobenzene | MSD | 104.0 | %REC |
| 13035211 | Tetrachloroethene | MSD | 104.0 | %REC |
| 13045233 | Chloroform | MSD | 104.0 | %REC |
| 13045233 | Ethylbenzene | MSD | 104.0 | %REC |
| 13045233 | Trichloroethene | MSD | 104.0 | %REC |
| 13045274 | 1,2-Dichloropropane | MSD | 104.0 | %REC |
| 13045278 | Chlorobenzene | MSD | 104.0 | %REC |
| 13045278 | Ethylbenzene | MSD | 104.0 | %REC |
| 13045288 | 1,1-Dichloroethene | MSD | 104.0 | %REC |
| 13055309 | Benzene | MSD | 104.0 | %REC |
| 13055328 | Bromodichloromethane | MSD | 104.0 | %REC |
| 13055328 | Carbon Tetrachloride | MSD | 104.0 | %REC |
| 13065430 | Bromodichloromethane | MSD | 104.0 | %REC |
| 13065430 | Carbon Tetrachloride | MSD | 104.0 | %REC |
| 13075491 | Carbon Tetrachloride | MSD | 104.0 | %REC |
| 13085538 | Chloroform | MSD | 104.0 | %REC |
| 13085548 | Chlorobenzene | MSD | 104.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13085548 | Ethylbenzene | MSD | 104.0 | %REC |
| 13115740 | Carbon Tetrachloride | MSD | 104.0 | %REC |
| 13125786 | trans-1,2-Dichloroethene | MSD | 104.0 | %REC |
| 13055362 | Cadmium | MS | 105.0 | %REC |
| 13055362 | Chromium | MS | 105.0 | %REC |
| 13055362 | Silver | MS | 105.0 | %REC |
| 13065444 | Copper | MS | 105.0 | %REC |
| 13075495 | Beryllium | MS | 105.0 | %REC |
| 13075495 | Selenium | MS | 105.0 | %REC |
| 13075495 | Uranium | MS | 105.0 | %REC |
| 13085546 | Uranium | MS | 105.0 | %REC |
| 13085563 | Selenium | MS | 105.0 | %REC |
| 13095608 | Uranium | MS | 105.0 | %REC |
| 13105674 | Arsenic | MS | 105.0 | %REC |
| 13115722 | Copper | MS | 105.0 | %REC |
| 13115722 | Uranium | MS | 105.0 | %REC |
| 13115736 | Uranium | MS | 105.0 | %REC |
| 13125843 | Cadmium | MS | 105.0 | %REC |
| 13125843 | Lead | MS | 105.0 | %REC |
| 13125843 | Mercury | MS | 105.0 | %REC |
| 13125843 | Silver | MS | 105.0 | %REC |
| 13025122 | Copper | MSD | 105.0 | %REC |
| 13025141 | Uranium | MSD | 105.0 | %REC |
| 14025915 | Mercury | MSD | 105.0 | %REC |
| 13055340 | Nitrate+Nitrite as N | MS | 105.0 | %REC |
| 13065395 | Nitrate+Nitrite as N | MS | 105.0 | %REC |
| 13065395 | Nitrate+Nitrite as N | MS | 105.0 | %REC |
| 13065394 | Nitrate+Nitrite as N | MSD | 105.0 | %REC |
| 13065395 | Nitrate+Nitrite as N | MSD | 105.0 | %REC |
| 13065395 | Nitrate+Nitrite as N | MSD | 105.0 | %REC |
| 13025106 | 1,1-Dichloroethene | MS | 105.0 | %REC |
| 13025106 | 1,1-Dichloroethene | MS | 105.0 | %REC |
| 13025115 | 1,1-Dichloroethene | MS | 105.0 | %REC |
| 13025115 | Chloroform | MS | 105.0 | %REC |
| 13025122 | Chlorobenzene | MS | 105.0 | %REC |
| 13025122 | trans-1,2-Dichloroethene | MS | 105.0 | %REC |
| 13025130 | Chloroform | MS | 105.0 | %REC |
| 13025130 | Methylene Chloride | MS | 105.0 | %REC |
| 13025139 | Methylene Chloride | MS | 105.0 | %REC |
| 13035157 | Bromodichloromethane | MS | 105.0 | %REC |
| 13035157 | Chloroform | MS | 105.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13035158 | Tetrachloroethene | MS | 105.0 | %REC |
| 13045278 | 1,1-Dichloroethene | MS | 105.0 | %REC |
| 13085566 | Chlorobenzene | MS | 105.0 | %REC |
| 13105704 | Tetrachloroethene | MS | 105.0 | %REC |
| 13115725 | Bromomethane | MS | 105.0 | %REC |
| 13115725 | Chloromethane | MS | 105.0 | %REC |
| 13025103 | Ethylbenzene | MSD | 105.0 | %REC |
| 13025103 | Ethylbenzene | MSD | 105.0 | %REC |
| 13025106 | 1,1-Dichloroethene | MSD | 105.0 | %REC |
| 13025111 | Tetrachloroethene | MSD | 105.0 | %REC |
| 13025116 | Benzene | MSD | 105.0 | %REC |
| 13025116 | Benzene | MSD | 105.0 | %REC |
| 13025131 | Chloroform | MSD | 105.0 | %REC |
| 13025138 | 1,2-Dichloropropane | MSD | 105.0 | %REC |
| 13025138 | Benzene | MSD | 105.0 | %REC |
| 13025138 | Tetrachloroethene | MSD | 105.0 | %REC |
| 13025138 | Toluene | MSD | 105.0 | %REC |
| 13025138 | trans-1,2-Dichloroethene | MSD | 105.0 | %REC |
| 13035158 | 1,1,1-Trichloroethane | MSD | 105.0 | %REC |
| 13035158 | 1,2-Dichloropropane | MSD | 105.0 | %REC |
| 13035158 | Bromodichloromethane | MSD | 105.0 | %REC |
| 13035158 | Chlorobenzene | MSD | 105.0 | %REC |
| 13035158 | trans-1,2-Dichloroethene | MSD | 105.0 | %REC |
| 13035198 | Chloroform | MSD | 105.0 | %REC |
| 13045274 | Bromodichloromethane | MSD | 105.0 | %REC |
| 13045288 | Chloroform | MSD | 105.0 | %REC |
| 13045288 | trans-1,2-Dichloroethene | MSD | 105.0 | %REC |
| 13055341 | Toluene | MSD | 105.0 | %REC |
| 13065430 | 1,2-Dichloropropane | MSD | 105.0 | %REC |
| 13085548 | 1,3-Dichlorobenzene | MSD | 105.0 | %REC |
| 13085548 | Toluene | MSD | 105.0 | %REC |
| 13085550 | Ethylbenzene | MSD | 105.0 | %REC |
| 13085566 | 1,1-Dichloroethene | MSD | 105.0 | %REC |
| 13085566 | 1,3-Dichlorobenzene | MSD | 105.0 | %REC |
| 13105677 | Toluene | MSD | 105.0 | %REC |
| 13045226 | Copper | MS | 106.0 | %REC |
| 13045226 | Uranium | MS | 106.0 | %REC |
| 13055302 | Cadmium | MS | 106.0 | %REC |
| 13055327 | Cadmium | MS | 106.0 | %REC |
| 13055362 | Beryllium | MS | 106.0 | %REC |
| 13075455 | Cadmium | MS | 106.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13075495 | Arsenic | MS | 106.0 | %REC |
| 13075495 | Cadmium | MS | 106.0 | %REC |
| 13075495 | Copper | MS | 106.0 | %REC |
| 13085546 | Cadmium | MS | 106.0 | %REC |
| 13095608 | Cadmium | MS | 106.0 | %REC |
| 13095621 | Mercury | MS | 106.0 | %REC |
| 13115722 | Arsenic | MS | 106.0 | %REC |
| 13115725 | Uranium | MS | 106.0 | %REC |
| 13125843 | Silver | MS | 106.0 | %REC |
| 14015875 | Uranium | MS | 106.0 | %REC |
| 13045278 | Silver | MSD | 106.0 | %REC |
| 13065438 | Uranium | MSD | 106.0 | %REC |
| 13085563 | Selenium | MSD | 106.0 | %REC |
| 13115722 | Cadmium | MSD | 106.0 | %REC |
| 13115740 | Boron | MSD | 106.0 | %REC |
| 13115740 | Chromium | MSD | 106.0 | %REC |
| 13055335 | Nitrate+Nitrite as N | MS | 106.0 | %REC |
| 13055335 | Nitrate+Nitrite as N | MSD | 106.0 | %REC |
| 13025122 | Toluene | MS | 106.0 | %REC |
| 13025130 | 1,1-Dichloroethene | MS | 106.0 | %REC |
| 13025130 | Bromodichloromethane | MS | 106.0 | %REC |
| 13025139 | Bromodichloromethane | MS | 106.0 | %REC |
| 13035158 | 1,1,1-Trichloroethane | MS | 106.0 | %REC |
| 13035158 | 1,2-Dichloropropane | MS | 106.0 | %REC |
| 13035158 | trans-1,2-Dichloroethene | MS | 106.0 | %REC |
| 13035211 | 1,2-Dichloropropane | MS | 106.0 | %REC |
| 13035211 | Chlorobenzene | MS | 106.0 | %REC |
| 13045233 | 1,1-Dichloroethene | MS | 106.0 | %REC |
| 13045278 | 1,1,1-Trichloroethane | MS | 106.0 | %REC |
| 13045288 | Carbon Tetrachloride | MS | 106.0 | %REC |
| 13045288 | cis-1,2-Dichloroethene | MS | 106.0 | %REC |
| 13065378 | Trichloroethene | MS | 106.0 | %REC |
| 13075486 | 1,1,1-Trichloroethane | MS | 106.0 | %REC |
| 13085548 | Chloroform | MS | 106.0 | %REC |
| 13085566 | 1,3-Dichlorobenzene | MS | 106.0 | %REC |
| 13085566 | Benzene | MS | 106.0 | %REC |
| 13085566 | Ethylbenzene | MS | 106.0 | %REC |
| 13085566 | Toluene | MS | 106.0 | %REC |
| 13105677 | Toluene | MS | 106.0 | %REC |
| 13105704 | Styrene | MS | 106.0 | %REC |
| 13105704 | trans-1,2-Dichloroethene | MS | 106.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13025111 | Bromodichloromethane | MSD | 106.0 | %REC |
| 13025122 | Carbon Tetrachloride | MSD | 106.0 | %REC |
| 13025130 | trans-1,2-Dichloroethene | MSD | 106.0 | %REC |
| 13035197 | 1,3-Dichlorobenzene | MSD | 106.0 | %REC |
| 13035197 | Toluene | MSD | 106.0 | %REC |
| 13035197 | trans-1,2-Dichloroethene | MSD | 106.0 | %REC |
| 13045274 | Ethylbenzene | MSD | 106.0 | %REC |
| 13045278 | 1,2-Dichloropropane | MSD | 106.0 | %REC |
| 13045278 | Benzene | MSD | 106.0 | %REC |
| 13045288 | Carbon Tetrachloride | MSD | 106.0 | %REC |
| 13045288 | cis-1,2-Dichloroethene | MSD | 106.0 | %REC |
| 13055297 | Carbon Tetrachloride | MSD | 106.0 | %REC |
| 13055309 | 1,3-Dichlorobenzene | MSD | 106.0 | %REC |
| 13055374 | Chloroform | MSD | 106.0 | %REC |
| 13065378 | Bromodichloromethane | MSD | 106.0 | %REC |
| 13065413 | Methylene Chloride | MSD | 106.0 | %REC |
| 13065430 | Benzene | MSD | 106.0 | %REC |
| 13065430 | Toluene | MSD | 106.0 | %REC |
| 13105677 | 1,2-Dichloropropane | MSD | 106.0 | %REC |
| 13115725 | Bromomethane | MSD | 106.0 | %REC |
| 13125786 | 1,1,1-Trichloroethane | MSD | 106.0 | %REC |
| 13045226 | Arsenic | MS | 107.0 | %REC |
| 13085563 | Copper | MS | 107.0 | %REC |
| 13115725 | Arsenic | MS | 107.0 | %REC |
| 13115725 | Boron | MS | 107.0 | %REC |
| 13125839 | Uranium | MS | 107.0 | %REC |
| 13125843 | Boron | MS | 107.0 | %REC |
| 13125843 | Cadmium | MS | 107.0 | %REC |
| 13115740 | Copper | MSD | 107.0 | %REC |
| 14015875 | Uranium | MSD | 107.0 | %REC |
| 13055297 | Nitrate+Nitrite as N | MSD | 107.0 | %REC |
| 13055340 | Nitrate+Nitrite as N | MSD | 107.0 | %REC |
| 13065438 | Nitrate+Nitrite as N | MSD | 107.0 | %REC |
| 13025116 | 1,1,1-Trichloroethane | MS | 107.0 | %REC |
| 13025116 | 1,1,1-Trichloroethane | MS | 107.0 | %REC |
| 13025122 | Chloroform | MS | 107.0 | %REC |
| 13025131 | Chloroform | MS | 107.0 | %REC |
| 13035158 | Carbon Tetrachloride | MS | 107.0 | %REC |
| 13035197 | 1,3-Dichlorobenzene | MS | 107.0 | %REC |
| 13035197 | Ethylbenzene | MS | 107.0 | %REC |
| 13045274 | Chlorobenzene | MS | 107.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13045288 | Chloroform | MS | 107.0 | %REC |
| 13045288 | trans-1,2-Dichloroethene | MS | 107.0 | %REC |
| 13055335 | 1,1,1-Trichloroethane | MS | 107.0 | %REC |
| 13055335 | Carbon Tetrachloride | MS | 107.0 | %REC |
| 13055335 | trans-1,2-Dichloroethene | MS | 107.0 | %REC |
| 13055374 | trans-1,2-Dichloroethene | MS | 107.0 | %REC |
| 13065378 | trans-1,2-Dichloroethene | MS | 107.0 | %REC |
| 13065413 | 1,1-Dichloroethene | MS | 107.0 | %REC |
| 13065413 | Bromodichloromethane | MS | 107.0 | %REC |
| 13065430 | 1,3-Dichlorobenzene | MS | 107.0 | %REC |
| 13075491 | 1,1,1-Trichloroethane | MS | 107.0 | %REC |
| 13085563 | 1,1,1-Trichloroethane | MS | 107.0 | %REC |
| 13085563 | Toluene | MS | 107.0 | %REC |
| 13085566 | 1,2-Dichloropropane | MS | 107.0 | %REC |
| 13085566 | Chloroform | MS | 107.0 | %REC |
| 13105704 | Ethylbenzene | MS | 107.0 | %REC |
| 13025116 | 1,2-Dichloropropane | MSD | 107.0 | %REC |
| 13025116 | 1,2-Dichloropropane | MSD | 107.0 | %REC |
| 13025116 | trans-1,2-Dichloroethene | MSD | 107.0 | %REC |
| 13025116 | trans-1,2-Dichloroethene | MSD | 107.0 | %REC |
| 13025138 | Chloroform | MSD | 107.0 | %REC |
| 13035157 | 1,3-Dichlorobenzene | MSD | 107.0 | %REC |
| 13045288 | 1,2-Dichloroethane | MSD | 107.0 | %REC |
| 13055309 | trans-1,2-Dichloroethene | MSD | 107.0 | %REC |
| 13065378 | 1,3-Dichlorobenzene | MSD | 107.0 | %REC |
| 13085550 | Chlorobenzene | MSD | 107.0 | %REC |
| 13085566 | Bromodichloromethane | MSD | 107.0 | %REC |
| 13085566 | Ethylbenzene | MSD | 107.0 | %REC |
| 13045288 | Uranium | MS | 108.0 | %REC |
| 13055297 | Uranium | MS | 108.0 | %REC |
| 13055306 | Uranium | MS | 108.0 | %REC |
| 13055339 | Uranium | MS | 108.0 | %REC |
| 13075521 | Silver | MS | 108.0 | %REC |
| 13085546 | Silver | MS | 108.0 | %REC |
| 13095621 | Boron | MS | 108.0 | %REC |
| 13095621 | Chromium | MS | 108.0 | %REC |
| 13095621 | Zinc | MS | 108.0 | %REC |
| 13095627 | Chromium | MS | 108.0 | %REC |
| 13115722 | Cadmium | MS | 108.0 | %REC |
| 13115740 | Boron | MS | 108.0 | %REC |
| 13115740 | Chromium | MS | 108.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13125843 | Arsenic | MS | 108.0 | %REC |
| 13125843 | Beryllium | MS | 108.0 | %REC |
| 13115740 | Selenium | MSD | 108.0 | %REC |
| 13115740 | Silver | MSD | 108.0 | %REC |
| 13115740 | Nitrate+Nitrite as N | MS | 108.0 | %REC |
| 13025101 | Nitrate+Nitrite as N | MSD | 108.0 | %REC |
| 13095613 | Nitrate+Nitrite as N | MSD | 108.0 | %REC |
| 13025116 | 1,1-Dichloroethene | MS | 108.0 | %REC |
| 13025116 | 1,1-Dichloroethene | MS | 108.0 | %REC |
| 13025122 | Bromodichloromethane | MS | 108.0 | %REC |
| 13025122 | Ethylbenzene | MS | 108.0 | %REC |
| 13025131 | 1,1,1-Trichloroethane | MS | 108.0 | %REC |
| 13025139 | Benzene | MS | 108.0 | %REC |
| 13035158 | Chloroform | MS | 108.0 | %REC |
| 13035158 | Methylene Chloride | MS | 108.0 | %REC |
| 13035198 | Chloroform | MS | 108.0 | %REC |
| 13045274 | 1,3-Dichlorobenzene | MS | 108.0 | %REC |
| 13045288 | 1,2-Dichloroethane | MS | 108.0 | %REC |
| 13055309 | 1,1-Dichloroethene | MS | 108.0 | %REC |
| 13055374 | Chloroform | MS | 108.0 | %REC |
| 13065413 | Toluene | MS | 108.0 | %REC |
| 13065413 | trans-1,2-Dichloroethene | MS | 108.0 | %REC |
| 13065430 | Bromodichloromethane | MS | 108.0 | %REC |
| 13065430 | Chlorobenzene | MS | 108.0 | %REC |
| 13075491 | 1,2-Dichloropropane | MS | 108.0 | %REC |
| 13025115 | Chloroform | MSD | 108.0 | %REC |
| 13025139 | Chloroform | MSD | 108.0 | %REC |
| 13035157 | Bromodichloromethane | MSD | 108.0 | %REC |
| 13035158 | Methylene Chloride | MSD | 108.0 | %REC |
| 13035197 | Bromodichloromethane | MSD | 108.0 | %REC |
| 13035197 | Chloroform | MSD | 108.0 | %REC |
| 13035211 | 1,2-Dichloropropane | MSD | 108.0 | %REC |
| 13045278 | trans-1,2-Dichloroethene | MSD | 108.0 | %REC |
| 13045288 | Bromodichloromethane | MSD | 108.0 | %REC |
| 13085538 | Methylene Chloride | MSD | 108.0 | %REC |
| 13085538 | Trichloroethene | MSD | 108.0 | %REC |
| 13085548 | trans-1,2-Dichloroethene | MSD | 108.0 | %REC |
| 13085563 | 1,1,1-Trichloroethane | MSD | 108.0 | %REC |
| 13085563 | Chloroform | MSD | 108.0 | %REC |
| 13085566 | Benzene | MSD | 108.0 | %REC |
| 13105704 | Chloroform | MSD | 108.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13045224 | Uranium | MS | 109.0 | %REC |
| 13055343 | Cadmium | MS | 109.0 | %REC |
| 13075455 | Silver | MS | 109.0 | %REC |
| 13075521 | Cadmium | MS | 109.0 | %REC |
| 13075521 | Uranium | MS | 109.0 | %REC |
| 13095621 | Cadmium | MS | 109.0 | %REC |
| 13115740 | Copper | MS | 109.0 | %REC |
| 13125843 | Copper | MS | 109.0 | %REC |
| 14015875 | Uranium | MS | 109.0 | %REC |
| 13025101 | Uranium | MSD | 109.0 | %REC |
| 13085563 | Copper | MSD | 109.0 | %REC |
| 13115740 | Uranium | MSD | 109.0 | %REC |
| 13065394 | Nitrate+Nitrite as N | MS | 109.0 | %REC |
| 13045276 | Nitrate+Nitrite as N | MSD | 109.0 | %REC |
| 13025139 | 1,1,1-Trichloroethane | MS | 109.0 | %REC |
| 13025139 | Toluene | MS | 109.0 | %REC |
| 13045274 | 1,2-Dichloropropane | MS | 109.0 | %REC |
| 13045274 | Ethylbenzene | MS | 109.0 | %REC |
| 13045274 | Toluene | MS | 109.0 | %REC |
| 13045288 | Bromodichloromethane | MS | 109.0 | %REC |
| 13065413 | Benzene | MS | 109.0 | %REC |
| 13065430 | 1,2-Dichloropropane | MS | 109.0 | %REC |
| 13085550 | 1,3-Dichlorobenzene | MS | 109.0 | %REC |
| 13085566 | Methylene Chloride | MS | 109.0 | %REC |
| 13105704 | 1,1-Dichloroethene | MS | 109.0 | %REC |
| 13025122 | Tetrachloroethene | MSD | 109.0 | %REC |
| 13025138 | Carbon Tetrachloride | MSD | 109.0 | %REC |
| 13025138 | Methylene Chloride | MSD | 109.0 | %REC |
| 13025139 | Ethylbenzene | MSD | 109.0 | %REC |
| 13035198 | 1,2-Dichloropropane | MSD | 109.0 | %REC |
| 13035198 | Bromodichloromethane | MSD | 109.0 | %REC |
| 13045274 | trans-1,2-Dichloroethene | MSD | 109.0 | %REC |
| 13045288 | 1,1,1-Trichloroethane | MSD | 109.0 | %REC |
| 13065378 | 1,1-Dichloroethene | MSD | 109.0 | %REC |
| 13065378 | Ethylbenzene | MSD | 109.0 | %REC |
| 13085538 | 1,2-Dichloropropane | MSD | 109.0 | %REC |
| 13085548 | Chloroform | MSD | 109.0 | %REC |
| 13085550 | Benzene | MSD | 109.0 | %REC |
| 13085563 | Bromodichloromethane | MSD | 109.0 | %REC |
| 13085563 | Toluene | MSD | 109.0 | %REC |
| 13085566 | Chlorobenzene | MSD | 109.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13025101 | Uranium | MS | 110.0 | %REC |
| 13045287 | Uranium | MS | 110.0 | %REC |
| 13095609 | Uranium | MS | 110.0 | %REC |
| 13095621 | Beryllium | MS | 110.0 | %REC |
| 13095621 | Lead | MS | 110.0 | %REC |
| 13095621 | Nickel | MS | 110.0 | %REC |
| 13095627 | Beryllium | MS | 110.0 | %REC |
| 13105653 | Uranium | MS | 110.0 | %REC |
| 13105691 | Silver | MS | 110.0 | %REC |
| 13115740 | Selenium | MS | 110.0 | %REC |
| 13095613 | Nitrate+Nitrite as N | MS | 110.0 | %REC |
| 13025106 | Tetrachloroethene | MS | 110.0 | %REC |
| 13025106 | Tetrachloroethene | MS | 110.0 | %REC |
| 13025111 | 1,1,1-Trichloroethane | MS | 110.0 | %REC |
| 13025122 | Benzene | MS | 110.0 | %REC |
| 13025130 | 1,1,1-Trichloroethane | MS | 110.0 | %REC |
| 13025139 | trans-1,2-Dichloroethene | MS | 110.0 | %REC |
| 13045274 | Bromodichloromethane | MS | 110.0 | %REC |
| 13045288 | 1,1-Dichloroethene | MS | 110.0 | %REC |
| 13065413 | Chloroform | MS | 110.0 | %REC |
| 13065430 | Ethylbenzene | MS | 110.0 | %REC |
| 13105677 | trans-1,2-Dichloroethene | MS | 110.0 | %REC |
| 13025103 | 1,1-Dichloroethene | MSD | 110.0 | %REC |
| 13025103 | 1,1-Dichloroethene | MSD | 110.0 | %REC |
| 13025122 | Trichloroethene | MSD | 110.0 | %REC |
| 13025130 | Chloroform | MSD | 110.0 | %REC |
| 13025138 | 1,1,1-Trichloroethane | MSD | 110.0 | %REC |
| 13035158 | Carbon Tetrachloride | MSD | 110.0 | %REC |
| 13035197 | 1,2-Dichloropropane | MSD | 110.0 | %REC |
| 13045233 | Carbon Tetrachloride | MSD | 110.0 | %REC |
| 13045274 | Benzene | MSD | 110.0 | %REC |
| 13055309 | Toluene | MSD | 110.0 | %REC |
| 13065378 | 1,1,1-Trichloroethane | MSD | 110.0 | %REC |
| 13065378 | 1,2-Dichloropropane | MSD | 110.0 | %REC |
| 13065378 | Chlorobenzene | MSD | 110.0 | %REC |
| 13085566 | Toluene | MSD | 110.0 | %REC |
| 13085566 | trans-1,2-Dichloroethene | MSD | 110.0 | %REC |
| 13115760 | Carbon Tetrachloride | MSD | 110.0 | %REC |
| 13055343 | Silver | MS | 111.0 | %REC |
| 13095609 | Cadmium | MS | 111.0 | %REC |
| 13105691 | Beryllium | MS | 111.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13125843 | Selenium | MS | 111.0 | %REC |
| 13115740 | Arsenic | MSD | 111.0 | %REC |
| 13025116 | Bromodichloromethane | MS | 111.0 | %REC |
| 13025116 | Bromodichloromethane | MS | 111.0 | %REC |
| 13035197 | 1,1,1-Trichloroethane | MS | 111.0 | %REC |
| 13035197 | 1,2-Dichloropropane | MS | 111.0 | %REC |
| 13035198 | 1,1-Dichloroethene | MS | 111.0 | %REC |
| 13035198 | 1,2-Dichloropropane | MS | 111.0 | %REC |
| 13045274 | Carbon Tetrachloride | MS | 111.0 | %REC |
| 13045278 | Carbon Tetrachloride | MS | 111.0 | %REC |
| 13045288 | 1,1,1-Trichloroethane | MS | 111.0 | %REC |
| 13065452 | Tetrachloroethene | MS | 111.0 | %REC |
| 13085563 | Bromodichloromethane | MS | 111.0 | %REC |
| 13105704 | Dibromochloromethane | MS | 111.0 | %REC |
| 13105704 | Hexachlorobutadiene | MS | 111.0 | %REC |
| 13105704 | trans-1,3-Dichloropropene | MS | 111.0 | %REC |
| 13035197 | Carbon Tetrachloride | MSD | 111.0 | %REC |
| 13035197 | Tetrachloroethene | MSD | 111.0 | %REC |
| 13045274 | 1,1,1-Trichloroethane | MSD | 111.0 | %REC |
| 13045274 | Methylene Chloride | MSD | 111.0 | %REC |
| 13045278 | Chloroform | MSD | 111.0 | %REC |
| 13055374 | 1,1-Dichloroethene | MSD | 111.0 | %REC |
| 13065378 | Chloroform | MSD | 111.0 | %REC |
| 13065413 | Carbon Tetrachloride | MSD | 111.0 | %REC |
| 13065430 | 1,1,1-Trichloroethane | MSD | 111.0 | %REC |
| 13085548 | Trichloroethene | MSD | 111.0 | %REC |
| 13105677 | trans-1,2-Dichloroethene | MSD | 111.0 | %REC |
| 13025101 | Uranium | MS | 112.0 | %REC |
| 13055302 | Silver | MS | 112.0 | %REC |
| 13055343 | Uranium | MS | 112.0 | %REC |
| 13095621 | Arsenic | MS | 112.0 | %REC |
| 13105691 | Uranium | MS | 112.0 | %REC |
| 13115725 | Copper | MS | 112.0 | %REC |
| 13115740 | Silver | MS | 112.0 | %REC |
| 13115740 | Cadmium | MSD | 112.0 | %REC |
| 13025116 | Carbon Tetrachloride | MS | 112.0 | %REC |
| 13025116 | Chloroform | MS | 112.0 | %REC |
| 13025131 | Bromodichloromethane | MS | 112.0 | %REC |
| 13035197 | Bromodichloromethane | MS | 112.0 | %REC |
| 13035211 | Tetrachloroethene | MS | 112.0 | %REC |
| 13065378 | Tetrachloroethene | MS | 112.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13065430 | Benzene | MS | 112.0 | %REC |
| 13065430 | Carbon Tetrachloride | MS | 112.0 | %REC |
| 13085538 | Methylene Chloride | MS | 112.0 | %REC |
| 13085550 | Chlorobenzene | MS | 112.0 | %REC |
| 13105704 | Trichloroethene | MS | 112.0 | %REC |
| 13015076 | 1,1-Dichloroethene | MSD | 112.0 | %REC |
| 13025115 | 1,1-Dichloroethene | MSD | 112.0 | %REC |
| 13025122 | 1,3-Dichlorobenzene | MSD | 112.0 | %REC |
| 13025130 | Bromodichloromethane | MSD | 112.0 | %REC |
| 13025131 | 1,1,1-Trichloroethane | MSD | 112.0 | %REC |
| 13045278 | 1,1,1-Trichloroethane | MSD | 112.0 | %REC |
| 13045278 | Toluene | MSD | 112.0 | %REC |
| 13045288 | 1,1-Dichloroethene | MSD | 112.0 | %REC |
| 13065378 | Benzene | MSD | 112.0 | %REC |
| 13085548 | Tetrachloroethene | MSD | 112.0 | %REC |
| 13085566 | 1,2-Dichloropropane | MSD | 112.0 | %REC |
| 13085566 | Chloroform | MSD | 112.0 | %REC |
| 13105704 | 1,1,1-Trichloroethane | MSD | 112.0 | %REC |
| 13105704 | Bromodichloromethane | MSD | 112.0 | %REC |
| 13025122 | Uranium | MS | 113.0 | %REC |
| 13035173 | Uranium | MS | 113.0 | %REC |
| 13085563 | Mercury | MS | 113.0 | %REC |
| 13095609 | Silver | MS | 113.0 | %REC |
| 13105691 | Cadmium | MS | 113.0 | %REC |
| 13115740 | Arsenic | MS | 113.0 | %REC |
| 13095612 | Nitrate+Nitrite as N | MS | 113.0 | %REC |
| 13025130 | Carbon Tetrachloride | MS | 113.0 | %REC |
| 13035197 | Carbon Tetrachloride | MS | 113.0 | %REC |
| 13035198 | 1,1,1-Trichloroethane | MS | 113.0 | %REC |
| 13035198 | Bromodichloromethane | MS | 113.0 | %REC |
| 13035198 | Carbon Tetrachloride | MS | 113.0 | %REC |
| 13035211 | 1,1-Dichloroethene | MS | 113.0 | %REC |
| 13045274 | trans-1,2-Dichloroethene | MS | 113.0 | %REC |
| 13055297 | 1,1,1-Trichloroethane | MS | 113.0 | %REC |
| 13055374 | Bromodichloromethane | MS | 113.0 | %REC |
| 13075491 | Carbon Tetrachloride | MS | 113.0 | %REC |
| 13085550 | Benzene | MS | 113.0 | %REC |
| 13085550 | Bromodichloromethane | MS | 113.0 | %REC |
| 13085550 | Ethylbenzene | MS | 113.0 | %REC |
| 13085563 | Carbon Tetrachloride | MS | 113.0 | %REC |
| 13085566 | 1,1,1-Trichloroethane | MS | 113.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13025111 | 1,1,1-Trichloroethane | MSD | 113.0 | %REC |
| 13025122 | 1,1,1-Trichloroethane | MSD | 113.0 | %REC |
| 13025122 | Chlorobenzene | MSD | 113.0 | %REC |
| 13025130 | 1,1,1-Trichloroethane | MSD | 113.0 | %REC |
| 13025130 | 1,1-Dichloroethene | MSD | 113.0 | %REC |
| 13025131 | Bromodichloromethane | MSD | 113.0 | %REC |
| 13025138 | 1,1-Dichloroethene | MSD | 113.0 | %REC |
| 13035211 | 1,1-Dichloroethene | MSD | 113.0 | %REC |
| 13045233 | 1,1,1-Trichloroethane | MSD | 113.0 | %REC |
| 13065430 | Tetrachloroethene | MSD | 113.0 | %REC |
| 13105704 | Carbon Tetrachloride | MSD | 113.0 | %REC |
| 13095621 | Copper | MS | 114.0 | %REC |
| 13115740 | Cadmium | MS | 114.0 | %REC |
| 13085563 | Mercury | MSD | 114.0 | %REC |
| 13025111 | Tetrachloroethene | MS | 114.0 | %REC |
| 13025131 | 1,1-Dichloroethene | MS | 114.0 | %REC |
| 13025139 | 1,2-Dichloropropane | MS | 114.0 | %REC |
| 13055297 | Carbon Tetrachloride | MS | 114.0 | %REC |
| 13065430 | Toluene | MS | 114.0 | %REC |
| 13025116 | 1,1,1-Trichloroethane | MSD | 114.0 | %REC |
| 13025116 | 1,1,1-Trichloroethane | MSD | 114.0 | %REC |
| 13025122 | Chloroform | MSD | 114.0 | %REC |
| 13025139 | Bromodichloromethane | MSD | 114.0 | %REC |
| 13035197 | 1,1,1-Trichloroethane | MSD | 114.0 | %REC |
| 13045233 | 1,1-Dichloroethene | MSD | 114.0 | %REC |
| 13045278 | 1,1-Dichloroethene | MSD | 114.0 | %REC |
| 13045278 | Methylene Chloride | MSD | 114.0 | %REC |
| 13055374 | Bromodichloromethane | MSD | 114.0 | %REC |
| 13065378 | Toluene | MSD | 114.0 | %REC |
| 13065413 | 1,1,1-Trichloroethane | MSD | 114.0 | %REC |
| 13085550 | Bromodichloromethane | MSD | 114.0 | %REC |
| 13085563 | Carbon Tetrachloride | MSD | 114.0 | %REC |
| 13105677 | 1,1-Dichloroethene | MSD | 114.0 | %REC |
| 13105704 | 1,2-Dichloroethane | MSD | 114.0 | %REC |
| 13125820 | Uranium | MS | 115.0 | %REC |
| 13035197 | Toluene | MS | 115.0 | %REC |
| 13035211 | Methylene Chloride | MS | 115.0 | %REC |
| 13045274 | 1,1,1-Trichloroethane | MS | 115.0 | %REC |
| 13045274 | Benzene | MS | 115.0 | %REC |
| 13065413 | Methylene Chloride | MS | 115.0 | %REC |
| 13065430 | Tetrachloroethene | MS | 115.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13085550 | 1,1-Dichloroethene | MS | 115.0 | %REC |
| 13105704 | cis-1,2-Dichloroethene | MS | 115.0 | %REC |
| 13025122 | Bromodichloromethane | MSD | 115.0 | %REC |
| 13025122 | Ethylbenzene | MSD | 115.0 | %REC |
| 13025122 | Toluene | MSD | 115.0 | %REC |
| 13025131 | 1,1-Dichloroethene | MSD | 115.0 | %REC |
| 13025139 | Methylene Chloride | MSD | 115.0 | %REC |
| 13025139 | Toluene | MSD | 115.0 | %REC |
| 13025139 | trans-1,2-Dichloroethene | MSD | 115.0 | %REC |
| 13035211 | Methylene Chloride | MSD | 115.0 | %REC |
| 13045278 | Bromodichloromethane | MSD | 115.0 | %REC |
| 13045288 | Carbon Tetrachloride | MSD | 115.0 | %REC |
| 13065378 | Carbon Tetrachloride | MSD | 115.0 | %REC |
| 13065378 | Trichloroethene | MSD | 115.0 | %REC |
| 13085550 | 1,1-Dichloroethene | MSD | 115.0 | %REC |
| 13085550 | Tetrachloroethene | MSD | 115.0 | %REC |
| 13025122 | Uranium | MS | 116.0 | %REC |
| 13095612 | Nitrate+Nitrite as N | MSD | 116.0 | %REC |
| 13015076 | 1,1-Dichloroethene | MS | 116.0 | %REC |
| 13025116 | Chloroform | MS | 116.0 | %REC |
| 13025116 | Methylene Chloride | MS | 116.0 | %REC |
| 13025116 | Methylene Chloride | MS | 116.0 | %REC |
| 13025122 | 1,1-Dichloroethene | MS | 116.0 | %REC |
| 13035197 | 1,1-Dichloroethene | MS | 116.0 | %REC |
| 13045274 | Chloroform | MS | 116.0 | %REC |
| 13055374 | 1,1-Dichloroethene | MS | 116.0 | %REC |
| 13025122 | trans-1,2-Dichloroethene | MSD | 116.0 | %REC |
| 13025130 | Methylene Chloride | MSD | 116.0 | %REC |
| 13025131 | Carbon Tetrachloride | MSD | 116.0 | %REC |
| 13025138 | Trichloroethene | MSD | 116.0 | %REC |
| 13025139 | 1,1,1-Trichloroethane | MSD | 116.0 | %REC |
| 13055309 | 1,1-Dichloroethene | MSD | 116.0 | %REC |
| 13065378 | trans-1,2-Dichloroethene | MSD | 116.0 | %REC |
| 13085550 | Toluene | MSD | 116.0 | %REC |
| 13085566 | 1,1,1-Trichloroethane | MSD | 116.0 | %REC |
| 13085566 | Methylene Chloride | MSD | 116.0 | %REC |
| 13125786 | Carbon Tetrachloride | MSD | 116.0 | %REC |
| 13025111 | 1,1-Dichloroethene | MS | 117.0 | %REC |
| 13025122 | 1,2-Dichloropropane | MS | 117.0 | %REC |
| 13025131 | Carbon Tetrachloride | MS | 117.0 | %REC |
| 13025139 | 1,1-Dichloroethene | MS | 117.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13045274 | Methylene Chloride | MS | 117.0 | %REC |
| 13025116 | 1,1-Dichloroethene | MSD | 117.0 | %REC |
| 13025116 | 1,1-Dichloroethene | MSD | 117.0 | %REC |
| 13025122 | Benzene | MSD | 117.0 | %REC |
| 13025139 | Benzene | MSD | 117.0 | %REC |
| 13035158 | 1,1-Dichloroethene | MSD | 117.0 | %REC |
| 13045278 | Carbon Tetrachloride | MSD | 117.0 | %REC |
| 13055374 | 1,1,1-Trichloroethane | MSD | 117.0 | %REC |
| 13065378 | Tetrachloroethene | MSD | 117.0 | %REC |
| 13065430 | trans-1,2-Dichloroethene | MSD | 117.0 | %REC |
| 13085550 | trans-1,2-Dichloroethene | MSD | 117.0 | %REC |
| 13085550 | Toluene | MS | 118.0 | %REC |
| 13025116 | Bromodichloromethane | MSD | 118.0 | %REC |
| 13025116 | Bromodichloromethane | MSD | 118.0 | %REC |
| 13025116 | Carbon Tetrachloride | MSD | 118.0 | %REC |
| 13035197 | 1,1-Dichloroethene | MSD | 118.0 | %REC |
| 13055309 | 1,1-Dichloroethene | MSD | 118.0 | %REC |
| 13065430 | Methylene Chloride | MSD | 118.0 | %REC |
| 13085550 | Chloroform | MSD | 118.0 | %REC |
| 13085563 | Cadmium | MS | 119.0 | %REC |
| 13035158 | 1,1-Dichloroethene | MS | 119.0 | %REC |
| 13045288 | Carbon Tetrachloride | MS | 119.0 | %REC |
| 13065430 | 1,1,1-Trichloroethane | MS | 119.0 | %REC |
| 13025116 | Chloroform | MSD | 119.0 | %REC |
| 13025130 | Carbon Tetrachloride | MSD | 119.0 | %REC |
| 13085550 | 1,2-Dichloropropane | MSD | 119.0 | %REC |
| 13085550 | Carbon Tetrachloride | MSD | 119.0 | %REC |
| 13085563 | Cadmium | MSD | 120.0 | %REC |
| 13085550 | Chloroform | MS | 120.0 | %REC |
| 13085566 | Carbon Tetrachloride | MS | 120.0 | %REC |
| 13065430 | 1,1-Dichloroethene | MSD | 120.0 | %REC |
| 13085548 | 1,1,1-Trichloroethane | MSD | 120.0 | %REC |
| 13085566 | Carbon Tetrachloride | MSD | 120.0 | %REC |
| 13025122 | Uranium | MSD | 121.0 | %REC |
| 13065413 | Carbon Tetrachloride | MS | 121.0 | %REC |
| 13065430 | Methylene Chloride | MS | 121.0 | %REC |
| 13085550 | Trichloroethene | MSD | 121.0 | %REC |
| 13105677 | Carbon Tetrachloride | MSD | 121.0 | %REC |
| 13065430 | Chloroform | MS | 122.0 | %REC |
| 13085550 | Carbon Tetrachloride | MS | 122.0 | %REC |
| 13105704 | Chloroform | MS | 122.0 | %REC |

*Table B-3 (continued). Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Recoveries*

| RIN | Analyte | Result Type | Result | Unit |
|---|---|---|---|---|
| 13025136 | Nitrate+Nitrite as N | MS | 123.0 | %REC |
| 13065413 | 1,1,1-Trichloroethane | MS | 123.0 | %REC |
| 13085550 | 1,2-Dichloropropane | MS | 123.0 | %REC |
| 13085550 | Tetrachloroethene | MS | 123.0 | %REC |
| 13085550 | trans-1,2-Dichloroethene | MS | 123.0 | %REC |
| 13025116 | Methylene Chloride | MSD | 123.0 | %REC |
| 13025116 | Methylene Chloride | MSD | 123.0 | %REC |
| 13025122 | 1,2-Dichloropropane | MSD | 123.0 | %REC |
| 13045274 | 1,1-Dichloroethene | MSD | 123.0 | %REC |
| 13025136 | Nitrate+Nitrite as N | MSD | 124.0 | %REC |
| 13055374 | 1,1,1-Trichloroethane | MS | 124.0 | %REC |
| 13065430 | trans-1,2-Dichloroethene | MS | 124.0 | %REC |
| 13105704 | Bromodichloromethane | MS | 124.0 | %REC |
| 13025139 | 1,2-Dichloropropane | MSD | 124.0 | %REC |
| 13105704 | 1,1,1-Trichloroethane | MS | 125.0 | %REC |
| 13025111 | 1,1-Dichloroethene | MSD | 125.0 | %REC |
| 13025122 | 1,1-Dichloroethene | MSD | 125.0 | %REC |
| 13085548 | Carbon Tetrachloride | MSD | 125.0 | %REC |
| 13055362 | Uranium | MS | 126.0 | %REC |
| 13065430 | Trichloroethene | MS | 126.0 | %REC |
| 13055374 | Carbon Tetrachloride | MSD | 126.0 | %REC |
| 13085550 | 1,1,1-Trichloroethane | MSD | 126.0 | %REC |
| 13085550 | Trichloroethene | MS | 127.0 | %REC |
| 13065430 | Chloroform | MSD | 127.0 | %REC |
| 13065430 | 1,1-Dichloroethene | MS | 128.0 | %REC |
| 13085550 | 1,1,1-Trichloroethane | MS | 128.0 | %REC |
| 13105704 | 1,2-Dichloroethane | MS | 128.0 | %REC |
| 13025139 | 1,1-Dichloroethene | MSD | 128.0 | %REC |
| 13055309 | Nitrate+Nitrite as N | MSD | 129.0 | %REC |
| 13105704 | Carbon Tetrachloride | MS | 130.0 | %REC |
| 13045274 | 1,1-Dichloroethene | MS | 131.0 | %REC |
| 13055374 | Carbon Tetrachloride | MS | 131.0 | %REC |
| 13105677 | 1,1-Dichloroethene | MS | 133.0 | %REC |
| 13055328 | Chloroform | MSD | 135.0 | %REC |
| 13075486 | Carbon Tetrachloride | MS | 136.0 | %REC |
| 13065413 | Trichloroethene | MS | 144.0 | %REC |
| 13105677 | Carbon Tetrachloride | MS | 144.0 | %REC |
| 13105677 | 1,1,1-Trichloroethane | MSD | 147.0 | %REC |
| 13015059 | Uranium | MS | 164.0 | %REC |
| 13105677 | 1,1,1-Trichloroethane | MS | 192.0 | %REC |
| 13065430 | Trichloroethene | MSD | 279.0 | %REC |

*Table B-4. Radionuclide Relative Bias Values for Lab Control Sample (LCS) Data*

| RESULT_TYPE_CODE | RIN | ANALYTE | RELATIVE_BIAS |
|---|---|---|---|
| LCS | 13105689 | Americium-241 | -0.166 |
| LCS | 13045288 | Americium-241 | -0.163 |
| LCS | 14015855 | Americium-241 | -0.159 |
| LCS | 14015856 | Americium-241 | -0.159 |
| LCS | 13125799 | Americium-241 | -0.125 |
| LCS | 13055327 | Americium-241 | -0.122 |
| LCS | 13105665 | Plutonium-239/240 | -0.122 |
| LCS | 13095608 | Plutonium-239/240 | -0.121 |
| LCS | 13095609 | Plutonium-239/240 | -0.121 |
| LCS | 13045288 | Americium-241 | -0.117 |
| LCS | 13115725 | Americium-241 | -0.109 |
| LCS | 13105689 | Americium-241 | -0.100 |
| LCS | 13065444 | Plutonium-239/240 | -0.094 |
| LCS | 13125839 | Americium-241 | -0.091 |
| LCS | 13065444 | Plutonium-239/240 | -0.088 |
| LCS | 13125799 | Americium-241 | -0.082 |
| LCS | 13045285 | Plutonium-239/240 | -0.079 |
| LCS | 13115725 | Plutonium-239/240 | -0.079 |
| LCS | 13055327 | Americium-241 | -0.078 |
| LCS | 13115748 | Plutonium-239/240 | -0.076 |
| LCS | 13125805 | Americium-241 | -0.073 |
| LCS | 13105665 | Plutonium-239/240 | -0.072 |
| LCS | 13075493 | Plutonium-239/240 | -0.071 |
| LCS | 13075455 | Americium-241 | -0.070 |
| LCS | 13115736 | Plutonium-239/240 | -0.070 |
| LCS | 13045288 | Plutonium-239/240 | -0.067 |
| LCS | 14015855 | Plutonium-239/240 | -0.066 |
| LCS | 14015856 | Plutonium-239/240 | -0.066 |
| LCS | 13105666 | Americium-241 | -0.065 |
| LCS | 13115748 | Americium-241 | -0.065 |
| LCS | 13115736 | Americium-241 | -0.059 |
| LCS | 13075521 | Americium-241 | -0.058 |
| LCS | 13105653 | Plutonium-239/240 | -0.058 |
| LCS | 13065444 | Americium-241 | -0.057 |
| LCS | 13045285 | Americium-241 | -0.056 |
| LCS | 13085546 | Plutonium-239/240 | -0.056 |
| LCS | 13115725 | Americium-241 | -0.056 |
| LCS | 14015879 | Plutonium-239/240 | -0.054 |
| LCS | 13025152 | Americium-241 | -0.049 |
| LCS | 13045226 | Plutonium-239/240 | -0.049 |
| LCS | 13105689 | Plutonium-239/240 | -0.048 |
| LCS | 13095621 | Plutonium-239/240 | -0.044 |

*Table B-4 (continued). Radionuclide Relative Bias Values for Lab Control Sample (LCS) Data*

| RESULT_TYPE_CODE | RIN | ANALYTE | RELATIVE_BIAS |
|---|---|---|---|
| LCS | 13095627 | Plutonium-239/240 | -0.044 |
| LCS | 13115748 | Plutonium-239/240 | -0.044 |
| LCS | 13105674 | Plutonium-239/240 | -0.042 |
| LCS | 13105691 | Plutonium-239/240 | -0.042 |
| LCS | 13065444 | Americium-241 | -0.041 |
| LCS | 13055343 | Plutonium-239/240 | -0.040 |
| LCS | 13055361 | Plutonium-239/240 | -0.040 |
| LCS | 13055343 | Americium-241 | -0.036 |
| LCS | 13055361 | Americium-241 | -0.036 |
| LCS | 13095621 | Plutonium-239/240 | -0.036 |
| LCS | 13095627 | Plutonium-239/240 | -0.036 |
| LCS | 13105653 | Plutonium-239/240 | -0.035 |
| LCS | 13105674 | Americium-241 | -0.035 |
| LCS | 13105691 | Americium-241 | -0.035 |
| LCS | 13075521 | Plutonium-239/240 | -0.033 |
| LCS | 14015856 | Plutonium-239/240 | -0.031 |
| LCS | 13065393 | Americium-241 | -0.029 |
| LCS | 13125805 | Americium-241 | -0.028 |
| LCS | 13125799 | Plutonium-239/240 | -0.027 |
| LCS | 13105674 | Americium-241 | -0.026 |
| LCS | 13105691 | Americium-241 | -0.026 |
| LCS | 13075493 | Americium-241 | -0.022 |
| LCS | 13075521 | Plutonium-239/240 | -0.021 |
| LCS | 13015059 | Americium-241 | -0.020 |
| LCS | 13015059 | Plutonium-239/240 | -0.020 |
| LCS | 13035200 | Plutonium-239/240 | -0.020 |
| LCS | 13035201 | Plutonium-239/240 | -0.020 |
| LCS | 14015856 | Americium-241 | -0.020 |
| LCS | 13045287 | Americium-241 | -0.019 |
| LCS | 13125839 | Plutonium-239/240 | -0.019 |
| LCS | 14015856 | Plutonium-239/240 | -0.019 |
| LCS | 13115736 | Plutonium-239/240 | -0.018 |
| LCS | 13055327 | Plutonium-239/240 | -0.017 |
| LCS | 13125839 | Americium-241 | -0.017 |
| LCS | 14015879 | Plutonium-239/240 | -0.017 |
| LCS | 13115748 | Americium-241 | -0.016 |
| LCS | 13075455 | Plutonium-239/240 | -0.013 |
| LCS | 13045226 | Americium-241 | -0.011 |
| LCS | 13035200 | Americium-241 | -0.010 |
| LCS | 13035201 | Americium-241 | -0.010 |
| LCS | 13115725 | Americium-241 | -0.010 |

*Table B-4 (continued). Radionuclide Relative Bias Values for Lab Control Sample (LCS) Data*

| RESULT_TYPE_CODE | RIN | ANALYTE | RELATIVE_BIAS |
|---|---|---|---|
| LCS | 14015856 | Americium-241 | -0.009 |
| LCS | 13055343 | Plutonium-239/240 | -0.006 |
| LCS | 13055361 | Plutonium-239/240 | -0.006 |
| LCS | 13055362 | Plutonium-239/240 | -0.006 |
| LCS | 13065393 | Plutonium-239/240 | -0.006 |
| LCS | 13095608 | Americium-241 | -0.003 |
| LCS | 13095609 | Americium-241 | -0.003 |
| LCS | 13115736 | Americium-241 | -0.003 |
| LCS | 13025152 | Americium-241 | -0.002 |
| LCS | 14015855 | Americium-241 | -0.001 |
| LCS | 14015856 | Americium-241 | -0.001 |
| LCS | 13045285 | Americium-241 | 0.000 |
| LCS | 13055302 | Americium-241 | 0.000 |
| LCS | 13055304 | Americium-241 | 0.000 |
| LCS | 13065393 | Americium-241 | 0.000 |
| LCS | 13075455 | Americium-241 | 0.000 |
| LCS | 13095621 | Americium-241 | 0.000 |
| LCS | 13095627 | Americium-241 | 0.000 |
| LCS | 13105666 | Plutonium-239/240 | 0.000 |
| LCS | 13105689 | Plutonium-239/240 | 0.000 |
| LCS | 13125799 | Plutonium-239/240 | 0.000 |
| LCS | 13125839 | Plutonium-239/240 | 0.000 |
| LCS | 13125843 | Americium-241 | 0.000 |
| LCS | 13125844 | Americium-241 | 0.000 |
| LCS | 13015059 | Plutonium-239/240 | 0.010 |
| LCS | 13045285 | Plutonium-239/240 | 0.010 |
| LCS | 13045287 | Plutonium-239/240 | 0.010 |
| LCS | 13055362 | Americium-241 | 0.010 |
| LCS | 13065393 | Americium-241 | 0.010 |
| LCS | 13085545 | Americium-241 | 0.010 |
| LCS | 13095621 | Americium-241 | 0.010 |
| LCS | 13095627 | Americium-241 | 0.010 |
| LCS | 13105653 | Americium-241 | 0.010 |
| LCS | 13115725 | Plutonium-239/240 | 0.010 |
| LCS | 13125843 | Plutonium-239/240 | 0.010 |
| LCS | 13125844 | Plutonium-239/240 | 0.010 |
| LCS | 13045287 | Americium-241 | 0.020 |
| LCS | 13045287 | Plutonium-239/240 | 0.020 |
| LCS | 13055302 | Plutonium-239/240 | 0.020 |
| LCS | 13055304 | Plutonium-239/240 | 0.020 |
| LCS | 13055327 | Plutonium-239/240 | 0.020 |

*Table B-4 (continued). Radionuclide Relative Bias Values for Lab Control Sample (LCS) Data*

| RESULT_TYPE_CODE | RIN | ANALYTE | RELATIVE_BIAS |
|---|---|---|---|
| LCS | 13085545 | Plutonium-239/240 | 0.020 |
| LCS | 13085546 | Plutonium-239/240 | 0.020 |
| LCS | 13105666 | Americium-241 | 0.020 |
| LCS | 13035200 | Americium-241 | 0.030 |
| LCS | 13035200 | Plutonium-239/240 | 0.030 |
| LCS | 13035201 | Americium-241 | 0.030 |
| LCS | 13035201 | Plutonium-239/240 | 0.030 |
| LCS | 13045226 | Plutonium-239/240 | 0.030 |
| LCS | 13065444 | Americium-241 | 0.030 |
| LCS | 13075493 | Plutonium-239/240 | 0.030 |
| LCS | 13085545 | Plutonium-239/240 | 0.030 |
| LCS | 13095608 | Americium-241 | 0.030 |
| LCS | 13095609 | Americium-241 | 0.030 |
| LCS | 13105653 | Americium-241 | 0.030 |
| LCS | 13105665 | Americium-241 | 0.030 |
| LCS | 14015879 | Americium-241 | 0.030 |
| LCS | 13045226 | Americium-241 | 0.040 |
| LCS | 13105674 | Plutonium-239/240 | 0.040 |
| LCS | 13105691 | Plutonium-239/240 | 0.040 |
| LCS | 13125805 | Plutonium-239/240 | 0.040 |
| LCS | 13015059 | Americium-241 | 0.050 |
| LCS | 13025152 | Plutonium-239/240 | 0.050 |
| LCS | 13055302 | Americium-241 | 0.050 |
| LCS | 13055304 | Americium-241 | 0.050 |
| LCS | 13065444 | Americium-241 | 0.050 |
| LCS | 13075493 | Americium-241 | 0.050 |
| LCS | 13085545 | Americium-241 | 0.050 |
| LCS | 13115725 | Americium-241 | 0.050 |
| LCS | 13125805 | Plutonium-239/240 | 0.050 |
| LCS | 13075455 | Plutonium-239/240 | 0.060 |
| LCS | 13085546 | Americium-241 | 0.060 |
| LCS | 13085546 | Americium-241 | 0.060 |
| LCS | 13095608 | Plutonium-239/240 | 0.060 |
| LCS | 13095609 | Plutonium-239/240 | 0.060 |
| LCS | 13055362 | Plutonium-239/240 | 0.070 |
| LCS | 13065393 | Plutonium-239/240 | 0.070 |
| LCS | 13045288 | Plutonium-239/240 | 0.080 |
| LCS | 13055302 | Plutonium-239/240 | 0.080 |
| LCS | 13055304 | Plutonium-239/240 | 0.080 |
| LCS | 14015879 | Americium-241 | 0.080 |
| LCS | 13025152 | Plutonium-239/240 | 0.090 |

*Table B-4 (continued). Radionuclide Relative Bias Values for Lab Control Sample (LCS) Data*

| RESULT_TYPE_CODE | RIN | ANALYTE | RELATIVE_BIAS |
|---|---|---|---|
| LCS | 13125843 | Americium-241 | 0.090 |
| LCS | 13125843 | Plutonium-239/240 | 0.090 |
| LCS | 13125844 | Americium-241 | 0.090 |
| LCS | 13125844 | Plutonium-239/240 | 0.090 |
| LCS | 13105665 | Americium-241 | 0.100 |
| LCS | 14015855 | Plutonium-239/240 | 0.100 |
| LCS | 14015856 | Plutonium-239/240 | 0.100 |
| LCS | 13075521 | Americium-241 | 0.110 |
| LCS | 13105666 | Plutonium-239/240 | 0.110 |
| LCS | 13055362 | Americium-241 | 0.120 |
| LCS | 13065393 | Americium-241 | 0.120 |
| LCS | 13055343 | Americium-241 | 0.130 |
| LCS | 13055361 | Americium-241 | 0.130 |

*Table B-5. Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | Metals | 13075507 | Uranium | 88.0 | %REC |
| LCS | Metals | 13055304 | Boron | 88.5 | %REC |
| LCS | Metals | 13075507 | Uranium | 90.0 | %REC |
| LCS | Metals | 13105704 | Uranium | 90.0 | %REC |
| LCS | Metals | 13015059 | Cadmium | 90.6 | %REC |
| LCS | Metals | 13015076 | Beryllium | 91.0 | %REC |
| LCS | Metals | 13125785 | Uranium | 91.0 | %REC |
| LCS | Metals | 13085546 | Uranium | 91.8 | %REC |
| LCS | Metals | 13075472 | Uranium | 92.0 | %REC |
| LCS | Metals | 13105674 | Boron | 92.1 | %REC |
| LCS | Metals | 13105674 | Uranium | 92.3 | %REC |
| LCS | Metals | 13105666 | Uranium | 92.6 | %REC |
| LCS | Metals | 13025141 | Beryllium | 93.0 | %REC |
| LCS | Metals | 13115760 | Uranium | 93.0 | %REC |
| LCS | Metals | 13055327 | Chromium | 93.6 | %REC |
| LCS | Metals | 13095621 | Uranium | 93.8 | %REC |
| LCS | Metals | 13085550 | Uranium | 94.0 | %REC |
| LCS | Metals | 13085550 | Zinc | 94.0 | %REC |
| LCS | Metals | 13085570 | Uranium | 94.0 | %REC |
| LCS | Metals | 13115722 | Mercury | 94.0 | %REC |
| LCS | Metals | 13125842 | Uranium | 94.0 | %REC |
| LCS | Metals | 14015882 | Uranium | 94.0 | %REC |
| LCS | Metals | 14015882 | Uranium | 94.0 | %REC |
| LCS | Metals | 13065444 | Boron | 94.1 | %REC |
| LCS | Metals | 13015059 | Silver | 94.6 | %REC |
| LCS | Metals | 13045285 | Chromium | 94.7 | %REC |
| LCS | Metals | 13085545 | Silver | 94.8 | %REC |
| LCS | Metals | 13105674 | Cadmium | 94.8 | %REC |
| LCS | Metals | 13025122 | Nickel | 95.0 | %REC |
| LCS | Metals | 13055339 | Uranium | 95.0 | %REC |
| LCS | Metals | 13085550 | Arsenic | 95.0 | %REC |
| LCS | Metals | 13085550 | Nickel | 95.0 | %REC |
| LCS | Metals | 13085550 | Selenium | 95.0 | %REC |
| LCS | Metals | 13105674 | Selenium | 95.0 | %REC |
| LCS | Metals | 13125786 | Arsenic | 95.0 | %REC |
| LCS | Metals | 14015882 | Mercury | 95.0 | %REC |
| LCS | Metals | 14025915 | Beryllium | 95.0 | %REC |
| LCS | Metals | 13075495 | Boron | 95.3 | %REC |
| LCS | Metals | 13105674 | Uranium | 95.4 | %REC |
| LCS | Metals | 13085546 | Selenium | 95.5 | %REC |
| LCS | Metals | 13085545 | Cadmium | 95.6 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | Metals | 13065393 | Chromium | 95.7 | %REC |
| LCS | Metals | 13055304 | Cadmium | 95.8 | %REC |
| LCS | Metals | 13055343 | Uranium | 95.8 | %REC |
| LCS | Metals | 13105674 | Zinc | 95.8 | %REC |
| LCS | Metals | 13055302 | Chromium | 95.9 | %REC |
| LCS | Metals | 13055304 | Silver | 95.9 | %REC |
| LCS | Metals | 13055343 | Zinc | 95.9 | %REC |
| LCS | Metals | 13015076 | Chromium | 96.0 | %REC |
| LCS | Metals | 13025103 | Mercury | 96.0 | %REC |
| LCS | Metals | 13025103 | Mercury | 96.0 | %REC |
| LCS | Metals | 13025122 | Zinc | 96.0 | %REC |
| LCS | Metals | 13045278 | Mercury | 96.0 | %REC |
| LCS | Metals | 13055304 | Beryllium | 96.0 | %REC |
| LCS | Metals | 13085544 | Uranium | 96.0 | %REC |
| LCS | Metals | 13085550 | Boron | 96.0 | %REC |
| LCS | Metals | 13115740 | Beryllium | 96.0 | %REC |
| LCS | Metals | 13115740 | Mercury | 96.0 | %REC |
| LCS | Metals | 13115740 | Zinc | 96.0 | %REC |
| LCS | Metals | 14025915 | Nickel | 96.0 | %REC |
| LCS | Metals | 14025915 | Zinc | 96.0 | %REC |
| LCS | Metals | 13065444 | Uranium | 96.1 | %REC |
| LCS | Metals | 13055343 | Selenium | 96.5 | %REC |
| LCS | Metals | 13085546 | Boron | 96.5 | %REC |
| LCS | Metals | 13065444 | Arsenic | 96.7 | %REC |
| LCS | Metals | 13065444 | Selenium | 96.8 | %REC |
| LCS | Metals | 13115725 | Selenium | 96.8 | %REC |
| LCS | Metals | 13055304 | Arsenic | 96.9 | %REC |
| LCS | Metals | 13015076 | Arsenic | 97.0 | %REC |
| LCS | Metals | 13015076 | Selenium | 97.0 | %REC |
| LCS | Metals | 13025122 | Lead | 97.0 | %REC |
| LCS | Metals | 13025141 | Mercury | 97.0 | %REC |
| LCS | Metals | 13045285 | Beryllium | 97.0 | %REC |
| LCS | Metals | 13045287 | Boron | 97.0 | %REC |
| LCS | Metals | 13055343 | Chromium | 97.0 | %REC |
| LCS | Metals | 13085550 | Chromium | 97.0 | %REC |
| LCS | Metals | 13085550 | Copper | 97.0 | %REC |
| LCS | Metals | 13085550 | Lead | 97.0 | %REC |
| LCS | Metals | 13125842 | Uranium | 97.0 | %REC |
| LCS | Metals | 14025915 | Arsenic | 97.0 | %REC |
| LCS | Metals | 14025915 | Cadmium | 97.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | Metals | 13045287 | Zinc | 97.2 | %REC |
| LCS | Metals | 13075495 | Boron | 97.2 | %REC |
| LCS | Metals | 13095608 | Beryllium | 97.2 | %REC |
| LCS | Metals | 13065393 | Beryllium | 97.7 | %REC |
| LCS | Metals | 13065444 | Beryllium | 97.7 | %REC |
| LCS | Metals | 13045226 | Uranium | 97.8 | %REC |
| LCS | Metals | 13055304 | Lead | 97.8 | %REC |
| LCS | Metals | 13025122 | Beryllium | 98.0 | %REC |
| LCS | Metals | 13025122 | Boron | 98.0 | %REC |
| LCS | Metals | 13025122 | Chromium | 98.0 | %REC |
| LCS | Metals | 13025122 | Selenium | 98.0 | %REC |
| LCS | Metals | 13025122 | Silver | 98.0 | %REC |
| LCS | Metals | 13065378 | Uranium | 98.0 | %REC |
| LCS | Metals | 13075495 | Uranium | 98.0 | %REC |
| LCS | Metals | 13085550 | Beryllium | 98.0 | %REC |
| LCS | Metals | 13085563 | Beryllium | 98.0 | %REC |
| LCS | Metals | 13085563 | Lead | 98.0 | %REC |
| LCS | Metals | 13095621 | Uranium | 98.0 | %REC |
| LCS | Metals | 13095627 | Uranium | 98.0 | %REC |
| LCS | Metals | 13105677 | Uranium | 98.0 | %REC |
| LCS | Metals | 13105685 | Uranium | 98.0 | %REC |
| LCS | Metals | 13125799 | Uranium | 98.0 | %REC |
| LCS | Metals | 14015882 | Beryllium | 98.0 | %REC |
| LCS | Metals | 13105674 | Chromium | 98.1 | %REC |
| LCS | Metals | 13045287 | Selenium | 98.2 | %REC |
| LCS | Metals | 13055304 | Chromium | 98.2 | %REC |
| LCS | Metals | 13055304 | Selenium | 98.2 | %REC |
| LCS | Metals | 13045287 | Cadmium | 98.3 | %REC |
| LCS | Metals | 13055304 | Zinc | 98.3 | %REC |
| LCS | Metals | 13115725 | Uranium | 98.3 | %REC |
| LCS | Metals | 13045226 | Boron | 98.4 | %REC |
| LCS | Metals | 13055304 | Nickel | 98.5 | %REC |
| LCS | Metals | 13085546 | Zinc | 98.5 | %REC |
| LCS | Metals | 13095608 | Chromium | 98.5 | %REC |
| LCS | Metals | 13045287 | Chromium | 98.6 | %REC |
| LCS | Metals | 13125843 | Uranium | 98.6 | %REC |
| LCS | Metals | 13105674 | Nickel | 98.7 | %REC |
| LCS | Metals | 13105666 | Mercury | 98.8 | %REC |
| LCS | Metals | 13065444 | Chromium | 98.9 | %REC |
| LCS | Metals | 13085546 | Chromium | 98.9 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | Metals | 13015076 | Boron | 99.0 | %REC |
| LCS | Metals | 13015076 | Copper | 99.0 | %REC |
| LCS | Metals | 13015076 | Lead | 99.0 | %REC |
| LCS | Metals | 13025122 | Arsenic | 99.0 | %REC |
| LCS | Metals | 13025122 | Copper | 99.0 | %REC |
| LCS | Metals | 13025122 | Uranium | 99.0 | %REC |
| LCS | Metals | 13025141 | Cadmium | 99.0 | %REC |
| LCS | Metals | 13025141 | Chromium | 99.0 | %REC |
| LCS | Metals | 13025141 | Lead | 99.0 | %REC |
| LCS | Metals | 13025141 | Nickel | 99.0 | %REC |
| LCS | Metals | 13025141 | Uranium | 99.0 | %REC |
| LCS | Metals | 13035173 | Uranium | 99.0 | %REC |
| LCS | Metals | 13045275 | Uranium | 99.0 | %REC |
| LCS | Metals | 13045278 | Copper | 99.0 | %REC |
| LCS | Metals | 13055340 | Selenium | 99.0 | %REC |
| LCS | Metals | 13065444 | Zinc | 99.0 | %REC |
| LCS | Metals | 13075471 | Mercury | 99.0 | %REC |
| LCS | Metals | 13085563 | Uranium | 99.0 | %REC |
| LCS | Metals | 14025915 | Chromium | 99.0 | %REC |
| LCS | Metals | 14025915 | Copper | 99.0 | %REC |
| LCS | Metals | 14025915 | Selenium | 99.0 | %REC |
| LCS | Metals | 14025915 | Silver | 99.0 | %REC |
| LCS | Metals | 13055343 | Boron | 99.2 | %REC |
| LCS | Metals | 13045285 | Cadmium | 99.3 | %REC |
| LCS | Metals | 13055304 | Cadmium | 99.3 | %REC |
| LCS | Metals | 13065444 | Nickel | 99.3 | %REC |
| LCS | Metals | 13045285 | Uranium | 99.4 | %REC |
| LCS | Metals | 13065444 | Cadmium | 99.4 | %REC |
| LCS | Metals | 13105674 | Cadmium | 99.4 | %REC |
| LCS | Metals | 13045287 | Cadmium | 99.5 | %REC |
| LCS | Metals | 13075493 | Chromium | 99.5 | %REC |
| LCS | Metals | 13075495 | Chromium | 99.5 | %REC |
| LCS | Metals | 13085546 | Beryllium | 99.5 | %REC |
| LCS | Metals | 13055304 | Uranium | 99.6 | %REC |
| LCS | Metals | 13055343 | Nickel | 99.6 | %REC |
| LCS | Metals | 13095609 | Beryllium | 99.6 | %REC |
| LCS | Metals | 13105689 | Uranium | 99.6 | %REC |
| LCS | Metals | 13125843 | Silver | 99.6 | %REC |
| LCS | Metals | 13055304 | Copper | 99.7 | %REC |
| LCS | Metals | 13055361 | Chromium | 99.7 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | Metals | 13075495 | Uranium | 99.7 | %REC |
| LCS | Metals | 13125843 | Boron | 99.7 | %REC |
| LCS | Metals | 13045287 | Beryllium | 99.8 | %REC |
| LCS | Metals | 13055302 | Beryllium | 99.9 | %REC |
| LCS | Metals | 13085546 | Silver | 99.9 | %REC |
| LCS | Metals | 13125843 | Nickel | 99.9 | %REC |
| LCS | Metals | 13015076 | Silver | 100.0 | %REC |
| LCS | Metals | 13025122 | Cadmium | 100.0 | %REC |
| LCS | Metals | 13045278 | Uranium | 100.0 | %REC |
| LCS | Metals | 13055297 | Uranium | 100.0 | %REC |
| LCS | Metals | 13055306 | Uranium | 100.0 | %REC |
| LCS | Metals | 13055327 | Beryllium | 100.0 | %REC |
| LCS | Metals | 13055361 | Beryllium | 100.0 | %REC |
| LCS | Metals | 13055375 | Uranium | 100.0 | %REC |
| LCS | Metals | 13065444 | Lead | 100.0 | %REC |
| LCS | Metals | 13085546 | Arsenic | 100.0 | %REC |
| LCS | Metals | 13085550 | Mercury | 100.0 | %REC |
| LCS | Metals | 13085563 | Arsenic | 100.0 | %REC |
| LCS | Metals | 13115722 | Beryllium | 100.0 | %REC |
| LCS | Metals | 13115725 | Lead | 100.0 | %REC |
| LCS | Metals | 13125799 | Cadmium | 100.0 | %REC |
| LCS | Metals | 14015875 | Uranium | 100.0 | %REC |
| LCS | Metals | 14015882 | Nickel | 100.0 | %REC |
| LCS | Metals | 13015076 | Mercury | 101.0 | %REC |
| LCS | Metals | 13015076 | Nickel | 101.0 | %REC |
| LCS | Metals | 13025136 | Uranium | 101.0 | %REC |
| LCS | Metals | 13025141 | Copper | 101.0 | %REC |
| LCS | Metals | 13035200 | Cadmium | 101.0 | %REC |
| LCS | Metals | 13045278 | Boron | 101.0 | %REC |
| LCS | Metals | 13045278 | Lead | 101.0 | %REC |
| LCS | Metals | 13045278 | Mercury | 101.0 | %REC |
| LCS | Metals | 13045278 | Nickel | 101.0 | %REC |
| LCS | Metals | 13045287 | Arsenic | 101.0 | %REC |
| LCS | Metals | 13045287 | Nickel | 101.0 | %REC |
| LCS | Metals | 13045287 | Silver | 101.0 | %REC |
| LCS | Metals | 13055304 | Uranium | 101.0 | %REC |
| LCS | Metals | 13055335 | Beryllium | 101.0 | %REC |
| LCS | Metals | 13055335 | Lead | 101.0 | %REC |
| LCS | Metals | 13055335 | Nickel | 101.0 | %REC |
| LCS | Metals | 13055335 | Uranium | 101.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | Metals | 13055343 | Cadmium | 101.0 | %REC |
| LCS | Metals | 13055343 | Silver | 101.0 | %REC |
| LCS | Metals | 13065444 | Copper | 101.0 | %REC |
| LCS | Metals | 13075455 | Uranium | 101.0 | %REC |
| LCS | Metals | 13075495 | Copper | 101.0 | %REC |
| LCS | Metals | 13075495 | Nickel | 101.0 | %REC |
| LCS | Metals | 13075495 | Selenium | 101.0 | %REC |
| LCS | Metals | 13075495 | Zinc | 101.0 | %REC |
| LCS | Metals | 13075521 | Chromium | 101.0 | %REC |
| LCS | Metals | 13085546 | Cadmium | 101.0 | %REC |
| LCS | Metals | 13085546 | Copper | 101.0 | %REC |
| LCS | Metals | 13085546 | Lead | 101.0 | %REC |
| LCS | Metals | 13085546 | Nickel | 101.0 | %REC |
| LCS | Metals | 13085546 | Uranium | 101.0 | %REC |
| LCS | Metals | 13085550 | Cadmium | 101.0 | %REC |
| LCS | Metals | 13085550 | Silver | 101.0 | %REC |
| LCS | Metals | 13095595 | Uranium | 101.0 | %REC |
| LCS | Metals | 13095621 | Boron | 101.0 | %REC |
| LCS | Metals | 13095621 | Mercury | 101.0 | %REC |
| LCS | Metals | 13105674 | Beryllium | 101.0 | %REC |
| LCS | Metals | 13105674 | Copper | 101.0 | %REC |
| LCS | Metals | 13105674 | Silver | 101.0 | %REC |
| LCS | Metals | 13105691 | Chromium | 101.0 | %REC |
| LCS | Metals | 13115722 | Nickel | 101.0 | %REC |
| LCS | Metals | 13115722 | Selenium | 101.0 | %REC |
| LCS | Metals | 13115722 | Silver | 101.0 | %REC |
| LCS | Metals | 13115725 | Boron | 101.0 | %REC |
| LCS | Metals | 13115725 | Mercury | 101.0 | %REC |
| LCS | Metals | 13115740 | Lead | 101.0 | %REC |
| LCS | Metals | 13115740 | Nickel | 101.0 | %REC |
| LCS | Metals | 13115748 | Uranium | 101.0 | %REC |
| LCS | Metals | 13115755 | Uranium | 101.0 | %REC |
| LCS | Metals | 13125805 | Uranium | 101.0 | %REC |
| LCS | Metals | 13125839 | Uranium | 101.0 | %REC |
| LCS | Metals | 13125843 | Arsenic | 101.0 | %REC |
| LCS | Metals | 13125843 | Chromium | 101.0 | %REC |
| LCS | Metals | 13125843 | Zinc | 101.0 | %REC |
| LCS | Metals | 14015856 | Cadmium | 101.0 | %REC |
| LCS | Metals | 14015856 | Chromium | 101.0 | %REC |
| LCS | Metals | 14015856 | Silver | 101.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | Metals | 14015882 | Chromium | 101.0 | %REC |
| LCS | Metals | 14015882 | Zinc | 101.0 | %REC |
| LCS | Metals | 14025915 | Uranium | 101.0 | %REC |
| LCS | Metals | 13015060 | Uranium | 102.0 | %REC |
| LCS | Metals | 13025122 | Mercury | 102.0 | %REC |
| LCS | Metals | 13025136 | Uranium | 102.0 | %REC |
| LCS | Metals | 13025141 | Arsenic | 102.0 | %REC |
| LCS | Metals | 13025141 | Boron | 102.0 | %REC |
| LCS | Metals | 13025152 | Uranium | 102.0 | %REC |
| LCS | Metals | 13045278 | Chromium | 102.0 | %REC |
| LCS | Metals | 13045278 | Selenium | 102.0 | %REC |
| LCS | Metals | 13045287 | Lead | 102.0 | %REC |
| LCS | Metals | 13055297 | Uranium | 102.0 | %REC |
| LCS | Metals | 13055302 | Uranium | 102.0 | %REC |
| LCS | Metals | 13055304 | Silver | 102.0 | %REC |
| LCS | Metals | 13055306 | Uranium | 102.0 | %REC |
| LCS | Metals | 13055309 | Uranium | 102.0 | %REC |
| LCS | Metals | 13055335 | Chromium | 102.0 | %REC |
| LCS | Metals | 13055335 | Mercury | 102.0 | %REC |
| LCS | Metals | 13055343 | Arsenic | 102.0 | %REC |
| LCS | Metals | 13055343 | Beryllium | 102.0 | %REC |
| LCS | Metals | 13055343 | Copper | 102.0 | %REC |
| LCS | Metals | 13065393 | Silver | 102.0 | %REC |
| LCS | Metals | 13065393 | Uranium | 102.0 | %REC |
| LCS | Metals | 13065394 | Uranium | 102.0 | %REC |
| LCS | Metals | 13065444 | Mercury | 102.0 | %REC |
| LCS | Metals | 13075493 | Beryllium | 102.0 | %REC |
| LCS | Metals | 13075495 | Beryllium | 102.0 | %REC |
| LCS | Metals | 13075495 | Chromium | 102.0 | %REC |
| LCS | Metals | 13075495 | Selenium | 102.0 | %REC |
| LCS | Metals | 13075495 | Silver | 102.0 | %REC |
| LCS | Metals | 13075495 | Silver | 102.0 | %REC |
| LCS | Metals | 13085545 | Beryllium | 102.0 | %REC |
| LCS | Metals | 13085545 | Chromium | 102.0 | %REC |
| LCS | Metals | 13085546 | Mercury | 102.0 | %REC |
| LCS | Metals | 13085563 | Boron | 102.0 | %REC |
| LCS | Metals | 13085563 | Nickel | 102.0 | %REC |
| LCS | Metals | 13085563 | Zinc | 102.0 | %REC |
| LCS | Metals | 13095609 | Chromium | 102.0 | %REC |
| LCS | Metals | 13095621 | Chromium | 102.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | Metals | 13095625 | Uranium | 102.0 | %REC |
| LCS | Metals | 13095627 | Chromium | 102.0 | %REC |
| LCS | Metals | 13105666 | Boron | 102.0 | %REC |
| LCS | Metals | 13105666 | Selenium | 102.0 | %REC |
| LCS | Metals | 13105674 | Arsenic | 102.0 | %REC |
| LCS | Metals | 13105674 | Lead | 102.0 | %REC |
| LCS | Metals | 13115721 | Uranium | 102.0 | %REC |
| LCS | Metals | 13115722 | Boron | 102.0 | %REC |
| LCS | Metals | 13115722 | Chromium | 102.0 | %REC |
| LCS | Metals | 13115722 | Lead | 102.0 | %REC |
| LCS | Metals | 13115722 | Uranium | 102.0 | %REC |
| LCS | Metals | 13115722 | Zinc | 102.0 | %REC |
| LCS | Metals | 13115725 | Silver | 102.0 | %REC |
| LCS | Metals | 13125843 | Beryllium | 102.0 | %REC |
| LCS | Metals | 13125843 | Cadmium | 102.0 | %REC |
| LCS | Metals | 14015856 | Beryllium | 102.0 | %REC |
| LCS | Metals | 14015856 | Uranium | 102.0 | %REC |
| LCS | Metals | 14015879 | Uranium | 102.0 | %REC |
| LCS | Metals | 14015882 | Arsenic | 102.0 | %REC |
| LCS | Metals | 14015882 | Lead | 102.0 | %REC |
| LCS | Metals | 13015059 | Chromium | 103.0 | %REC |
| LCS | Metals | 13015076 | Zinc | 103.0 | %REC |
| LCS | Metals | 13025141 | Selenium | 103.0 | %REC |
| LCS | Metals | 13035203 | Uranium | 103.0 | %REC |
| LCS | Metals | 13045226 | Mercury | 103.0 | %REC |
| LCS | Metals | 13045226 | Selenium | 103.0 | %REC |
| LCS | Metals | 13045278 | Arsenic | 103.0 | %REC |
| LCS | Metals | 13045278 | Beryllium | 103.0 | %REC |
| LCS | Metals | 13045287 | Copper | 103.0 | %REC |
| LCS | Metals | 13045287 | Mercury | 103.0 | %REC |
| LCS | Metals | 13045287 | Uranium | 103.0 | %REC |
| LCS | Metals | 13045287 | Uranium | 103.0 | %REC |
| LCS | Metals | 13055304 | Mercury | 103.0 | %REC |
| LCS | Metals | 13055335 | Boron | 103.0 | %REC |
| LCS | Metals | 13055335 | Copper | 103.0 | %REC |
| LCS | Metals | 13065444 | Silver | 103.0 | %REC |
| LCS | Metals | 13075495 | Zinc | 103.0 | %REC |
| LCS | Metals | 13075521 | Beryllium | 103.0 | %REC |
| LCS | Metals | 13085563 | Chromium | 103.0 | %REC |
| LCS | Metals | 13095608 | Uranium | 103.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | Metals | 13095621 | Beryllium | 103.0 | %REC |
| LCS | Metals | 13095621 | Cadmium | 103.0 | %REC |
| LCS | Metals | 13095627 | Beryllium | 103.0 | %REC |
| LCS | Metals | 13095627 | Cadmium | 103.0 | %REC |
| LCS | Metals | 13105666 | Cadmium | 103.0 | %REC |
| LCS | Metals | 13105666 | Uranium | 103.0 | %REC |
| LCS | Metals | 13105674 | Mercury | 103.0 | %REC |
| LCS | Metals | 13115722 | Arsenic | 103.0 | %REC |
| LCS | Metals | 13115722 | Copper | 103.0 | %REC |
| LCS | Metals | 13115725 | Cadmium | 103.0 | %REC |
| LCS | Metals | 13115740 | Boron | 103.0 | %REC |
| LCS | Metals | 13115740 | Chromium | 103.0 | %REC |
| LCS | Metals | 13115740 | Selenium | 103.0 | %REC |
| LCS | Metals | 13115740 | Uranium | 103.0 | %REC |
| LCS | Metals | 13115755 | Uranium | 103.0 | %REC |
| LCS | Metals | 13125843 | Copper | 103.0 | %REC |
| LCS | Metals | 13125843 | Lead | 103.0 | %REC |
| LCS | Metals | 13125843 | Uranium | 103.0 | %REC |
| LCS | Metals | 13125844 | Uranium | 103.0 | %REC |
| LCS | Metals | 13125844 | Uranium | 103.0 | %REC |
| LCS | Metals | 14015855 | Silver | 103.0 | %REC |
| LCS | Metals | 14015882 | Cadmium | 103.0 | %REC |
| LCS | Metals | 13015059 | Beryllium | 104.0 | %REC |
| LCS | Metals | 13015076 | Uranium | 104.0 | %REC |
| LCS | Metals | 13025101 | Uranium | 104.0 | %REC |
| LCS | Metals | 13025141 | Silver | 104.0 | %REC |
| LCS | Metals | 13025141 | Zinc | 104.0 | %REC |
| LCS | Metals | 13035200 | Silver | 104.0 | %REC |
| LCS | Metals | 13045224 | Uranium | 104.0 | %REC |
| LCS | Metals | 13045278 | Cadmium | 104.0 | %REC |
| LCS | Metals | 13045278 | Zinc | 104.0 | %REC |
| LCS | Metals | 13045287 | Silver | 104.0 | %REC |
| LCS | Metals | 13055335 | Arsenic | 104.0 | %REC |
| LCS | Metals | 13055335 | Selenium | 104.0 | %REC |
| LCS | Metals | 13055335 | Zinc | 104.0 | %REC |
| LCS | Metals | 13055339 | Uranium | 104.0 | %REC |
| LCS | Metals | 13055343 | Lead | 104.0 | %REC |
| LCS | Metals | 13065438 | Uranium | 104.0 | %REC |
| LCS | Metals | 13065444 | Cadmium | 104.0 | %REC |
| LCS | Metals | 13075455 | Chromium | 104.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | Metals | 13075495 | Arsenic | 104.0 | %REC |
| LCS | Metals | 13075495 | Beryllium | 104.0 | %REC |
| LCS | Metals | 13075495 | Cadmium | 104.0 | %REC |
| LCS | Metals | 13075495 | Mercury | 104.0 | %REC |
| LCS | Metals | 13075495 | Nickel | 104.0 | %REC |
| LCS | Metals | 13095621 | Arsenic | 104.0 | %REC |
| LCS | Metals | 13105665 | Beryllium | 104.0 | %REC |
| LCS | Metals | 13105665 | Chromium | 104.0 | %REC |
| LCS | Metals | 13105665 | Uranium | 104.0 | %REC |
| LCS | Metals | 13105666 | Arsenic | 104.0 | %REC |
| LCS | Metals | 13105666 | Cadmium | 104.0 | %REC |
| LCS | Metals | 13115725 | Beryllium | 104.0 | %REC |
| LCS | Metals | 13115740 | Arsenic | 104.0 | %REC |
| LCS | Metals | 13115740 | Copper | 104.0 | %REC |
| LCS | Metals | 13115740 | Silver | 104.0 | %REC |
| LCS | Metals | 13125799 | Silver | 104.0 | %REC |
| LCS | Metals | 14015855 | Cadmium | 104.0 | %REC |
| LCS | Metals | 14015882 | Boron | 104.0 | %REC |
| LCS | Metals | 14015882 | Silver | 104.0 | %REC |
| LCS | Metals | 14025915 | Boron | 104.0 | %REC |
| LCS | Metals | 13035200 | Beryllium | 105.0 | %REC |
| LCS | Metals | 13035200 | Chromium | 105.0 | %REC |
| LCS | Metals | 13045226 | Beryllium | 105.0 | %REC |
| LCS | Metals | 13045226 | Cadmium | 105.0 | %REC |
| LCS | Metals | 13045226 | Chromium | 105.0 | %REC |
| LCS | Metals | 13045226 | Copper | 105.0 | %REC |
| LCS | Metals | 13045226 | Lead | 105.0 | %REC |
| LCS | Metals | 13045226 | Nickel | 105.0 | %REC |
| LCS | Metals | 13045226 | Zinc | 105.0 | %REC |
| LCS | Metals | 13045288 | Uranium | 105.0 | %REC |
| LCS | Metals | 13055335 | Cadmium | 105.0 | %REC |
| LCS | Metals | 13055335 | Silver | 105.0 | %REC |
| LCS | Metals | 13055361 | Uranium | 105.0 | %REC |
| LCS | Metals | 13065444 | Uranium | 105.0 | %REC |
| LCS | Metals | 13075455 | Beryllium | 105.0 | %REC |
| LCS | Metals | 13075495 | Copper | 105.0 | %REC |
| LCS | Metals | 13075495 | Lead | 105.0 | %REC |
| LCS | Metals | 13075521 | Silver | 105.0 | %REC |
| LCS | Metals | 13085563 | Selenium | 105.0 | %REC |
| LCS | Metals | 13095621 | Cadmium | 105.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | Metals | 13095621 | Copper | 105.0 | %REC |
| LCS | Metals | 13095621 | Nickel | 105.0 | %REC |
| LCS | Metals | 13095621 | Silver | 105.0 | %REC |
| LCS | Metals | 13095621 | Zinc | 105.0 | %REC |
| LCS | Metals | 13105666 | Silver | 105.0 | %REC |
| LCS | Metals | 13105666 | Zinc | 105.0 | %REC |
| LCS | Metals | 13115725 | Arsenic | 105.0 | %REC |
| LCS | Metals | 13115725 | Uranium | 105.0 | %REC |
| LCS | Metals | 13125799 | Chromium | 105.0 | %REC |
| LCS | Metals | 13125843 | Mercury | 105.0 | %REC |
| LCS | Metals | 13125843 | Selenium | 105.0 | %REC |
| LCS | Metals | 14015855 | Uranium | 105.0 | %REC |
| LCS | Metals | 14015882 | Copper | 105.0 | %REC |
| LCS | Metals | 14015882 | Selenium | 105.0 | %REC |
| LCS | Metals | 14025915 | Lead | 105.0 | %REC |
| LCS | Metals | 14025915 | Mercury | 105.0 | %REC |
| LCS | Metals | 13035200 | Uranium | 106.0 | %REC |
| LCS | Metals | 13035201 | Uranium | 106.0 | %REC |
| LCS | Metals | 13045226 | Cadmium | 106.0 | %REC |
| LCS | Metals | 13045226 | Silver | 106.0 | %REC |
| LCS | Metals | 13045226 | Silver | 106.0 | %REC |
| LCS | Metals | 13055327 | Uranium | 106.0 | %REC |
| LCS | Metals | 13055343 | Mercury | 106.0 | %REC |
| LCS | Metals | 13055362 | Beryllium | 106.0 | %REC |
| LCS | Metals | 13055362 | Chromium | 106.0 | %REC |
| LCS | Metals | 13065393 | Cadmium | 106.0 | %REC |
| LCS | Metals | 13075493 | Silver | 106.0 | %REC |
| LCS | Metals | 13075495 | Arsenic | 106.0 | %REC |
| LCS | Metals | 13075495 | Cadmium | 106.0 | %REC |
| LCS | Metals | 13075495 | Lead | 106.0 | %REC |
| LCS | Metals | 13075495 | Uranium | 106.0 | %REC |
| LCS | Metals | 13085545 | Uranium | 106.0 | %REC |
| LCS | Metals | 13085546 | Cadmium | 106.0 | %REC |
| LCS | Metals | 13085563 | Silver | 106.0 | %REC |
| LCS | Metals | 13095608 | Silver | 106.0 | %REC |
| LCS | Metals | 13095609 | Uranium | 106.0 | %REC |
| LCS | Metals | 13095621 | Lead | 106.0 | %REC |
| LCS | Metals | 13095621 | Silver | 106.0 | %REC |
| LCS | Metals | 13095627 | Silver | 106.0 | %REC |
| LCS | Metals | 13105666 | Silver | 106.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | Metals | 13115722 | Cadmium | 106.0 | %REC |
| LCS | Metals | 13115725 | Nickel | 106.0 | %REC |
| LCS | Metals | 13115725 | Zinc | 106.0 | %REC |
| LCS | Metals | 13115740 | Cadmium | 106.0 | %REC |
| LCS | Metals | 13125799 | Beryllium | 106.0 | %REC |
| LCS | Metals | 13125839 | Uranium | 106.0 | %REC |
| LCS | Metals | 13125843 | Silver | 106.0 | %REC |
| LCS | Metals | 13045226 | Arsenic | 107.0 | %REC |
| LCS | Metals | 13045285 | Silver | 107.0 | %REC |
| LCS | Metals | 13055327 | Silver | 107.0 | %REC |
| LCS | Metals | 13065444 | Silver | 107.0 | %REC |
| LCS | Metals | 13075493 | Cadmium | 107.0 | %REC |
| LCS | Metals | 13075521 | Cadmium | 107.0 | %REC |
| LCS | Metals | 13075521 | Uranium | 107.0 | %REC |
| LCS | Metals | 13105665 | Cadmium | 107.0 | %REC |
| LCS | Metals | 13105666 | Beryllium | 107.0 | %REC |
| LCS | Metals | 13105666 | Chromium | 107.0 | %REC |
| LCS | Metals | 13105666 | Lead | 107.0 | %REC |
| LCS | Metals | 13105666 | Nickel | 107.0 | %REC |
| LCS | Metals | 13105674 | Silver | 107.0 | %REC |
| LCS | Metals | 14015855 | Beryllium | 107.0 | %REC |
| LCS | Metals | 13045278 | Silver | 108.0 | %REC |
| LCS | Metals | 13055302 | Cadmium | 108.0 | %REC |
| LCS | Metals | 13055327 | Cadmium | 108.0 | %REC |
| LCS | Metals | 13055361 | Silver | 108.0 | %REC |
| LCS | Metals | 13075455 | Cadmium | 108.0 | %REC |
| LCS | Metals | 13095608 | Cadmium | 108.0 | %REC |
| LCS | Metals | 13105653 | Uranium | 108.0 | %REC |
| LCS | Metals | 13115725 | Chromium | 108.0 | %REC |
| LCS | Metals | 13125843 | Cadmium | 108.0 | %REC |
| LCS | Metals | 13015076 | Cadmium | 109.0 | %REC |
| LCS | Metals | 13055361 | Cadmium | 109.0 | %REC |
| LCS | Metals | 13055362 | Cadmium | 109.0 | %REC |
| LCS | Metals | 13085546 | Silver | 109.0 | %REC |
| LCS | Metals | 13085563 | Copper | 109.0 | %REC |
| LCS | Metals | 13105665 | Silver | 109.0 | %REC |
| LCS | Metals | 13105691 | Uranium | 109.0 | %REC |
| LCS | Metals | 13115736 | Uranium | 109.0 | %REC |
| LCS | Metals | 13045226 | Uranium | 110.0 | %REC |
| LCS | Metals | 13055343 | Cadmium | 110.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | Metals | 13085563 | Mercury | 110.0 | %REC |
| LCS | Metals | 13105666 | Copper | 110.0 | %REC |
| LCS | Metals | 13115725 | Copper | 110.0 | %REC |
| LCS | Metals | 13075455 | Silver | 111.0 | %REC |
| LCS | Metals | 13095609 | Cadmium | 111.0 | %REC |
| LCS | Metals | 13095621 | Selenium | 111.0 | %REC |
| LCS | Metals | 14015855 | Chromium | 111.0 | %REC |
| LCS | Metals | 13075493 | Uranium | 112.0 | %REC |
| LCS | Metals | 13105691 | Beryllium | 112.0 | %REC |
| LCS | Metals | 13125820 | Uranium | 112.0 | %REC |
| LCS | Metals | 13055302 | Silver | 113.0 | %REC |
| LCS | Metals | 13055343 | Uranium | 113.0 | %REC |
| LCS | Metals | 13095609 | Silver | 113.0 | %REC |
| LCS | Metals | 13015059 | Uranium | 114.0 | %REC |
| LCS | Metals | 13055343 | Silver | 114.0 | %REC |
| LCS | Metals | 13055362 | Silver | 114.0 | %REC |
| LCS | Metals | 13105691 | Cadmium | 114.0 | %REC |
| LCS | Metals | 13105691 | Silver | 115.0 | %REC |
| LCS | Metals | 13085563 | Cadmium | 118.0 | %REC |
| LCS | Metals | 13055362 | Uranium | 119.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 4-Nitrophenol | 14.1 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 4-Nitrophenol | 17.2 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Phenol | 35.7 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Phenol | 40.4 | %REC |
| LCS | VOCs/SVOCs | 13045278 | 1,4-Dichlorobenzene | 47.0 | %REC |
| LCS | VOCs/SVOCs | 13015076 | 1,2,4-Trichlorobenzene | 53.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | 1,2,4-Trichlorobenzene | 54.0 | %REC |
| LCS | VOCs/SVOCs | 13015076 | 1,4-Dichlorobenzene | 55.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | 1,2,4-Trichlorobenzene | 59.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | 1,4-Dichlorobenzene | 60.0 | %REC |
| LCS | VOCs/SVOCs | 13035197 | Methylene Chloride | 61.0 | %REC |
| LCS | VOCs/SVOCs | 13035198 | Methylene Chloride | 61.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | 2-Chlorophenol | 62.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 1,4-Dichlorobenzene | 63.9 | %REC |
| LCS | VOCs/SVOCs | 13045278 | 1,4-Dichlorobenzene | 64.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | Phenol | 64.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 1,4-Dichlorobenzene | 64.8 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Pentachlorophenol | 66.5 | %REC |
| LCS | VOCs/SVOCs | 13045278 | 1,2,4-Trichlorobenzene | 67.0 | %REC |
| LCS | VOCs/SVOCs | 13065413 | 1,1-Dichloroethene | 67.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13115722 | Methylene Chloride | 67.0 | %REC |
| LCS | VOCs/SVOCs | 13015076 | 1,2,4-Trichlorobenzene | 68.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | 1,2,4-Trichlorobenzene | 68.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Pentachlorophenol | 68.7 | %REC |
| LCS | VOCs/SVOCs | 13025141 | Pentachlorophenol | 69.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | Pentachlorophenol | 69.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | n-Nitroso-di-n-propylamine | 69.0 | %REC |
| LCS | VOCs/SVOCs | 13015076 | 1,4-Dichlorobenzene | 70.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | 1,4-Dichlorobenzene | 71.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | Methylene Chloride | 71.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Acenaphthene | 71.5 | %REC |
| LCS | VOCs/SVOCs | 13015076 | Acenaphthene | 72.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | 1,4-Dichlorobenzene | 72.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | 4-Nitrophenol | 72.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | Pentachlorophenol | 72.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | Pentachlorophenol | 72.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | 1,4-Dichlorobenzene | 72.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Acenaphthene | 72.1 | %REC |
| LCS | VOCs/SVOCs | 13025141 | Methylene Chloride | 73.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | 1,2,4-Trichlorobenzene | 73.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | 1,4-Dichlorobenzene | 73.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | 1,4-Dichlorobenzene | 73.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | 4-Nitrophenol | 73.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | 1,2,4-Trichlorobenzene | 73.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | Acenaphthene | 74.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | 1,2,4-Trichlorobenzene | 74.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | 1,2,4-Trichlorobenzene | 74.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | 1,4-Dichlorobenzene | 74.0 | %REC |
| LCS | VOCs/SVOCs | 13025122 | Methylene Chloride | 75.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | 1,2,4-Trichlorobenzene | 75.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Toluene | 75.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | 1,4-Dichlorobenzene | 76.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | 2,4,6-Trichlorophenol | 76.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Benzene | 77.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Benzene | 77.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Toluene | 77.0 | %REC |
| LCS | VOCs/SVOCs | 13065413 | Ethylbenzene | 77.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 1,2,4-Trichlorobenzene | 77.7 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 1,2,4-Trichlorobenzene | 77.8 | %REC |
| LCS | VOCs/SVOCs | 13045278 | 4-Chloro-3-methylphenol | 78.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13055328 | Tetrachloroethene | 78.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | 1,3-Dichlorobenzene | 78.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Trichloroethene | 78.0 | %REC |
| LCS | VOCs/SVOCs | 13065413 | Chlorobenzene | 78.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | Bromodichloromethane | 78.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 2-Chlorophenol | 78.5 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 2-Chlorophenol | 78.5 | %REC |
| LCS | VOCs/SVOCs | 13055328 | 1,3-Dichlorobenzene | 79.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Ethylbenzene | 79.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | trans-1,2-Dichloroethene | 79.0 | %REC |
| LCS | VOCs/SVOCs | 13065413 | Methylene Chloride | 79.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | 1,1,1-Trichloroethane | 79.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | Benzene | 79.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | Bromodichloromethane | 79.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | Trichloroethene | 79.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | 1,1-Dichloroethene | 79.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | Tetrachloroethene | 79.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 1,2-Dibromo-3-chloropropane | 79.6 | %REC |
| LCS | VOCs/SVOCs | 13015076 | Acenaphthene | 80.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | 1,2,4-Trichlorobenzene | 80.0 | %REC |
| LCS | VOCs/SVOCs | 13045233 | Methylene Chloride | 80.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | Acenaphthene | 80.0 | %REC |
| LCS | VOCs/SVOCs | 13055328 | Ethylbenzene | 80.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | 1,1-Dichloroethene | 80.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | 1,1-Dichloroethene | 80.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Chlorobenzene | 80.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Tetrachloroethene | 80.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | trans-1,2-Dichloroethene | 80.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Trichloroethene | 80.0 | %REC |
| LCS | VOCs/SVOCs | 13065413 | Benzene | 80.0 | %REC |
| LCS | VOCs/SVOCs | 13065413 | trans-1,2-Dichloroethene | 80.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | Acenaphthene | 80.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | Chlorobenzene | 80.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | Chloroform | 80.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | 1,3-Dichlorobenzene | 80.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | Benzene | 80.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Carbon Tetrachloride | 81.0 | %REC |
| LCS | VOCs/SVOCs | 13055328 | Benzene | 81.0 | %REC |
| LCS | VOCs/SVOCs | 13055328 | Carbon Tetrachloride | 81.0 | %REC |
| LCS | VOCs/SVOCs | 13065413 | Tetrachloroethene | 81.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13085550 | 2,4,6-Trichlorophenol | 81.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | 1,3-Dichlorobenzene | 81.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | Ethylbenzene | 81.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | 1,1,1-Trichloroethane | 81.0 | %REC |
| LCS | VOCs/SVOCs | 13115772 | 1,1-Dichloroethene | 81.0 | %REC |
| LCS | VOCs/SVOCs | 13115772 | 1,3-Dichlorobenzene | 81.0 | %REC |
| LCS | VOCs/SVOCs | 13115772 | Ethylbenzene | 81.0 | %REC |
| LCS | VOCs/SVOCs | 13115772 | Tetrachloroethene | 81.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,2-Dibromo-3-chloropropane | 81.9 | %REC |
| LCS | VOCs/SVOCs | 13045278 | 2,4,6-Trichlorophenol | 82.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | n-Nitroso-di-n-propylamine | 82.0 | %REC |
| LCS | VOCs/SVOCs | 13055297 | Ethylbenzene | 82.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | 1,3-Dichlorobenzene | 82.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Chlorobenzene | 82.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Ethylbenzene | 82.0 | %REC |
| LCS | VOCs/SVOCs | 13065430 | Methylene Chloride | 82.0 | %REC |
| LCS | VOCs/SVOCs | 13075471 | Bromodichloromethane | 82.0 | %REC |
| LCS | VOCs/SVOCs | 13075471 | Methylene Chloride | 82.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | 1,2,4-Trichlorobenzene | 82.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | 1,2-Dichloropropane | 82.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | Carbon Tetrachloride | 82.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | trans-1,2-Dichloroethene | 82.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | Carbon Tetrachloride | 82.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | Pentachlorophenol | 82.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | Tetrachloroethene | 82.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | Trichloroethene | 82.0 | %REC |
| LCS | VOCs/SVOCs | 13125786 | Chlorobenzene | 82.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | 2-Chlorophenol | 83.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | 4-Nitrophenol | 83.0 | %REC |
| LCS | VOCs/SVOCs | 13055297 | Tetrachloroethene | 83.0 | %REC |
| LCS | VOCs/SVOCs | 13055328 | Trichloroethene | 83.0 | %REC |
| LCS | VOCs/SVOCs | 13065378 | Methylene Chloride | 83.0 | %REC |
| LCS | VOCs/SVOCs | 13065413 | 1,3-Dichlorobenzene | 83.0 | %REC |
| LCS | VOCs/SVOCs | 13065413 | Toluene | 83.0 | %REC |
| LCS | VOCs/SVOCs | 13065452 | 1,2-Dichloropropane | 83.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | 1,3-Dichlorobenzene | 83.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | Acenaphthene | 83.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | Tetrachloroethene | 83.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | Chlorobenzene | 83.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13115722 | Chloroform | 83.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | Ethylbenzene | 83.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | Toluene | 83.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | 1,3-Dichlorobenzene | 83.0 | %REC |
| LCS | VOCs/SVOCs | 13035197 | Tetrachloroethene | 84.0 | %REC |
| LCS | VOCs/SVOCs | 13035197 | trans-1,2-Dichloroethene | 84.0 | %REC |
| LCS | VOCs/SVOCs | 13035198 | Tetrachloroethene | 84.0 | %REC |
| LCS | VOCs/SVOCs | 13035198 | trans-1,2-Dichloroethene | 84.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | Phenol | 84.0 | %REC |
| LCS | VOCs/SVOCs | 13055297 | Chlorobenzene | 84.0 | %REC |
| LCS | VOCs/SVOCs | 13055297 | Trichloroethene | 84.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Bromodichloromethane | 84.0 | %REC |
| LCS | VOCs/SVOCs | 13055328 | 1,1,1-Trichloroethane | 84.0 | %REC |
| LCS | VOCs/SVOCs | 13055328 | Toluene | 84.0 | %REC |
| LCS | VOCs/SVOCs | 13055328 | trans-1,2-Dichloroethene | 84.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | 1,1,1-Trichloroethane | 84.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | 1,1,1-Trichloroethane | 84.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Acenaphthene | 84.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Carbon Tetrachloride | 84.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Tetrachloroethene | 84.0 | %REC |
| LCS | VOCs/SVOCs | 13065413 | Trichloroethene | 84.0 | %REC |
| LCS | VOCs/SVOCs | 13065452 | 1,1-Dichloroethene | 84.0 | %REC |
| LCS | VOCs/SVOCs | 13065452 | Bromodichloromethane | 84.0 | %REC |
| LCS | VOCs/SVOCs | 13075471 | Benzene | 84.0 | %REC |
| LCS | VOCs/SVOCs | 13075471 | Chloroform | 84.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | 2-Chlorophenol | 84.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | Anthracene | 84.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | Pentachlorophenol | 84.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | Pyrene | 84.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | Carbon Tetrachloride | 84.0 | %REC |
| LCS | VOCs/SVOCs | 13125786 | 1,3-Dichlorobenzene | 84.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Chloromethane | 84.3 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Methylene Chloride | 84.3 | %REC |
| LCS | VOCs/SVOCs | 13015076 | 2-Chlorophenol | 85.0 | %REC |
| LCS | VOCs/SVOCs | 13025106 | Methylene Chloride | 85.0 | %REC |
| LCS | VOCs/SVOCs | 13025111 | Methylene Chloride | 85.0 | %REC |
| LCS | VOCs/SVOCs | 13025139 | Methylene Chloride | 85.0 | %REC |
| LCS | VOCs/SVOCs | 13055297 | 1,2-Dichloropropane | 85.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | 1,1,1-Trichloroethane | 85.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Carbon Tetrachloride | 85.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13055309 | Toluene | 85.0 | %REC |
| LCS | VOCs/SVOCs | 13055328 | 1,2-Dichloropropane | 85.0 | %REC |
| LCS | VOCs/SVOCs | 13055328 | Chlorobenzene | 85.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Anthracene | 85.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Bromodichloromethane | 85.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Carbon Tetrachloride | 85.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Pyrene | 85.0 | %REC |
| LCS | VOCs/SVOCs | 13065413 | 1,2-Dichloropropane | 85.0 | %REC |
| LCS | VOCs/SVOCs | 13065452 | Methylene Chloride | 85.0 | %REC |
| LCS | VOCs/SVOCs | 13065452 | Toluene | 85.0 | %REC |
| LCS | VOCs/SVOCs | 13075471 | 1,2-Dichloropropane | 85.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | Ethylbenzene | 85.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | Methylene Chloride | 85.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | 1,2-Dichloropropane | 85.0 | %REC |
| LCS | VOCs/SVOCs | 13115740 | Methylene Chloride | 85.0 | %REC |
| LCS | VOCs/SVOCs | 13115772 | Chlorobenzene | 85.0 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Bromoform | 85.5 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Vinyl Chloride | 85.7 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 2,4-Dinitrotoluene | 85.8 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Bromoform | 85.9 | %REC |
| LCS | VOCs/SVOCs | 13015076 | Anthracene | 86.0 | %REC |
| LCS | VOCs/SVOCs | 13015076 | n-Nitroso-di-n-propylamine | 86.0 | %REC |
| LCS | VOCs/SVOCs | 13015076 | Pyrene | 86.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | 2-Chlorophenol | 86.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | Carbon Tetrachloride | 86.0 | %REC |
| LCS | VOCs/SVOCs | 13055297 | 1,3-Dichlorobenzene | 86.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Acenaphthene | 86.0 | %REC |
| LCS | VOCs/SVOCs | 13065413 | Chloroform | 86.0 | %REC |
| LCS | VOCs/SVOCs | 13065452 | Benzene | 86.0 | %REC |
| LCS | VOCs/SVOCs | 13065452 | Chloroform | 86.0 | %REC |
| LCS | VOCs/SVOCs | 13075471 | 1,1,1-Trichloroethane | 86.0 | %REC |
| LCS | VOCs/SVOCs | 13075471 | 1,1-Dichloroethene | 86.0 | %REC |
| LCS | VOCs/SVOCs | 13075471 | Carbon Tetrachloride | 86.0 | %REC |
| LCS | VOCs/SVOCs | 13075471 | Toluene | 86.0 | %REC |
| LCS | VOCs/SVOCs | 13075486 | Methylene Chloride | 86.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | Acenaphthene | 86.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | 4-Nitrophenol | 86.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | Pentachlorophenol | 86.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | trans-1,2-Dichloroethene | 86.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | 1,1,1-Trichloroethane | 86.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13115760 | Ethylbenzene | 86.0 | %REC |
| LCS | VOCs/SVOCs | 13125786 | Benzene | 86.0 | %REC |
| LCS | VOCs/SVOCs | 13125786 | Bromodichloromethane | 86.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 2,4-Dinitrotoluene | 86.2 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 1,2,4-Trichlorobenzene | 86.4 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 1,4-Dichlorobenzene | 86.9 | %REC |
| LCS | VOCs/SVOCs | 13025141 | Bromodichloromethane | 87.0 | %REC |
| LCS | VOCs/SVOCs | 13035157 | Ethylbenzene | 87.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | 4-Chloro-3-methylphenol | 87.0 | %REC |
| LCS | VOCs/SVOCs | 13055297 | Benzene | 87.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | 1,1,1-Trichloroethane | 87.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Trichloroethene | 87.0 | %REC |
| LCS | VOCs/SVOCs | 13055328 | Chloroform | 87.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Bromodichloromethane | 87.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Chloroform | 87.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Chloroform | 87.0 | %REC |
| LCS | VOCs/SVOCs | 13065413 | Bromodichloromethane | 87.0 | %REC |
| LCS | VOCs/SVOCs | 13065430 | 1,3-Dichlorobenzene | 87.0 | %REC |
| LCS | VOCs/SVOCs | 13065452 | 1,1,1-Trichloroethane | 87.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | 2,4,6-Trichlorophenol | 87.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | Anthracene | 87.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | 4-Chloro-3-methylphenol | 87.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | Bromodichloromethane | 87.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | Toluene | 87.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | Chlorobenzene | 87.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | Tetrachloroethene | 87.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 1,2-Dichlorobenzene | 87.2 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 1,3-Dichlorobenzene | 87.2 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Pyrene | 87.2 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Bromomethane | 87.5 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Vinyl Chloride | 87.7 | %REC |
| LCS | VOCs/SVOCs | 13045288 | 1,1,2,2-Tetrachloroethane | 87.9 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Chloromethane | 87.9 | %REC |
| LCS | VOCs/SVOCs | 13025139 | Methylene Chloride | 88.0 | %REC |
| LCS | VOCs/SVOCs | 13035157 | 1,3-Dichlorobenzene | 88.0 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Chloromethane | 88.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Benzene | 88.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Bromodichloromethane | 88.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Toluene | 88.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Pentachlorophenol | 88.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13065452 | Carbon Tetrachloride | 88.0 | %REC |
| LCS | VOCs/SVOCs | 13075491 | 1,3-Dichlorobenzene | 88.0 | %REC |
| LCS | VOCs/SVOCs | 13075491 | Tetrachloroethene | 88.0 | %REC |
| LCS | VOCs/SVOCs | 13085548 | Methylene Chloride | 88.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | 1,4-Dichlorobenzene | 88.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | Anthracene | 88.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | 2-Chlorophenol | 88.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | Chlorobenzene | 88.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | 1,1-Dichloroethene | 88.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | Acenaphthene | 88.0 | %REC |
| LCS | VOCs/SVOCs | 13115740 | 1,1-Dichloroethene | 88.0 | %REC |
| LCS | VOCs/SVOCs | 13125786 | 1,2-Dichloropropane | 88.0 | %REC |
| LCS | VOCs/SVOCs | 13125786 | Ethylbenzene | 88.0 | %REC |
| LCS | VOCs/SVOCs | 13125786 | Methylene Chloride | 88.0 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Bromoform | 88.6 | %REC |
| LCS | VOCs/SVOCs | 13045288 | 1,1,2-Trichloroethane | 88.7 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,1,2,2-Tetrachloroethane | 88.8 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Pyrene | 88.8 | %REC |
| LCS | VOCs/SVOCs | 13015076 | Pentachlorophenol | 89.0 | %REC |
| LCS | VOCs/SVOCs | 13025122 | Carbon Tetrachloride | 89.0 | %REC |
| LCS | VOCs/SVOCs | 13025138 | 1,3-Dichlorobenzene | 89.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | 1,1,1-Trichloroethane | 89.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | 2,4,6-Trichlorophenol | 89.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | 2-Chlorophenol | 89.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | Acenaphthene | 89.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | Pyrene | 89.0 | %REC |
| LCS | VOCs/SVOCs | 13035197 | 1,1-Dichloroethene | 89.0 | %REC |
| LCS | VOCs/SVOCs | 13035198 | 1,1-Dichloroethene | 89.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Trichloroethene | 89.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | 1,2-Dichloropropane | 89.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | 4-Chloro-3-methylphenol | 89.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | n-Nitroso-di-n-propylamine | 89.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Pyrene | 89.0 | %REC |
| LCS | VOCs/SVOCs | 13065452 | Trichloroethene | 89.0 | %REC |
| LCS | VOCs/SVOCs | 13075471 | Trichloroethene | 89.0 | %REC |
| LCS | VOCs/SVOCs | 13075491 | Methylene Chloride | 89.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | Methylene Chloride | 89.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | 1,1,1-Trichloroethane | 89.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | Acenaphthene | 89.0 | %REC |
| LCS | VOCs/SVOCs | 13115740 | Chlorobenzene | 89.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13115740 | Ethylbenzene | 89.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | Trichloroethene | 89.0 | %REC |
| LCS | VOCs/SVOCs | 13045288 | 1,2-Dichloroethane | 89.1 | %REC |
| LCS | VOCs/SVOCs | 13045288 | 1,2-Dibromo-3-chloropropane | 89.3 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Toluene | 89.7 | %REC |
| LCS | VOCs/SVOCs | 13045288 | 1,2-Dichlorobenzene | 89.8 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 1,1-Dichloroethene | 89.8 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Chlorobenzene | 89.9 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Naphthalene | 89.9 | %REC |
| LCS | VOCs/SVOCs | 13015076 | n-Nitroso-di-n-propylamine | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13015076 | Phenol | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13025122 | 1,3-Dichlorobenzene | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13025138 | Chlorobenzene | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13025138 | Tetrachloroethene | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | Acenaphthene | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | Chlorobenzene | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | Chloroform | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13035157 | Chlorobenzene | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | 4-Nitrophenol | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13055297 | Chloroform | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13055297 | trans-1,2-Dichloroethene | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Benzene | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Chloroform | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Methylene Chloride | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13055328 | 1,1-Dichloroethene | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13055328 | Bromodichloromethane | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13065413 | Carbon Tetrachloride | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13065430 | Chlorobenzene | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13065430 | Ethylbenzene | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13075486 | Ethylbenzene | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13075491 | 1,1-Dichloroethene | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13075491 | Ethylbenzene | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | 4-Chloro-3-methylphenol | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | 2,4,6-Trichlorophenol | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | 2,4-Dinitrotoluene | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | Phenol | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | Bromodichloromethane | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | Trichloroethene | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 1,1,2,2-Tetrachloroethane | 90.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13115725 | Ethylbenzene | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | Ethylbenzene | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13115772 | 1,1,1-Trichloroethane | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13115772 | trans-1,2-Dichloroethene | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13125786 | Chloroform | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13125786 | Tetrachloroethene | 90.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Chloromethane | 90.1 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Total Xylenes | 90.1 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Naphthalene | 90.2 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Vinyl Chloride | 90.2 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Hexachlorobutadiene | 90.4 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Styrene | 90.5 | %REC |
| LCS | VOCs/SVOCs | 13045288 | 1,3-Dichlorobenzene | 90.6 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Bromomethane | 90.8 | %REC |
| LCS | VOCs/SVOCs | 13015076 | 2-Chlorophenol | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13025139 | 1,3-Dichlorobenzene | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | 1,2-Dichloropropane | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13045233 | Tetrachloroethene | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | 1,2-Dichloropropane | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | 4-Nitrophenol | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Anthracene | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | n-Nitroso-di-n-propylamine | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13055341 | Methylene Chloride | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13065378 | 1,1,1-Trichloroethane | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13065378 | Bromodichloromethane | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13065413 | 1,1,1-Trichloroethane | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13065430 | 1,1-Dichloroethene | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13065452 | trans-1,2-Dichloroethene | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13075471 | trans-1,2-Dichloroethene | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13075486 | 1,3-Dichlorobenzene | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13075486 | Chlorobenzene | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13075491 | Chlorobenzene | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13085548 | 1,1-Dichloroethene | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | n-Nitroso-di-n-propylamine | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | Phenol | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | n-Nitroso-di-n-propylamine | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | Tetrachloroethene | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | 1,3-Dichlorobenzene | 91.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13105677 | 1,3-Dichlorobenzene | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | Chlorobenzene | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | Chlorobenzene | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | Tetrachloroethene | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | Anthracene | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13115740 | Benzene | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13115740 | Tetrachloroethene | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13115772 | Toluene | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13115772 | Trichloroethene | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13125786 | 1,1-Dichloroethene | 91.0 | %REC |
| LCS | VOCs/SVOCs | 13045288 | 1,4-Dichlorobenzene | 91.1 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Bromomethane | 91.1 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Bromoform | 91.3 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Tetrachloroethene | 91.7 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,1,2-Trichloroethane | 91.9 | %REC |
| LCS | VOCs/SVOCs | 13015076 | 4-Chloro-3-methylphenol | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13015076 | Anthracene | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | 1,3-Dichlorobenzene | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | 2,4,6-Trichlorophenol | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | Benzene | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | Phenol | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | Toluene | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | trans-1,2-Dichloroethene | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | Trichloroethene | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13035157 | Trichloroethene | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13035158 | Trichloroethene | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13045233 | Chlorobenzene | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | Anthracene | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Chloroform | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Trichloroethene | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | 1,2-Dichloropropane | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | 2-Chlorophenol | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Phenol | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13065378 | Carbon Tetrachloride | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13065378 | Chloroform | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13065430 | 1,2-Dichloropropane | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13065430 | Benzene | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13075486 | 1,1-Dichloroethene | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13075486 | 1,2-Dichloropropane | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | 2,4-Dinitrotoluene | 92.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13085550 | Pyrene | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | Pyrene | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | Tetrachloroethene | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,4-Dichlorobenzene | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13115740 | 1,3-Dichlorobenzene | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13115740 | trans-1,2-Dichloroethene | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13115740 | Trichloroethene | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | Bromodichloromethane | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | trans-1,2-Dichloroethene | 92.0 | %REC |
| LCS | VOCs/SVOCs | 13045288 | 1,1,2,2-Tetrachloroethane | 92.2 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Vinyl Chloride | 92.3 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,3-Dichlorobenzene | 92.3 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 1,2-Dibromoethane | 92.3 | %REC |
| LCS | VOCs/SVOCs | 13045288 | 1,1,2-Trichloroethane | 92.4 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 1,1,1-Trichloroethane | 92.6 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 1,2-Dibromo-3-chloropropane | 92.7 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Chlorobenzene | 92.8 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Benzene | 92.8 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Methylene Chloride | 92.8 | %REC |
| LCS | VOCs/SVOCs | 13115725 | trans-1,2-Dichloroethene | 92.8 | %REC |
| LCS | VOCs/SVOCs | 13015076 | 2,4,6-Trichlorophenol | 93.0 | %REC |
| LCS | VOCs/SVOCs | 13025122 | Trichloroethene | 93.0 | %REC |
| LCS | VOCs/SVOCs | 13035158 | Chloroform | 93.0 | %REC |
| LCS | VOCs/SVOCs | 13035211 | Bromodichloromethane | 93.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | Pyrene | 93.0 | %REC |
| LCS | VOCs/SVOCs | 13045288 | 1,2-Dichlorobenzene | 93.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | trans-1,2-Dichloroethene | 93.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | 2,4-Dinitrotoluene | 93.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | 2-Chlorophenol | 93.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Pentachlorophenol | 93.0 | %REC |
| LCS | VOCs/SVOCs | 13065430 | Tetrachloroethene | 93.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | 2,4-Dinitrotoluene | 93.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | Carbon Tetrachloride | 93.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | Benzene | 93.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | Carbon Tetrachloride | 93.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | Ethylbenzene | 93.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | Trichloroethene | 93.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | 2-Chlorophenol | 93.0 | %REC |
| LCS | VOCs/SVOCs | 13115740 | Bromodichloromethane | 93.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | 1,3-Dichlorobenzene | 93.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13115760 | Chlorobenzene | 93.0 | %REC |
| LCS | VOCs/SVOCs | 13115772 | Benzene | 93.0 | %REC |
| LCS | VOCs/SVOCs | 13125786 | Trichloroethene | 93.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Toluene | 93.1 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Benzene | 93.1 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Ethylbenzene | 93.2 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Dibromochloromethane | 93.2 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Toluene | 93.5 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,2-Dichloropropane | 93.5 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,1-Dichloroethene | 93.6 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Chloromethane | 93.6 | %REC |
| LCS | VOCs/SVOCs | 13045288 | 1,2-Dibromoethane | 93.7 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Bromomethane | 93.7 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Carbon Tetrachloride | 93.7 | %REC |
| LCS | VOCs/SVOCs | 13045288 | 1,2,4-Trichlorobenzene | 93.8 | %REC |
| LCS | VOCs/SVOCs | 13045288 | 1,2-Dichloroethane | 93.8 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Toluene | 93.8 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 1,1,2-Trichloroethane | 93.8 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 4-Chloro-3-methylphenol | 93.8 | %REC |
| LCS | VOCs/SVOCs | 13015076 | Pyrene | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13025122 | Tetrachloroethene | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13025139 | Chlorobenzene | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | 4-Chloro-3-methylphenol | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | Ethylbenzene | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | Pyrene | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | Tetrachloroethene | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13035157 | 1,2-Dichloropropane | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13035158 | 1,2-Dichloropropane | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13035158 | Benzene | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13035158 | Toluene | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13035197 | Toluene | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13035198 | Toluene | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | Anthracene | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13055297 | Toluene | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | 1,2-Dichloropropane | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Chlorobenzene | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Tetrachloroethene | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | trans-1,2-Dichloroethene | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | 2,4,6-Trichlorophenol | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | 4-Chloro-3-methylphenol | 94.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13065378 | Bromodichloromethane | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13065430 | 1,3-Dichlorobenzene | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13065430 | Toluene | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13065430 | trans-1,2-Dichloroethene | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13075491 | Toluene | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | 1,1,1-Trichloroethane | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | Bromodichloromethane | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | Chloroform | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | Ethylbenzene | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | Methylene Chloride | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,2-Dichlorobenzene | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Chloroform | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | Pyrene | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 4-Chloro-3-methylphenol | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Bromomethane | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | 1,1-Dichloroethene | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | 1,2-Dichloropropane | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | 1,3-Dichlorobenzene | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | Benzene | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | Benzene | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | Bromodichloromethane | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13115772 | Carbon Tetrachloride | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13125786 | 1,1,1-Trichloroethane | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13125786 | Toluene | 94.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Chloroform | 94.1 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Trichloroethene | 94.1 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Chlorobenzene | 94.2 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Total Xylenes | 94.2 | %REC |
| LCS | VOCs/SVOCs | 13045288 | 1,2-Dibromoethane | 94.3 | %REC |
| LCS | VOCs/SVOCs | 13045288 | 1,3-Dichlorobenzene | 94.3 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Chlorobenzene | 94.3 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Vinyl Chloride | 94.4 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Bromoform | 94.4 | %REC |
| LCS | VOCs/SVOCs | 13105704 | trans-1,2-Dichloroethene | 94.4 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Trichloroethene | 94.4 | %REC |
| LCS | VOCs/SVOCs | 13115725 | cis-1,2-Dichloroethene | 94.5 | %REC |
| LCS | VOCs/SVOCs | 13045288 | 1,4-Dichlorobenzene | 94.6 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,1-Dichloroethene | 94.6 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 1,2-Dichloropropane | 94.6 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Styrene | 94.7 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13115725 | trans-1,3-Dichloropropene | 94.7 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Chloroform | 94.8 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,2,4-Trichlorobenzene | 94.9 | %REC |
| LCS | VOCs/SVOCs | 13015076 | Phenol | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13015076 | Toluene | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13025115 | Methylene Chloride | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13025116 | Methylene Chloride | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13025122 | 1,1,1-Trichloroethane | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13025138 | Ethylbenzene | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13025138 | Methylene Chloride | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | Anthracene | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13035157 | Benzene | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13035157 | Benzene | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13035158 | 1,3-Dichlorobenzene | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13035158 | Bromodichloromethane | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13035158 | Carbon Tetrachloride | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13035158 | Tetrachloroethene | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | Pentachlorophenol | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | Pyrene | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | Trichloroethene | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13055297 | Bromodichloromethane | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | 1,2-Dichloropropane | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | 1,3-Dichlorobenzene | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Chlorobenzene | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Phenol | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13055374 | Ethylbenzene | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13065452 | 1,3-Dichlorobenzene | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13075471 | Ethylbenzene | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13075486 | Benzene | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13075486 | Tetrachloroethene | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13075491 | trans-1,2-Dichloroethene | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13075491 | Trichloroethene | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | 2-Chlorophenol | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | 4-Chloro-3-methylphenol | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | 1,1,1-Trichloroethane | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | Trichloroethene | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | Benzene | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | Chloroform | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Tetrachloroethene | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | 2,4,6-Trichlorophenol | 95.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13115722 | 4-Nitrophenol | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | Anthracene | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13115740 | Toluene | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | Chloroform | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | Chloroform | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | Toluene | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13115772 | Methylene Chloride | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13125786 | trans-1,2-Dichloroethene | 95.0 | %REC |
| LCS | VOCs/SVOCs | 13045288 | 1,2-Dibromo-3-chloropropane | 95.1 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Tetrachloroethene | 95.2 | %REC |
| LCS | VOCs/SVOCs | 13105704 | cis-1,2-Dichloroethene | 95.2 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,2-Dichloropropane | 95.4 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Ethylbenzene | 95.5 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 1,2-Dichloroethane | 95.5 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Bromoform | 95.5 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Total Xylenes | 95.6 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,2-Dibromo-3-chloropropane | 95.6 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Hexachlorobutadiene | 95.6 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,2-Dichloroethane | 95.8 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,2-Dibromoethane | 95.9 | %REC |
| LCS | VOCs/SVOCs | 13015076 | 4-Chloro-3-methylphenol | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13025103 | Chloroform | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13025103 | Trichloroethene | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13025115 | 1,2-Dichloropropane | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13025116 | 1,2-Dichloropropane | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | Phenol | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13035157 | Tetrachloroethene | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13035158 | Chlorobenzene | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13035158 | Ethylbenzene | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13035158 | trans-1,2-Dichloroethene | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13035197 | Benzene | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13035197 | Bromodichloromethane | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13035197 | Chlorobenzene | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13035197 | Chloroform | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13035198 | Benzene | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13035198 | Bromodichloromethane | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13035198 | Chlorobenzene | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13035198 | Chloroform | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13045233 | trans-1,2-Dichloroethene | 96.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13045278 | Pentachlorophenol | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13055297 | 1,1-Dichloroethene | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Bromodichloromethane | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Carbon Tetrachloride | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Chlorobenzene | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Ethylbenzene | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | 1,1-Dichloroethene | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Bromodichloromethane | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13055374 | Chlorobenzene | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13065430 | Ethylbenzene | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13065430 | Tetrachloroethene | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13065430 | Trichloroethene | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13065452 | Ethylbenzene | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13075491 | Benzene | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13075491 | Bromodichloromethane | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | Toluene | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | trans-1,2-Dichloroethene | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Benzene | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Bromomethane | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | 2,4,6-Trichlorophenol | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13115740 | 1,2-Dichloropropane | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | Methylene Chloride | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | Toluene | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13115772 | Bromodichloromethane | 96.0 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Naphthalene | 96.1 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Methylene Chloride | 96.2 | %REC |
| LCS | VOCs/SVOCs | 13045288 | trans-1,3-Dichloropropene | 96.3 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Ethylbenzene | 96.4 | %REC |
| LCS | VOCs/SVOCs | 13045288 | trans-1,3-Dichloropropene | 96.4 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,3-Dichlorobenzene | 96.4 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,2-Dichlorobenzene | 96.5 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,4-Dichlorobenzene | 96.5 | %REC |
| LCS | VOCs/SVOCs | 13045288 | cis-1,2-Dichloroethene | 96.6 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,2,4-Trichlorobenzene | 96.6 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Toluene | 96.6 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Chlorobenzene | 96.7 | %REC |
| LCS | VOCs/SVOCs | 13015076 | 2,4-Dinitrotoluene | 97.0 | %REC |
| LCS | VOCs/SVOCs | 13025103 | Bromodichloromethane | 97.0 | %REC |
| LCS | VOCs/SVOCs | 13025103 | Carbon Tetrachloride | 97.0 | %REC |
| LCS | VOCs/SVOCs | 13025106 | Bromodichloromethane | 97.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13025106 | Chloroform | 97.0 | %REC |
| LCS | VOCs/SVOCs | 13025111 | Bromodichloromethane | 97.0 | %REC |
| LCS | VOCs/SVOCs | 13025111 | Chloroform | 97.0 | %REC |
| LCS | VOCs/SVOCs | 13025139 | 1,3-Dichlorobenzene | 97.0 | %REC |
| LCS | VOCs/SVOCs | 13025139 | Chlorobenzene | 97.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | Anthracene | 97.0 | %REC |
| LCS | VOCs/SVOCs | 13035158 | Methylene Chloride | 97.0 | %REC |
| LCS | VOCs/SVOCs | 13045233 | 1,2-Dichloropropane | 97.0 | %REC |
| LCS | VOCs/SVOCs | 13045233 | 1,3-Dichlorobenzene | 97.0 | %REC |
| LCS | VOCs/SVOCs | 13045233 | Benzene | 97.0 | %REC |
| LCS | VOCs/SVOCs | 13045233 | Chloroform | 97.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | Tetrachloroethene | 97.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | 1,1,1-Trichloroethane | 97.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | 1,2-Dichloropropane | 97.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Bromodichloromethane | 97.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Chloroform | 97.0 | %REC |
| LCS | VOCs/SVOCs | 13055341 | Bromodichloromethane | 97.0 | %REC |
| LCS | VOCs/SVOCs | 13065430 | Bromodichloromethane | 97.0 | %REC |
| LCS | VOCs/SVOCs | 13075486 | Bromodichloromethane | 97.0 | %REC |
| LCS | VOCs/SVOCs | 13085538 | Bromodichloromethane | 97.0 | %REC |
| LCS | VOCs/SVOCs | 13085538 | Chloroform | 97.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | 1,1-Dichloroethene | 97.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | 2-Chlorophenol | 97.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | 4-Chloro-3-methylphenol | 97.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | Phenol | 97.0 | %REC |
| LCS | VOCs/SVOCs | 13115740 | 1,1-Dichloroethene | 97.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | Chlorobenzene | 97.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | Methylene Chloride | 97.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | Trichloroethene | 97.0 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Total Xylenes | 97.1 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Tetrachloroethene | 97.3 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Methylene Chloride | 97.3 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Bromodichloromethane | 97.3 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Bromodichloromethane | 97.4 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Chloroform | 97.5 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Hexachlorobutadiene | 97.5 | %REC |
| LCS | VOCs/SVOCs | 13045288 | 1,2-Dichloropropane | 97.7 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Naphthalene | 97.7 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Benzene | 97.8 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Carbon Tetrachloride | 97.8 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13115725 | 1,2-Dichlorobenzene | 97.8 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Benzene | 97.9 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,1,1-Trichloroethane | 97.9 | %REC |
| LCS | VOCs/SVOCs | 13015076 | 2,4,6-Trichlorophenol | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13015076 | Pentachlorophenol | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13025103 | Benzene | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13025106 | Carbon Tetrachloride | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13025111 | Carbon Tetrachloride | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13025122 | Chlorobenzene | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13025138 | Trichloroethene | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13025139 | Ethylbenzene | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13025139 | Ethylbenzene | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | 4-Chloro-3-methylphenol | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13035157 | 1,2-Dichloropropane | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13035158 | 1,1,1-Trichloroethane | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13035197 | Trichloroethene | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13035198 | Trichloroethene | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | 2,4-Dinitrotoluene | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | Ethylbenzene | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13055297 | 1,1,1-Trichloroethane | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | 1,3-Dichlorobenzene | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Benzene | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Trichloroethene | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | 2,4,6-Trichlorophenol | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | 2,4-Dinitrotoluene | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | 4-Nitrophenol | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13055341 | 1,1-Dichloroethene | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13055374 | Benzene | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13065430 | 1,1,1-Trichloroethane | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13065430 | Chlorobenzene | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13065430 | Chloroform | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13075471 | 1,3-Dichlorobenzene | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13075471 | Chlorobenzene | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13075486 | Trichloroethene | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13085538 | 1,1,1-Trichloroethane | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13085538 | Methylene Chloride | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13085548 | Benzene | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13085548 | Bromodichloromethane | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | Phenol | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | 1,1-Dichloroethene | 98.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13085563 | 1,2-Dichloropropane | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | 1,2-Dichloropropane | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | 1,2-Dichloropropane | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | 2,4-Dinitrotoluene | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | 2,4-Dinitrotoluene | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | n-Nitroso-di-n-propylamine | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | Pyrene | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13115740 | 1,1,1-Trichloroethane | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | 1,1-Dichloroethene | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | Bromodichloromethane | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | Methylene Chloride | 98.0 | %REC |
| LCS | VOCs/SVOCs | 13045288 | 1,1,1-Trichloroethane | 98.1 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Methylene Chloride | 98.1 | %REC |
| LCS | VOCs/SVOCs | 13045288 | trans-1,2-Dichloroethene | 98.1 | %REC |
| LCS | VOCs/SVOCs | 13105704 | trans-1,2-Dichloroethene | 98.1 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Bromodichloromethane | 98.2 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Dibromochloromethane | 98.2 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Vinyl Chloride | 98.3 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,1,2,2-Tetrachloroethane | 98.4 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,2-Dibromo-3-chloropropane | 98.4 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,2-Dibromoethane | 98.4 | %REC |
| LCS | VOCs/SVOCs | 13045288 | 1,2,4-Trichlorobenzene | 98.6 | %REC |
| LCS | VOCs/SVOCs | 13045288 | cis-1,2-Dichloroethene | 98.6 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,1,2-Trichloroethane | 98.6 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Dibromochloromethane | 98.7 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Trichloroethene | 98.7 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 1,4-Dichlorobenzene | 98.7 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Dibromochloromethane | 98.9 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Total Xylenes | 98.9 | %REC |
| LCS | VOCs/SVOCs | 13025103 | 1,1,1-Trichloroethane | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13025103 | 1,2-Dichloropropane | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13025103 | Chlorobenzene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13025106 | 1,2-Dichloropropane | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13025106 | 1,3-Dichlorobenzene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13025106 | Benzene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13025106 | Trichloroethene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13025111 | 1,2-Dichloropropane | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13025111 | 1,3-Dichlorobenzene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13025111 | Benzene | 99.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13025111 | Trichloroethene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13025115 | Trichloroethene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13025116 | Trichloroethene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13025122 | Chloroform | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13025122 | Ethylbenzene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13025130 | 1,2-Dichloropropane | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13025130 | Trichloroethene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13025131 | 1,2-Dichloropropane | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13025131 | Trichloroethene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13025138 | 1,2-Dichloropropane | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13025138 | Benzene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13025138 | Bromodichloromethane | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13025138 | Chloroform | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13025138 | trans-1,2-Dichloroethene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13025139 | Tetrachloroethene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13035197 | Ethylbenzene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13035198 | Ethylbenzene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13035211 | Trichloroethene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13045233 | Bromodichloromethane | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | 1,2-Dichloropropane | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | 1,3-Dichlorobenzene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | Chlorobenzene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Trichloroethene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Benzene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Chloroform | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Ethylbenzene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Ethylbenzene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Toluene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | 1,1,1-Trichloroethane | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Chloroform | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Tetrachloroethene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13055374 | 1,3-Dichlorobenzene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13065378 | 1,2-Dichloropropane | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13065430 | Trichloroethene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13065452 | Chlorobenzene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13075486 | Chloroform | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13075486 | Toluene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13075491 | Chloroform | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13085538 | Carbon Tetrachloride | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13085538 | Chlorobenzene | 99.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13085550 | n-Nitroso-di-n-propylamine | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | 1,2-Dichloropropane | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | 1,3-Dichlorobenzene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | Benzene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | Carbon Tetrachloride | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | trans-1,2-Dichloroethene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Chloromethane | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Ethylbenzene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | 4-Nitrophenol | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | Phenol | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13115740 | Benzene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13115740 | Chloroform | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | 1,2-Dichloropropane | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | Benzene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | Ethylbenzene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | trans-1,2-Dichloroethene | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13115772 | Chloroform | 99.0 | %REC |
| LCS | VOCs/SVOCs | 13045288 | 1,2-Dichloropropane | 99.3 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Dibromochloromethane | 99.3 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 1,3-Dichlorobenzene | 99.3 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Methylene Chloride | 99.3 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Styrene | 99.4 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Hexachlorobutadiene | 99.6 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,1,2-Trichloroethane | 99.7 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Styrene | 99.9 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Styrene | 99.9 | %REC |
| LCS | VOCs/SVOCs | 13015076 | Tetrachloroethene | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13015076 | Trichloroethene | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13025103 | 1,3-Dichlorobenzene | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13025103 | Ethylbenzene | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13025103 | Toluene | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13025122 | Bromodichloromethane | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13025122 | Toluene | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13025130 | Ethylbenzene | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13025131 | Ethylbenzene | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13025138 | Toluene | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13025139 | Carbon Tetrachloride | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13035211 | 1,1,1-Trichloroethane | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13035211 | Benzene | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13035211 | Chloroform | 100.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13045233 | Ethylbenzene | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | 1,3-Dichlorobenzene | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Carbon Tetrachloride | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Trichloroethene | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13065378 | 1,3-Dichlorobenzene | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13065430 | Benzene | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13065430 | Toluene | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13075486 | trans-1,2-Dichloroethene | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13085538 | Ethylbenzene | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | Benzene | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | Chlorobenzene | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | Trichloroethene | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | Toluene | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,1,2,2-Tetrachloroethane | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | trans-1,3-Dichloropropene | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | trans-1,3-Dichloropropene | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Vinyl Chloride | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13115722 | 4-Chloro-3-methylphenol | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13115740 | Ethylbenzene | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | 1,1,1-Trichloroethane | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13125786 | Carbon Tetrachloride | 100.0 | %REC |
| LCS | VOCs/SVOCs | 13025103 | Methylene Chloride | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13025103 | trans-1,2-Dichloroethene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13025106 | 1,1,1-Trichloroethane | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13025106 | Toluene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13025111 | 1,1,1-Trichloroethane | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13025111 | Toluene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13025122 | trans-1,2-Dichloroethene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13025130 | Chlorobenzene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13025131 | Chlorobenzene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13025138 | 1,1,1-Trichloroethane | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13025138 | Carbon Tetrachloride | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13025139 | Bromodichloromethane | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13025139 | Carbon Tetrachloride | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13025139 | Tetrachloroethene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | 2,4-Dinitrotoluene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13035211 | Carbon Tetrachloride | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13035211 | trans-1,2-Dichloroethene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13045233 | Toluene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13045233 | Trichloroethene | 101.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13045278 | 2,4-Dinitrotoluene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | Benzene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | trans-1,2-Dichloroethene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | 1,1-Dichloroethene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Chlorobenzene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Ethylbenzene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Tetrachloroethene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Toluene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Chlorobenzene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13055341 | 1,2-Dichloropropane | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13055341 | Trichloroethene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13055374 | 1,2-Dichloropropane | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13065378 | 1,1-Dichloroethene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13065378 | Chlorobenzene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13065378 | Chloroform | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13065378 | Trichloroethene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13065430 | 1,2-Dichloropropane | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13085538 | 1,3-Dichlorobenzene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13085538 | Tetrachloroethene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13085538 | Toluene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | Benzene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | Tetrachloroethene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Naphthalene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 1,1,2,2-Tetrachloroethane | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Bromomethane | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Chlorobenzene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Naphthalene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13115740 | Chlorobenzene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13115740 | trans-1,2-Dichloroethene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | Chloroform | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | Tetrachloroethene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | Toluene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | Trichloroethene | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13115772 | 1,2-Dichloropropane | 101.0 | %REC |
| LCS | VOCs/SVOCs | 13015076 | 1,3-Dichlorobenzene | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13015076 | Benzene | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13015076 | Bromodichloromethane | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13015076 | Chlorobenzene | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13015076 | Chloroform | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13025103 | Tetrachloroethene | 102.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13025106 | Chlorobenzene | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13025111 | Chlorobenzene | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13025115 | 1,2-Dichloropropane | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13025115 | 1,3-Dichlorobenzene | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13025115 | Benzene | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13025115 | Chlorobenzene | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13025116 | 1,2-Dichloropropane | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13025116 | 1,3-Dichlorobenzene | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13025116 | Benzene | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13025116 | Chlorobenzene | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13025130 | Benzene | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13025131 | Benzene | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13025139 | Trichloroethene | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | 4-Nitrophenol | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13035157 | Toluene | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13035197 | 1,1,1-Trichloroethane | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13035197 | 1,2-Dichloropropane | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13035198 | 1,1,1-Trichloroethane | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13035198 | 1,2-Dichloropropane | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Bromodichloromethane | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Carbon Tetrachloride | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Styrene | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13045288 | trans-1,2-Dichloroethene | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | 1,3-Dichlorobenzene | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Carbon Tetrachloride | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Methylene Chloride | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | 1,2-Dichloropropane | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13055341 | Chloroform | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13055374 | Toluene | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13065430 | 1,1,1-Trichloroethane | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13065430 | Carbon Tetrachloride | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13065430 | Chloroform | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13075486 | 1,1,1-Trichloroethane | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13075491 | 1,1,1-Trichloroethane | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13075491 | 1,2-Dichloropropane | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13085548 | 1,3-Dichlorobenzene | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | 1,3-Dichlorobenzene | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | trans-1,2-Dichloroethene | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | Toluene | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | cis-1,2-Dichloroethene | 102.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13115722 | n-Nitroso-di-n-propylamine | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 1,1,2-Trichloroethane | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 1,2-Dibromoethane | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Ethylbenzene | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Toluene | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Total Xylenes | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13115740 | Tetrachloroethene | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | 1,1,1-Trichloroethane | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | trans-1,2-Dichloroethene | 102.0 | %REC |
| LCS | VOCs/SVOCs | 13025122 | Benzene | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13025139 | 1,1,1-Trichloroethane | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13025139 | Chloroform | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13025139 | Trichloroethene | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | 4-Nitrophenol | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | n-Nitroso-di-n-propylamine | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13035157 | Bromodichloromethane | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13035157 | Chloroform | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13035157 | Methylene Chloride | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13035197 | 1,3-Dichlorobenzene | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13035198 | 1,3-Dichlorobenzene | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13035211 | Toluene | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13055297 | Carbon Tetrachloride | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | 1,3-Dichlorobenzene | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Methylene Chloride | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Tetrachloroethene | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | trans-1,2-Dichloroethene | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Benzene | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Ethylbenzene | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13055341 | Benzene | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13065378 | Benzene | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13065378 | Tetrachloroethene | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13065430 | Bromodichloromethane | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13085538 | Benzene | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13085548 | 1,2-Dichloropropane | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13085548 | Toluene | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | Bromodichloromethane | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | 1,1-Dichloroethene | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Bromoform | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 1,2-Dichloroethane | 103.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13115725 | Dibromochloromethane | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13115740 | 1,2-Dichloropropane | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13115740 | Bromodichloromethane | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13115740 | Methylene Chloride | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | 1,2-Dichloropropane | 103.0 | %REC |
| LCS | VOCs/SVOCs | 13015076 | 4-Nitrophenol | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13015076 | Ethylbenzene | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13025106 | trans-1,2-Dichloroethene | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13025111 | trans-1,2-Dichloroethene | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13025115 | Toluene | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13025115 | Trichloroethene | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13025116 | Toluene | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13025116 | Trichloroethene | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13025130 | 1,3-Dichlorobenzene | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13025131 | 1,3-Dichlorobenzene | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13025139 | Benzene | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13025139 | Toluene | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | n-Nitroso-di-n-propylamine | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | Chloroform | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13045288 | 1,1,1-Trichloroethane | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | 1,1,1-Trichloroethane | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | trans-1,2-Dichloroethene | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13055341 | Chlorobenzene | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13055374 | Trichloroethene | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13065378 | 1,1,1-Trichloroethane | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13065378 | 1,2-Dichloropropane | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13065378 | Benzene | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13065378 | Ethylbenzene | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13065378 | Methylene Chloride | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13065378 | trans-1,2-Dichloroethene | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13065452 | Tetrachloroethene | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13085538 | Trichloroethene | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | Chlorobenzene | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | Ethylbenzene | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,2-Dichloropropane | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Chloroform | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Tetrachloroethene | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 1,2,4-Trichlorobenzene | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13115740 | 1,3-Dichlorobenzene | 104.0 | %REC |
| LCS | VOCs/SVOCs | 13115740 | Carbon Tetrachloride | 104.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13015076 | 2,4-Dinitrotoluene | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13025115 | Chlorobenzene | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13025115 | Ethylbenzene | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13025115 | Methylene Chloride | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13025116 | Chlorobenzene | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13025116 | Ethylbenzene | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13025116 | Methylene Chloride | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13025130 | Methylene Chloride | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13025131 | Methylene Chloride | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13025139 | Bromodichloromethane | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13025139 | Chloroform | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | 2,4-Dinitrotoluene | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13035211 | 1,2-Dichloropropane | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13035211 | Ethylbenzene | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13045233 | 1,1-Dichloroethene | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13045233 | Carbon Tetrachloride | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13045274 | 1,2-Dichloropropane | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13045274 | Tetrachloroethene | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13045274 | Toluene | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13045274 | Trichloroethene | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13045288 | 1,1-Dichloroethene | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | 1,1-Dichloroethene | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Methylene Chloride | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13065378 | 1,3-Dichlorobenzene | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13065378 | Chlorobenzene | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13065430 | Carbon Tetrachloride | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13075471 | Tetrachloroethene | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13085548 | Chlorobenzene | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | Chloroform | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,2-Dibromoethane | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Bromodichloromethane | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Naphthalene | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Trichloroethene | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 1,2-Dichloropropane | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Benzene | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Chloroform | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | trans-1,3-Dichloropropene | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13115740 | Chloroform | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13115740 | Trichloroethene | 105.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | Carbon Tetrachloride | 105.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13025106 | Ethylbenzene | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13025106 | Tetrachloroethene | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13025111 | Ethylbenzene | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13025111 | Tetrachloroethene | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13025115 | Benzene | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13025115 | Ethylbenzene | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13025115 | trans-1,2-Dichloroethene | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13025116 | Benzene | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13025116 | Ethylbenzene | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13025116 | trans-1,2-Dichloroethene | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13025122 | 1,1-Dichloroethene | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13025130 | Toluene | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13025131 | Toluene | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13025138 | 1,1-Dichloroethene | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13025139 | 1,1,1-Trichloroethane | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13025139 | Benzene | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13025139 | Toluene | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13025139 | trans-1,2-Dichloroethene | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13025141 | 1,1-Dichloroethene | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13035157 | Toluene | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13035157 | trans-1,2-Dichloroethene | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13035211 | Methylene Chloride | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | trans-1,2-Dichloroethene | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13055341 | 1,3-Dichlorobenzene | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13055341 | Ethylbenzene | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13055341 | Tetrachloroethene | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13055341 | trans-1,2-Dichloroethene | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13055374 | Tetrachloroethene | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13055374 | trans-1,2-Dichloroethene | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13065378 | Toluene | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13065378 | Toluene | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13065378 | Trichloroethene | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13085538 | 1,2-Dichloropropane | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13085538 | Bromodichloromethane | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13085538 | Trichloroethene | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | Methylene Chloride | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13085566 | Bromodichloromethane | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13085566 | Trichloroethene | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,1,1-Trichloroethane | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,2-Dichlorobenzene | 106.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13105704 | Dibromochloromethane | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Chloromethane | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Methylene Chloride | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | n-Nitroso-di-n-propylamine | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13115740 | 1,1,1-Trichloroethane | 106.0 | %REC |
| LCS | VOCs/SVOCs | 13015076 | Carbon Tetrachloride | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13025115 | 1,3-Dichlorobenzene | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13025116 | 1,3-Dichlorobenzene | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13025130 | trans-1,2-Dichloroethene | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13025131 | trans-1,2-Dichloroethene | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13025139 | 1,2-Dichloropropane | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13025139 | trans-1,2-Dichloroethene | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13035157 | Methylene Chloride | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13035157 | Trichloroethene | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13035158 | 1,1-Dichloroethene | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13035211 | Chlorobenzene | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13035211 | Tetrachloroethene | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13045233 | 1,1,1-Trichloroethane | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13045274 | 1,3-Dichlorobenzene | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13045274 | Chlorobenzene | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | 1,1-Dichloroethene | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Tetrachloroethene | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Toluene | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13055341 | 1,1,1-Trichloroethane | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13065378 | 1,1-Dichloroethene | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13085538 | 1,3-Dichlorobenzene | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13085538 | Benzene | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13085548 | Chloroform | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13085548 | Ethylbenzene | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | 1,1-Dichloroethene | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | Ethylbenzene | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | Chloroform | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13085566 | 1,3-Dichlorobenzene | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13085566 | Benzene | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,2-Dichloroethane | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,3-Dichlorobenzene | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,4-Dichlorobenzene | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Benzene | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Chlorobenzene | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Hexachlorobutadiene | 107.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13115740 | Toluene | 107.0 | %REC |
| LCS | VOCs/SVOCs | 13015076 | 1,2-Dichloropropane | 108.0 | %REC |
| LCS | VOCs/SVOCs | 13025122 | 1,2-Dichloropropane | 108.0 | %REC |
| LCS | VOCs/SVOCs | 13035157 | trans-1,2-Dichloroethene | 108.0 | %REC |
| LCS | VOCs/SVOCs | 13035197 | Carbon Tetrachloride | 108.0 | %REC |
| LCS | VOCs/SVOCs | 13035198 | Carbon Tetrachloride | 108.0 | %REC |
| LCS | VOCs/SVOCs | 13035211 | 1,3-Dichlorobenzene | 108.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | Toluene | 108.0 | %REC |
| LCS | VOCs/SVOCs | 13045288 | 1,1-Dichloroethene | 108.0 | %REC |
| LCS | VOCs/SVOCs | 13045288 | Carbon Tetrachloride | 108.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | Methylene Chloride | 108.0 | %REC |
| LCS | VOCs/SVOCs | 13055341 | Carbon Tetrachloride | 108.0 | %REC |
| LCS | VOCs/SVOCs | 13055341 | Toluene | 108.0 | %REC |
| LCS | VOCs/SVOCs | 13065378 | Ethylbenzene | 108.0 | %REC |
| LCS | VOCs/SVOCs | 13085538 | 1,1-Dichloroethene | 108.0 | %REC |
| LCS | VOCs/SVOCs | 13085538 | trans-1,2-Dichloroethene | 108.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | Bromodichloromethane | 108.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | trans-1,2-Dichloroethene | 108.0 | %REC |
| LCS | VOCs/SVOCs | 13085566 | 1,1-Dichloroethene | 108.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Carbon Tetrachloride | 108.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Hexachlorobutadiene | 108.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Bromodichloromethane | 108.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | cis-1,2-Dichloroethene | 108.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | trans-1,2-Dichloroethene | 108.0 | %REC |
| LCS | VOCs/SVOCs | 13015076 | 4-Nitrophenol | 109.0 | %REC |
| LCS | VOCs/SVOCs | 13025106 | 1,1-Dichloroethene | 109.0 | %REC |
| LCS | VOCs/SVOCs | 13025111 | 1,1-Dichloroethene | 109.0 | %REC |
| LCS | VOCs/SVOCs | 13025130 | Bromodichloromethane | 109.0 | %REC |
| LCS | VOCs/SVOCs | 13025130 | Chloroform | 109.0 | %REC |
| LCS | VOCs/SVOCs | 13025130 | Tetrachloroethene | 109.0 | %REC |
| LCS | VOCs/SVOCs | 13025131 | Bromodichloromethane | 109.0 | %REC |
| LCS | VOCs/SVOCs | 13025131 | Chloroform | 109.0 | %REC |
| LCS | VOCs/SVOCs | 13025131 | Tetrachloroethene | 109.0 | %REC |
| LCS | VOCs/SVOCs | 13045274 | Ethylbenzene | 109.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | 1,1,1-Trichloroethane | 109.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | 1,1-Dichloroethene | 109.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | Bromodichloromethane | 109.0 | %REC |
| LCS | VOCs/SVOCs | 13065378 | Carbon Tetrachloride | 109.0 | %REC |
| LCS | VOCs/SVOCs | 13065430 | 1,1-Dichloroethene | 109.0 | %REC |
| LCS | VOCs/SVOCs | 13075491 | Carbon Tetrachloride | 109.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13085538 | Chlorobenzene | 109.0 | %REC |
| LCS | VOCs/SVOCs | 13085538 | Ethylbenzene | 109.0 | %REC |
| LCS | VOCs/SVOCs | 13085548 | trans-1,2-Dichloroethene | 109.0 | %REC |
| LCS | VOCs/SVOCs | 13085548 | Trichloroethene | 109.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | Chloroform | 109.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | trans-1,2-Dichloroethene | 109.0 | %REC |
| LCS | VOCs/SVOCs | 13085566 | Chlorobenzene | 109.0 | %REC |
| LCS | VOCs/SVOCs | 13085566 | Ethylbenzene | 109.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Styrene | 109.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Toluene | 109.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Total Xylenes | 109.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | trans-1,2-Dichloroethene | 109.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | trans-1,3-Dichloropropene | 109.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | n-Nitroso-di-n-propylamine | 109.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Tetrachloroethene | 109.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Trichloroethene | 109.0 | %REC |
| LCS | VOCs/SVOCs | 13015076 | 1,1,1-Trichloroethane | 110.0 | %REC |
| LCS | VOCs/SVOCs | 13025115 | Chloroform | 110.0 | %REC |
| LCS | VOCs/SVOCs | 13025116 | Chloroform | 110.0 | %REC |
| LCS | VOCs/SVOCs | 13025139 | 1,2-Dichloropropane | 110.0 | %REC |
| LCS | VOCs/SVOCs | 13045274 | Bromodichloromethane | 110.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Methylene Chloride | 110.0 | %REC |
| LCS | VOCs/SVOCs | 13055374 | Chloroform | 110.0 | %REC |
| LCS | VOCs/SVOCs | 13055374 | Methylene Chloride | 110.0 | %REC |
| LCS | VOCs/SVOCs | 13065378 | trans-1,2-Dichloroethene | 110.0 | %REC |
| LCS | VOCs/SVOCs | 13085538 | trans-1,2-Dichloroethene | 110.0 | %REC |
| LCS | VOCs/SVOCs | 13085566 | trans-1,2-Dichloroethene | 110.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Ethylbenzene | 110.0 | %REC |
| LCS | VOCs/SVOCs | 13115740 | Carbon Tetrachloride | 110.0 | %REC |
| LCS | VOCs/SVOCs | 13115760 | Carbon Tetrachloride | 110.0 | %REC |
| LCS | VOCs/SVOCs | 13025115 | Tetrachloroethene | 111.0 | %REC |
| LCS | VOCs/SVOCs | 13025115 | Toluene | 111.0 | %REC |
| LCS | VOCs/SVOCs | 13025116 | Tetrachloroethene | 111.0 | %REC |
| LCS | VOCs/SVOCs | 13025116 | Toluene | 111.0 | %REC |
| LCS | VOCs/SVOCs | 13035157 | 1,3-Dichlorobenzene | 111.0 | %REC |
| LCS | VOCs/SVOCs | 13035157 | Chlorobenzene | 111.0 | %REC |
| LCS | VOCs/SVOCs | 13045274 | 1,1,1-Trichloroethane | 111.0 | %REC |
| LCS | VOCs/SVOCs | 13045274 | 1,1,1-Trichloroethane | 111.0 | %REC |
| LCS | VOCs/SVOCs | 13045274 | Carbon Tetrachloride | 111.0 | %REC |
| LCS | VOCs/SVOCs | 13065430 | trans-1,2-Dichloroethene | 111.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13085538 | 1,1-Dichloroethene | 111.0 | %REC |
| LCS | VOCs/SVOCs | 13085538 | Methylene Chloride | 111.0 | %REC |
| LCS | VOCs/SVOCs | 13085538 | Toluene | 111.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | Tetrachloroethene | 111.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | Toluene | 111.0 | %REC |
| LCS | VOCs/SVOCs | 13085566 | Methylene Chloride | 111.0 | %REC |
| LCS | VOCs/SVOCs | 13085566 | Toluene | 111.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,1-Dichloroethene | 111.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,2-Dichloroethane | 111.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | cis-1,2-Dichloroethene | 111.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 1,1,1-Trichloroethane | 111.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | 1,1-Dichloroethene | 111.0 | %REC |
| LCS | VOCs/SVOCs | 13025103 | 1,1-Dichloroethene | 112.0 | %REC |
| LCS | VOCs/SVOCs | 13025115 | Bromodichloromethane | 112.0 | %REC |
| LCS | VOCs/SVOCs | 13025115 | Bromodichloromethane | 112.0 | %REC |
| LCS | VOCs/SVOCs | 13025116 | Bromodichloromethane | 112.0 | %REC |
| LCS | VOCs/SVOCs | 13025116 | Bromodichloromethane | 112.0 | %REC |
| LCS | VOCs/SVOCs | 13045274 | Benzene | 112.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | Carbon Tetrachloride | 112.0 | %REC |
| LCS | VOCs/SVOCs | 13075486 | Carbon Tetrachloride | 112.0 | %REC |
| LCS | VOCs/SVOCs | 13085538 | 1,2-Dichloropropane | 112.0 | %REC |
| LCS | VOCs/SVOCs | 13085538 | Chloroform | 112.0 | %REC |
| LCS | VOCs/SVOCs | 13085538 | Tetrachloroethene | 112.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | Toluene | 112.0 | %REC |
| LCS | VOCs/SVOCs | 13085566 | 1,2-Dichloropropane | 112.0 | %REC |
| LCS | VOCs/SVOCs | 13085566 | Chloroform | 112.0 | %REC |
| LCS | VOCs/SVOCs | 13085566 | Tetrachloroethene | 112.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Chloroform | 112.0 | %REC |
| LCS | VOCs/SVOCs | 13025115 | Chloroform | 113.0 | %REC |
| LCS | VOCs/SVOCs | 13025116 | Chloroform | 113.0 | %REC |
| LCS | VOCs/SVOCs | 13035157 | Chloroform | 113.0 | %REC |
| LCS | VOCs/SVOCs | 13035211 | 1,1-Dichloroethene | 113.0 | %REC |
| LCS | VOCs/SVOCs | 13045274 | trans-1,2-Dichloroethene | 113.0 | %REC |
| LCS | VOCs/SVOCs | 13065430 | Methylene Chloride | 113.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | Carbon Tetrachloride | 113.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Bromodichloromethane | 113.0 | %REC |
| LCS | VOCs/SVOCs | 13115725 | Carbon Tetrachloride | 113.0 | %REC |
| LCS | VOCs/SVOCs | 13015076 | trans-1,2-Dichloroethene | 114.0 | %REC |
| LCS | VOCs/SVOCs | 13025115 | Tetrachloroethene | 114.0 | %REC |
| LCS | VOCs/SVOCs | 13025115 | trans-1,2-Dichloroethene | 114.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13025116 | Tetrachloroethene | 114.0 | %REC |
| LCS | VOCs/SVOCs | 13025116 | trans-1,2-Dichloroethene | 114.0 | %REC |
| LCS | VOCs/SVOCs | 13035157 | Ethylbenzene | 114.0 | %REC |
| LCS | VOCs/SVOCs | 13045274 | Chloroform | 114.0 | %REC |
| LCS | VOCs/SVOCs | 13065378 | Tetrachloroethene | 114.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,2,4-Trichlorobenzene | 114.0 | %REC |
| LCS | VOCs/SVOCs | 13035157 | 1,1,1-Trichloroethane | 115.0 | %REC |
| LCS | VOCs/SVOCs | 13035157 | Bromodichloromethane | 115.0 | %REC |
| LCS | VOCs/SVOCs | 13045274 | Methylene Chloride | 115.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | 1,2-Dichloropropane | 115.0 | %REC |
| LCS | VOCs/SVOCs | 13085566 | 1,1,1-Trichloroethane | 115.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | 1,1-Dichloroethene | 115.0 | %REC |
| LCS | VOCs/SVOCs | 13025115 | 1,1,1-Trichloroethane | 116.0 | %REC |
| LCS | VOCs/SVOCs | 13025116 | 1,1,1-Trichloroethane | 116.0 | %REC |
| LCS | VOCs/SVOCs | 13055374 | 1,1-Dichloroethene | 116.0 | %REC |
| LCS | VOCs/SVOCs | 13085548 | Tetrachloroethene | 116.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | 1,1,1-Trichloroethane | 116.0 | %REC |
| LCS | VOCs/SVOCs | 13055335 | Methylene Chloride | 117.0 | %REC |
| LCS | VOCs/SVOCs | 13055374 | Bromodichloromethane | 117.0 | %REC |
| LCS | VOCs/SVOCs | 13085550 | Trichloroethene | 117.0 | %REC |
| LCS | VOCs/SVOCs | 13105677 | 1,1-Dichloroethene | 117.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Trichloroethene | 117.0 | %REC |
| LCS | VOCs/SVOCs | 13025130 | 1,1,1-Trichloroethane | 118.0 | %REC |
| LCS | VOCs/SVOCs | 13025131 | 1,1,1-Trichloroethane | 118.0 | %REC |
| LCS | VOCs/SVOCs | 13025139 | 1,1-Dichloroethene | 118.0 | %REC |
| LCS | VOCs/SVOCs | 13025139 | 1,1-Dichloroethene | 118.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Tetrachloroethene | 118.0 | %REC |
| LCS | VOCs/SVOCs | 13025115 | 1,1-Dichloroethene | 119.0 | %REC |
| LCS | VOCs/SVOCs | 13025116 | 1,1-Dichloroethene | 119.0 | %REC |
| LCS | VOCs/SVOCs | 13055309 | 1,1-Dichloroethene | 119.0 | %REC |
| LCS | VOCs/SVOCs | 13025130 | 1,1-Dichloroethene | 120.0 | %REC |
| LCS | VOCs/SVOCs | 13025131 | 1,1-Dichloroethene | 120.0 | %REC |
| LCS | VOCs/SVOCs | 13055328 | Methylene Chloride | 120.0 | %REC |
| LCS | VOCs/SVOCs | 13085538 | Carbon Tetrachloride | 120.0 | %REC |
| LCS | VOCs/SVOCs | 13085548 | 1,1,1-Trichloroethane | 120.0 | %REC |
| LCS | VOCs/SVOCs | 13085566 | Carbon Tetrachloride | 120.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | 1,1,1-Trichloroethane | 120.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Hexachlorobutadiene | 120.0 | %REC |
| LCS | VOCs/SVOCs | 13025130 | Carbon Tetrachloride | 121.0 | %REC |
| LCS | VOCs/SVOCs | 13025131 | Carbon Tetrachloride | 121.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | VOCs/SVOCs | 13035157 | 1,1-Dichloroethene | 121.0 | %REC |
| LCS | VOCs/SVOCs | 13085548 | Carbon Tetrachloride | 122.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | 1,1,1-Trichloroethane | 122.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | Methylene Chloride | 122.0 | %REC |
| LCS | VOCs/SVOCs | 13015076 | Methylene Chloride | 123.0 | %REC |
| LCS | VOCs/SVOCs | 13035157 | Tetrachloroethene | 123.0 | %REC |
| LCS | VOCs/SVOCs | 13105704 | Carbon Tetrachloride | 123.0 | %REC |
| LCS | VOCs/SVOCs | 13025115 | 1,1,1-Trichloroethane | 124.0 | %REC |
| LCS | VOCs/SVOCs | 13025115 | Carbon Tetrachloride | 124.0 | %REC |
| LCS | VOCs/SVOCs | 13025116 | 1,1,1-Trichloroethane | 124.0 | %REC |
| LCS | VOCs/SVOCs | 13025116 | Carbon Tetrachloride | 124.0 | %REC |
| LCS | VOCs/SVOCs | 13035157 | 1,1-Dichloroethene | 124.0 | %REC |
| LCS | VOCs/SVOCs | 13045274 | 1,1-Dichloroethene | 124.0 | %REC |
| LCS | VOCs/SVOCs | 13055374 | 1,1,1-Trichloroethane | 125.0 | %REC |
| LCS | VOCs/SVOCs | 13025115 | Carbon Tetrachloride | 126.0 | %REC |
| LCS | VOCs/SVOCs | 13025116 | Carbon Tetrachloride | 126.0 | %REC |
| LCS | VOCs/SVOCs | 13035157 | Carbon Tetrachloride | 126.0 | %REC |
| LCS | VOCs/SVOCs | 13025115 | 1,1-Dichloroethene | 127.0 | %REC |
| LCS | VOCs/SVOCs | 13025116 | 1,1-Dichloroethene | 127.0 | %REC |
| LCS | VOCs/SVOCs | 13045278 | Methylene Chloride | 128.0 | %REC |
| LCS | VOCs/SVOCs | 13055374 | Carbon Tetrachloride | 128.0 | %REC |
| LCS | VOCs/SVOCs | 13085563 | Carbon Tetrachloride | 129.0 | %REC |
| LCS | VOCs/SVOCs | 13035157 | 1,1,1-Trichloroethane | 130.0 | %REC |
| LCS | VOCs/SVOCs | 13055297 | Methylene Chloride | 130.0 | %REC |
| LCS | VOCs/SVOCs | 13015076 | 1,1-Dichloroethene | 132.0 | %REC |
| LCS | VOCs/SVOCs | 13035157 | Carbon Tetrachloride | 137.0 | %REC |
| LCS | WQP | 13125842 | Nitrate+Nitrite as N | 91.0 | %REC |
| LCS | WQP | 13035203 | Nitrate+Nitrite as N | 93.0 | %REC |
| LCS | WQP | 13125820 | Nitrate+Nitrite as N | 93.0 | %REC |
| LCS | WQP | 13125842 | Nitrate+Nitrite as N | 93.0 | %REC |
| LCS | WQP | 13125842 | Nitrate+Nitrite as N | 94.0 | %REC |
| LCS | WQP | 13085570 | Nitrate+Nitrite as N | 95.0 | %REC |
| LCS | WQP | 13125785 | Nitrate+Nitrite as N | 95.0 | %REC |
| LCS | WQP | 13045288 | NO2+NO3 as N | 95.8 | %REC |
| LCS | WQP | 13055309 | Nitrate+Nitrite as N | 96.0 | %REC |
| LCS | WQP | 13055339 | Nitrate+Nitrite as N | 96.0 | %REC |
| LCS | WQP | 13095612 | Nitrate+Nitrite as N | 96.0 | %REC |
| LCS | WQP | 13115725 | NO2+NO3 as N | 96.3 | %REC |
| LCS | WQP | 13085544 | Nitrate+Nitrite as N | 97.0 | %REC |
| LCS | WQP | 13115721 | Nitrate+Nitrite as N | 97.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | WQP | 13115722 | Nitrate+Nitrite as N | 97.0 | %REC |
| LCS | WQP | 13115740 | Nitrate+Nitrite as N | 97.0 | %REC |
| LCS | WQP | 13065438 | Nitrate+Nitrite as N | 98.0 | %REC |
| LCS | WQP | 13105671 | Nitrate+Nitrite as N | 98.0 | %REC |
| LCS | WQP | 13065394 | Nitrate+Nitrite as N | 99.0 | %REC |
| LCS | WQP | 13085570 | Nitrate+Nitrite as N | 99.0 | %REC |
| LCS | WQP | 13095595 | Nitrate+Nitrite as N | 99.0 | %REC |
| LCS | WQP | 13115721 | Nitrate+Nitrite as N | 99.0 | %REC |
| LCS | WQP | 13115721 | Nitrate+Nitrite as N | 99.0 | %REC |
| LCS | WQP | 13115722 | Nitrate+Nitrite as N | 99.0 | %REC |
| LCS | WQP | 13115755 | Nitrate+Nitrite as N | 99.0 | %REC |
| LCS | WQP | 13125785 | Nitrate+Nitrite as N | 99.0 | %REC |
| LCS | WQP | 14015879 | NO2+NO3 as N | 99.0 | %REC |
| LCS | WQP | 13075521 | Hardness as CaCO3 | 99.1 | %REC |
| LCS | WQP | 13105665 | Hardness as CaCO3 | 99.7 | %REC |
| LCS | WQP | 13105666 | Hardness as CaCO3 | 99.7 | %REC |
| LCS | WQP | 13055362 | Hardness as CaCO3 | 99.8 | %REC |
| LCS | WQP | 13065393 | Hardness as CaCO3 | 99.8 | %REC |
| LCS | WQP | 13105689 | NO2+NO3 as N | 99.8 | %REC |
| LCS | WQP | 13105704 | NO2+NO3 as N | 99.8 | %REC |
| LCS | WQP | 13055343 | Hardness as CaCO3 | 99.9 | %REC |
| LCS | WQP | 13055361 | Hardness as CaCO3 | 99.9 | %REC |
| LCS | WQP | 13105674 | Hardness as CaCO3 | 99.9 | %REC |
| LCS | WQP | 13105691 | Hardness as CaCO3 | 99.9 | %REC |
| LCS | WQP | 13015059 | Hardness as CaCO3 | 100.0 | %REC |
| LCS | WQP | 13035203 | Nitrate+Nitrite as N | 100.0 | %REC |
| LCS | WQP | 13045224 | Nitrate+Nitrite as N | 100.0 | %REC |
| LCS | WQP | 13045224 | Nitrate+Nitrite as N | 100.0 | %REC |
| LCS | WQP | 13055327 | Hardness as CaCO3 | 100.0 | %REC |
| LCS | WQP | 13055340 | Nitrate+Nitrite as N | 100.0 | %REC |
| LCS | WQP | 13065444 | Hardness as CaCO3 | 100.0 | %REC |
| LCS | WQP | 13075455 | Hardness as CaCO3 | 100.0 | %REC |
| LCS | WQP | 13095612 | Nitrate+Nitrite as N | 100.0 | %REC |
| LCS | WQP | 13095613 | Nitrate+Nitrite as N | 100.0 | %REC |
| LCS | WQP | 13095621 | Hardness as CaCO3 | 100.0 | %REC |
| LCS | WQP | 13095627 | Hardness as CaCO3 | 100.0 | %REC |
| LCS | WQP | 13105671 | Nitrate+Nitrite as N | 100.0 | %REC |
| LCS | WQP | 13125799 | Hardness as CaCO3 | 100.0 | %REC |
| LCS | WQP | 13015060 | Nitrate+Nitrite as N | 101.0 | %REC |
| LCS | WQP | 13035173 | Nitrate+Nitrite as N | 101.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | WQP | 13035200 | Hardness as CaCO3 | 101.0 | %REC |
| LCS | WQP | 13045226 | Hardness as CaCO3 | 101.0 | %REC |
| LCS | WQP | 13045276 | Nitrate+Nitrite as N | 101.0 | %REC |
| LCS | WQP | 13045285 | Hardness as CaCO3 | 101.0 | %REC |
| LCS | WQP | 13045287 | Hardness as CaCO3 | 101.0 | %REC |
| LCS | WQP | 13055302 | Hardness as CaCO3 | 101.0 | %REC |
| LCS | WQP | 13055304 | Hardness as CaCO3 | 101.0 | %REC |
| LCS | WQP | 13065378 | Nitrate+Nitrite as N | 101.0 | %REC |
| LCS | WQP | 13075493 | Hardness as CaCO3 | 101.0 | %REC |
| LCS | WQP | 13085545 | Hardness as CaCO3 | 101.0 | %REC |
| LCS | WQP | 13085546 | Hardness as CaCO3 | 101.0 | %REC |
| LCS | WQP | 13095608 | Hardness as CaCO3 | 101.0 | %REC |
| LCS | WQP | 13095609 | Hardness as CaCO3 | 101.0 | %REC |
| LCS | WQP | 13095625 | Nitrate+Nitrite as N | 101.0 | %REC |
| LCS | WQP | 13095625 | Nitrate+Nitrite as N | 101.0 | %REC |
| LCS | WQP | 13105671 | Nitrate+Nitrite as N | 101.0 | %REC |
| LCS | WQP | 13115760 | Nitrate+Nitrite as N | 101.0 | %REC |
| LCS | WQP | 13125843 | Hardness as CaCO3 | 101.0 | %REC |
| LCS | WQP | 14015855 | Hardness as CaCO3 | 101.0 | %REC |
| LCS | WQP | 14015856 | Hardness as CaCO3 | 101.0 | %REC |
| LCS | WQP | 13015060 | Nitrate+Nitrite as N | 102.0 | %REC |
| LCS | WQP | 13015060 | Nitrate+Nitrite as N | 102.0 | %REC |
| LCS | WQP | 13035173 | Nitrate+Nitrite as N | 102.0 | %REC |
| LCS | WQP | 13045224 | Nitrate+Nitrite as N | 102.0 | %REC |
| LCS | WQP | 13045275 | Nitrate+Nitrite as N | 102.0 | %REC |
| LCS | WQP | 13055306 | Nitrate+Nitrite as N | 102.0 | %REC |
| LCS | WQP | 13055340 | Nitrate+Nitrite as N | 102.0 | %REC |
| LCS | WQP | 13055375 | Nitrate+Nitrite as N | 102.0 | %REC |
| LCS | WQP | 13055375 | Nitrate+Nitrite as N | 102.0 | %REC |
| LCS | WQP | 13065378 | Nitrate+Nitrite as N | 102.0 | %REC |
| LCS | WQP | 13065395 | Nitrate+Nitrite as N | 102.0 | %REC |
| LCS | WQP | 13095613 | Nitrate+Nitrite as N | 102.0 | %REC |
| LCS | WQP | 13095625 | Nitrate+Nitrite as N | 102.0 | %REC |
| LCS | WQP | 13115721 | Nitrate+Nitrite as N | 102.0 | %REC |
| LCS | WQP | 13125805 | NO2+NO3 as N | 102.0 | %REC |
| LCS | WQP | 13125842 | Nitrate+Nitrite as N | 102.0 | %REC |
| LCS | WQP | 13125842 | Nitrate+Nitrite as N | 102.0 | %REC |
| LCS | WQP | 13025136 | Nitrate+Nitrite as N | 103.0 | %REC |
| LCS | WQP | 13035203 | Nitrate+Nitrite as N | 103.0 | %REC |
| LCS | WQP | 13045224 | Nitrate+Nitrite as N | 103.0 | %REC |

*Table B-5 (continued). Lab Control Sample (LCS) Data for Metals, VOCs/SVOCs, and Water-Quality Parameters*

| RESULT_TYPE_CODE | Analyte Group | RIN | ANALYTE | Result | Units |
|---|---|---|---|---|---|
| LCS | WQP | 13055297 | Nitrate+Nitrite as N | 103.0 | %REC |
| LCS | WQP | 13055306 | Nitrate+Nitrite as N | 103.0 | %REC |
| LCS | WQP | 13055335 | Nitrate+Nitrite as N | 103.0 | %REC |
| LCS | WQP | 13055335 | Nitrate+Nitrite as N | 103.0 | %REC |
| LCS | WQP | 13055339 | Nitrate+Nitrite as N | 103.0 | %REC |
| LCS | WQP | 13055340 | Nitrate+Nitrite as N | 103.0 | %REC |
| LCS | WQP | 13065378 | Nitrate+Nitrite as N | 103.0 | %REC |
| LCS | WQP | 13065394 | Nitrate+Nitrite as N | 103.0 | %REC |
| LCS | WQP | 13095625 | Nitrate+Nitrite as N | 103.0 | %REC |
| LCS | WQP | 13025136 | Nitrate+Nitrite as N | 104.0 | %REC |
| LCS | WQP | 13035203 | Nitrate+Nitrite as N | 104.0 | %REC |
| LCS | WQP | 13045275 | Nitrate+Nitrite as N | 104.0 | %REC |
| LCS | WQP | 13055340 | Nitrate+Nitrite as N | 104.0 | %REC |
| LCS | WQP | 13065394 | Nitrate+Nitrite as N | 104.0 | %REC |
| LCS | WQP | 13065395 | Nitrate+Nitrite as N | 104.0 | %REC |
| LCS | WQP | 13065438 | Nitrate+Nitrite as N | 104.0 | %REC |
| LCS | WQP | 13075472 | Nitrate+Nitrite as N | 104.0 | %REC |
| LCS | WQP | 13075472 | Nitrate+Nitrite as N | 104.0 | %REC |
| LCS | WQP | 13075507 | Nitrate+Nitrite as N | 104.0 | %REC |
| LCS | WQP | 13085544 | Nitrate+Nitrite as N | 104.0 | %REC |
| LCS | WQP | 13085570 | Nitrate+Nitrite as N | 104.0 | %REC |
| LCS | WQP | 13105677 | Nitrate+Nitrite as N | 104.0 | %REC |
| LCS | WQP | 13105685 | Nitrate+Nitrite as N | 104.0 | %REC |
| LCS | WQP | 13125820 | Nitrate+Nitrite as N | 104.0 | %REC |
| LCS | WQP | 13025101 | Nitrate+Nitrite as N | 105.0 | %REC |
| LCS | WQP | 13025101 | Nitrate+Nitrite as N | 105.0 | %REC |
| LCS | WQP | 13045276 | Nitrate+Nitrite as N | 105.0 | %REC |
| LCS | WQP | 13055306 | Nitrate+Nitrite as N | 105.0 | %REC |
| LCS | WQP | 13055339 | Nitrate+Nitrite as N | 105.0 | %REC |
| LCS | WQP | 13055375 | Nitrate+Nitrite as N | 105.0 | %REC |
| LCS | WQP | 13075472 | Nitrate+Nitrite as N | 105.0 | %REC |
| LCS | WQP | 13075507 | Nitrate+Nitrite as N | 105.0 | %REC |
| LCS | WQP | 13105677 | Nitrate+Nitrite as N | 105.0 | %REC |
| LCS | WQP | 13105685 | Nitrate+Nitrite as N | 105.0 | %REC |
| LCS | WQP | 13065394 | Nitrate+Nitrite as N | 107.0 | %REC |
| LCS | WQP | 13115755 | Nitrate+Nitrite as N | 107.0 | %REC |
| LCS | WQP | 13105685 | Nitrate+Nitrite as N | 108.0 | %REC |
| LCS | WQP | 13105710 | Nitrate+Nitrite as N | 108.0 | %REC |
| LCS | WQP | 13115755 | Nitrate+Nitrite as N | 108.0 | %REC |

## B.5 Automated Surface-Water Sample Collection Field Information

The following tables present the RFLMA sample collection information by monitoring location for all automated surface-water samples collected during CY 2013. The fields in each table are defined as follows:

- RIN#: The sample number assigned to the specific sampling event. This number corresponds to the sample number stored in SEEPro.
- START DATE-TIME: The date and time of the beginning of the composite (all automated surface-water samples are composite samples).
- END DATE-TIME: The end of the composite sampling period. It is generally the date-time of the first grab sample of the next composite sampling period.
- NUMBER OF GRABS: The total number of individual grab samples comprising the composite sample. For continuous flow-paced samples the grab size is uniformly 200 mL. The grab size for the other sample types varies, but is sized such that an adequate amount of water is collected to complete all required analyses.
- AVERAGE FLOW: The average flow rate (in cfs; for locations with flow measurement) during the sample period. It is calculated by arithmetically averaging the instantaneous flow rates at each grab sample time for the entire composite sample period. If there are gaps in the flow data, resulting in missing FLOW VOLUME values, the AVERAGE FLOW can still be determined if none of the grab samples were collected during the missing flow data period.
- FLOW VOLUME: The total measured surface-water flow volume (in cf; for continuous flow-paced samples only) during the entire composite sampling period.

### B.5.1 Location GS01

*Table B-6. Sample Collection Information for Samples Collected at GS01: Calendar Year 2013*

| GS01 RIN# | Start Date-Time | End Date-Time | Number of Grabs [200 mL] | Average Flow [cfs] | Flow Volume [cf] |
|---|---|---|---|---|---|
| 13025152-533 | 6/6/2012 11:43 | 2/20/2013 15:01 | 60 | Missing Flow Data | 84404 |
| 13035201-736 | 2/20/2013 15:01 | 3/14/2013 13:36 | 47 | 0.644 | 518184 |
| 13045226-307 | 3/14/2013 13:36 | 3/26/2013 12:26 | 36 | 0.333 | 173162 |
| 13045226-311 | 3/26/2013 12:26 | 4/1/2013 11:16 | 57 | 0.757 | 270824 |
| 13045285-550 | 4/1/2013 11:16 | 4/20/2013 18:37 | 73 | 0.969 | 732144 |
| 13055302-923 | 4/20/2013 18:37 | 4/29/2013 11:44 | 73 | 3.625 | 1524228 |
| 13055327-302 | 4/29/2013 11:44 | 5/7/2013 13:09 | 46 | 2.366 | 909133 |
| 13065393-453 | 5/7/2013 13:09 | 6/6/2013 9:59 | 44 | 1.083 | 877570 |
| NSQ | 6/6/2013 9:59 | 9/9/2013 0:00 | 0; NSQ[1] | NA | 0 |

As of September 9, 2013, GS01 is no longer an RFLMA POC.
[1] No flow.

### B.5.2 Location WOMPOC

*Table B-7. Sample Collection Information for Samples Collected at WOMPOC: Calendar Year 2013*

| WOMPOC RIN# | Start Date-Time | End Date-Time | Number of Grabs [200 mL] | Average Flow [cfs] | Flow Volume [cf] |
|---|---|---|---|---|---|
| 13015059-121 | 11/21/2012 8:54 | 1/10/2013 12:00 | 27 | 0.071 | 233038 |
| 13025252-532 | 1/10/2013 12:00 | 2/20/2013 14:43 | 64 | Missing Flow Data | Missing Flow Data |
| 13035201-735 | 2/20/2013 14:43 | 3/6/2013 12:42 | 47 | 0.740 | 363493 |
| 13035201-737 | 3/6/2013 12:42 | 3/14/2013 13:11 | 101 | 0.851 | 347197 |
| 13045226-302 | 3/14/2013 13:11 | 3/26/2013 12:17 | 42 | 0.410 | 264590 |
| 13045226-310 | 3/26/2013 12:17 | 4/1/2013 11:02 | 62 | 0.881 | 318287 |
| 13045285-551 | 4/1/2013 11:02 | 4/20/2013 18:26 | 78 | 1.063 | 921333 |
| 13055302-924 | 4/20/2013 18:26 | 4/29/2013 12:01 | 76 | 4.308 | 1637901 |
| 13055327-303 | 4/29/2013 12:01 | 5/7/2013 12:57 | 51 | 2.646 | 1022558 |
| 13065393-454 | 5/7/2013 12:57 | 6/6/2013 10:20 | 62 | 1.060 | 1228700 |
| 13095608-261 | 6/6/2013 10:20 | 9/12/2013 14:13 | 250 | 236.604 | 6483887 |
| NSQ | 9/12/2013 14:13 | 9/13/2013 12:23 | 0;NSQ[1] | NA | 9997752 |
| 13095608-268 | 9/13/2013 12:23 | 9/14/2013 10:50 | 127 | 12.558 | 860693 |
| 13095627-964 | 9/14/2013 10:50 | 9/19/2013 11:39 | 58 | 5.795 | 2151430 |
| 13105665-763 | 9/19/2013 11:39 | 9/23/2013 13:37 | 85 | 0.546 | 220604 |
| NSQ | 9/23/2013 13:37 | 9/28/2013 9:24 | 2; NSQ[2] | NA | 197895 |
| 13105665-764 | 9/28/2013 9:24 | 10/7/2013 14:43 | 76 | 0.896 | 407475 |
| 13115748-353 | 10/7/2013 14:43 | 11/7/2013 11:16 | 84 | 0.333 | 816782 |
| 13125839-216 | 11/7/2013 11:16 | 12/17/2013 15:35 | 161 | 0.087 | 567876 |
| 14015879-887 | 12/17/2013 15:35 | 1/14/2014 12:53 | 57 | 0.255 | 511995 |

[1] Automated sampler full due to high flows. [2] Automated sampler pacing set too high for actual flows.

### B.5.3 Location GS03

*Table B-8. Sample Collection Information for Samples Collected at GS03: Calendar Year 2013*

| GS03 RIN# | Start Date-Time | End Date-Time | Number of Grabs [200 mL] | Average Flow [cfs] | Flow Volume [cf] |
|---|---|---|---|---|---|
| 12064627-108 | 4/4/2012 11:49 | 1/15/2013 10:08 | 43 | 0.203 | 131040 |
| 13055302-927 | 1/15/2013 10:08 | 4/21/2013 13:06 | 74 | 1.960 | 222615 |
| 13055302-928 | 4/21/2013 13:06 | 4/25/2013 14:10 | 87 | 1.640 | 522776 |
| 13055302-929 | 4/25/2013 14:10 | 4/29/2013 11:23 | 40 | 0.869 | 236806 |
| 13055327-306 | 4/29/2013 11:23 | 5/3/2013 13:10 | 70 | 2.778 | 415641 |
| 13055327-307 | 5/3/2013 13:10 | 5/7/2013 14:20 | 75 | 1.841 | 448017 |
| 13055361-904 | 5/7/2013 14:20 | 5/17/2013 10:24 | 84 | 0.963 | 504083 |
| 13065444-305 | 5/17/2013 10:24 | 6/25/2013 12:07 | 35 | 0.139 | 122019 |
| 13095608-265 | 6/25/2013 12:07 | 9/12/2013 14:36 | 249 | Missing Flow Data | Missing Flow Data |
| 13095608-262 | 9/12/2013 14:36 | 9/14/2013 9:50 | 251 | Missing Flow Data | Missing Flow Data |
| 13105653-297 | 9/14/2013 9:50 | 10/2/2013 14:37 | 52 | 20.824 | 6705477 |

As of September 28, 2013, GS03 is no longer an RFLMA POC.

### B.5.4 Location WALPOC

*Table B-9. Sample Collection Information for Samples Collected at WALPOC: Calendar Year 2013*

| WALPOC RIN# | Start Date-Time | End Date-Time | Number of Grabs [200 mL] | Average Flow [cfs] | Flow Volume [cf] |
|---|---|---|---|---|---|
| 13045285-553 | 4/13/2012 10:08 | 4/21/2013 12:06 | 92 | 1.630 | 493058 |
| 13055302-926 | 4/21/2013 12:06 | 4/29/2013 12:46 | 103 | 1.423 | 804369 |
| 13055327-305 | 4/29/2013 12:46 | 5/3/2013 11:50 | 42 | 1.542 | 323295 |
| 13055327-310 | 5/3/2013 11:50 | 5/7/2013 12:13 | 45 | 1.173 | 338393 |
| 13055361-907 | 5/7/2013 12:13 | 5/17/2013 9:41 | 69 | 0.713 | 512139 |
| 13065393-456 | 5/17/2013 9:41 | 6/4/2013 13:19 | 75 | 0.234 | 261529 |
| 13095608-263 | 6/4/2013 13:19 | 9/12/2013 7:08 | 231 | 21.783 | 687719 |
| NSQ | 9/12/2013 7:08 | 9/13/2013 14:54 | 0;NSQ[1] | NA | 5772277 |
| 13095608-269 | 9/13/2013 14:54 | 9/14/2013 11:54 | 62 | 33.108 | 2337625 |
| 13095621-775 | 9/14/2013 11:54 | 9/16/2013 11:20 | 89 | 23.121 | 3355747 |
| 13115736-245 | 9/16/2013 11:20 | 10/25/2013 14:12 | 32 | 1.435 | 1362605 |
| 13125839-217 | 10/25/2013 14:12 | 12/18/2013 11:39 | 45 | 0.135 | 450326 |
| 14015879-888 | 12/18/2013 11:39 | 1/16/2014 13:27 | 56 | 0.151 | 261029 |

[1] Automated sampler full due to high flows.

### B.5.5 Location GS05

*Table B-10. Sample Collection Information for Samples Collected at GS05: Calendar Year 2013*

| GS05 RIN# | Start Date-Time | End Date-Time | Number of Grabs [200 mL] | Average Flow [cfs] | Flow Volume [cf] |
|---|---|---|---|---|---|
| 13015086-090 | 10/24/2012 8:53 | 1/17/2013 10:09 | 55 | 0.270 | Missing Flow Data |
| 13045287-857 | 1/17/2013 10:09 | 4/20/2013 17:50 | 61 | 1.477 | Missing Flow Data |
| 13055304-947 | 4/20/2013 17:50 | 4/24/2013 9:03 | 57 | 3.769 | 756295 |
| 13055343-651 | 4/24/2013 9:03 | 5/3/2013 10:33 | 75 | 2.847 | 850913 |
| 13065444-296 | 5/3/2013 10:33 | 5/13/2013 12:01 | 75 | Missing Grab Sample Times | 871384 |
| 13075495-251 | 5/13/2013 12:01 | 7/1/2013 10:40 | 75 | Missing Grab Sample Times | 545128 |
| 13095621-771 | 7/1/2013 10:40 | 9/12/2013 2:41 | 73 | Missing Grab Sample Times | Missing Flow Data |
| NSQ | 9/12/2013 2:41 | 9/18/2013 14:56 | 0;NSQ[1] | NA | Missing Flow Data |
| 13125843-290 | 9/18/2013 14:56 | 10/29/2013 14:10 | 55 | 0.255 | 623894 |
| 14015882-951 | 10/29/2013 14:10 | 1/14/2014 13:57 | 13 | 0.063 | Missing Flow Data |

[1] Automated sampler full due to high flows; equipment damaged.

### B.5.6 Location GS10

*Table B-11. Sample Collection Information for Samples Collected at GS10: Calendar Year 2013*

| GS10 RIN# | Start Date-Time | End Date-Time | Number of Grabs [200 mL] | Average Flow [cfs] | Flow Volume [cf] |
|---|---|---|---|---|---|
| 13015059-119 | 12/4/2012 10:44 | 1/10/2013 10:39 | 54 | 0.018 | 49684 |
| NSQ | 1/10/2013 10:39 | 3/4/2013 11:22 | 0; NSQ[1] | NA | 45810 |
| 13045226-304 | 3/4/2013 11:22 | 4/1/2013 10:35 | 37 | 0.034 | 36293 |
| 13045285-552 | 4/1/2013 10:35 | 4/20/2013 18:54 | 64 | 0.196 | 76038 |
| 13055302-925 | 4/20/2013 18:54 | 4/24/2013 9:51 | 61 | 0.422 | 72652 |
| 13055327-304 | 4/24/2013 9:51 | 4/29/2013 12:21 | 53 | 0.208 | 62790 |
| 13055327-309 | 4/29/2013 12:21 | 5/3/2013 12:24 | 46 | 0.389 | 54905 |
| 13055327-311 | 5/3/2013 12:24 | 5/8/2013 9:01 | 38 | 0.124 | 45532 |
| 13055361-906 | 5/8/2013 9:01 | 5/16/2013 11:04 | 69 | 0.129 | 81791 |
| 13065393-462 | 5/16/2013 11:04 | 5/28/2013 10:54 | 79 | 0.085 | 87445 |
| 13065444-297 | 5/28/2013 10:54 | 6/14/2013 9:15 | 106 | 0.076 | 92030 |
| 13075493-230 | 6/14/2013 9:15 | 7/3/2013 7:36 | 85 | 0.048 | 76088 |
| 13085545-895 | 7/3/2013 7:36 | 8/9/2013 13:06 | 52 | 0.427 | 59234 |
| 13095608-264 | 8/9/2013 13:06 | 9/11/2013 21:49 | 109 | 6.401 | 113682 |
| NSQ | 9/11/2013 21:49 | 9/13/2013 15:30 | 0; NSQ[2] | NA | 2138242 |
| 13095621-773 | 9/13/2013 15:30 | 9/16/2013 12:09 | 110 | 6.812 | 404794 |
| 13105665-759 | 9/16/2013 12:09 | 9/24/2013 16:26 | 41 | 0.402 | 162793 |
| 13105691-078 | 9/24/2013 16:26 | 10/16/2013 14:45 | 47 | 0.114 | 181589 |
| 13125799-360 | 10/16/2013 14:45 | 11/13/2013 13:38 | 60 | 0.055 | 128654 |
| 14015855-503 | 11/13/2013 13:38 | 1/2/2014 13:09 | 37 | 0.040 | 129410 |

[1] Location frozen for extended period. [2]Automated sampler full due to high flows.

### B.5.7 Location GS13

*Table B-12. Collection Information for Samples Collected at GS13: Calendar Year 2013*

| GS13 RIN# | Start Date-Time | End Date-Time | Number of Grabs [200 mL] | Average Flow [cfs] | Flow Volume [cf] |
|---|---|---|---|---|---|
| 13015086-093 | 5/21/2012 13:00 | 1/16/2013 9:14 | 7 | 0.131 | 76165 |
| 13035200-734 | 1/16/2013 9:14 | 3/14/2013 12:14 | 35 | 0.287 | 169090 |
| 13045287-565 | 3/14/2013 12:14 | 4/19/2013 13:18 | 78 | 0.429 | 295176 |
| 13045287-570 | 4/19/2013 13:18 | 4/21/2013 10:57 | 62 | 1.742 | 246295 |
| 13055304-940 | 4/21/2013 10:57 | 4/25/2013 10:28 | 59 | 1.615 | 352722 |
| 13055343-646 | 4/25/2013 10:28 | 5/3/2013 11:12 | 61 | 0.890 | 364607 |
| 13055362-909 | 5/3/2013 11:12 | 5/15/2013 9:29 | 77 | 0.525 | 458087 |
| 13065444-298 | 5/15/2013 9:29 | 6/5/2013 9:30 | 48 | 0.180 | 214996 |
| 13075521-388 | 6/5/2013 9:30 | 7/23/2013 13:14 | 25 | 2.965 | 102846 |
| 13095609-276 | 7/23/2013 13:14 | 9/12/2013 14:42 | 108 | 20.935 | 2046824 |
| NSQ | 9/12/2013 14:42 | 9/14/2013 13:14 | 0; NSQ[1] | NA | 4518907 |
| 13125805-787 | 9/14/2013 13:14 | 10/25/2013 15:51 | 65 | 2.153 | 1390107 |
| 14015875-759 | 10/25/2013 15:51 | 11/26/2013 14:52 | 40 | 0.100 | 237391 |
| 14015856-505 | 11/26/2013 14:52 | 1/2/2014 12:04 | 19 | 0.069 | 172467 |

[1] Automated sampler full due to high flows.

### B.5.8 Location GS59

*Table B-13. Sample Collection Information for Samples Collected at GS59: Calendar Year 2013*

| GS59 RIN# | Start Date-Time | End Date-Time | Number of Grabs | Average Flow [cfs] | Flow Volume [cf] |
|---|---|---|---|---|---|
| 13015086-086 | 10/24/2012 9:12 | 1/17/2013 9:27 | 25 | 0.137 | Missing Flow Data |
| 13045226-303 | 1/17/2013 9:27 | 3/28/2013 11:44 | 59 | 0.457 | Missing Flow Data |
| 13055304-948 | 3/28/2013 11:44 | 4/24/2013 9:29 | 85 | 2.640 | 1566712 |
| 13055343-652 | 4/24/2013 9:29 | 5/8/2013 10:37 | 74 | 2.576 | 1319451 |
| 13075495-239 | 5/8/2013 10:37 | 7/1/2013 9:12 | 61 | 0.747 | 1176306 |
| 13095621-776 | 7/1/2013 9:12 | 9/12/2013 14:35 | 56 | 210.063 | 6110567 |
| NSQ | 9/12/2013 14:35 | 9/16/2013 15:01 | 0; NSQ[1] | NA | 9405973 |
| 13105666-770 | 9/16/2013 15:01 | 10/3/2013 16:44 | 83 | 1.100 | 677777 |
| 13125843-294 | 10/3/2013 16:44 | 10/29/2013 11:59 | 19 | 0.342 | 506551 |
| 14025915-880 | 10/29/2013 11:59 | 1/9/2014 14:12 | 37 | 0.170 | Missing Flow Data |

[1] Automated sampler full due to high flows; equipment damaged.

### B.5.9 Location SW027

*Table B-14. Sample Collection Information for Samples Collected at SW027: Calendar Year 2013*

| SW027 RIN# | Start Date-Time | End Date-Time | Number of Grabs | Average Flow [cfs] | Flow Volume [cf] |
|---|---|---|---|---|---|
| NSQ | 1/9/2012 10:47 | 2/4/2013 11:38 | 0; NSQ[1] | NA | 0 |
| 13095609-271 | 2/4/2013 11:38 | 9/12/2013 12:21 | 109 | 1.528 | 32079 |
| NSQ | 9/12/2013 12:21 | 9/13/2013 13:17 | 0; NSQ[2] | NA | 682097 |
| 13105666-769 | 9/13/2013 13:17 | 10/3/2013 17:49 | 47 | 2.180 | 134197 |
| NSQ | 10/3/2013 17:49 | 3/6/2014 11:59 | 0;NSQ[3] | NA | 296 |

[1] No flow. [2]Automated sampler full due to high flows. [3] Minimal flows; new sample started to close out calendar year.

### B.5.10 Location SW093

*Table B-15. Collection Information for Samples Collected at SW093: Calendar Year 2012*

| SW093 RIN# | Start Date-Time | End Date-Time | Number of Grabs [200 mL] | Average Flow [cfs] | Flow Volume [cf] |
|---|---|---|---|---|---|
| 13015059-124 | 11/15/2012 10:05 | 1/10/2013 11:21 | 54 | 0.015 | 63314 |
| NSQ | 1/10/2013 11:21 | 2/5/2013 10:15 | 0; NSQ[1] | NA | 30780 |
| 13035200-733 | 2/5/2013 10:15 | 3/14/2013 11:55 | 49 | 0.295 | 143372 |
| 13045287-574 | 3/14/2013 11:55 | 4/6/2013 10:39 | 37 | 0.278 | 89831 |
| 13045287-573 | 4/6/2013 10:39 | 4/19/2013 13:41 | 71 | 0.498 | 193168 |
| 13045287-564 | 4/19/2013 13:41 | 4/21/2013 10:42 | 77 | 1.662 | 231263 |
| 13055304-939 | 4/21/2013 10:42 | 4/24/2013 10:13 | 56 | 1.713 | 249978 |
| 13055304-945 | 4/24/2013 10:13 | 4/29/2013 13:20 | 51 | 0.684 | 228171 |
| 13055343-645 | 4/29/2013 13:20 | 5/3/2013 10:52 | 47 | 1.120 | 207655 |
| 13055343-650 | 5/3/2013 10:52 | 5/8/2013 9:57 | 44 | 0.510 | 195463 |
| 13055362-910 | 5/8/2013 9:57 | 5/16/2013 10:27 | 61 | 0.490 | 273208 |
| 13065444-302 | 5/16/2013 10:27 | 6/5/2013 9:12 | 101 | 0.190 | 246355 |
| 13075455-428 | 6/5/2013 9:12 | 6/26/2013 8:18 | 47 | 0.049 | 41286 |
| 13075521-389 | 6/26/2013 8:18 | 7/23/2013 12:28 | 88 | 2.601 | 120751 |
| 13095609-275 | 7/23/2013 12:28 | 9/11/2013 20:17 | 110 | 3.193 | 222012 |
| NSQ | 9/11/2013 20:17 | 9/15/2013 11:01 | 0; NSQ[2] | NA | 5786989 |
| 13095627-967 | 9/15/2013 11:01 | 9/19/2013 12:34 | 58 | 5.553 | 576107 |
| 13105691-076 | 9/19/2013 12:34 | 10/15/2013 14:15 | 63 | 0.383 | 483196 |
| 13125843-289 | 10/15/2013 14:15 | 11/4/2013 11:32 | 67 | 0.109 | 170268 |
| 14015856-504 | 11/4/2013 11:32 | 1/2/2014 12:40 | 67 | 0.075 | 309107 |

[1] Location frozen for extended period. [2]Automated sampler full due to high flows.

## B.6 Analytical Results for Water Samples—4th Quarter of CY 2013

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 00193 | WL | 10/23/2013 | 13105689 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 75-27-4 | Bromodichloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 75-25-2 | Bromoform | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 74-83-9 | Bromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 56-23-5 | Carbon tetrachloride | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 108-90-7 | Chlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 124-48-1 | Chlorodibromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 74-87-3 | Chloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 87-68-3 | Hexachlorobutadiene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 75-09-2 | Methylene chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 91-20-3 | Naphthalene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 100-42-5 | Styrene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 127-18-4 | Tetrachloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 108-88-3 | Toluene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 1330-20-7 | Total Xylenes | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00193 | WL | 10/23/2013 | 13105689 | 7440-61-1 | Uranium | 0001 | 74.3 | ug/L | N | F | 0.067 | | QFJ |
| 00193 | WL | 10/23/2013 | 13105689 | 75-01-4 | Vinyl chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 00797 | WL | 10/24/2013 | 13105689 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 75-27-4 | Bromodichloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 75-25-2 | Bromoform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 74-83-9 | Bromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 56-23-5 | Carbon tetrachloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 108-90-7 | Chlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 124-48-1 | Chlorodibromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 00797 | WL | 10/24/2013 | 13105689 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 74-87-3 | Chloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 87-68-3 | Hexachlorobutadiene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 75-09-2 | Methylene chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 91-20-3 | Naphthalene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 100-42-5 | Styrene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 127-18-4 | Tetrachloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 108-88-3 | Toluene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 1330-20-7 | Total Xylenes | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 7440-61-1 | Uranium | 0001 | 14.7 | ug/L | N | F | 0.067 | | F |
| 00797 | WL | 10/24/2013 | 13105689 | 75-01-4 | Vinyl chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 00997 | WL | 11/26/2013 | 13115760 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.21 | ug/L | U | F | 0.21 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.27 | ug/L | U | F | 0.27 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.23 | ug/L | U | F | 0.23 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.21 | ug/L | U | F | 0.21 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.47 | ug/L | U | F | 0.47 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.18 | ug/L | U | F | 0.18 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.15 | ug/L | U | F | 0.15 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.13 | ug/L | U | F | 0.13 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.18 | ug/L | U | F | 0.18 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.16 | ug/L | J | F | 0.13 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 75-27-4 | Bromodichloromethane | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 75-25-2 | Bromoform | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 74-83-9 | Bromomethane | N001 | 0.21 | ug/L | U | F | 0.21 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 56-23-5 | Carbon tetrachloride | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 108-90-7 | Chlorobenzene | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 124-48-1 | Chlorodibromomethane | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 74-87-3 | Chloromethane | N001 | 0.3 | ug/L | U | F | 0.3 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 87-68-3 | Hexachlorobutadiene | N001 | 0.36 | ug/L | U | F | 0.36 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 75-09-2 | Methylene chloride | N001 | 0.32 | ug/L | U | F | 0.32 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 91-20-3 | Naphthalene | N001 | 0.22 | ug/L | U | F | 0.22 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 0.11 | mg/L | | F | 0.019 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 100-42-5 | Styrene | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 127-18-4 | Tetrachloroethene | N001 | 0.2 | ug/L | U | F | 0.2 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 108-88-3 | Toluene | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 1330-20-7 | Total Xylenes | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 7440-61-1 | Uranium | 0001 | 14 | ug/L | | F | 0.05 | | FQ |
| 00997 | WL | 11/26/2013 | 13115760 | 75-01-4 | Vinyl chloride | N001 | 0.1 | ug/L | U | F | 0.1 | | FQ |
| 4087 | WL | 11/12/2013 | 13115740 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.21 | ug/L | U | F | 0.21 | | F |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4087 | WL | 11/12/2013 | 13115740 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.27 | ug/L | U | F | 0.27 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.23 | ug/L | U | F | 0.23 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.21 | ug/L | U | F | 0.21 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.47 | ug/L | U | F | 0.47 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.18 | ug/L | U | F | 0.18 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.15 | ug/L | U | F | 0.15 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.13 | ug/L | U | F | 0.13 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.18 | ug/L | U | F | 0.18 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.25 | ug/L | J | F | 0.13 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 75-27-4 | Bromodichloromethane | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 75-25-2 | Bromoform | N001 | 0.19 | ug/L | U | F | 0.19 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 74-83-9 | Bromomethane | N001 | 0.21 | ug/L | U | F | 0.21 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 56-23-5 | Carbon tetrachloride | N001 | 0.19 | ug/L | U | F | 0.19 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 108-90-7 | Chlorobenzene | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 124-48-1 | Chlorodibromomethane | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 74-87-3 | Chloromethane | N001 | 0.3 | ug/L | U | F | 0.3 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 87-68-3 | Hexachlorobutadiene | N001 | 0.36 | ug/L | U | F | 0.36 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 75-09-2 | Methylene chloride | N001 | 0.32 | ug/L | U | F | 0.32 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 91-20-3 | Naphthalene | N001 | 0.22 | ug/L | U | F | 0.22 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 0.12 | mg/L | | F | 0.019 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 100-42-5 | Styrene | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 127-18-4 | Tetrachloroethene | N001 | 0.2 | ug/L | U | F | 0.2 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 108-88-3 | Toluene | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 1330-20-7 | Total Xylenes | N001 | 0.19 | ug/L | U | F | 0.19 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.19 | ug/L | U | F | 0.19 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 7440-61-1 | Uranium | 0001 | 22 | ug/L | | F | 0.05 | | F |
| 4087 | WL | 11/12/2013 | 13115740 | 75-01-4 | Vinyl chloride | N001 | 0.1 | ug/L | U | F | 0.1 | | F |
| 04091 | WL | 11/20/2013 | 13115760 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 04091 | WL | 11/20/2013 | 13115760 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.21 | ug/L | U | F | 0.21 | | FQ |
| 04091 | WL | 11/20/2013 | 13115760 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.27 | ug/L | U | F | 0.27 | | FQ |
| 04091 | WL | 11/20/2013 | 13115760 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.23 | ug/L | U | F | 0.23 | | FQ |
| 04091 | WL | 11/20/2013 | 13115760 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.21 | ug/L | U | F | 0.21 | | FQ |
| 04091 | WL | 11/20/2013 | 13115760 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.47 | ug/L | U | F | 0.47 | | FQ |
| 04091 | WL | 11/20/2013 | 13115760 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.18 | ug/L | U | F | 0.18 | | FQ |
| 04091 | WL | 11/20/2013 | 13115760 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.15 | ug/L | U | F | 0.15 | | FQ |
| 04091 | WL | 11/20/2013 | 13115760 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.13 | ug/L | U | F | 0.13 | | FQ |
| 04091 | WL | 11/20/2013 | 13115760 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.18 | ug/L | U | F | 0.18 | | FQ |
| 04091 | WL | 11/20/2013 | 13115760 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.13 | ug/L | U | F | 0.13 | | FQ |
| 04091 | WL | 11/20/2013 | 13115760 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 04091 | WL | 11/20/2013 | 13115760 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 04091 | WL | 11/20/2013 | 13115760 | 75-27-4 | Bromodichloromethane | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 04091 | WL | 11/20/2013 | 13115760 | 75-25-2 | Bromoform | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 04091 | WL | 11/20/2013 | 13115760 | 74-83-9 | Bromomethane | N001 | 0.21 | ug/L | U | F | 0.21 | | FQ |
| 04091 | WL | 11/20/2013 | 13115760 | 56-23-5 | Carbon tetrachloride | N001 | 0.24 | ug/L | J | F | 0.19 | | FQ |
| 04091 | WL | 11/20/2013 | 13115760 | 108-90-7 | Chlorobenzene | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 04091 | WL | 11/20/2013 | 13115760 | 124-48-1 | Chlorodibromomethane | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 04091 | WL | 11/20/2013 | 13115760 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 04091 | WL | 11/20/2013 | 13115760 | 74-87-3 | Chloromethane | N001 | 0.3 | ug/L | U | F | 0.3 | | FQ |
| 04091 | WL | 11/20/2013 | 13115760 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | FQ |
| 04091 | WL | 11/20/2013 | 13115760 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 04091 | WL | 11/20/2013 | 13115760 | 87-68-3 | Hexachlorobutadiene | N001 | 0.36 | ug/L | U | F | 0.36 | | FQ |
| 04091 | WL | 11/20/2013 | 13115760 | 75-09-2 | Methylene chloride | N001 | 0.32 | ug/L | U | F | 0.32 | | FQ |
| 04091 | WL | 11/20/2013 | 13115760 | 91-20-3 | Naphthalene | N001 | 0.22 | ug/L | U | F | 0.22 | | FQ |
| 04091 | WL | 11/20/2013 | 13115760 | 100-42-5 | Styrene | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 04091 | WL | 11/20/2013 | 13115760 | 127-18-4 | Tetrachloroethene | N001 | 0.2 | ug/L | U | F | 0.2 | | FQ |
| 04091 | WL | 11/20/2013 | 13115760 | 108-88-3 | Toluene | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 04091 | WL | 11/20/2013 | 13115760 | 1330-20-7 | Total Xylenes | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 04091 | WL | 11/20/2013 | 13115760 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | FQ |
| 04091 | WL | 11/20/2013 | 13115760 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 04091 | WL | 11/20/2013 | 13115760 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 04091 | WL | 11/20/2013 | 13115760 | 75-01-4 | Vinyl chloride | N001 | 0.1 | ug/L | U | F | 0.1 | | FQ |
| 07391 | WL | 10/24/2013 | 13105689 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 320 | ug/L | U | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 320 | ug/L | U | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 320 | ug/L | U | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 75-35-4 | 1,1-Dichloroethene | N001 | 320 | ug/L | U | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 320 | ug/L | U | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 320 | ug/L | U | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 106-93-4 | 1,2-Dibromoethane | N001 | 320 | ug/L | U | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 320 | ug/L | U | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 107-06-2 | 1,2-Dichloroethane | N001 | 320 | ug/L | U | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 78-87-5 | 1,2-Dichloropropane | N001 | 320 | ug/L | U | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 320 | ug/L | U | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 320 | ug/L | U | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 71-43-2 | Benzene | N001 | 320 | ug/L | U | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 75-27-4 | Bromodichloromethane | N001 | 320 | ug/L | U | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 75-25-2 | Bromoform | N001 | 320 | ug/L | U | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 74-83-9 | Bromomethane | N001 | 320 | ug/L | U | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 56-23-5 | Carbon tetrachloride | N001 | 320 | ug/L | U | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 108-90-7 | Chlorobenzene | N001 | 320 | ug/L | U | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 124-48-1 | Chlorodibromomethane | N001 | 320 | ug/L | U | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 67-66-3 | Chloroform | N001 | 840 | ug/L | J | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 74-87-3 | Chloromethane | N001 | 320 | ug/L | U | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 320 | ug/L | U | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 100-41-4 | Ethylbenzene | N001 | 320 | ug/L | U | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 87-68-3 | Hexachlorobutadiene | N001 | 320 | ug/L | U | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 75-09-2 | Methylene chloride | N001 | 320 | ug/L | U | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 91-20-3 | Naphthalene | N001 | 320 | ug/L | U | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 100-42-5 | Styrene | N001 | 320 | ug/L | U | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 127-18-4 | Tetrachloroethene | N001 | 1900 | ug/L | J | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 108-88-3 | Toluene | N001 | 320 | ug/L | U | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 1330-20-7 | Total Xylenes | N001 | 320 | ug/L | U | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 320 | ug/L | U | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 320 | ug/L | U | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 79-01-6 | Trichloroethene | N001 | 51200 | ug/L | | F | 320 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 7440-61-1 | Uranium | 0001 | 145 | ug/L | N | F | 0.335 | | F |
| 07391 | WL | 10/24/2013 | 13105689 | 75-01-4 | Vinyl chloride | N001 | 320 | ug/L | U | F | 320 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 71-55-6 | 1,1,1-Trichloroethane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10304 | WL | 10/23/2013 | 13105689 | 79-00-5 | 1,1,2-Trichloroethane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 75-35-4 | 1,1-Dichloroethene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 120-82-1 | 1,2,4-Trichlorobenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 106-93-4 | 1,2-Dibromoethane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 95-50-1 | 1,2-Dichlorobenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 107-06-2 | 1,2-Dichloroethane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 78-87-5 | 1,2-Dichloropropane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 541-73-1 | 1,3-Dichlorobenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 106-46-7 | 1,4-Dichlorobenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 71-43-2 | Benzene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 75-27-4 | Bromodichloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 75-27-4 | Bromodichloromethane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 75-25-2 | Bromoform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 75-25-2 | Bromoform | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 74-83-9 | Bromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 74-83-9 | Bromomethane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 56-23-5 | Carbon tetrachloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 56-23-5 | Carbon tetrachloride | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 108-90-7 | Chlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 108-90-7 | Chlorobenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 124-48-1 | Chlorodibromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 124-48-1 | Chlorodibromomethane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 67-66-3 | Chloroform | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 74-87-3 | Chloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 74-87-3 | Chloromethane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 156-59-2 | cis-1,2-Dichloroethene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 100-41-4 | Ethylbenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 87-68-3 | Hexachlorobutadiene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 87-68-3 | Hexachlorobutadiene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 75-09-2 | Methylene chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 75-09-2 | Methylene chloride | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 91-20-3 | Naphthalene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 91-20-3 | Naphthalene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 0.017 | mg/L | U | F | 0.017 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N002 | 0.017 | mg/L | U | D | 0.017 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 100-42-5 | Styrene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 100-42-5 | Styrene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 127-18-4 | Tetrachloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 127-18-4 | Tetrachloroethene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 108-88-3 | Toluene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10304 | WL | 10/23/2013 | 13105689 | 108-88-3 | Toluene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 1330-20-7 | Total Xylenes | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 1330-20-7 | Total Xylenes | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 156-60-5 | trans-1,2-Dichloroethene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 10061-02-6 | trans-1,3-dichloropropene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 79-01-6 | Trichloroethene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 7440-61-1 | Uranium | 0001 | 22.6 | ug/L | N | F | 0.067 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 7440-61-1 | Uranium | 0002 | 22.5 | ug/L | N | D | 0.067 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 75-01-4 | Vinyl chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10304 | WL | 10/23/2013 | 13105689 | 75-01-4 | Vinyl chloride | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 75-27-4 | Bromodichloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 75-25-2 | Bromoform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 74-83-9 | Bromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 56-23-5 | Carbon tetrachloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 108-90-7 | Chlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 124-48-1 | Chlorodibromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 74-87-3 | Chloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 87-68-3 | Hexachlorobutadiene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 75-09-2 | Methylene chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 91-20-3 | Naphthalene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 0.0272 | mg/L | J | F | 0.017 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 100-42-5 | Styrene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 127-18-4 | Tetrachloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 108-88-3 | Toluene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 1330-20-7 | Total Xylenes | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 7440-61-1 | Uranium | 0001 | 67.9 | ug/L | | F | 0.067 | | F |
| 10594 | WL | 11/1/2013 | 13105704 | 75-01-4 | Vinyl chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11104 | WL | 11/5/2013 | 13115725 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 75-27-4 | Bromodichloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 75-25-2 | Bromoform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 74-83-9 | Bromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 56-23-5 | Carbon tetrachloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 108-90-7 | Chlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 124-48-1 | Chlorodibromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 74-87-3 | Chloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 87-68-3 | Hexachlorobutadiene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 75-09-2 | Methylene chloride | N001 | 2.27 | ug/L | J | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 91-20-3 | Naphthalene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 100-42-5 | Styrene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 127-18-4 | Tetrachloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 108-88-3 | Toluene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 1330-20-7 | Total Xylenes | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 7440-61-1 | Uranium | 0001 | 27.7 | ug/L | | F | 0.067 | | F |
| 11104 | WL | 11/5/2013 | 13115725 | 75-01-4 | Vinyl chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 75-27-4 | Bromodichloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 75-25-2 | Bromoform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 74-83-9 | Bromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 56-23-5 | Carbon tetrachloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 108-90-7 | Chlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 124-48-1 | Chlorodibromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 74-87-3 | Chloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 87-68-3 | Hexachlorobutadiene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11502 | WL | 11/6/2013 | 13115725 | 75-09-2 | Methylene chloride | N001 | 2.27 | ug/L | J | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 91-20-3 | Naphthalene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 100-42-5 | Styrene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 127-18-4 | Tetrachloroethene | N001 | 5.28 | ug/L | | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 108-88-3 | Toluene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 1330-20-7 | Total Xylenes | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 79-01-6 | Trichloroethene | N001 | 0.39 | ug/L | J | F | 0.16 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 7440-61-1 | Uranium | 0001 | 1.12 | ug/L | | F | 0.067 | | F |
| 11502 | WL | 11/6/2013 | 13115725 | 75-01-4 | Vinyl chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 15699 | WL | 10/15/2013 | 13105677 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 2 | ug/L | | F | 0.16 | | FQ |
| 15699 | WL | 10/15/2013 | 13105677 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.21 | ug/L | U | F | 0.21 | | FQ |
| 15699 | WL | 10/15/2013 | 13105677 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.27 | ug/L | U | F | 0.27 | | FQ |
| 15699 | WL | 10/15/2013 | 13105677 | 75-35-4 | 1,1-Dichloroethene | N001 | 3.8 | ug/L | | F | 0.23 | | FQ |
| 15699 | WL | 10/15/2013 | 13105677 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.21 | ug/L | U | F | 0.21 | | FQ |
| 15699 | WL | 10/15/2013 | 13105677 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.47 | ug/L | U | F | 0.47 | | FQ |
| 15699 | WL | 10/15/2013 | 13105677 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.18 | ug/L | U | F | 0.18 | | FQ |
| 15699 | WL | 10/15/2013 | 13105677 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.15 | ug/L | U | F | 0.15 | | FQ |
| 15699 | WL | 10/15/2013 | 13105677 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.32 | ug/L | J | F | 0.13 | | FQ |
| 15699 | WL | 10/15/2013 | 13105677 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.18 | ug/L | U | F | 0.18 | | FQ |
| 15699 | WL | 10/15/2013 | 13105677 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.18 | ug/L | J | F | 0.13 | | FQ |
| 15699 | WL | 10/15/2013 | 13105677 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.18 | ug/L | J | F | 0.16 | | UFQ |
| 15699 | WL | 10/15/2013 | 13105677 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 15699 | WL | 10/15/2013 | 13105677 | 75-27-4 | Bromodichloromethane | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 15699 | WL | 10/15/2013 | 13105677 | 75-25-2 | Bromoform | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 15699 | WL | 10/15/2013 | 13105677 | 74-83-9 | Bromomethane | N001 | 0.21 | ug/L | U | F | 0.21 | | FQ |
| 15699 | WL | 10/15/2013 | 13105677 | 56-23-5 | Carbon tetrachloride | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 15699 | WL | 10/15/2013 | 13105677 | 108-90-7 | Chlorobenzene | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 15699 | WL | 10/15/2013 | 13105677 | 124-48-1 | Chlorodibromomethane | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 15699 | WL | 10/15/2013 | 13105677 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 15699 | WL | 10/15/2013 | 13105677 | 74-87-3 | Chloromethane | N001 | 0.3 | ug/L | U | F | 0.3 | | FQ |
| 15699 | WL | 10/15/2013 | 13105677 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 270 | ug/L | | F | 6 | | FQ |
| 15699 | WL | 10/15/2013 | 13105677 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 15699 | WL | 10/15/2013 | 13105677 | 87-68-3 | Hexachlorobutadiene | N001 | 0.36 | ug/L | U | F | 0.36 | | FQ |
| 15699 | WL | 10/15/2013 | 13105677 | 75-09-2 | Methylene chloride | N001 | 0.32 | ug/L | U | F | 0.32 | | FQ |
| 15699 | WL | 10/15/2013 | 13105677 | 91-20-3 | Naphthalene | N001 | 0.22 | ug/L | U | F | 0.22 | | FQ |
| 15699 | WL | 10/15/2013 | 13105677 | 100-42-5 | Styrene | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 15699 | WL | 10/15/2013 | 13105677 | 127-18-4 | Tetrachloroethene | N001 | 4.6 | ug/L | | F | 0.2 | | FQ |
| 15699 | WL | 10/15/2013 | 13105677 | 108-88-3 | Toluene | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 15699 | WL | 10/15/2013 | 13105677 | 1330-20-7 | Total Xylenes | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 15699 | WL | 10/15/2013 | 13105677 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 1.6 | ug/L | | F | 0.15 | | FQ |
| 15699 | WL | 10/15/2013 | 13105677 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 15699 | WL | 10/15/2013 | 13105677 | 79-01-6 | Trichloroethene | N001 | 29 | ug/L | | F | 0.16 | | FQ |
| 15699 | WL | 10/15/2013 | 13105677 | 75-01-4 | Vinyl chloride | N001 | 17 | ug/L | | F | 0.1 | | FQ |
| 18199 | WL | 11/1/2013 | 13105704 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 8 | ug/L | U | F | 8 | | F |
| 18199 | WL | 11/1/2013 | 13105704 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 8 | ug/L | U | F | 8 | | F |
| 18199 | WL | 11/1/2013 | 13105704 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 8 | ug/L | U | F | 8 | | F |
| 18199 | WL | 11/1/2013 | 13105704 | 75-35-4 | 1,1-Dichloroethene | N001 | 8 | ug/L | U | F | 8 | | F |
| 18199 | WL | 11/1/2013 | 13105704 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 8 | ug/L | U | F | 8 | | F |
| 18199 | WL | 11/1/2013 | 13105704 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 8 | ug/L | U | F | 8 | | F |
| 18199 | WL | 11/1/2013 | 13105704 | 106-93-4 | 1,2-Dibromoethane | N001 | 8 | ug/L | U | F | 8 | | F |
| 18199 | WL | 11/1/2013 | 13105704 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 8 | ug/L | U | F | 8 | | F |
| 18199 | WL | 11/1/2013 | 13105704 | 107-06-2 | 1,2-Dichloroethane | N001 | 8 | ug/L | U | F | 8 | | F |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18199 | WL | 11/1/2013 | 13105704 | 78-87-5 | 1,2-Dichloropropane | N001 | 8 | ug/L | U | F | 8 | | F |
| 18199 | WL | 11/1/2013 | 13105704 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 8 | ug/L | U | F | 8 | | F |
| 18199 | WL | 11/1/2013 | 13105704 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 8 | ug/L | U | F | 8 | | F |
| 18199 | WL | 11/1/2013 | 13105704 | 71-43-2 | Benzene | N001 | 8 | ug/L | U | F | 8 | | F |
| 18199 | WL | 11/1/2013 | 13105704 | 75-27-4 | Bromodichloromethane | N001 | 8 | ug/L | U | F | 8 | | F |
| 18199 | WL | 11/1/2013 | 13105704 | 75-25-2 | Bromoform | N001 | 8 | ug/L | U | F | 8 | | F |
| 18199 | WL | 11/1/2013 | 13105704 | 74-83-9 | Bromomethane | N001 | 8 | ug/L | U | F | 8 | | F |
| 18199 | WL | 11/1/2013 | 13105704 | 56-23-5 | Carbon tetrachloride | N001 | 2230 | ug/L | | F | 8 | | F |
| 18199 | WL | 11/1/2013 | 13105704 | 108-90-7 | Chlorobenzene | N001 | 8 | ug/L | U | F | 8 | | F |
| 18199 | WL | 11/1/2013 | 13105704 | 124-48-1 | Chlorodibromomethane | N001 | 8 | ug/L | U | F | 8 | | F |
| 18199 | WL | 11/1/2013 | 13105704 | 67-66-3 | Chloroform | N001 | 295 | ug/L | | F | 8 | | F |
| 18199 | WL | 11/1/2013 | 13105704 | 74-87-3 | Chloromethane | N001 | 8 | ug/L | U | F | 8 | | F |
| 18199 | WL | 11/1/2013 | 13105704 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 8 | ug/L | U | F | 8 | | F |
| 18199 | WL | 11/1/2013 | 13105704 | 100-41-4 | Ethylbenzene | N001 | 8 | ug/L | U | F | 8 | | F |
| 18199 | WL | 11/1/2013 | 13105704 | 87-68-3 | Hexachlorobutadiene | N001 | 8 | ug/L | U | F | 8 | | F |
| 18199 | WL | 11/1/2013 | 13105704 | 75-09-2 | Methylene chloride | N001 | 8 | ug/L | U | F | 8 | | F |
| 18199 | WL | 11/1/2013 | 13105704 | 91-20-3 | Naphthalene | N001 | 8 | ug/L | U | F | 8 | | F |
| 18199 | WL | 11/1/2013 | 13105704 | 100-42-5 | Styrene | N001 | 8 | ug/L | U | F | 8 | | F |
| 18199 | WL | 11/1/2013 | 13105704 | 127-18-4 | Tetrachloroethene | N001 | 8 | ug/L | U | F | 8 | | F |
| 18199 | WL | 11/1/2013 | 13105704 | 108-88-3 | Toluene | N001 | 8 | ug/L | U | F | 8 | | F |
| 18199 | WL | 11/1/2013 | 13105704 | 1330-20-7 | Total Xylenes | N001 | 8 | ug/L | U | F | 8 | | F |
| 18199 | WL | 11/1/2013 | 13105704 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 8 | ug/L | U | F | 8 | | F |
| 18199 | WL | 11/1/2013 | 13105704 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 8 | ug/L | U | F | 8 | | F |
| 18199 | WL | 11/1/2013 | 13105704 | 79-01-6 | Trichloroethene | N001 | 8 | ug/L | U | F | 8 | | F |
| 18199 | WL | 11/1/2013 | 13105704 | 75-01-4 | Vinyl chloride | N001 | 8 | ug/L | U | F | 8 | | F |
| 20205 | WL | 11/4/2013 | 13115725 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | AM-241 | Americium-241 | 0001 | 0.00144 | pCi/L | U | F | 0.0136 | 0.00632 | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 75-27-4 | Bromodichloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 75-25-2 | Bromoform | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 74-83-9 | Bromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 56-23-5 | Carbon tetrachloride | N001 | 0.32 | ug/L | J | F | 0.16 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 108-90-7 | Chlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 124-48-1 | Chlorodibromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 67-66-3 | Chloroform | N001 | 3.29 | ug/L | | F | 0.16 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 74-87-3 | Chloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 87-68-3 | Hexachlorobutadiene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 75-09-2 | Methylene chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 91-20-3 | Naphthalene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | PU-239,240 | Plutonium-239, 240 | 0001 | -0.00151 | pCi/L | U | F | 0.0203 | 0.00782 | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 100-42-5 | Styrene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20205 | WL | 11/4/2013 | 13115725 | 127-18-4 | Tetrachloroethene | N001 | 0.3 | ug/L | J | F | 0.16 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 108-88-3 | Toluene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 1330-20-7 | Total Xylenes | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 7440-61-1 | Uranium | 0001 | 63.1 | ug/L | | F | 0.067 | | FQ |
| 20205 | WL | 11/4/2013 | 13115725 | 75-01-4 | Vinyl chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 20505 | WL | 11/4/2013 | 13115725 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.3 | ug/L | J | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | AM-241 | Americium-241 | 0001 | -0.00703 | pCi/L | U | F | 0.0165 | 0.0138 | F |
| 20505 | WL | 11/4/2013 | 13115725 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | 75-27-4 | Bromodichloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | 75-25-2 | Bromoform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | 74-83-9 | Bromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | 56-23-5 | Carbon tetrachloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | 108-90-7 | Chlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | 124-48-1 | Chlorodibromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | 74-87-3 | Chloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 4.95 | ug/L | | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | 87-68-3 | Hexachlorobutadiene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | 75-09-2 | Methylene chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | 91-20-3 | Naphthalene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | PU-239,240 | Plutonium-239, 240 | 0001 | -0.00106 | pCi/L | U | F | 0.0143 | 0.0108 | F |
| 20505 | WL | 11/4/2013 | 13115725 | 100-42-5 | Styrene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | 127-18-4 | Tetrachloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | 108-88-3 | Toluene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | 1330-20-7 | Total Xylenes | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | 79-01-6 | Trichloroethene | N001 | 0.38 | ug/L | J | F | 0.16 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | 7440-61-1 | Uranium | 0001 | 8.35 | ug/L | | F | 0.067 | | F |
| 20505 | WL | 11/4/2013 | 13115725 | 75-01-4 | Vinyl chloride | N001 | 0.45 | ug/L | J | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20705 | WL | 11/4/2013 | 13115725 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | AM-241 | Americium-241 | 0001 | 0.00849 | pCi/L | U | F | 0.016 | 0.01 | F |
| 20705 | WL | 11/4/2013 | 13115725 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | 75-27-4 | Bromodichloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | 75-25-2 | Bromoform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | 74-83-9 | Bromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | 56-23-5 | Carbon tetrachloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | 108-90-7 | Chlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | 124-48-1 | Chlorodibromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | 74-87-3 | Chloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.8 | ug/L | J | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | 87-68-3 | Hexachlorobutadiene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | 75-09-2 | Methylene chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | 91-20-3 | Naphthalene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 0.0417 | mg/L | J | F | 0.017 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | PU-239,240 | Plutonium-239, 240 | 0001 | -0.00252 | pCi/L | U | F | 0.017 | 0.00781 | F |
| 20705 | WL | 11/4/2013 | 13115725 | 100-42-5 | Styrene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | 127-18-4 | Tetrachloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | 108-88-3 | Toluene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | 1330-20-7 | Total Xylenes | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | 7440-61-1 | Uranium | 0001 | 23.3 | ug/L | | F | 0.067 | | F |
| 20705 | WL | 11/4/2013 | 13115725 | 75-01-4 | Vinyl chloride | N001 | 0.25 | ug/L | J | F | 0.16 | | F |
| 23296 | WL | 11/26/2013 | 13115760 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.72 | ug/L | J | F | 0.64 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.84 | ug/L | U | F | 0.84 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 1.1 | ug/L | U | F | 1.1 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.92 | ug/L | U | F | 0.92 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.84 | ug/L | U | F | 0.84 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 1.9 | ug/L | U | F | 1.9 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.72 | ug/L | U | F | 0.72 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.6 | ug/L | U | F | 0.6 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.52 | ug/L | U | F | 0.52 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.72 | ug/L | U | F | 0.72 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.52 | ug/L | U | F | 0.52 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.64 | ug/L | U | F | 0.64 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 71-43-2 | Benzene | N001 | 0.64 | ug/L | U | F | 0.64 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 75-27-4 | Bromodichloromethane | N001 | 0.68 | ug/L | U | F | 0.68 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 75-25-2 | Bromoform | N001 | 0.76 | ug/L | U | F | 0.76 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 74-83-9 | Bromomethane | N001 | 0.84 | ug/L | U | F | 0.84 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 56-23-5 | Carbon tetrachloride | N001 | 4.2 | ug/L | | F | 0.76 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 108-90-7 | Chlorobenzene | N001 | 0.68 | ug/L | U | F | 0.68 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 124-48-1 | Chlorodibromomethane | N001 | 0.68 | ug/L | U | F | 0.68 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 67-66-3 | Chloroform | N001 | 34 | ug/L | | F | 0.64 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 74-87-3 | Chloromethane | N001 | 1.2 | ug/L | U | F | 1.2 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 77 | ug/L | | F | 0.6 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 100-41-4 | Ethylbenzene | N001 | 0.64 | ug/L | U | F | 0.64 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 87-68-3 | Hexachlorobutadiene | N001 | 1.4 | ug/L | U | F | 1.4 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 75-09-2 | Methylene chloride | N001 | 1.3 | ug/L | U | F | 1.3 | | FQ |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 23296 | WL | 11/26/2013 | 13115760 | 91-20-3 | Naphthalene | N001 | 0.88 | ug/L | U | F | 0.88 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 100-42-5 | Styrene | N001 | 0.68 | ug/L | U | F | 0.68 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 127-18-4 | Tetrachloroethene | N001 | 87 | ug/L | | F | 0.8 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 108-88-3 | Toluene | N001 | 0.68 | ug/L | U | F | 0.68 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 1330-20-7 | Total Xylenes | N001 | 0.76 | ug/L | U | F | 0.76 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.6 | ug/L | U | F | 0.6 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.76 | ug/L | U | F | 0.76 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 79-01-6 | Trichloroethene | N001 | 900 | ug/L | | F | 6.4 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 7440-61-1 | Uranium | 0001 | 19 | ug/L | | F | 0.05 | | FQ |
| 23296 | WL | 11/26/2013 | 13115760 | 75-01-4 | Vinyl chloride | N001 | 0.4 | ug/L | U | F | 0.4 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 75-27-4 | Bromodichloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 75-25-2 | Bromoform | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 74-83-9 | Bromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 56-23-5 | Carbon tetrachloride | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 108-90-7 | Chlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 124-48-1 | Chlorodibromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 74-87-3 | Chloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 87-68-3 | Hexachlorobutadiene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 75-09-2 | Methylene chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 91-20-3 | Naphthalene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 100-42-5 | Styrene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 127-18-4 | Tetrachloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 108-88-3 | Toluene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 1330-20-7 | Total Xylenes | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 30002 | WL | 11/4/2013 | 13115725 | 75-01-4 | Vinyl chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 33502 | WL | 10/22/2013 | 13105689 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 6.6 | ug/L | | F | 0.16 | | F |
| 33502 | WL | 10/22/2013 | 13105689 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 33502 | WL | 10/22/2013 | 13105689 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 33502 | WL | 10/22/2013 | 13105689 | 75-35-4 | 1,1-Dichloroethene | N001 | 2.93 | ug/L | | F | 0.16 | | F |
| 33502 | WL | 10/22/2013 | 13105689 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 1.25 | ug/L | B | F | 0.16 | | UF |
| 33502 | WL | 10/22/2013 | 13105689 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 33502 | WL | 10/22/2013 | 13105689 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 33502 | WL | 10/22/2013 | 13105689 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 5.05 | ug/L | | F | 0.16 | | F |
| 33502 | WL | 10/22/2013 | 13105689 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 33502 | WL | 10/22/2013 | 13105689 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.9 | ug/L | J | F | 0.16 | | F |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 33502 | WL | 10/22/2013 | 13105689 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 17.7 | ug/L | | F | 0.16 | | F |
| 33502 | WL | 10/22/2013 | 13105689 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 135 | ug/L | H | F | 3.2 | | F |
| 33502 | WL | 10/22/2013 | 13105689 | 71-43-2 | Benzene | N001 | 2.62 | ug/L | | F | 0.16 | | F |
| 33502 | WL | 10/22/2013 | 13105689 | 75-27-4 | Bromodichloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 33502 | WL | 10/22/2013 | 13105689 | 75-25-2 | Bromoform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 33502 | WL | 10/22/2013 | 13105689 | 74-83-9 | Bromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 33502 | WL | 10/22/2013 | 13105689 | 56-23-5 | Carbon tetrachloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 33502 | WL | 10/22/2013 | 13105689 | 108-90-7 | Chlorobenzene | N001 | 1.11 | ug/L | | F | 0.16 | | F |
| 33502 | WL | 10/22/2013 | 13105689 | 124-48-1 | Chlorodibromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 33502 | WL | 10/22/2013 | 13105689 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 33502 | WL | 10/22/2013 | 13105689 | 74-87-3 | Chloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 33502 | WL | 10/22/2013 | 13105689 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 632 | ug/L | H | F | 3.2 | | F |
| 33502 | WL | 10/22/2013 | 13105689 | 100-41-4 | Ethylbenzene | N001 | 1.14 | ug/L | | F | 0.16 | | F |
| 33502 | WL | 10/22/2013 | 13105689 | 87-68-3 | Hexachlorobutadiene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 33502 | WL | 10/22/2013 | 13105689 | 75-09-2 | Methylene chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 33502 | WL | 10/22/2013 | 13105689 | 91-20-3 | Naphthalene | N001 | 1.42 | ug/L | B | F | 0.16 | | UF |
| 33502 | WL | 10/22/2013 | 13105689 | 100-42-5 | Styrene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 33502 | WL | 10/22/2013 | 13105689 | 127-18-4 | Tetrachloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 33502 | WL | 10/22/2013 | 13105689 | 108-88-3 | Toluene | N001 | 3.21 | ug/L | | F | 0.16 | | F |
| 33502 | WL | 10/22/2013 | 13105689 | 1330-20-7 | Total Xylenes | N001 | 3.91 | ug/L | | F | 0.16 | | F |
| 33502 | WL | 10/22/2013 | 13105689 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 10.4 | ug/L | | F | 0.16 | | F |
| 33502 | WL | 10/22/2013 | 13105689 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 33502 | WL | 10/22/2013 | 13105689 | 79-01-6 | Trichloroethene | N001 | 4.43 | ug/L | | F | 0.16 | | F |
| 33502 | WL | 10/22/2013 | 13105689 | 75-01-4 | Vinyl chloride | N001 | 652 | ug/L | H | F | 3.2 | | F |
| 33604 | WL | 10/22/2013 | 13105689 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 33604 | WL | 10/22/2013 | 13105689 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 33604 | WL | 10/22/2013 | 13105689 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 33604 | WL | 10/22/2013 | 13105689 | 75-35-4 | 1,1-Dichloroethene | N001 | 8.94 | ug/L | | F | 0.16 | | QF |
| 33604 | WL | 10/22/2013 | 13105689 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.82 | ug/L | BJ | F | 0.16 | | UQF |
| 33604 | WL | 10/22/2013 | 13105689 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 33604 | WL | 10/22/2013 | 13105689 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 33604 | WL | 10/22/2013 | 13105689 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.32 | ug/L | J | F | 0.16 | | QF |
| 33604 | WL | 10/22/2013 | 13105689 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.36 | ug/L | J | F | 0.16 | | QF |
| 33604 | WL | 10/22/2013 | 13105689 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 33604 | WL | 10/22/2013 | 13105689 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 1.86 | ug/L | | F | 0.16 | | QF |
| 33604 | WL | 10/22/2013 | 13105689 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 7.02 | ug/L | | F | 0.16 | | QF |
| 33604 | WL | 10/22/2013 | 13105689 | 71-43-2 | Benzene | N001 | 0.4 | ug/L | J | F | 0.16 | | QF |
| 33604 | WL | 10/22/2013 | 13105689 | 75-27-4 | Bromodichloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 33604 | WL | 10/22/2013 | 13105689 | 75-25-2 | Bromoform | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 33604 | WL | 10/22/2013 | 13105689 | 74-83-9 | Bromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 33604 | WL | 10/22/2013 | 13105689 | 56-23-5 | Carbon tetrachloride | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 33604 | WL | 10/22/2013 | 13105689 | 108-90-7 | Chlorobenzene | N001 | 1.08 | ug/L | | F | 0.16 | | QF |
| 33604 | WL | 10/22/2013 | 13105689 | 124-48-1 | Chlorodibromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 33604 | WL | 10/22/2013 | 13105689 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 33604 | WL | 10/22/2013 | 13105689 | 74-87-3 | Chloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 33604 | WL | 10/22/2013 | 13105689 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 3120 | ug/L | H | F | 16 | | QF |
| 33604 | WL | 10/22/2013 | 13105689 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 33604 | WL | 10/22/2013 | 13105689 | 87-68-3 | Hexachlorobutadiene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 33604 | WL | 10/22/2013 | 13105689 | 75-09-2 | Methylene chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 33604 | WL | 10/22/2013 | 13105689 | 91-20-3 | Naphthalene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 33604 | WL | 10/22/2013 | 13105689 | 100-42-5 | Styrene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 33604 | WL | 10/22/2013 | 13105689 | 127-18-4 | Tetrachloroethene | N001 | 10.9 | ug/L | | F | 0.16 | | QF |
| 33604 | WL | 10/22/2013 | 13105689 | 108-88-3 | Toluene | N001 | 1.35 | ug/L | | F | 0.16 | | QF |
| 33604 | WL | 10/22/2013 | 13105689 | 1330-20-7 | Total Xylenes | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 33604 | WL | 10/22/2013 | 13105689 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 41.5 | ug/L | | F | 0.16 | | QF |
| 33604 | WL | 10/22/2013 | 13105689 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 33604 | WL | 10/22/2013 | 13105689 | 79-01-6 | Trichloroethene | N001 | 48 | ug/L | | F | 0.16 | | QF |
| 33604 | WL | 10/22/2013 | 13105689 | 75-01-4 | Vinyl chloride | N001 | 1620 | ug/L | H | F | 16 | | QF |
| 33711 | WL | 10/22/2013 | 13105689 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 33711 | WL | 10/22/2013 | 13105689 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 33711 | WL | 10/22/2013 | 13105689 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 33711 | WL | 10/22/2013 | 13105689 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 33711 | WL | 10/22/2013 | 13105689 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 33711 | WL | 10/22/2013 | 13105689 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 33711 | WL | 10/22/2013 | 13105689 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 33711 | WL | 10/22/2013 | 13105689 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 33711 | WL | 10/22/2013 | 13105689 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 33711 | WL | 10/22/2013 | 13105689 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 33711 | WL | 10/22/2013 | 13105689 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 33711 | WL | 10/22/2013 | 13105689 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.95 | ug/L | HJ | F | 0.16 | | FJ |
| 33711 | WL | 10/22/2013 | 13105689 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 33711 | WL | 10/22/2013 | 13105689 | 75-27-4 | Bromodichloromethane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 33711 | WL | 10/22/2013 | 13105689 | 75-25-2 | Bromoform | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 33711 | WL | 10/22/2013 | 13105689 | 74-83-9 | Bromomethane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 33711 | WL | 10/22/2013 | 13105689 | 56-23-5 | Carbon tetrachloride | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 33711 | WL | 10/22/2013 | 13105689 | 108-90-7 | Chlorobenzene | N001 | 0.29 | ug/L | HJ | F | 0.16 | | F |
| 33711 | WL | 10/22/2013 | 13105689 | 124-48-1 | Chlorodibromomethane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 33711 | WL | 10/22/2013 | 13105689 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 33711 | WL | 10/22/2013 | 13105689 | 74-87-3 | Chloromethane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 33711 | WL | 10/22/2013 | 13105689 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 2.29 | ug/L | H | F | 0.16 | | F |
| 33711 | WL | 10/22/2013 | 13105689 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 33711 | WL | 10/22/2013 | 13105689 | 87-68-3 | Hexachlorobutadiene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 33711 | WL | 10/22/2013 | 13105689 | 75-09-2 | Methylene chloride | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 33711 | WL | 10/22/2013 | 13105689 | 91-20-3 | Naphthalene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 33711 | WL | 10/22/2013 | 13105689 | 100-42-5 | Styrene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 33711 | WL | 10/22/2013 | 13105689 | 127-18-4 | Tetrachloroethene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 33711 | WL | 10/22/2013 | 13105689 | 108-88-3 | Toluene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 33711 | WL | 10/22/2013 | 13105689 | 1330-20-7 | Total Xylenes | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 33711 | WL | 10/22/2013 | 13105689 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 33711 | WL | 10/22/2013 | 13105689 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 33711 | WL | 10/22/2013 | 13105689 | 79-01-6 | Trichloroethene | N001 | 0.51 | ug/L | HJ | F | 0.16 | | F |
| 33711 | WL | 10/22/2013 | 13105689 | 75-01-4 | Vinyl chloride | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | AM-241 | Americium-241 | 0001 | 0.00562 | pCi/L | U | F | 0.019 | 0.00823 | F |
| 37405 | WL | 10/22/2013 | 13105689 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | 75-27-4 | Bromodichloromethane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | 75-25-2 | Bromoform | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 37405 | WL | 10/22/2013 | 13105689 | 74-83-9 | Bromomethane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | 56-23-5 | Carbon tetrachloride | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | 108-90-7 | Chlorobenzene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | 124-48-1 | Chlorodibromomethane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | 74-87-3 | Chloromethane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | 87-68-3 | Hexachlorobutadiene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | 75-09-2 | Methylene chloride | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | 91-20-3 | Naphthalene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 6.33 | mg/L | | F | 0.17 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | PU-239,240 | Plutonium-239, 240 | 0001 | 0.0131 | pCi/L | U | F | 0.0177 | 0.0121 | F |
| 37405 | WL | 10/22/2013 | 13105689 | 100-42-5 | Styrene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | 127-18-4 | Tetrachloroethene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | 108-88-3 | Toluene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | 1330-20-7 | Total Xylenes | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | 7440-61-1 | Uranium | 0001 | 1.62 | ug/L | N | F | 0.067 | | F |
| 37405 | WL | 10/22/2013 | 13105689 | 75-01-4 | Vinyl chloride | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 75-27-4 | Bromodichloromethane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 75-25-2 | Bromoform | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 74-83-9 | Bromomethane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 56-23-5 | Carbon tetrachloride | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 108-90-7 | Chlorobenzene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 124-48-1 | Chlorodibromomethane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 74-87-3 | Chloromethane | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 87-68-3 | Hexachlorobutadiene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 75-09-2 | Methylene chloride | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 91-20-3 | Naphthalene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 3.28 | mg/L | | F | 0.17 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 100-42-5 | Styrene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 127-18-4 | Tetrachloroethene | N001 | 0.48 | ug/L | HJ | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 108-88-3 | Toluene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 1330-20-7 | Total Xylenes | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 37505 | WL | 10/22/2013 | 13105689 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 7440-61-1 | Uranium | 0001 | 11.2 | ug/L | N | F | 0.067 | | F |
| 37505 | WL | 10/22/2013 | 13105689 | 75-01-4 | Vinyl chloride | N001 | 0.16 | ug/L | HU | F | 0.16 | | F |
| 37705 | WL | 10/23/2013 | 13105689 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | AM-241 | Americium-241 | 0001 | 0.00297 | pCi/L | U | F | 0.015 | 0.00823 | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 75-27-4 | Bromodichloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 75-25-2 | Bromoform | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 74-83-9 | Bromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 56-23-5 | Carbon tetrachloride | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 108-90-7 | Chlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 124-48-1 | Chlorodibromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 74-87-3 | Chloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 87-68-3 | Hexachlorobutadiene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 75-09-2 | Methylene chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 91-20-3 | Naphthalene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 0.173 | mg/L | | F | 0.017 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | PU-239,240 | Plutonium-239, 240 | 0001 | 0.00672 | pCi/L | U | F | 0.0181 | 0.00952 | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 100-42-5 | Styrene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 127-18-4 | Tetrachloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 108-88-3 | Toluene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 1330-20-7 | Total Xylenes | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 7440-61-1 | Uranium | 0001 | 5.26 | ug/L | N | F | 0.067 | | QF |
| 37705 | WL | 10/23/2013 | 13105689 | 75-01-4 | Vinyl chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 40005 | WL | 10/24/2013 | 13105689 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 28 | ug/L | J | F | 16 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 16 | ug/L | U | F | 16 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 16 | ug/L | U | F | 16 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 75-35-4 | 1,1-Dichloroethene | N001 | 547 | ug/L | | F | 16 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 16 | ug/L | U | F | 16 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 16 | ug/L | U | F | 16 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 106-93-4 | 1,2-Dibromoethane | N001 | 16 | ug/L | U | F | 16 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 16 | ug/L | U | F | 16 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 107-06-2 | 1,2-Dichloroethane | N001 | 16 | ug/L | U | F | 16 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 78-87-5 | 1,2-Dichloropropane | N001 | 16 | ug/L | U | F | 16 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 16 | ug/L | U | F | 16 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 16 | ug/L | U | F | 16 | | F |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40005 | WL | 10/24/2013 | 13105689 | 71-43-2 | Benzene | N001 | 16 | ug/L | U | F | 16 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 75-27-4 | Bromodichloromethane | N001 | 16 | ug/L | U | F | 16 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 75-25-2 | Bromoform | N001 | 16 | ug/L | U | F | 16 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 74-83-9 | Bromomethane | N001 | 16 | ug/L | U | F | 16 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 56-23-5 | Carbon tetrachloride | N001 | 16 | ug/L | U | F | 16 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 108-90-7 | Chlorobenzene | N001 | 16 | ug/L | U | F | 16 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 124-48-1 | Chlorodibromomethane | N001 | 16 | ug/L | U | F | 16 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 67-66-3 | Chloroform | N001 | 16 | ug/L | U | F | 16 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 74-87-3 | Chloromethane | N001 | 16 | ug/L | U | F | 16 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 810 | ug/L | | F | 16 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 100-41-4 | Ethylbenzene | N001 | 16 | ug/L | U | F | 16 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 87-68-3 | Hexachlorobutadiene | N001 | 16 | ug/L | U | F | 16 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 75-09-2 | Methylene chloride | N001 | 16 | ug/L | U | F | 16 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 91-20-3 | Naphthalene | N001 | 16 | ug/L | U | F | 16 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 100-42-5 | Styrene | N001 | 16 | ug/L | U | F | 16 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 127-18-4 | Tetrachloroethene | N001 | 69 | ug/L | J | F | 16 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 108-88-3 | Toluene | N001 | 16 | ug/L | U | F | 16 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 1330-20-7 | Total Xylenes | N001 | 16 | ug/L | U | F | 16 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 16 | ug/L | U | F | 16 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 16 | ug/L | U | F | 16 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 79-01-6 | Trichloroethene | N001 | 3450 | ug/L | | F | 16 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 7440-61-1 | Uranium | 0001 | 0.861 | ug/L | N | F | 0.067 | | F |
| 40005 | WL | 10/24/2013 | 13105689 | 75-01-4 | Vinyl chloride | N001 | 16 | ug/L | U | F | 16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 75-27-4 | Bromodichloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 75-25-2 | Bromoform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 74-83-9 | Bromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 56-23-5 | Carbon tetrachloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 108-90-7 | Chlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 124-48-1 | Chlorodibromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 74-87-3 | Chloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 87-68-3 | Hexachlorobutadiene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 75-09-2 | Methylene chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 91-20-3 | Naphthalene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 100-42-5 | Styrene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 127-18-4 | Tetrachloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 108-88-3 | Toluene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 1330-20-7 | Total Xylenes | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40305 | WL | 10/24/2013 | 13105689 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 7440-61-1 | Uranium | 0001 | 0.533 | ug/L | N | F | 0.067 | | F |
| 40305 | WL | 10/24/2013 | 13105689 | 75-01-4 | Vinyl chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 42505 | WL | 11/4/2013 | 13115725 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 75-27-4 | Bromodichloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 75-25-2 | Bromoform | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 74-83-9 | Bromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 56-23-5 | Carbon tetrachloride | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 108-90-7 | Chlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 124-48-1 | Chlorodibromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 74-87-3 | Chloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.26 | ug/L | J | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 87-68-3 | Hexachlorobutadiene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 75-09-2 | Methylene chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 91-20-3 | Naphthalene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 100-42-5 | Styrene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 127-18-4 | Tetrachloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 108-88-3 | Toluene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 1330-20-7 | Total Xylenes | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 42505 | WL | 11/4/2013 | 13115725 | 75-01-4 | Vinyl chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 45608 | WL | 10/15/2013 | 13105677 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.22 | ug/L | J | F | 0.16 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 71-55-6 | 1,1,1-Trichloroethane | N002 | 0.22 | ug/L | J | D | 0.16 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.21 | ug/L | U | F | 0.21 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N002 | 0.21 | ug/L | U | D | 0.21 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.27 | ug/L | U | F | 0.27 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 79-00-5 | 1,1,2-Trichloroethane | N002 | 0.27 | ug/L | U | D | 0.27 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 75-35-4 | 1,1-Dichloroethene | N001 | 1.4 | ug/L | | F | 0.23 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 75-35-4 | 1,1-Dichloroethene | N002 | 1.5 | ug/L | | D | 0.23 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.38 | ug/L | J | F | 0.21 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 120-82-1 | 1,2,4-Trichlorobenzene | N002 | 0.39 | ug/L | J | D | 0.21 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.47 | ug/L | U | F | 0.47 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N002 | 0.47 | ug/L | U | D | 0.47 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.18 | ug/L | U | F | 0.18 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 106-93-4 | 1,2-Dibromoethane | N002 | 0.18 | ug/L | U | D | 0.18 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.15 | ug/L | U | F | 0.15 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 95-50-1 | 1,2-Dichlorobenzene | N002 | 0.15 | ug/L | U | D | 0.15 | | F |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 45608 | WL | 10/15/2013 | 13105677 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.13 | ug/L | U | F | 0.13 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 107-06-2 | 1,2-Dichloroethane | N002 | 0.13 | ug/L | U | D | 0.13 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.18 | ug/L | U | F | 0.18 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 78-87-5 | 1,2-Dichloropropane | N002 | 0.18 | ug/L | U | D | 0.18 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.17 | ug/L | J | F | 0.13 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 541-73-1 | 1,3-Dichlorobenzene | N002 | 0.16 | ug/L | J | D | 0.13 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.17 | ug/L | J | F | 0.16 | | UF |
| 45608 | WL | 10/15/2013 | 13105677 | 106-46-7 | 1,4-Dichlorobenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 71-43-2 | Benzene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 75-27-4 | Bromodichloromethane | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 75-27-4 | Bromodichloromethane | N002 | 0.17 | ug/L | U | D | 0.17 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 75-25-2 | Bromoform | N001 | 0.19 | ug/L | U | F | 0.19 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 75-25-2 | Bromoform | N002 | 0.19 | ug/L | U | D | 0.19 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 74-83-9 | Bromomethane | N001 | 0.21 | ug/L | U | F | 0.21 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 74-83-9 | Bromomethane | N002 | 0.21 | ug/L | U | D | 0.21 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 56-23-5 | Carbon tetrachloride | N001 | 0.19 | ug/L | U | F | 0.19 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 56-23-5 | Carbon tetrachloride | N002 | 0.19 | ug/L | U | D | 0.19 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 108-90-7 | Chlorobenzene | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 108-90-7 | Chlorobenzene | N002 | 0.17 | ug/L | U | D | 0.17 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 124-48-1 | Chlorodibromomethane | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 124-48-1 | Chlorodibromomethane | N002 | 0.17 | ug/L | U | D | 0.17 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 67-66-3 | Chloroform | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 74-87-3 | Chloromethane | N001 | 0.3 | ug/L | U | F | 0.3 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 74-87-3 | Chloromethane | N002 | 0.3 | ug/L | U | D | 0.3 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 180 | ug/L | | F | 0.6 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 156-59-2 | cis-1,2-Dichloroethene | N002 | 190 | ug/L | | D | 0.6 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 100-41-4 | Ethylbenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 87-68-3 | Hexachlorobutadiene | N001 | 0.36 | ug/L | U | F | 0.36 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 87-68-3 | Hexachlorobutadiene | N002 | 0.36 | ug/L | U | D | 0.36 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 75-09-2 | Methylene chloride | N001 | 0.32 | ug/L | U | F | 0.32 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 75-09-2 | Methylene chloride | N002 | 0.32 | ug/L | U | D | 0.32 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 91-20-3 | Naphthalene | N001 | 0.22 | ug/L | U | F | 0.22 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 91-20-3 | Naphthalene | N002 | 0.22 | ug/L | U | D | 0.22 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 100-42-5 | Styrene | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 100-42-5 | Styrene | N002 | 0.17 | ug/L | U | D | 0.17 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 127-18-4 | Tetrachloroethene | N001 | 1.8 | ug/L | | F | 0.2 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 127-18-4 | Tetrachloroethene | N002 | 1.9 | ug/L | | D | 0.2 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 108-88-3 | Toluene | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 108-88-3 | Toluene | N002 | 0.17 | ug/L | U | D | 0.17 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 1330-20-7 | Total Xylenes | N001 | 0.19 | ug/L | U | F | 0.19 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 1330-20-7 | Total Xylenes | N002 | 0.19 | ug/L | U | D | 0.19 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.78 | ug/L | J | F | 0.15 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 156-60-5 | trans-1,2-Dichloroethene | N002 | 0.79 | ug/L | J | D | 0.15 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.19 | ug/L | U | F | 0.19 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 10061-02-6 | trans-1,3-dichloropropene | N002 | 0.19 | ug/L | U | D | 0.19 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 79-01-6 | Trichloroethene | N001 | 27 | ug/L | | F | 0.16 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 79-01-6 | Trichloroethene | N002 | 27 | ug/L | | D | 0.16 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 75-01-4 | Vinyl chloride | N001 | 17 | ug/L | | F | 0.1 | | F |
| 45608 | WL | 10/15/2013 | 13105677 | 75-01-4 | Vinyl chloride | N002 | 17 | ug/L | | D | 0.1 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 71-55-6 | 1,1,1-Trichloroethane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 52505 | WL | 11/4/2013 | 13115725 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 79-00-5 | 1,1,2-Trichloroethane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 75-35-4 | 1,1-Dichloroethene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 120-82-1 | 1,2,4-Trichlorobenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 106-93-4 | 1,2-Dibromoethane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 95-50-1 | 1,2-Dichlorobenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 107-06-2 | 1,2-Dichloroethane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 78-87-5 | 1,2-Dichloropropane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 541-73-1 | 1,3-Dichlorobenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 106-46-7 | 1,4-Dichlorobenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 71-43-2 | Benzene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 75-27-4 | Bromodichloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 75-27-4 | Bromodichloromethane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 75-25-2 | Bromoform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 75-25-2 | Bromoform | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 74-83-9 | Bromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 74-83-9 | Bromomethane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 56-23-5 | Carbon tetrachloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 56-23-5 | Carbon tetrachloride | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 108-90-7 | Chlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 108-90-7 | Chlorobenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 124-48-1 | Chlorodibromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 124-48-1 | Chlorodibromomethane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 67-66-3 | Chloroform | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 74-87-3 | Chloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 74-87-3 | Chloromethane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 1.17 | ug/L | | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 156-59-2 | cis-1,2-Dichloroethene | N002 | 1.22 | ug/L | | D | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 100-41-4 | Ethylbenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 87-68-3 | Hexachlorobutadiene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 87-68-3 | Hexachlorobutadiene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 75-09-2 | Methylene chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 75-09-2 | Methylene chloride | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 91-20-3 | Naphthalene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 91-20-3 | Naphthalene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 100-42-5 | Styrene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 100-42-5 | Styrene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 127-18-4 | Tetrachloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 127-18-4 | Tetrachloroethene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 52505 | WL | 11/4/2013 | 13115725 | 108-88-3 | Toluene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 108-88-3 | Toluene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 1330-20-7 | Total Xylenes | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 1330-20-7 | Total Xylenes | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 156-60-5 | trans-1,2-Dichloroethene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 10061-02-6 | trans-1,3-dichloropropene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 79-01-6 | Trichloroethene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 75-01-4 | Vinyl chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 52505 | WL | 11/4/2013 | 13115725 | 75-01-4 | Vinyl chloride | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 70099 | WL | 10/30/2013 | 13105704 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 3.41 | mg/L | | F | 0.17 | | FQ |
| 70099 | WL | 10/30/2013 | 13105704 | 7440-61-1 | Uranium | 0001 | 120 | ug/L | | F | 0.67 | | FQ |
| 70193 | WL | 11/13/2013 | 13115740 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.21 | ug/L | U | F | 0.21 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.27 | ug/L | U | F | 0.27 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.23 | ug/L | U | F | 0.23 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.21 | ug/L | U | F | 0.21 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.47 | ug/L | U | F | 0.47 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.18 | ug/L | U | F | 0.18 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.15 | ug/L | U | F | 0.15 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.13 | ug/L | U | F | 0.13 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.18 | ug/L | U | F | 0.18 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.13 | ug/L | U | F | 0.13 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 7440-38-2 | Arsenic | 0001 | 4.4 | ug/L | U | F | 4.4 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 7440-41-7 | Beryllium | 0001 | 0.47 | ug/L | U | F | 0.47 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 7440-42-8 | Boron | 0001 | 16 | ug/L | J | F | 4.4 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 75-27-4 | Bromodichloromethane | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 75-25-2 | Bromoform | N001 | 0.19 | ug/L | U | F | 0.19 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 74-83-9 | Bromomethane | N001 | 0.21 | ug/L | U | F | 0.21 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 7440-43-9 | Cadmium | 0001 | 0.56 | ug/L | J | F | 0.45 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 56-23-5 | Carbon tetrachloride | N001 | 0.19 | ug/L | U | F | 0.19 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 108-90-7 | Chlorobenzene | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 124-48-1 | Chlorodibromomethane | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 74-87-3 | Chloromethane | N001 | 0.3 | ug/L | U | F | 0.3 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 7440-47-3 | Chromium | 0001 | 0.66 | ug/L | U | F | 0.66 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 7440-50-8 | Copper | 0001 | 1.4 | ug/L | U | F | 1.4 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 87-68-3 | Hexachlorobutadiene | N001 | 0.36 | ug/L | U | F | 0.36 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 7439-92-1 | Lead | 0001 | 2.6 | ug/L | U | F | 2.6 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 7439-97-6 | Mercury | 0001 | 0.027 | ug/L | U | F | 0.027 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 75-09-2 | Methylene chloride | N001 | 0.32 | ug/L | U | F | 0.32 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 91-20-3 | Naphthalene | N001 | 0.22 | ug/L | U | F | 0.22 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 7440-02-0 | Nickel | 0001 | 1.3 | ug/L | U | F | 1.3 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 7782-49-2 | Selenium | 0001 | 6.2 | ug/L | J | F | 4.9 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 7440-22-4 | Silver | 0001 | 0.93 | ug/L | U | F | 0.93 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 100-42-5 | Styrene | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 127-18-4 | Tetrachloroethene | N001 | 0.2 | ug/L | U | F | 0.2 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 108-88-3 | Toluene | N001 | 0.17 | ug/L | U | F | 0.17 | | F |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 70193 | WL | 11/13/2013 | 13115740 | 1330-20-7 | Total Xylenes | N001 | 0.19 | ug/L | U | F | 0.19 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.19 | ug/L | U | F | 0.19 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 7440-61-1 | Uranium | 0001 | 0.05 | ug/L | U | F | 0.05 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 75-01-4 | Vinyl chloride | N001 | 0.1 | ug/L | U | F | 0.1 | | F |
| 70193 | WL | 11/13/2013 | 13115740 | 7440-66-6 | Zinc | 0001 | 5.7 | ug/L | J | F | 4.5 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.75 | ug/L | J | F | 0.16 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.21 | ug/L | U | F | 0.21 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.27 | ug/L | U | F | 0.27 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 75-35-4 | 1,1-Dichloroethene | N001 | 1.8 | ug/L | | F | 0.23 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.21 | ug/L | U | F | 0.21 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.47 | ug/L | U | F | 0.47 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.18 | ug/L | U | F | 0.18 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.15 | ug/L | U | F | 0.15 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.13 | ug/L | U | F | 0.13 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.18 | ug/L | U | F | 0.18 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.13 | ug/L | U | F | 0.13 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 7440-38-2 | Arsenic | 0001 | 4.4 | ug/L | U | F | 4.4 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 7440-41-7 | Beryllium | 0001 | 0.47 | ug/L | U | F | 0.47 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 7440-42-8 | Boron | 0001 | 9.2 | ug/L | J | F | 4.4 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 75-27-4 | Bromodichloromethane | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 75-25-2 | Bromoform | N001 | 0.19 | ug/L | U | F | 0.19 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 74-83-9 | Bromomethane | N001 | 0.21 | ug/L | U | F | 0.21 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 7440-43-9 | Cadmium | 0001 | 0.49 | ug/L | J | F | 0.45 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 56-23-5 | Carbon tetrachloride | N001 | 0.19 | ug/L | U | F | 0.19 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 108-90-7 | Chlorobenzene | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 124-48-1 | Chlorodibromomethane | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 74-87-3 | Chloromethane | N001 | 0.3 | ug/L | U | F | 0.3 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 7440-47-3 | Chromium | 0001 | 0.66 | ug/L | U | F | 0.66 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 7440-50-8 | Copper | 0001 | 1.4 | ug/L | U | F | 1.4 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 87-68-3 | Hexachlorobutadiene | N001 | 0.36 | ug/L | U | F | 0.36 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 7439-92-1 | Lead | 0001 | 2.6 | ug/L | U | F | 2.6 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 7439-97-6 | Mercury | 0001 | 0.027 | ug/L | U | F | 0.027 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 75-09-2 | Methylene chloride | N001 | 0.32 | ug/L | U | F | 0.32 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 91-20-3 | Naphthalene | N001 | 0.22 | ug/L | U | F | 0.22 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 7440-02-0 | Nickel | 0001 | 1.9 | ug/L | J | F | 1.3 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 7782-49-2 | Selenium | 0001 | 6.1 | ug/L | J | F | 4.9 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 7440-22-4 | Silver | 0001 | 0.93 | ug/L | U | F | 0.93 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 100-42-5 | Styrene | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 127-18-4 | Tetrachloroethene | N001 | 1.6 | ug/L | | F | 0.2 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 108-88-3 | Toluene | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 1330-20-7 | Total Xylenes | N001 | 0.19 | ug/L | U | F | 0.19 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.19 | ug/L | U | F | 0.19 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 79-01-6 | Trichloroethene | N001 | 6.7 | ug/L | | F | 0.16 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 7440-61-1 | Uranium | 0001 | 0.05 | ug/L | U | F | 0.05 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 75-01-4 | Vinyl chloride | N001 | 0.1 | ug/L | U | F | 0.1 | | F |
| 70393 | WL | 11/13/2013 | 13115740 | 7440-66-6 | Zinc | 0001 | 6.1 | ug/L | J | F | 4.5 | | F |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 70693 | WL | 11/13/2013 | 13115740 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.64 | ug/L | J | F | 0.16 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.21 | ug/L | U | F | 0.21 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.27 | ug/L | U | F | 0.27 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.84 | ug/L | J | F | 0.23 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.21 | ug/L | U | F | 0.21 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.47 | ug/L | U | F | 0.47 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.18 | ug/L | U | F | 0.18 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.15 | ug/L | U | F | 0.15 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.13 | ug/L | U | F | 0.13 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.18 | ug/L | U | F | 0.18 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.13 | ug/L | U | F | 0.13 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 7440-38-2 | Arsenic | 0001 | 4.4 | ug/L | U | F | 4.4 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 7440-41-7 | Beryllium | 0001 | 0.47 | ug/L | U | F | 0.47 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 7440-42-8 | Boron | 0001 | 39 | ug/L | | F | 4.4 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 75-27-4 | Bromodichloromethane | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 75-25-2 | Bromoform | N001 | 0.19 | ug/L | U | F | 0.19 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 74-83-9 | Bromomethane | N001 | 0.21 | ug/L | U | F | 0.21 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 7440-43-9 | Cadmium | 0001 | 0.45 | ug/L | U | F | 0.45 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 56-23-5 | Carbon tetrachloride | N001 | 0.19 | ug/L | U | F | 0.19 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 108-90-7 | Chlorobenzene | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 124-48-1 | Chlorodibromomethane | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 74-87-3 | Chloromethane | N001 | 0.3 | ug/L | U | F | 0.3 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 7440-47-3 | Chromium | 0001 | 0.66 | ug/L | U | F | 0.66 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 7440-50-8 | Copper | 0001 | 1.4 | ug/L | U | F | 1.4 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 87-68-3 | Hexachlorobutadiene | N001 | 0.36 | ug/L | U | F | 0.36 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 7439-92-1 | Lead | 0001 | 2.6 | ug/L | U | F | 2.6 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 7439-97-6 | Mercury | 0001 | 0.027 | ug/L | U | F | 0.027 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 75-09-2 | Methylene chloride | N001 | 0.32 | ug/L | U | F | 0.32 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 91-20-3 | Naphthalene | N001 | 0.22 | ug/L | U | F | 0.22 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 7440-02-0 | Nickel | 0001 | 1.3 | ug/L | U | F | 1.3 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 7782-49-2 | Selenium | 0001 | 4.9 | ug/L | U | F | 4.9 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 7440-22-4 | Silver | 0001 | 0.93 | ug/L | U | F | 0.93 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 100-42-5 | Styrene | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 127-18-4 | Tetrachloroethene | N001 | 0.53 | ug/L | J | F | 0.2 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 108-88-3 | Toluene | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 1330-20-7 | Total Xylenes | N001 | 0.19 | ug/L | U | F | 0.19 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.19 | ug/L | U | F | 0.19 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 79-01-6 | Trichloroethene | N001 | 1.5 | ug/L | | F | 0.16 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 7440-61-1 | Uranium | 0001 | 0.05 | ug/L | U | F | 0.05 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 75-01-4 | Vinyl chloride | N001 | 0.1 | ug/L | U | F | 0.1 | | F |
| 70693 | WL | 11/13/2013 | 13115740 | 7440-66-6 | Zinc | 0001 | 4.5 | ug/L | U | F | 4.5 | | F |
| 73005 | WL | 11/12/2013 | 13115740 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.21 | ug/L | U | F | 0.21 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.27 | ug/L | U | F | 0.27 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.23 | ug/L | U | F | 0.23 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.21 | ug/L | U | F | 0.21 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.47 | ug/L | U | F | 0.47 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.18 | ug/L | U | F | 0.18 | | FQ |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 73005 | WL | 11/12/2013 | 13115740 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.15 | ug/L | U | F | 0.15 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.13 | ug/L | U | F | 0.13 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.18 | ug/L | U | F | 0.18 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.13 | ug/L | U | F | 0.13 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 7440-38-2 | Arsenic | 0001 | 4.4 | ug/L | U | F | 4.4 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 7440-41-7 | Beryllium | 0001 | 0.47 | ug/L | U | F | 0.47 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 7440-42-8 | Boron | 0001 | 36 | ug/L | | F | 4.4 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 75-27-4 | Bromodichloromethane | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 75-25-2 | Bromoform | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 74-83-9 | Bromomethane | N001 | 0.21 | ug/L | U | F | 0.21 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 7440-43-9 | Cadmium | 0001 | 0.54 | ug/L | J | F | 0.45 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 56-23-5 | Carbon tetrachloride | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 108-90-7 | Chlorobenzene | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 124-48-1 | Chlorodibromomethane | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 74-87-3 | Chloromethane | N001 | 0.3 | ug/L | U | F | 0.3 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 7440-47-3 | Chromium | 0001 | 2.3 | ug/L | J | F | 0.66 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 7440-50-8 | Copper | 0001 | 1.4 | ug/L | U | F | 1.4 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 87-68-3 | Hexachlorobutadiene | N001 | 0.36 | ug/L | U | F | 0.36 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 7439-92-1 | Lead | 0001 | 2.6 | ug/L | U | F | 2.6 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 7439-97-6 | Mercury | 0001 | 0.027 | ug/L | U | F | 0.027 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 75-09-2 | Methylene chloride | N001 | 0.32 | ug/L | U | F | 0.32 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 91-20-3 | Naphthalene | N001 | 0.22 | ug/L | U | F | 0.22 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 7440-02-0 | Nickel | 0001 | 1.3 | ug/L | U | F | 1.3 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 7782-49-2 | Selenium | 0001 | 12 | ug/L | J | F | 4.9 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 7440-22-4 | Silver | 0001 | 0.93 | ug/L | U | F | 0.93 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 100-42-5 | Styrene | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 127-18-4 | Tetrachloroethene | N001 | 0.2 | ug/L | U | F | 0.2 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 108-88-3 | Toluene | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 1330-20-7 | Total Xylenes | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 7440-61-1 | Uranium | 0001 | 34 | ug/L | | F | 0.05 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 75-01-4 | Vinyl chloride | N001 | 0.1 | ug/L | U | F | 0.1 | | FQ |
| 73005 | WL | 11/12/2013 | 13115740 | 7440-66-6 | Zinc | 0001 | 4.5 | ug/L | U | F | 4.5 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.21 | ug/L | U | F | 0.21 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.27 | ug/L | U | F | 0.27 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.23 | ug/L | U | F | 0.23 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.21 | ug/L | U | F | 0.21 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.47 | ug/L | U | F | 0.47 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.18 | ug/L | U | F | 0.18 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.15 | ug/L | U | F | 0.15 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.13 | ug/L | U | F | 0.13 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.18 | ug/L | U | F | 0.18 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.13 | ug/L | U | F | 0.13 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 7440-38-2 | Arsenic | 0001 | 4.4 | ug/L | U | F | 4.4 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 73105 | WL | 11/12/2013 | 13115740 | 7440-41-7 | Beryllium | 0001 | 0.47 | ug/L | U | F | 0.47 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 7440-42-8 | Boron | 0001 | 140 | ug/L | | F | 4.4 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 75-27-4 | Bromodichloromethane | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 75-25-2 | Bromoform | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 74-83-9 | Bromomethane | N001 | 0.21 | ug/L | U | F | 0.21 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 7440-43-9 | Cadmium | 0001 | 0.5 | ug/L | J | F | 0.45 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 56-23-5 | Carbon tetrachloride | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 108-90-7 | Chlorobenzene | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 124-48-1 | Chlorodibromomethane | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 74-87-3 | Chloromethane | N001 | 0.3 | ug/L | U | F | 0.3 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 7440-47-3 | Chromium | 0001 | 0.66 | ug/L | U | F | 0.66 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 7440-50-8 | Copper | 0001 | 2 | ug/L | J | F | 1.4 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 87-68-3 | Hexachlorobutadiene | N001 | 0.36 | ug/L | U | F | 0.36 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 7439-92-1 | Lead | 0001 | 2.6 | ug/L | U | F | 2.6 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 7439-97-6 | Mercury | 0001 | 0.027 | ug/L | U | F | 0.027 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 75-09-2 | Methylene chloride | N001 | 0.32 | ug/L | U | F | 0.32 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 91-20-3 | Naphthalene | N001 | 0.22 | ug/L | U | F | 0.22 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 7440-02-0 | Nickel | 0001 | 3.2 | ug/L | J | F | 1.3 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 7782-49-2 | Selenium | 0001 | 4.9 | ug/L | U | F | 4.9 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 7440-22-4 | Silver | 0001 | 0.93 | ug/L | U | F | 0.93 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 100-42-5 | Styrene | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 127-18-4 | Tetrachloroethene | N001 | 0.2 | ug/L | U | F | 0.2 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 108-88-3 | Toluene | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 1330-20-7 | Total Xylenes | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 7440-61-1 | Uranium | 0001 | 22 | ug/L | | F | 0.05 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 75-01-4 | Vinyl chloride | N001 | 0.1 | ug/L | U | F | 0.1 | | FQ |
| 73105 | WL | 11/12/2013 | 13115740 | 7440-66-6 | Zinc | 0001 | 6.9 | ug/L | J | F | 4.5 | | FQ |
| 73205 | WL | 11/12/2013 | 13115740 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 71-55-6 | 1,1,1-Trichloroethane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.21 | ug/L | U | F | 0.21 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N002 | 0.21 | ug/L | U | D | 0.21 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.27 | ug/L | U | F | 0.27 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 79-00-5 | 1,1,2-Trichloroethane | N002 | 0.27 | ug/L | U | D | 0.27 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.23 | ug/L | U | F | 0.23 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 75-35-4 | 1,1-Dichloroethene | N002 | 0.23 | ug/L | U | D | 0.23 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.21 | ug/L | U | F | 0.21 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 120-82-1 | 1,2,4-Trichlorobenzene | N002 | 0.21 | ug/L | U | D | 0.21 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.47 | ug/L | U | F | 0.47 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N002 | 0.47 | ug/L | U | D | 0.47 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.18 | ug/L | U | F | 0.18 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 106-93-4 | 1,2-Dibromoethane | N002 | 0.18 | ug/L | U | D | 0.18 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.15 | ug/L | U | F | 0.15 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 95-50-1 | 1,2-Dichlorobenzene | N002 | 0.15 | ug/L | U | D | 0.15 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.13 | ug/L | U | F | 0.13 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 107-06-2 | 1,2-Dichloroethane | N002 | 0.13 | ug/L | U | D | 0.13 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.18 | ug/L | U | F | 0.18 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 78-87-5 | 1,2-Dichloropropane | N002 | 0.18 | ug/L | U | D | 0.18 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.13 | ug/L | U | F | 0.13 | | F |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 73205 | WL | 11/12/2013 | 13115740 | 541-73-1 | 1,3-Dichlorobenzene | N002 | 0.13 | ug/L | U | D | 0.13 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 106-46-7 | 1,4-Dichlorobenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 7440-38-2 | Arsenic | 0001 | 4.4 | ug/L | U | F | 4.4 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 7440-38-2 | Arsenic | 0002 | 4.4 | ug/L | U | D | 4.4 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 71-43-2 | Benzene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 7440-41-7 | Beryllium | 0001 | 0.47 | ug/L | U | F | 0.47 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 7440-41-7 | Beryllium | 0002 | 0.47 | ug/L | U | D | 0.47 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 7440-42-8 | Boron | 0001 | 66 | ug/L | | F | 4.4 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 7440-42-8 | Boron | 0002 | 71 | ug/L | | D | 4.4 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 75-27-4 | Bromodichloromethane | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 75-27-4 | Bromodichloromethane | N002 | 0.17 | ug/L | U | D | 0.17 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 75-25-2 | Bromoform | N001 | 0.19 | ug/L | U | F | 0.19 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 75-25-2 | Bromoform | N002 | 0.19 | ug/L | U | D | 0.19 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 74-83-9 | Bromomethane | N001 | 0.21 | ug/L | U | F | 0.21 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 74-83-9 | Bromomethane | N002 | 0.21 | ug/L | U | D | 0.21 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 7440-43-9 | Cadmium | 0001 | 0.45 | ug/L | U | F | 0.45 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 7440-43-9 | Cadmium | 0002 | 0.45 | ug/L | U | D | 0.45 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 56-23-5 | Carbon tetrachloride | N001 | 0.19 | ug/L | U | F | 0.19 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 56-23-5 | Carbon tetrachloride | N002 | 0.19 | ug/L | U | D | 0.19 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 108-90-7 | Chlorobenzene | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 108-90-7 | Chlorobenzene | N002 | 0.17 | ug/L | U | D | 0.17 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 124-48-1 | Chlorodibromomethane | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 124-48-1 | Chlorodibromomethane | N002 | 0.17 | ug/L | U | D | 0.17 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 67-66-3 | Chloroform | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 74-87-3 | Chloromethane | N001 | 0.3 | ug/L | U | F | 0.3 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 74-87-3 | Chloromethane | N002 | 0.3 | ug/L | U | D | 0.3 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 7440-47-3 | Chromium | 0001 | 0.66 | ug/L | U | F | 0.66 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 7440-47-3 | Chromium | 0002 | 0.66 | ug/L | U | D | 0.66 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 156-59-2 | cis-1,2-Dichloroethene | N002 | 0.15 | ug/L | U | D | 0.15 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 7440-50-8 | Copper | 0001 | 1.7 | ug/L | J | F | 1.4 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 7440-50-8 | Copper | 0002 | 2.3 | ug/L | J | D | 1.4 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 100-41-4 | Ethylbenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 87-68-3 | Hexachlorobutadiene | N001 | 0.36 | ug/L | U | F | 0.36 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 87-68-3 | Hexachlorobutadiene | N002 | 0.36 | ug/L | U | D | 0.36 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 7439-92-1 | Lead | 0001 | 2.6 | ug/L | U | F | 2.6 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 7439-92-1 | Lead | 0002 | 2.6 | ug/L | U | D | 2.6 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 7439-97-6 | Mercury | 0001 | 0.027 | ug/L | U | F | 0.027 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 7439-97-6 | Mercury | 0002 | 0.027 | ug/L | U | D | 0.027 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 75-09-2 | Methylene chloride | N001 | 0.32 | ug/L | U | F | 0.32 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 75-09-2 | Methylene chloride | N002 | 0.32 | ug/L | U | D | 0.32 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 91-20-3 | Naphthalene | N001 | 0.22 | ug/L | U | F | 0.22 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 91-20-3 | Naphthalene | N002 | 0.22 | ug/L | U | D | 0.22 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 7440-02-0 | Nickel | 0001 | 1.9 | ug/L | J | F | 1.3 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 7440-02-0 | Nickel | 0002 | 2.1 | ug/L | J | D | 1.3 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 7782-49-2 | Selenium | 0001 | 420 | ug/L | | F | 4.9 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 7782-49-2 | Selenium | 0002 | 450 | ug/L | | D | 4.9 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 7440-22-4 | Silver | 0001 | 0.93 | ug/L | U | F | 0.93 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 7440-22-4 | Silver | 0002 | 0.93 | ug/L | U | D | 0.93 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 100-42-5 | Styrene | N001 | 0.17 | ug/L | U | F | 0.17 | | F |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 73205 | WL | 11/12/2013 | 13115740 | 100-42-5 | Styrene | N002 | 0.17 | ug/L | U | D | 0.17 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 127-18-4 | Tetrachloroethene | N001 | 0.2 | ug/L | U | F | 0.2 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 127-18-4 | Tetrachloroethene | N002 | 0.2 | ug/L | U | D | 0.2 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 108-88-3 | Toluene | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 108-88-3 | Toluene | N002 | 0.17 | ug/L | U | D | 0.17 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 1330-20-7 | Total Xylenes | N001 | 0.19 | ug/L | U | F | 0.19 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 1330-20-7 | Total Xylenes | N002 | 0.19 | ug/L | U | D | 0.19 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 156-60-5 | trans-1,2-Dichloroethene | N002 | 0.15 | ug/L | U | D | 0.15 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.19 | ug/L | U | F | 0.19 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 10061-02-6 | trans-1,3-dichloropropene | N002 | 0.19 | ug/L | U | D | 0.19 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 79-01-6 | Trichloroethene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 7440-61-1 | Uranium | 0001 | 110 | ug/L | | F | 0.05 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 7440-61-1 | Uranium | 0002 | 100 | ug/L | | D | 0.05 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 75-01-4 | Vinyl chloride | N001 | 0.1 | ug/L | U | F | 0.1 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 75-01-4 | Vinyl chloride | N002 | 0.1 | ug/L | U | D | 0.1 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 7440-66-6 | Zinc | 0001 | 5.5 | ug/L | J | F | 4.5 | | F |
| 73205 | WL | 11/12/2013 | 13115740 | 7440-66-6 | Zinc | 0002 | 4.7 | ug/L | J | D | 4.5 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 71-55-6 | 1,1,1-Trichloroethane | N002 | 1.6 | ug/L | U | D | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N002 | 1.6 | ug/L | U | D | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 79-00-5 | 1,1,2-Trichloroethane | N002 | 1.6 | ug/L | U | D | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 75-35-4 | 1,1-Dichloroethene | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 75-35-4 | 1,1-Dichloroethene | N002 | 1.6 | ug/L | U | D | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 120-82-1 | 1,2,4-Trichlorobenzene | N002 | 1.6 | ug/L | U | D | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N002 | 1.6 | ug/L | U | D | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 106-93-4 | 1,2-Dibromoethane | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 106-93-4 | 1,2-Dibromoethane | N002 | 1.6 | ug/L | U | D | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 95-50-1 | 1,2-Dichlorobenzene | N002 | 1.6 | ug/L | U | D | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 107-06-2 | 1,2-Dichloroethane | N001 | 2.6 | ug/L | J | F | 1.6 | | UF |
| 79102 | WL | 10/29/2013 | 13105704 | 107-06-2 | 1,2-Dichloroethane | N002 | 1.6 | ug/L | U | D | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 78-87-5 | 1,2-Dichloropropane | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 78-87-5 | 1,2-Dichloropropane | N002 | 1.6 | ug/L | U | D | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 541-73-1 | 1,3-Dichlorobenzene | N002 | 1.6 | ug/L | U | D | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 106-46-7 | 1,4-Dichlorobenzene | N002 | 1.6 | ug/L | U | D | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 71-43-2 | Benzene | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 71-43-2 | Benzene | N002 | 1.6 | ug/L | U | D | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 75-27-4 | Bromodichloromethane | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 75-27-4 | Bromodichloromethane | N002 | 1.6 | ug/L | U | D | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 75-25-2 | Bromoform | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 75-25-2 | Bromoform | N002 | 1.6 | ug/L | U | D | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 74-83-9 | Bromomethane | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 74-83-9 | Bromomethane | N002 | 1.6 | ug/L | U | D | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 56-23-5 | Carbon tetrachloride | N001 | 218 | ug/L | | F | 1.6 | | FJ |
| 79102 | WL | 10/29/2013 | 13105704 | 56-23-5 | Carbon tetrachloride | N002 | 274 | ug/L | | D | 1.6 | | FJ |
| 79102 | WL | 10/29/2013 | 13105704 | 108-90-7 | Chlorobenzene | N001 | 1.6 | ug/L | U | F | 1.6 | | F |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 79102 | WL | 10/29/2013 | 13105704 | 108-90-7 | Chlorobenzene | N002 | 1.6 | ug/L | U | D | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 124-48-1 | Chlorodibromomethane | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 124-48-1 | Chlorodibromomethane | N002 | 1.6 | ug/L | U | D | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 67-66-3 | Chloroform | N001 | 67.8 | ug/L | | F | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 67-66-3 | Chloroform | N002 | 73.1 | ug/L | | D | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 74-87-3 | Chloromethane | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 74-87-3 | Chloromethane | N002 | 1.6 | ug/L | U | D | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 8.1 | ug/L | J | F | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 156-59-2 | cis-1,2-Dichloroethene | N002 | 8.5 | ug/L | J | D | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 100-41-4 | Ethylbenzene | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 100-41-4 | Ethylbenzene | N002 | 1.6 | ug/L | U | D | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 87-68-3 | Hexachlorobutadiene | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 87-68-3 | Hexachlorobutadiene | N002 | 1.6 | ug/L | U | D | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 75-09-2 | Methylene chloride | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 75-09-2 | Methylene chloride | N002 | 1.6 | ug/L | U | D | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 91-20-3 | Naphthalene | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 91-20-3 | Naphthalene | N002 | 1.6 | ug/L | U | D | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 690 | mg/L | | F | 8.5 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N002 | 675 | mg/L | | D | 8.5 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 100-42-5 | Styrene | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 100-42-5 | Styrene | N002 | 1.6 | ug/L | U | D | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 127-18-4 | Tetrachloroethene | N001 | 5.7 | ug/L | J | F | 1.6 | | FJ |
| 79102 | WL | 10/29/2013 | 13105704 | 127-18-4 | Tetrachloroethene | N002 | 5.5 | ug/L | J | D | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 108-88-3 | Toluene | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 108-88-3 | Toluene | N002 | 1.6 | ug/L | U | D | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 1330-20-7 | Total Xylenes | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 1330-20-7 | Total Xylenes | N002 | 1.6 | ug/L | U | D | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 156-60-5 | trans-1,2-Dichloroethene | N002 | 1.6 | ug/L | U | D | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 10061-02-6 | trans-1,3-dichloropropene | N002 | 1.6 | ug/L | U | D | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 79-01-6 | Trichloroethene | N001 | 219 | ug/L | | F | 1.6 | | FJ |
| 79102 | WL | 10/29/2013 | 13105704 | 79-01-6 | Trichloroethene | N002 | 233 | ug/L | | D | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 7440-61-1 | Uranium | 0001 | 576 | ug/L | | F | 0.67 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 7440-61-1 | Uranium | 0002 | 595 | ug/L | | D | 0.67 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 75-01-4 | Vinyl chloride | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 79102 | WL | 10/29/2013 | 13105704 | 75-01-4 | Vinyl chloride | N002 | 1.6 | ug/L | U | D | 1.6 | | F |
| 79302 | WL | 10/29/2013 | 13105704 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 4210 | mg/L | | F | 85 | | FQ |
| 79302 | WL | 10/29/2013 | 13105704 | 7440-61-1 | Uranium | 0001 | 266 | ug/L | | F | 0.67 | | FQ |
| 79502 | WL | 10/29/2013 | 13105704 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 17.9 | mg/L | | F | 0.85 | | F |
| 79502 | WL | 10/29/2013 | 13105704 | 7440-61-1 | Uranium | 0001 | 12.3 | ug/L | | F | 0.067 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 105-67-9 | 2, 4-Dimethylphenol | N001 | 3.13 | ug/L | U | F | 3.13 | | F |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 80005 | WL | 11/6/2013 | 13115725 | 95-95-4 | 2,4,5-Trichlorophenol | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 88-06-2 | 2,4,6-Trichlorophenol | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 120-83-2 | 2,4-Dichlorophenol | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 51-28-5 | 2,4-Dinitrophenol | N001 | 5.21 | ug/L | U | F | 5.21 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 121-14-2 | 2,4-Dinitrotoluene | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 606-20-2 | 2,6-Dinitrotoluene | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 91-58-7 | 2-Chloronaphthalene | N001 | 0.427 | ug/L | U | F | 0.427 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 95-57-8 | 2-Chlorophenol | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 91-94-1 | 3,3'-Dichlorobenzidine | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 534-52-1 | 4,6-Dinitro-2-methyl phenol | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 59-50-7 | 4-Chloro-3-methylphenol | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 100-02-7 | 4-Nitrophenol | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 83-32-9 | Acenaphthene | N001 | 0.313 | ug/L | U | F | 0.313 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 120-12-7 | Anthracene | N001 | 0.313 | ug/L | U | F | 0.313 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 7440-38-2 | Arsenic | 0001 | 5 | ug/L | U | F | 5 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 56-55-3 | Benz(a)anthracene | N001 | 0.313 | ug/L | U | F | 0.313 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 50-32-8 | Benzo(a)pyrene | N001 | 0.313 | ug/L | U | F | 0.313 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 205-99-2 | Benzo(b)fluoranthene | N001 | 0.313 | ug/L | U | F | 0.313 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 191-24-2 | Benzo(g,h,i)Perylene | N001 | 0.313 | ug/L | U | F | 0.313 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 207-08-9 | Benzo(k)fluoranthene | N001 | 0.313 | ug/L | U | F | 0.313 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 7440-41-7 | Beryllium | 0001 | 1 | ug/L | U | F | 1 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 111-44-4 | Bis(2-chloroethyl) ether | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 108-60-1 | Bis(2-chloroisopropyl) ether | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 117-81-7 | Bis(2-ethylhexyl) phthalate | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 7440-42-8 | Boron | 0001 | 48.6 | ug/L | B | F | 15 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 75-27-4 | Bromodichloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 75-25-2 | Bromoform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 74-83-9 | Bromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 85-68-7 | Butyl benzyl phthalate | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 7440-43-9 | Cadmium | 0001 | 1 | ug/L | U | F | 1 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 56-23-5 | Carbon tetrachloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 108-90-7 | Chlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 124-48-1 | Chlorodibromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 74-87-3 | Chloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 7440-47-3 | Chromium | 0001 | 1 | ug/L | U | F | 1 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 218-01-9 | Chrysene | N001 | 0.313 | ug/L | U | F | 0.313 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 7440-50-8 | Copper | 0001 | 3 | ug/L | U | F | 3 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 53-70-3 | Dibenz(a,h)anthracene | N001 | 0.313 | ug/L | U | F | 0.313 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 84-66-2 | Diethyl phthalate | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 131-11-3 | Dimethyl phthalate | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 84-74-2 | Di-n-butyl phthalate | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 206-44-0 | Fluoranthene | N001 | 0.313 | ug/L | U | F | 0.313 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 86-73-7 | Fluorene | N001 | 0.313 | ug/L | U | F | 0.313 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 118-74-1 | Hexachlorobenzene | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 87-68-3 | Hexachlorobutadiene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 77-47-4 | Hexachlorocyclopentadiene | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 67-72-1 | Hexachloroethane | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 193-39-5 | Indeno(1,2,3-cd)pyrene | N001 | 0.313 | ug/L | U | F | 0.313 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 78-59-1 | Isophorone | N001 | 3.65 | ug/L | U | F | 3.65 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 7439-92-1 | Lead | 0001 | 3.3 | ug/L | U | F | 3.3 | | F |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 80005 | WL | 11/6/2013 | 13115725 | 7439-97-6 | Mercury | 0001 | 0.067 | ug/L | U | F | 0.067 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 75-09-2 | Methylene chloride | N001 | 0.98 | ug/L | J | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 91-20-3 | Naphthalene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 7440-02-0 | Nickel | 0001 | 1.5 | ug/L | U | F | 1.5 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 98-95-3 | Nitrobenzene | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 621-64-7 | N-Nitrosodi-n-propylamine | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 87-86-5 | Pentachlorophenol | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 108-95-2 | Phenol | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 129-00-0 | Pyrene | N001 | 0.313 | ug/L | U | F | 0.313 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 7782-49-2 | Selenium | 0001 | 8.33 | ug/L | B | F | 6 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 7440-22-4 | Silver | 0001 | 1 | ug/L | U | F | 1 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 100-42-5 | Styrene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 127-18-4 | Tetrachloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 108-88-3 | Toluene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 1330-20-7 | Total Xylenes | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 7440-61-1 | Uranium | 0001 | 43.3 | ug/L | B | F | 10 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 75-01-4 | Vinyl chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80005 | WL | 11/6/2013 | 13115725 | 7440-66-6 | Zinc | 0001 | 3.3 | ug/L | U | F | 3.3 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 105-67-9 | 2, 4-Dimethylphenol | N001 | 2.94 | ug/L | U | F | 2.94 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 95-95-4 | 2,4,5-Trichlorophenol | N001 | 2.94 | ug/L | U | F | 2.94 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 88-06-2 | 2,4,6-Trichlorophenol | N001 | 2.94 | ug/L | U | F | 2.94 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 120-83-2 | 2,4-Dichlorophenol | N001 | 2.94 | ug/L | U | F | 2.94 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 51-28-5 | 2,4-Dinitrophenol | N001 | 4.9 | ug/L | U | F | 4.9 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 121-14-2 | 2,4-Dinitrotoluene | N001 | 2.94 | ug/L | U | F | 2.94 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 606-20-2 | 2,6-Dinitrotoluene | N001 | 2.94 | ug/L | U | F | 2.94 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 91-58-7 | 2-Chloronaphthalene | N001 | 0.402 | ug/L | U | F | 0.402 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 95-57-8 | 2-Chlorophenol | N001 | 2.94 | ug/L | U | F | 2.94 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 91-94-1 | 3,3'-Dichlorobenzidine | N001 | 2.94 | ug/L | U | F | 2.94 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 534-52-1 | 4,6-Dinitro-2-methyl phenol | N001 | 2.94 | ug/L | U | F | 2.94 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 59-50-7 | 4-Chloro-3-methylphenol | N001 | 2.94 | ug/L | U | F | 2.94 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 100-02-7 | 4-Nitrophenol | N001 | 2.94 | ug/L | U | F | 2.94 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 83-32-9 | Acenaphthene | N001 | 0.294 | ug/L | U | F | 0.294 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 120-12-7 | Anthracene | N001 | 0.294 | ug/L | U | F | 0.294 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 7440-38-2 | Arsenic | 0001 | 5 | ug/L | U | F | 5 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 56-55-3 | Benz(a)anthracene | N001 | 0.294 | ug/L | U | F | 0.294 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 50-32-8 | Benzo(a)pyrene | N001 | 0.294 | ug/L | U | F | 0.294 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 205-99-2 | Benzo(b)fluoranthene | N001 | 0.294 | ug/L | U | F | 0.294 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 191-24-2 | Benzo(g,h,i)Perylene | N001 | 0.294 | ug/L | U | F | 0.294 | | F |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 80105 | WL | 11/6/2013 | 13115725 | 207-08-9 | Benzo(k)fluoranthene | N001 | 0.294 | ug/L | U | F | 0.294 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 7440-41-7 | Beryllium | 0001 | 1 | ug/L | U | F | 1 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 111-44-4 | Bis(2-chloroethyl) ether | N001 | 2.94 | ug/L | U | F | 2.94 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 108-60-1 | Bis(2-chloroisopropyl) ether | N001 | 2.94 | ug/L | U | F | 2.94 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 117-81-7 | Bis(2-ethylhexyl) phthalate | N001 | 2.94 | ug/L | U | F | 2.94 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 7440-42-8 | Boron | 0001 | 170 | ug/L | | F | 15 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 75-27-4 | Bromodichloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 75-25-2 | Bromoform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 74-83-9 | Bromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 85-68-7 | Butyl benzyl phthalate | N001 | 2.94 | ug/L | U | F | 2.94 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 7440-43-9 | Cadmium | 0001 | 1 | ug/L | U | F | 1 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 56-23-5 | Carbon tetrachloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 108-90-7 | Chlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 124-48-1 | Chlorodibromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 74-87-3 | Chloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 7440-47-3 | Chromium | 0001 | 1 | ug/L | U | F | 1 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 218-01-9 | Chrysene | N001 | 0.294 | ug/L | U | F | 0.294 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 7440-50-8 | Copper | 0001 | 3 | ug/L | U | F | 3 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 53-70-3 | Dibenz(a,h)anthracene | N001 | 0.294 | ug/L | U | F | 0.294 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 84-66-2 | Diethyl phthalate | N001 | 2.94 | ug/L | U | F | 2.94 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 131-11-3 | Dimethyl phthalate | N001 | 2.94 | ug/L | U | F | 2.94 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 84-74-2 | Di-n-butyl phthalate | N001 | 2.94 | ug/L | U | F | 2.94 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 206-44-0 | Fluoranthene | N001 | 0.294 | ug/L | U | F | 0.294 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 86-73-7 | Fluorene | N001 | 0.294 | ug/L | U | F | 0.294 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 118-74-1 | Hexachlorobenzene | N001 | 2.94 | ug/L | U | F | 2.94 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 87-68-3 | Hexachlorobutadiene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 77-47-4 | Hexachlorocyclopentadiene | N001 | 2.94 | ug/L | U | F | 2.94 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 67-72-1 | Hexachloroethane | N001 | 2.94 | ug/L | U | F | 2.94 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 193-39-5 | Indeno(1,2,3-cd)pyrene | N001 | 0.294 | ug/L | U | F | 0.294 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 78-59-1 | Isophorone | N001 | 3.43 | ug/L | U | F | 3.43 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 7439-92-1 | Lead | 0001 | 3.3 | ug/L | U | F | 3.3 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 7439-97-6 | Mercury | 0001 | 0.067 | ug/L | U | F | 0.067 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 75-09-2 | Methylene chloride | N001 | 1.02 | ug/L | BJ | F | 0.16 | | UF |
| 80105 | WL | 11/6/2013 | 13115725 | 91-20-3 | Naphthalene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 7440-02-0 | Nickel | 0001 | 1.5 | ug/L | U | F | 1.5 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 98-95-3 | Nitrobenzene | N001 | 2.94 | ug/L | U | F | 2.94 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 621-64-7 | N-Nitrosodi-n-propylamine | N001 | 2.94 | ug/L | U | F | 2.94 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 87-86-5 | Pentachlorophenol | N001 | 2.94 | ug/L | U | F | 2.94 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 108-95-2 | Phenol | N001 | 2.94 | ug/L | U | F | 2.94 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 129-00-0 | Pyrene | N001 | 0.294 | ug/L | U | F | 0.294 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 7782-49-2 | Selenium | 0001 | 6 | ug/L | U | F | 6 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 7440-22-4 | Silver | 0001 | 1 | ug/L | U | F | 1 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 100-42-5 | Styrene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 127-18-4 | Tetrachloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 108-88-3 | Toluene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 1330-20-7 | Total Xylenes | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 7440-61-1 | Uranium | 0001 | 10 | ug/L | U | F | 10 | | F |
| 80105 | WL | 11/6/2013 | 13115725 | 75-01-4 | Vinyl chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 80105 | WL | 11/6/2013 | 13115725 | 7440-66-6 | Zinc | 0001 | 3.3 | ug/L | U | F | 3.3 | | F |
| 80205 | WL | 11/6/2013 | 13115725 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 71-55-6 | 1,1,1-Trichloroethane | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 79-00-5 | 1,1,2-Trichloroethane | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 75-35-4 | 1,1-Dichloroethene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 120-82-1 | 1,2,4-Trichlorobenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 106-93-4 | 1,2-Dibromoethane | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 95-50-1 | 1,2-Dichlorobenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 107-06-2 | 1,2-Dichloroethane | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 78-87-5 | 1,2-Dichloropropane | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 541-73-1 | 1,3-Dichlorobenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 106-46-7 | 1,4-Dichlorobenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 105-67-9 | 2, 4-Dimethylphenol | N001 | 2.94 | ug/L | U | F | 2.94 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 105-67-9 | 2, 4-Dimethylphenol | N002 | 3.06 | ug/L | U | D | 3.06 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 95-95-4 | 2,4,5-Trichlorophenol | N001 | 2.94 | ug/L | U | F | 2.94 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 95-95-4 | 2,4,5-Trichlorophenol | N002 | 3.06 | ug/L | U | D | 3.06 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 88-06-2 | 2,4,6-Trichlorophenol | N001 | 2.94 | ug/L | U | F | 2.94 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 88-06-2 | 2,4,6-Trichlorophenol | N002 | 3.06 | ug/L | U | D | 3.06 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 120-83-2 | 2,4-Dichlorophenol | N001 | 2.94 | ug/L | U | F | 2.94 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 120-83-2 | 2,4-Dichlorophenol | N002 | 3.06 | ug/L | U | D | 3.06 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 51-28-5 | 2,4-Dinitrophenol | N001 | 4.9 | ug/L | U | F | 4.9 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 51-28-5 | 2,4-Dinitrophenol | N002 | 5.1 | ug/L | U | D | 5.1 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 121-14-2 | 2,4-Dinitrotoluene | N001 | 2.94 | ug/L | U | F | 2.94 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 121-14-2 | 2,4-Dinitrotoluene | N002 | 3.06 | ug/L | U | D | 3.06 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 606-20-2 | 2,6-Dinitrotoluene | N001 | 2.94 | ug/L | U | F | 2.94 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 606-20-2 | 2,6-Dinitrotoluene | N002 | 3.06 | ug/L | U | D | 3.06 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 91-58-7 | 2-Chloronaphthalene | N001 | 0.402 | ug/L | U | F | 0.402 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 91-58-7 | 2-Chloronaphthalene | N002 | 0.418 | ug/L | U | D | 0.418 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 95-57-8 | 2-Chlorophenol | N001 | 2.94 | ug/L | U | F | 2.94 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 95-57-8 | 2-Chlorophenol | N002 | 3.06 | ug/L | U | D | 3.06 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 91-94-1 | 3,3'-Dichlorobenzidine | N001 | 2.94 | ug/L | U | F | 2.94 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 91-94-1 | 3,3'-Dichlorobenzidine | N002 | 3.06 | ug/L | U | D | 3.06 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 534-52-1 | 4,6-Dinitro-2-methyl phenol | N001 | 2.94 | ug/L | U | F | 2.94 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 534-52-1 | 4,6-Dinitro-2-methyl phenol | N002 | 3.06 | ug/L | U | D | 3.06 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 59-50-7 | 4-Chloro-3-methylphenol | N001 | 2.94 | ug/L | U | F | 2.94 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 59-50-7 | 4-Chloro-3-methylphenol | N002 | 3.06 | ug/L | U | D | 3.06 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 100-02-7 | 4-Nitrophenol | N001 | 2.94 | ug/L | U | F | 2.94 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 100-02-7 | 4-Nitrophenol | N002 | 3.06 | ug/L | U | D | 3.06 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 83-32-9 | Acenaphthene | N001 | 0.294 | ug/L | U | F | 0.294 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 83-32-9 | Acenaphthene | N002 | 0.306 | ug/L | U | D | 0.306 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 120-12-7 | Anthracene | N001 | 0.294 | ug/L | U | F | 0.294 | | FQ |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 80205 | WL | 11/6/2013 | 13115725 | 120-12-7 | Anthracene | N002 | 0.306 | ug/L | U | D | 0.306 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 7440-38-2 | Arsenic | 0001 | 5 | ug/L | U | F | 5 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 7440-38-2 | Arsenic | 0002 | 5 | ug/L | U | D | 5 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 56-55-3 | Benz(a)anthracene | N001 | 0.294 | ug/L | U | F | 0.294 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 56-55-3 | Benz(a)anthracene | N002 | 0.306 | ug/L | U | D | 0.306 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 71-43-2 | Benzene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 50-32-8 | Benzo(a)pyrene | N001 | 0.294 | ug/L | U | F | 0.294 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 50-32-8 | Benzo(a)pyrene | N002 | 0.306 | ug/L | U | D | 0.306 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 205-99-2 | Benzo(b)fluoranthene | N001 | 0.294 | ug/L | U | F | 0.294 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 205-99-2 | Benzo(b)fluoranthene | N002 | 0.306 | ug/L | U | D | 0.306 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 191-24-2 | Benzo(g,h,i)Perylene | N001 | 0.294 | ug/L | U | F | 0.294 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 191-24-2 | Benzo(g,h,i)Perylene | N002 | 0.306 | ug/L | U | D | 0.306 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 207-08-9 | Benzo(k)fluoranthene | N001 | 0.294 | ug/L | U | F | 0.294 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 207-08-9 | Benzo(k)fluoranthene | N002 | 0.306 | ug/L | U | D | 0.306 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 7440-41-7 | Beryllium | 0001 | 1 | ug/L | U | F | 1 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 7440-41-7 | Beryllium | 0002 | 1 | ug/L | U | D | 1 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 111-44-4 | Bis(2-chloroethyl) ether | N001 | 2.94 | ug/L | U | F | 2.94 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 111-44-4 | Bis(2-chloroethyl) ether | N002 | 3.06 | ug/L | U | D | 3.06 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 108-60-1 | Bis(2-chloroisopropyl) ether | N001 | 2.94 | ug/L | U | F | 2.94 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 108-60-1 | Bis(2-chloroisopropyl) ether | N002 | 3.06 | ug/L | U | D | 3.06 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 117-81-7 | Bis(2-ethylhexyl) phthalate | N001 | 2.94 | ug/L | U | F | 2.94 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 117-81-7 | Bis(2-ethylhexyl) phthalate | N002 | 3.06 | ug/L | U | D | 3.06 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 7440-42-8 | Boron | 0001 | 96.2 | ug/L | | F | 15 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 7440-42-8 | Boron | 0002 | 96.1 | ug/L | | D | 15 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 75-27-4 | Bromodichloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 75-27-4 | Bromodichloromethane | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 75-25-2 | Bromoform | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 75-25-2 | Bromoform | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 74-83-9 | Bromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 74-83-9 | Bromomethane | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 85-68-7 | Butyl benzyl phthalate | N001 | 2.94 | ug/L | U | F | 2.94 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 85-68-7 | Butyl benzyl phthalate | N002 | 3.06 | ug/L | U | D | 3.06 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 7440-43-9 | Cadmium | 0001 | 1 | ug/L | U | F | 1 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 7440-43-9 | Cadmium | 0002 | 1 | ug/L | U | D | 1 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 56-23-5 | Carbon tetrachloride | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 56-23-5 | Carbon tetrachloride | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 108-90-7 | Chlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 108-90-7 | Chlorobenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 124-48-1 | Chlorodibromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 124-48-1 | Chlorodibromomethane | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 67-66-3 | Chloroform | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 74-87-3 | Chloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 74-87-3 | Chloromethane | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 7440-47-3 | Chromium | 0001 | 1 | ug/L | U | F | 1 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 7440-47-3 | Chromium | 0002 | 1 | ug/L | U | D | 1 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 218-01-9 | Chrysene | N001 | 0.294 | ug/L | U | F | 0.294 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 218-01-9 | Chrysene | N002 | 0.306 | ug/L | U | D | 0.306 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 156-59-2 | cis-1,2-Dichloroethene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 7440-50-8 | Copper | 0001 | 3 | ug/L | U | F | 3 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 7440-50-8 | Copper | 0002 | 3 | ug/L | U | D | 3 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 53-70-3 | Dibenz(a,h)anthracene | N001 | 0.294 | ug/L | U | F | 0.294 | | FQ |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 80205 | WL | 11/6/2013 | 13115725 | 53-70-3 | Dibenz(a,h)anthracene | N002 | 0.306 | ug/L | U | D | 0.306 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 84-66-2 | Diethyl phthalate | N001 | 2.94 | ug/L | U | F | 2.94 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 84-66-2 | Diethyl phthalate | N002 | 3.06 | ug/L | U | D | 3.06 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 131-11-3 | Dimethyl phthalate | N001 | 2.94 | ug/L | U | F | 2.94 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 131-11-3 | Dimethyl phthalate | N002 | 3.06 | ug/L | U | D | 3.06 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 84-74-2 | Di-n-butyl phthalate | N001 | 2.94 | ug/L | U | F | 2.94 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 84-74-2 | Di-n-butyl phthalate | N002 | 3.06 | ug/L | U | D | 3.06 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 100-41-4 | Ethylbenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 206-44-0 | Fluoranthene | N001 | 0.294 | ug/L | U | F | 0.294 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 206-44-0 | Fluoranthene | N002 | 0.306 | ug/L | U | D | 0.306 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 86-73-7 | Fluorene | N001 | 0.294 | ug/L | U | F | 0.294 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 86-73-7 | Fluorene | N002 | 0.306 | ug/L | U | D | 0.306 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 118-74-1 | Hexachlorobenzene | N001 | 2.94 | ug/L | U | F | 2.94 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 118-74-1 | Hexachlorobenzene | N002 | 3.06 | ug/L | U | D | 3.06 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 87-68-3 | Hexachlorobutadiene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 87-68-3 | Hexachlorobutadiene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 77-47-4 | Hexachlorocyclopentadiene | N001 | 2.94 | ug/L | U | F | 2.94 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 77-47-4 | Hexachlorocyclopentadiene | N002 | 3.06 | ug/L | U | D | 3.06 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 67-72-1 | Hexachloroethane | N001 | 2.94 | ug/L | U | F | 2.94 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 67-72-1 | Hexachloroethane | N002 | 3.06 | ug/L | U | D | 3.06 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 193-39-5 | Indeno(1,2,3-cd)pyrene | N001 | 0.294 | ug/L | U | F | 0.294 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 193-39-5 | Indeno(1,2,3-cd)pyrene | N002 | 0.306 | ug/L | U | D | 0.306 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 78-59-1 | Isophorone | N001 | 3.43 | ug/L | U | F | 3.43 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 78-59-1 | Isophorone | N002 | 3.57 | ug/L | U | D | 3.57 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 7439-92-1 | Lead | 0001 | 3.84 | ug/L | B | F | 3.3 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 7439-92-1 | Lead | 0002 | 3.3 | ug/L | U | D | 3.3 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 7439-97-6 | Mercury | 0001 | 0.067 | ug/L | U | F | 0.067 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 7439-97-6 | Mercury | 0002 | 0.067 | ug/L | U | D | 0.067 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 75-09-2 | Methylene chloride | N001 | 1.03 | ug/L | BJ | F | 0.16 | | UFQ |
| 80205 | WL | 11/6/2013 | 13115725 | 75-09-2 | Methylene chloride | N002 | 0.97 | ug/L | J | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 91-20-3 | Naphthalene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 91-20-3 | Naphthalene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 7440-02-0 | Nickel | 0001 | 3.14 | ug/L | B | F | 1.5 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 7440-02-0 | Nickel | 0002 | 2.78 | ug/L | B | D | 1.5 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 98-95-3 | Nitrobenzene | N001 | 2.94 | ug/L | U | F | 2.94 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 98-95-3 | Nitrobenzene | N002 | 3.06 | ug/L | U | D | 3.06 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 621-64-7 | N-Nitrosodi-n-propylamine | N001 | 2.94 | ug/L | U | F | 2.94 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 621-64-7 | N-Nitrosodi-n-propylamine | N002 | 3.06 | ug/L | U | D | 3.06 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 87-86-5 | Pentachlorophenol | N001 | 2.94 | ug/L | U | F | 2.94 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 87-86-5 | Pentachlorophenol | N002 | 3.06 | ug/L | U | D | 3.06 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 108-95-2 | Phenol | N001 | 2.94 | ug/L | U | F | 2.94 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 108-95-2 | Phenol | N002 | 3.06 | ug/L | U | D | 3.06 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 129-00-0 | Pyrene | N001 | 0.294 | ug/L | U | F | 0.294 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 129-00-0 | Pyrene | N002 | 0.306 | ug/L | U | D | 0.306 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 7782-49-2 | Selenium | 0001 | 8.55 | ug/L | B | F | 6 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 7782-49-2 | Selenium | 0002 | 6 | ug/L | U | D | 6 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 7440-22-4 | Silver | 0001 | 1 | ug/L | U | F | 1 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 7440-22-4 | Silver | 0002 | 1 | ug/L | U | D | 1 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 100-42-5 | Styrene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 100-42-5 | Styrene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 127-18-4 | Tetrachloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 127-18-4 | Tetrachloroethene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 108-88-3 | Toluene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 80205 | WL | 11/6/2013 | 13115725 | 108-88-3 | Toluene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 1330-20-7 | Total Xylenes | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 1330-20-7 | Total Xylenes | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 156-60-5 | trans-1,2-Dichloroethene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 10061-02-6 | trans-1,3-dichloropropene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 79-01-6 | Trichloroethene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 7440-61-1 | Uranium | 0001 | 64.8 | ug/L | B | F | 10 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 7440-61-1 | Uranium | 0002 | 54.6 | ug/L | B | D | 10 | | UFQ |
| 80205 | WL | 11/6/2013 | 13115725 | 75-01-4 | Vinyl chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 75-01-4 | Vinyl chloride | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 7440-66-6 | Zinc | 0001 | 3.3 | ug/L | U | F | 3.3 | | FQ |
| 80205 | WL | 11/6/2013 | 13115725 | 7440-66-6 | Zinc | 0002 | 3.43 | ug/L | B | D | 3.3 | | FQ |
| 88104 | WL | 10/24/2013 | 13105689 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 75-27-4 | Bromodichloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 75-25-2 | Bromoform | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 74-83-9 | Bromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 56-23-5 | Carbon tetrachloride | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 108-90-7 | Chlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 124-48-1 | Chlorodibromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 74-87-3 | Chloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 87-68-3 | Hexachlorobutadiene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 75-09-2 | Methylene chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 91-20-3 | Naphthalene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 100-42-5 | Styrene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 127-18-4 | Tetrachloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 108-88-3 | Toluene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 1330-20-7 | Total Xylenes | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 7440-61-1 | Uranium | 0001 | 55.7 | ug/L | N | F | 0.067 | | QF |
| 88104 | WL | 10/24/2013 | 13105689 | 75-01-4 | Vinyl chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | QF |
| 89104 | WL | 10/25/2013 | 13105689 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 71-55-6 | 1,1,1-Trichloroethane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 89104 | WL | 10/25/2013 | 13105689 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 79-00-5 | 1,1,2-Trichloroethane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 75-35-4 | 1,1-Dichloroethene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 120-82-1 | 1,2,4-Trichlorobenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 106-93-4 | 1,2-Dibromoethane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 95-50-1 | 1,2-Dichlorobenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 107-06-2 | 1,2-Dichloroethane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 78-87-5 | 1,2-Dichloropropane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 541-73-1 | 1,3-Dichlorobenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 106-46-7 | 1,4-Dichlorobenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 71-43-2 | Benzene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 75-27-4 | Bromodichloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 75-27-4 | Bromodichloromethane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 75-25-2 | Bromoform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 75-25-2 | Bromoform | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 74-83-9 | Bromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 74-83-9 | Bromomethane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 56-23-5 | Carbon tetrachloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 56-23-5 | Carbon tetrachloride | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 108-90-7 | Chlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 108-90-7 | Chlorobenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 124-48-1 | Chlorodibromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 124-48-1 | Chlorodibromomethane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 67-66-3 | Chloroform | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 74-87-3 | Chloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 74-87-3 | Chloromethane | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 156-59-2 | cis-1,2-Dichloroethene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 100-41-4 | Ethylbenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 87-68-3 | Hexachlorobutadiene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 87-68-3 | Hexachlorobutadiene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 75-09-2 | Methylene chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 75-09-2 | Methylene chloride | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 91-20-3 | Naphthalene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 91-20-3 | Naphthalene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 100-42-5 | Styrene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 100-42-5 | Styrene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 127-18-4 | Tetrachloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 127-18-4 | Tetrachloroethene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 108-88-3 | Toluene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 108-88-3 | Toluene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 89104 | WL | 10/25/2013 | 13105689 | 1330-20-7 | Total Xylenes | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 1330-20-7 | Total Xylenes | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 156-60-5 | trans-1,2-Dichloroethene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 10061-02-6 | trans-1,3-dichloropropene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 79-01-6 | Trichloroethene | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 75-01-4 | Vinyl chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 89104 | WL | 10/25/2013 | 13105689 | 75-01-4 | Vinyl chloride | N002 | 0.16 | ug/L | U | D | 0.16 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 75-35-4 | 1,1-Dichloroethene | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 106-93-4 | 1,2-Dibromoethane | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 107-06-2 | 1,2-Dichloroethane | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 78-87-5 | 1,2-Dichloropropane | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 71-43-2 | Benzene | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 75-27-4 | Bromodichloromethane | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 75-25-2 | Bromoform | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 74-83-9 | Bromomethane | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 56-23-5 | Carbon tetrachloride | N001 | 187 | ug/L | | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 108-90-7 | Chlorobenzene | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 124-48-1 | Chlorodibromomethane | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 67-66-3 | Chloroform | N001 | 38.9 | ug/L | | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 74-87-3 | Chloromethane | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 3.6 | ug/L | J | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 100-41-4 | Ethylbenzene | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 87-68-3 | Hexachlorobutadiene | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 75-09-2 | Methylene chloride | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 91-20-3 | Naphthalene | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 100-42-5 | Styrene | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 127-18-4 | Tetrachloroethene | N001 | 9.6 | ug/L | J | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 108-88-3 | Toluene | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 1330-20-7 | Total Xylenes | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 79-01-6 | Trichloroethene | N001 | 423 | ug/L | | F | 1.6 | | F |
| 90399 | WL | 10/23/2013 | 13105689 | 75-01-4 | Vinyl chloride | N001 | 1.6 | ug/L | U | F | 1.6 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 2300 | ug/L | | F | 16 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 21 | ug/L | U | F | 21 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 27 | ug/L | U | F | 27 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 75-35-4 | 1,1-Dichloroethene | N001 | 260 | ug/L | | F | 23 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 39 | ug/L | J | F | 21 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 47 | ug/L | U | F | 47 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 106-93-4 | 1,2-Dibromoethane | N001 | 18 | ug/L | U | F | 18 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 15 | ug/L | U | F | 15 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 107-06-2 | 1,2-Dichloroethane | N001 | 13 | ug/L | U | F | 13 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 78-87-5 | 1,2-Dichloropropane | N001 | 18 | ug/L | U | F | 18 | | F |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 91105 | WL | 10/15/2013 | 13105677 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 13 | ug/L | U | F | 13 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 16 | ug/L | U | F | 16 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 71-43-2 | Benzene | N001 | 16 | ug/L | U | F | 16 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 75-27-4 | Bromodichloromethane | N001 | 17 | ug/L | U | F | 17 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 75-25-2 | Bromoform | N001 | 19 | ug/L | U | F | 19 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 74-83-9 | Bromomethane | N001 | 21 | ug/L | U | F | 21 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 56-23-5 | Carbon tetrachloride | N001 | 19 | ug/L | U | F | 19 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 108-90-7 | Chlorobenzene | N001 | 17 | ug/L | U | F | 17 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 124-48-1 | Chlorodibromomethane | N001 | 17 | ug/L | U | F | 17 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 67-66-3 | Chloroform | N001 | 460 | ug/L | | F | 16 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 74-87-3 | Chloromethane | N001 | 30 | ug/L | U | F | 30 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 4700 | ug/L | | F | 15 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 100-41-4 | Ethylbenzene | N001 | 16 | ug/L | U | F | 16 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 87-68-3 | Hexachlorobutadiene | N001 | 36 | ug/L | U | F | 36 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 75-09-2 | Methylene chloride | N001 | 32 | ug/L | U | F | 32 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 91-20-3 | Naphthalene | N001 | 22 | ug/L | U | F | 22 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 100-42-5 | Styrene | N001 | 17 | ug/L | U | F | 17 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 127-18-4 | Tetrachloroethene | N001 | 2200 | ug/L | | F | 20 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 108-88-3 | Toluene | N001 | 17 | ug/L | U | F | 17 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 1330-20-7 | Total Xylenes | N001 | 19 | ug/L | U | F | 19 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 15 | ug/L | U | F | 15 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 19 | ug/L | U | F | 19 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 79-01-6 | Trichloroethene | N001 | 18000 | ug/L | | F | 320 | | F |
| 91105 | WL | 10/15/2013 | 13105677 | 75-01-4 | Vinyl chloride | N001 | 270 | ug/L | | F | 10 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 3.4 | ug/L | | F | 0.16 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.21 | ug/L | U | F | 0.21 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.27 | ug/L | U | F | 0.27 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 75-35-4 | 1,1-Dichloroethene | N001 | 1.1 | ug/L | | F | 0.23 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.21 | ug/L | U | F | 0.21 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.47 | ug/L | U | F | 0.47 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.18 | ug/L | U | F | 0.18 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.15 | ug/L | U | F | 0.15 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.13 | ug/L | U | F | 0.13 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.18 | ug/L | U | F | 0.18 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.13 | ug/L | U | F | 0.13 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 75-27-4 | Bromodichloromethane | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 75-25-2 | Bromoform | N001 | 0.19 | ug/L | U | F | 0.19 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 74-83-9 | Bromomethane | N001 | 0.21 | ug/L | U | F | 0.21 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 56-23-5 | Carbon tetrachloride | N001 | 120 | ug/L | | F | 0.76 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 108-90-7 | Chlorobenzene | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 124-48-1 | Chlorodibromomethane | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 67-66-3 | Chloroform | N001 | 6.9 | ug/L | | F | 0.16 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 74-87-3 | Chloromethane | N001 | 0.3 | ug/L | U | F | 0.3 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 2 | ug/L | | F | 0.15 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 87-68-3 | Hexachlorobutadiene | N001 | 0.36 | ug/L | U | F | 0.36 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 75-09-2 | Methylene chloride | N001 | 0.32 | ug/L | U | F | 0.32 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 91-20-3 | Naphthalene | N001 | 0.22 | ug/L | U | F | 0.22 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 100-42-5 | Styrene | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 127-18-4 | Tetrachloroethene | N001 | 17 | ug/L | | F | 0.2 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 108-88-3 | Toluene | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 1330-20-7 | Total Xylenes | N001 | 0.19 | ug/L | U | F | 0.19 | | F |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 91203 | WL | 10/15/2013 | 13105677 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.19 | ug/L | U | F | 0.19 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 79-01-6 | Trichloroethene | N001 | 9.5 | ug/L | | F | 0.16 | | F |
| 91203 | WL | 10/15/2013 | 13105677 | 75-01-4 | Vinyl chloride | N001 | 0.1 | ug/L | U | F | 0.1 | | F |
| 91305 | WL | 10/16/2013 | 13105677 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.21 | ug/L | U | F | 0.21 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.27 | ug/L | U | F | 0.27 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.23 | ug/L | U | F | 0.23 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.21 | ug/L | U | F | 0.21 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.47 | ug/L | U | F | 0.47 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.18 | ug/L | U | F | 0.18 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.15 | ug/L | U | F | 0.15 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.13 | ug/L | U | F | 0.13 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.18 | ug/L | U | F | 0.18 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.13 | ug/L | U | F | 0.13 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 75-27-4 | Bromodichloromethane | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 75-25-2 | Bromoform | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 74-83-9 | Bromomethane | N001 | 0.21 | ug/L | U | F | 0.21 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 56-23-5 | Carbon tetrachloride | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 108-90-7 | Chlorobenzene | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 124-48-1 | Chlorodibromomethane | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 74-87-3 | Chloromethane | N001 | 0.3 | ug/L | U | F | 0.3 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 3 | ug/L | | F | 0.15 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 87-68-3 | Hexachlorobutadiene | N001 | 0.36 | ug/L | U | F | 0.36 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 75-09-2 | Methylene chloride | N001 | 0.32 | ug/L | U | F | 0.32 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 91-20-3 | Naphthalene | N001 | 0.22 | ug/L | U | F | 0.22 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 0.099 | mg/L | | F | 0.019 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 100-42-5 | Styrene | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 127-18-4 | Tetrachloroethene | N001 | 0.2 | ug/L | U | F | 0.2 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 108-88-3 | Toluene | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 1330-20-7 | Total Xylenes | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 7440-61-1 | Uranium | 0001 | 32 | ug/L | | F | 0.05 | | FQ |
| 91305 | WL | 10/16/2013 | 13105677 | 75-01-4 | Vinyl chloride | N001 | 0.11 | ug/L | J | F | 0.1 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.21 | ug/L | U | F | 0.21 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.27 | ug/L | U | F | 0.27 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.23 | ug/L | U | F | 0.23 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.21 | ug/L | U | F | 0.21 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.47 | ug/L | U | F | 0.47 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.18 | ug/L | U | F | 0.18 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.15 | ug/L | U | F | 0.15 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.13 | ug/L | U | F | 0.13 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.18 | ug/L | U | F | 0.18 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.13 | ug/L | U | F | 0.13 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 75-27-4 | Bromodichloromethane | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 95099 | WL | 11/26/2013 | 13115760 | 75-25-2 | Bromoform | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 74-83-9 | Bromomethane | N001 | 0.21 | ug/L | U | F | 0.21 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 56-23-5 | Carbon tetrachloride | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 108-90-7 | Chlorobenzene | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 124-48-1 | Chlorodibromomethane | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 67-66-3 | Chloroform | N001 | 0.17 | ug/L | J | F | 0.16 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 74-87-3 | Chloromethane | N001 | 0.3 | ug/L | U | F | 0.3 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 87-68-3 | Hexachlorobutadiene | N001 | 0.36 | ug/L | U | F | 0.36 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 75-09-2 | Methylene chloride | N001 | 0.32 | ug/L | U | F | 0.32 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 91-20-3 | Naphthalene | N001 | 0.22 | ug/L | U | F | 0.22 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 100-42-5 | Styrene | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 127-18-4 | Tetrachloroethene | N001 | 0.2 | ug/L | U | F | 0.2 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 108-88-3 | Toluene | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 1330-20-7 | Total Xylenes | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 95099 | WL | 11/26/2013 | 13115760 | 75-01-4 | Vinyl chloride | N001 | 0.1 | ug/L | U | F | 0.1 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.21 | ug/L | U | F | 0.21 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.27 | ug/L | U | F | 0.27 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 75-35-4 | 1,1-Dichloroethene | N001 | 1.1 | ug/L | | F | 0.23 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.21 | ug/L | U | F | 0.21 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.47 | ug/L | U | F | 0.47 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.18 | ug/L | U | F | 0.18 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.15 | ug/L | U | F | 0.15 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.13 | ug/L | U | F | 0.13 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.18 | ug/L | U | F | 0.18 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.13 | ug/L | U | F | 0.13 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 75-27-4 | Bromodichloromethane | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 75-25-2 | Bromoform | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 74-83-9 | Bromomethane | N001 | 0.21 | ug/L | U | F | 0.21 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 56-23-5 | Carbon tetrachloride | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 108-90-7 | Chlorobenzene | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 124-48-1 | Chlorodibromomethane | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 74-87-3 | Chloromethane | N001 | 0.3 | ug/L | U | F | 0.3 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 5.4 | ug/L | | F | 0.15 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 87-68-3 | Hexachlorobutadiene | N001 | 0.36 | ug/L | U | F | 0.36 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 75-09-2 | Methylene chloride | N001 | 0.32 | ug/L | U | F | 0.32 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 91-20-3 | Naphthalene | N001 | 0.22 | ug/L | U | F | 0.22 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 100-42-5 | Styrene | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 127-18-4 | Tetrachloroethene | N001 | 3.9 | ug/L | | F | 0.2 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 108-88-3 | Toluene | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 1330-20-7 | Total Xylenes | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.18 | ug/L | J | F | 0.15 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 79-01-6 | Trichloroethene | N001 | 90 | ug/L | | F | 1.6 | | FQ |
| 95199 | WL | 11/26/2013 | 13115760 | 75-01-4 | Vinyl chloride | N001 | 0.1 | ug/L | U | F | 0.1 | | FQ |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 99305 | WL | 10/16/2013 | 13105677 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.21 | ug/L | U | F | 0.21 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.27 | ug/L | U | F | 0.27 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.9 | ug/L | J | F | 0.23 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.21 | ug/L | U | F | 0.21 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.47 | ug/L | U | F | 0.47 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.18 | ug/L | U | F | 0.18 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.15 | ug/L | U | F | 0.15 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.13 | ug/L | U | F | 0.13 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.18 | ug/L | U | F | 0.18 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.13 | ug/L | U | F | 0.13 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 75-27-4 | Bromodichloromethane | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 75-25-2 | Bromoform | N001 | 0.19 | ug/L | U | F | 0.19 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 74-83-9 | Bromomethane | N001 | 0.21 | ug/L | U | F | 0.21 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 56-23-5 | Carbon tetrachloride | N001 | 0.19 | ug/L | U | F | 0.19 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 108-90-7 | Chlorobenzene | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 124-48-1 | Chlorodibromomethane | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 74-87-3 | Chloromethane | N001 | 0.3 | ug/L | U | F | 0.3 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 17 | ug/L | | F | 0.15 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 87-68-3 | Hexachlorobutadiene | N001 | 0.36 | ug/L | U | F | 0.36 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 75-09-2 | Methylene chloride | N001 | 0.56 | ug/L | J | F | 0.32 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 91-20-3 | Naphthalene | N001 | 0.22 | ug/L | U | F | 0.22 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 0.72 | mg/L | | F | 0.019 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 100-42-5 | Styrene | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 127-18-4 | Tetrachloroethene | N001 | 7.2 | ug/L | | F | 0.2 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 108-88-3 | Toluene | N001 | 0.17 | ug/L | U | F | 0.17 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 1330-20-7 | Total Xylenes | N001 | 0.19 | ug/L | U | F | 0.19 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.24 | ug/L | J | F | 0.15 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.19 | ug/L | U | F | 0.19 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 79-01-6 | Trichloroethene | N001 | 100 | ug/L | | F | 1.6 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 7440-61-1 | Uranium | 0001 | 49 | ug/L | | F | 0.05 | | F |
| 99305 | WL | 10/16/2013 | 13105677 | 75-01-4 | Vinyl chloride | N001 | 0.1 | ug/L | U | F | 0.1 | | F |
| 99405 | WL | 10/16/2013 | 13105677 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 71-55-6 | 1,1,1-Trichloroethane | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.21 | ug/L | U | F | 0.21 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N002 | 0.21 | ug/L | U | D | 0.21 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.27 | ug/L | U | F | 0.27 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 79-00-5 | 1,1,2-Trichloroethane | N002 | 0.27 | ug/L | U | D | 0.27 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.23 | ug/L | U | F | 0.23 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 75-35-4 | 1,1-Dichloroethene | N002 | 0.23 | ug/L | U | D | 0.23 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.21 | ug/L | U | F | 0.21 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 120-82-1 | 1,2,4-Trichlorobenzene | N002 | 0.21 | ug/L | U | D | 0.21 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.47 | ug/L | U | F | 0.47 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N002 | 0.47 | ug/L | U | D | 0.47 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.18 | ug/L | U | F | 0.18 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 106-93-4 | 1,2-Dibromoethane | N002 | 0.18 | ug/L | U | D | 0.18 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.15 | ug/L | U | F | 0.15 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 95-50-1 | 1,2-Dichlorobenzene | N002 | 0.15 | ug/L | U | D | 0.15 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.13 | ug/L | U | F | 0.13 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 107-06-2 | 1,2-Dichloroethane | N002 | 0.13 | ug/L | U | D | 0.13 | | FQ |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 99405 | WL | 10/16/2013 | 13105677 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.18 | ug/L | U | F | 0.18 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 78-87-5 | 1,2-Dichloropropane | N002 | 0.18 | ug/L | U | D | 0.18 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.13 | ug/L | U | F | 0.13 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 541-73-1 | 1,3-Dichlorobenzene | N002 | 0.13 | ug/L | U | D | 0.13 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 106-46-7 | 1,4-Dichlorobenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 71-43-2 | Benzene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 75-27-4 | Bromodichloromethane | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 75-27-4 | Bromodichloromethane | N002 | 0.17 | ug/L | U | D | 0.17 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 75-25-2 | Bromoform | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 75-25-2 | Bromoform | N002 | 0.19 | ug/L | U | D | 0.19 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 74-83-9 | Bromomethane | N001 | 0.21 | ug/L | U | F | 0.21 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 74-83-9 | Bromomethane | N002 | 0.21 | ug/L | U | D | 0.21 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 56-23-5 | Carbon tetrachloride | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 56-23-5 | Carbon tetrachloride | N002 | 0.19 | ug/L | U | D | 0.19 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 108-90-7 | Chlorobenzene | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 108-90-7 | Chlorobenzene | N002 | 0.17 | ug/L | U | D | 0.17 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 124-48-1 | Chlorodibromomethane | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 124-48-1 | Chlorodibromomethane | N002 | 0.17 | ug/L | U | D | 0.17 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 67-66-3 | Chloroform | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 74-87-3 | Chloromethane | N001 | 0.3 | ug/L | U | F | 0.3 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 74-87-3 | Chloromethane | N002 | 0.3 | ug/L | U | D | 0.3 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 1.2 | ug/L | | F | 0.15 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 156-59-2 | cis-1,2-Dichloroethene | N002 | 1.1 | ug/L | | D | 0.15 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 100-41-4 | Ethylbenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 87-68-3 | Hexachlorobutadiene | N001 | 0.36 | ug/L | U | F | 0.36 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 87-68-3 | Hexachlorobutadiene | N002 | 0.36 | ug/L | U | D | 0.36 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 75-09-2 | Methylene chloride | N001 | 0.32 | ug/L | U | F | 0.32 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 75-09-2 | Methylene chloride | N002 | 0.32 | ug/L | U | D | 0.32 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 91-20-3 | Naphthalene | N001 | 0.22 | ug/L | U | F | 0.22 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 91-20-3 | Naphthalene | N002 | 0.22 | ug/L | U | D | 0.22 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 1.6 | mg/L | | F | 0.019 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N002 | 1.6 | mg/L | | D | 0.019 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 100-42-5 | Styrene | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 100-42-5 | Styrene | N002 | 0.17 | ug/L | U | D | 0.17 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 127-18-4 | Tetrachloroethene | N001 | 0.2 | ug/L | U | F | 0.2 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 127-18-4 | Tetrachloroethene | N002 | 0.21 | ug/L | J | D | 0.2 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 108-88-3 | Toluene | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 108-88-3 | Toluene | N002 | 0.17 | ug/L | U | D | 0.17 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 1330-20-7 | Total Xylenes | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 1330-20-7 | Total Xylenes | N002 | 0.19 | ug/L | U | D | 0.19 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 156-60-5 | trans-1,2-Dichloroethene | N002 | 0.15 | ug/L | U | D | 0.15 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 10061-02-6 | trans-1,3-dichloropropene | N002 | 0.19 | ug/L | U | D | 0.19 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 79-01-6 | Trichloroethene | N001 | 17 | ug/L | | F | 0.16 | | FQJ |
| 99405 | WL | 10/16/2013 | 13105677 | 79-01-6 | Trichloroethene | N002 | 17 | ug/L | | D | 0.16 | | FQJ |
| 99405 | WL | 10/16/2013 | 13105677 | 7440-61-1 | Uranium | 0001 | 400 | ug/L | | F | 0.05 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 7440-61-1 | Uranium | 0002 | 380 | ug/L | | D | 0.05 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 75-01-4 | Vinyl chloride | N001 | 0.1 | ug/L | U | F | 0.1 | | FQ |
| 99405 | WL | 10/16/2013 | 13105677 | 75-01-4 | Vinyl chloride | N002 | 0.1 | ug/L | U | D | 0.1 | | FQ |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B206989 | WL | 11/12/2013 | 13115740 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.21 | ug/L | U | F | 0.21 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.27 | ug/L | U | F | 0.27 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.23 | ug/L | U | F | 0.23 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.21 | ug/L | U | F | 0.21 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.47 | ug/L | U | F | 0.47 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.18 | ug/L | U | F | 0.18 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.15 | ug/L | U | F | 0.15 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.13 | ug/L | U | F | 0.13 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.18 | ug/L | U | F | 0.18 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.13 | ug/L | U | F | 0.13 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 75-27-4 | Bromodichloromethane | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 75-25-2 | Bromoform | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 74-83-9 | Bromomethane | N001 | 0.21 | ug/L | U | F | 0.21 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 56-23-5 | Carbon tetrachloride | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 108-90-7 | Chlorobenzene | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 124-48-1 | Chlorodibromomethane | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 74-87-3 | Chloromethane | N001 | 0.3 | ug/L | U | F | 0.3 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 87-68-3 | Hexachlorobutadiene | N001 | 0.36 | ug/L | U | F | 0.36 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 75-09-2 | Methylene chloride | N001 | 0.32 | ug/L | U | F | 0.32 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 91-20-3 | Naphthalene | N001 | 0.22 | ug/L | U | F | 0.22 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 3.5 | mg/L | | F | 0.019 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 100-42-5 | Styrene | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 127-18-4 | Tetrachloroethene | N001 | 0.2 | ug/L | U | F | 0.2 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 108-88-3 | Toluene | N001 | 0.17 | ug/L | U | F | 0.17 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 1330-20-7 | Total Xylenes | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.19 | ug/L | U | F | 0.19 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 7440-61-1 | Uranium | 0001 | 100 | ug/L | | F | 0.05 | | FQ |
| B206989 | WL | 11/12/2013 | 13115740 | 75-01-4 | Vinyl chloride | N001 | 0.1 | ug/L | U | F | 0.1 | | FQ |
| B3OUTFLOW | SL | 10/16/2013 | 13105685 | 7440-61-1 | Uranium | N001 | 14 | ug/L | | F | 0.05 | | |
| B3OUTFLOW | SL | 10/30/2013 | 13115721 | 7440-61-1 | Uranium | N001 | 16 | ug/L | | F | 0.05 | | |
| B3OUTFLOW | SL | 11/13/2013 | 13115755 | 7440-61-1 | Uranium | N001 | 17 | ug/L | | F | 0.05 | | |
| B3OUTFLOW | SL | 11/26/2013 | 13125785 | 7440-61-1 | Uranium | N001 | 18 | ug/L | B | F | 0.05 | | |
| B3OUTFLOW | SL | 12/24/2013 | 13125842 | 7440-61-1 | Uranium | N001 | 23 | ug/L | | F | 0.05 | | |
| B3OUTFLOW | SL | 12/24/2013 | 13125842 | 7440-61-1 | Uranium | N002 | 23 | ug/L | | D | 0.05 | | |
| B5 POND | SL | 10/16/2013 | 13105685 | 7440-61-1 | Uranium | N001 | 12 | ug/L | | F | 0.05 | | |
| B5 POND | SL | 10/30/2013 | 13115721 | 7440-61-1 | Uranium | N001 | 12 | ug/L | | F | 0.05 | | |
| B5 POND | SL | 11/13/2013 | 13115755 | 7440-61-1 | Uranium | N001 | 14 | ug/L | | F | 0.05 | | |
| B5 POND | SL | 11/26/2013 | 13125785 | 7440-61-1 | Uranium | N001 | 13 | ug/L | B | F | 0.05 | | |
| B5 POND | SL | 12/24/2013 | 13125842 | 7440-61-1 | Uranium | N001 | 14 | ug/L | | F | 0.05 | | |
| B5 POND | SL | 12/24/2013 | 13125842 | 7440-61-1 | Uranium | N002 | 14 | ug/L | | D | 0.05 | | |
| B5INFLOW | SL | 9/25/2013 | 13125805 | 7440-61-1 | Uranium | N001 | 15.7 | ug/L | | F | 0.067 | | |
| B5INFLOW | SL | 9/25/2013 | 13125844 | 7440-61-1 | Uranium | N002 | 15.7 | ug/L | | F | 0.067 | | |
| B5INFLOW | SL | 10/16/2013 | 13105685 | 7440-61-1 | Uranium | N002 | 14 | ug/L | | F | 0.05 | | |
| B5INFLOW | SL | 10/30/2013 | 13115721 | 7440-61-1 | Uranium | N001 | 15 | ug/L | | F | 0.05 | | |
| B5INFLOW | SL | 11/13/2013 | 13115755 | 7440-61-1 | Uranium | N001 | 16 | ug/L | | F | 0.05 | | |
| B5INFLOW | UN | 11/26/2013 | 13125785 | 7440-61-1 | Uranium | N001 | 16 | ug/L | B | F | 0.05 | | |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B5INFLOW | SL | 12/12/2013 | 13125821 | 7440-61-1 | Uranium | N001 | 40 | ug/L | | F | 0.05 | | |
| B5INFLOW | SL | 12/24/2013 | 13125842 | 7440-61-1 | Uranium | N001 | 19 | ug/L | | F | 0.05 | | |
| B5INFLOW | SL | 12/24/2013 | 13125842 | 7440-61-1 | Uranium | N002 | 18 | ug/L | | D | 0.05 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.21 | ug/L | U | F | 0.21 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.27 | ug/L | U | F | 0.27 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.23 | ug/L | U | F | 0.23 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.21 | ug/L | U | F | 0.21 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.47 | ug/L | U | F | 0.47 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.18 | ug/L | U | F | 0.18 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.15 | ug/L | U | F | 0.15 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.13 | ug/L | U | F | 0.13 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.18 | ug/L | U | F | 0.18 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.13 | ug/L | U | F | 0.13 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 71-43-2 | Benzene | N001 | 0.19 | ug/L | J | F | 0.16 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 75-27-4 | Bromodichloromethane | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 75-25-2 | Bromoform | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 74-83-9 | Bromomethane | N001 | 0.21 | ug/L | U | F | 0.21 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 56-23-5 | Carbon tetrachloride | N001 | 2.2 | ug/L | | F | 0.19 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 108-90-7 | Chlorobenzene | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 124-48-1 | Chlorodibromomethane | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 67-66-3 | Chloroform | N001 | 5.9 | ug/L | | F | 0.16 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 74-87-3 | Chloromethane | N001 | 0.3 | ug/L | U | F | 0.3 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 80 | ug/L | | F | 1.5 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 87-68-3 | Hexachlorobutadiene | N001 | 0.36 | ug/L | U | F | 0.36 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 75-09-2 | Methylene chloride | N001 | 1 | ug/L | | F | 0.32 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 91-20-3 | Naphthalene | N001 | 0.22 | ug/L | U | F | 0.22 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 100-42-5 | Styrene | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 127-18-4 | Tetrachloroethene | N001 | 23 | ug/L | | F | 0.2 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 108-88-3 | Toluene | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 1330-20-7 | Total Xylenes | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 79-01-6 | Trichloroethene | N001 | 96 | ug/L | | F | 1.6 | | |
| ET EFFLUENT | TS | 11/26/2013 | 13115760 | 75-01-4 | Vinyl chloride | N001 | 0.49 | ug/L | J | F | 0.1 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 3.4 | ug/L | J | F | 1.6 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 2.1 | ug/L | U | F | 2.1 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 2.7 | ug/L | U | F | 2.7 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 75-35-4 | 1,1-Dichloroethene | N001 | 2.9 | ug/L | J | F | 2.3 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 2.1 | ug/L | U | F | 2.1 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 4.7 | ug/L | U | F | 4.7 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 106-93-4 | 1,2-Dibromoethane | N001 | 1.8 | ug/L | U | F | 1.8 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 1.5 | ug/L | U | F | 1.5 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 107-06-2 | 1,2-Dichloroethane | N001 | 1.3 | ug/L | U | F | 1.3 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 78-87-5 | 1,2-Dichloropropane | N001 | 1.8 | ug/L | U | F | 1.8 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 1.3 | ug/L | U | F | 1.3 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 1.6 | ug/L | U | F | 1.6 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 71-43-2 | Benzene | N001 | 1.6 | ug/L | U | F | 1.6 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 75-27-4 | Bromodichloromethane | N001 | 1.7 | ug/L | U | F | 1.7 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 75-25-2 | Bromoform | N001 | 1.9 | ug/L | U | F | 1.9 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 74-83-9 | Bromomethane | N001 | 2.1 | ug/L | U | F | 2.1 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 56-23-5 | Carbon tetrachloride | N001 | 140 | ug/L | | F | 1.9 | | |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 108-90-7 | Chlorobenzene | N001 | 1.7 | ug/L | U | F | 1.7 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 124-48-1 | Chlorodibromomethane | N001 | 1.7 | ug/L | U | F | 1.7 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 67-66-3 | Chloroform | N001 | 120 | ug/L | | F | 1.6 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 74-87-3 | Chloromethane | N001 | 3 | ug/L | U | F | 3 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 37 | ug/L | | F | 1.5 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 100-41-4 | Ethylbenzene | N001 | 1.6 | ug/L | U | F | 1.6 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 87-68-3 | Hexachlorobutadiene | N001 | 3.6 | ug/L | U | F | 3.6 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 75-09-2 | Methylene chloride | N001 | 3.2 | ug/L | U | F | 3.2 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 91-20-3 | Naphthalene | N001 | 2.2 | ug/L | U | F | 2.2 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 100-42-5 | Styrene | N001 | 1.7 | ug/L | U | F | 1.7 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 127-18-4 | Tetrachloroethene | N001 | 280 | ug/L | | F | 2 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 108-88-3 | Toluene | N001 | 1.7 | ug/L | U | F | 1.7 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 1330-20-7 | Total Xylenes | N001 | 1.9 | ug/L | U | F | 1.9 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 1.5 | ug/L | U | F | 1.5 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 1.9 | ug/L | U | F | 1.9 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 79-01-6 | Trichloroethene | N001 | 2900 | ug/L | | F | 16 | | |
| ET INFLUENT | TS | 11/26/2013 | 13115760 | 75-01-4 | Vinyl chloride | N001 | 1 | ug/L | U | F | 1 | | |
| FC4750 | SL | 10/16/2013 | 13105685 | 7440-61-1 | Uranium | N001 | 15 | ug/L | | F | 0.05 | | |
| FC4750 | SL | 10/30/2013 | 13115721 | 7440-61-1 | Uranium | N001 | 17 | ug/L | | F | 0.05 | | |
| FC4750 | SL | 11/13/2013 | 13115755 | 7440-61-1 | Uranium | N001 | 17 | ug/L | | F | 0.05 | | |
| FC4750 | SL | 11/26/2013 | 13125785 | 7440-61-1 | Uranium | N001 | 15 | ug/L | B | F | 0.05 | | |
| FC4750 | SL | 12/24/2013 | 13125842 | 7440-61-1 | Uranium | N001 | 16 | ug/L | | F | 0.05 | | |
| FC4750 | SL | 12/24/2013 | 13125842 | 7440-61-1 | Uranium | N002 | 16 | ug/L | | D | 0.05 | | |
| FC4988 | SL | 10/17/2013 | 13105684 | AM-241 | Americium-241 | N001 | -0.00706 | pCi/L | U | F | 0.0117 | 0.0107 | |
| FC4988 | SL | 10/17/2013 | 13105684 | PU-239,240 | Plutonium-239, 240 | N001 | 1.04E-09 | pCi/L | U | F | 0.0151 | 0.00844 | |
| FC4988 | SL | 10/17/2013 | 13105684 | 7440-61-1 | Uranium | N001 | 19 | ug/L | | F | 0.067 | | |
| FC4988 | SL | 10/31/2013 | 13115749 | AM-241 | Americium-241 | N001 | 0.00379 | pCi/L | U | F | 0.0178 | 0.00911 | |
| FC4988 | SL | 10/31/2013 | 13115749 | PU-239,240 | Plutonium-239, 240 | N001 | 0.00314 | pCi/L | U | F | 0.0211 | 0.0087 | |
| FC4988 | SL | 10/31/2013 | 13115749 | 7440-61-1 | Uranium | N001 | 22.2 | ug/L | | F | 0.067 | | |
| FC4988 | SL | 11/14/2013 | 13115769 | AM-241 | Americium-241 | N002 | 0.00503 | pCi/L | U | F | 0.0259 | 0.00988 | |
| FC4988 | SL | 11/14/2013 | 13115769 | PU-239,240 | Plutonium-239, 240 | N002 | 0.0045 | pCi/L | U | F | 0.0182 | 0.00882 | |
| FC4988 | SL | 11/14/2013 | 13115769 | 7440-61-1 | Uranium | N002 | 19.5 | ug/L | | F | 0.067 | | |
| FC4988 | SL | 11/25/2013 | 13125822 | AM-241 | Americium-241 | N002 | 0.029 | pCi/L | | F | 0.0212 | 0.0188 | J |
| FC4988 | SL | 11/25/2013 | 13125822 | PU-239,240 | Plutonium-239, 240 | N002 | 0.0195 | pCi/L | | F | 0.0181 | 0.0104 | J |
| FC4988 | SL | 11/25/2013 | 13125822 | 7440-61-1 | Uranium | N002 | 26.5 | ug/L | | F | 0.067 | | |
| FC4991 | SL | 10/16/2013 | 13105685 | 7440-61-1 | Uranium | N001 | 14 | ug/L | | F | 0.05 | | |
| FC4991 | SL | 10/30/2013 | 13115721 | 7440-61-1 | Uranium | N001 | 16 | ug/L | | F | 0.05 | | |
| FC4991 | SL | 11/13/2013 | 13115755 | 7440-61-1 | Uranium | N001 | 18 | ug/L | | F | 0.05 | | |
| FC4991 | SL | 11/26/2013 | 13125785 | 7440-61-1 | Uranium | N001 | 20 | ug/L | B | F | 0.05 | | |
| FC4991 | SL | 12/12/2013 | 13125821 | 7440-61-1 | Uranium | N001 | 41 | ug/L | | F | 0.05 | | |
| FC4991 | SL | 12/24/2013 | 13125842 | 7440-61-1 | Uranium | N001 | 21 | ug/L | | F | 0.05 | | |
| FC4991 | SL | 12/24/2013 | 13125842 | 7440-61-1 | Uranium | N002 | 21 | ug/L | | D | 0.05 | | |
| FC4995 | SL | 10/17/2013 | 13105684 | AM-241 | Americium-241 | N001 | -0.00129 | pCi/L | U | F | 0.0107 | 0.00911 | |
| FC4995 | SL | 10/17/2013 | 13105684 | PU-239,240 | Plutonium-239, 240 | N001 | 0.00556 | pCi/L | U | F | 0.0136 | 0.00656 | |
| FC4995 | SL | 10/17/2013 | 13105684 | 7440-61-1 | Uranium | N001 | 19.6 | ug/L | | F | 0.067 | | |
| FC4995 | SL | 10/31/2013 | 13115749 | AM-241 | Americium-241 | N001 | 0.0046 | pCi/L | U | F | 0.0216 | 0.00903 | |
| FC4995 | SL | 10/31/2013 | 13115749 | PU-239,240 | Plutonium-239, 240 | N001 | 0.00149 | pCi/L | U | F | 0.0201 | 0.00773 | |
| FC4995 | SL | 10/31/2013 | 13115749 | 7440-61-1 | Uranium | N001 | 23.4 | ug/L | | F | 0.067 | | |
| FC4995 | SL | 11/14/2013 | 13115769 | AM-241 | Americium-241 | N002 | 0.00375 | pCi/L | U | F | 0.0193 | 0.0104 | |
| FC4995 | SL | 11/14/2013 | 13115769 | PU-239,240 | Plutonium-239, 240 | N002 | 0 | pCi/L | U | F | 0.0194 | 0.00766 | |
| FC4995 | SL | 11/14/2013 | 13115769 | 7440-61-1 | Uranium | N002 | 20 | ug/L | | F | 0.067 | | |
| FC4995 | SL | 11/25/2013 | 13125822 | AM-241 | Americium-241 | N002 | 0.00169 | pCi/L | U | F | 0.0211 | 0.00878 | |
| FC4995 | SL | 11/25/2013 | 13125822 | PU-239,240 | Plutonium-239, 240 | N002 | -0.0024 | pCi/L | U | F | 0.0189 | 0.00745 | |
| FC4995 | SL | 11/25/2013 | 13125822 | 7440-61-1 | Uranium | N002 | 26.1 | ug/L | | F | 0.067 | | |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FC4997 | SL | 10/17/2013 | 13105684 | AM-241 | Americium-241 | N001 | 0.00763 | pCi/L | U | F | 0.0158 | 0.014 | |
| FC4997 | SL | 10/17/2013 | 13105684 | PU-239,240 | Plutonium-239, 240 | N001 | 0.00115 | pCi/L | U | F | 0.014 | 0.00504 | |
| FC4997 | SL | 10/17/2013 | 13105684 | 7440-61-1 | Uranium | N001 | 19.2 | ug/L | | F | 0.067 | | |
| FC4997 | SL | 10/31/2013 | 13115749 | AM-241 | Americium-241 | N001 | 0.0328 | pCi/L | | F | 0.0257 | 0.0265 | U |
| FC4997 | SL | 10/31/2013 | 13115749 | PU-239,240 | Plutonium-239, 240 | N001 | 0.00336 | pCi/L | U | F | 0.0227 | 0.00933 | |
| FC4997 | SL | 10/31/2013 | 13115749 | 7440-61-1 | Uranium | N001 | 22 | ug/L | | F | 0.067 | | |
| FC4997 | SL | 11/14/2013 | 13115769 | AM-241 | Americium-241 | N001 | 0.00515 | pCi/L | U | F | 0.0177 | 0.00891 | |
| FC4997 | SL | 11/14/2013 | 13115769 | PU-239,240 | Plutonium-239, 240 | N001 | 0.00443 | pCi/L | U | F | 0.0179 | 0.00766 | |
| FC4997 | SL | 11/14/2013 | 13115769 | 7440-61-1 | Uranium | N001 | 19.2 | ug/L | | F | 0.067 | | |
| FC4997 | SL | 11/25/2013 | 13125822 | AM-241 | Americium-241 | N002 | 0.00479 | pCi/L | U | F | 0.0199 | 0.00828 | |
| FC4997 | SL | 11/25/2013 | 13125822 | PU-239,240 | Plutonium-239, 240 | N002 | 0.00722 | pCi/L | U | F | 0.0189 | 0.00669 | |
| FC4997 | SL | 11/25/2013 | 13125822 | 7440-61-1 | Uranium | N002 | 24.3 | ug/L | | F | 0.067 | | |
| FC4EFF | SL | 10/17/2013 | 13105684 | AM-241 | Americium-241 | N001 | 0.00155 | pCi/L | U | F | 0.0128 | 0.00803 | |
| FC4EFF | SL | 10/17/2013 | 13105684 | PU-239,240 | Plutonium-239, 240 | N001 | 0.00595 | pCi/L | U | F | 0.0145 | 0.00904 | |
| FC4EFF | SL | 10/17/2013 | 13105684 | 7440-61-1 | Uranium | N001 | 17.8 | ug/L | | F | 0.067 | | |
| FC4EFF | SL | 10/31/2013 | 13115749 | AM-241 | Americium-241 | N001 | 0 | pCi/L | U | F | 0.0178 | 0.00741 | |
| FC4EFF | SL | 10/31/2013 | 13115749 | PU-239,240 | Plutonium-239, 240 | N001 | 0.00288 | pCi/L | U | F | 0.0194 | 0.00691 | |
| FC4EFF | SL | 10/31/2013 | 13115749 | 7440-61-1 | Uranium | N001 | 20.3 | ug/L | | F | 0.067 | | |
| FC4EFF | SL | 11/14/2013 | 13115769 | AM-241 | Americium-241 | N001 | 0.00983 | pCi/L | U | F | 0.0169 | 0.0151 | |
| FC4EFF | SL | 11/14/2013 | 13115769 | PU-239,240 | Plutonium-239, 240 | N001 | 0.00761 | pCi/L | U | F | 0.0154 | 0.0161 | |
| FC4EFF | SL | 11/14/2013 | 13115769 | 7440-61-1 | Uranium | N001 | 19.2 | ug/L | | F | 0.067 | | |
| FC4EFF | SL | 11/25/2013 | 13125822 | AM-241 | Americium-241 | N002 | 0.00584 | pCi/L | U | F | 0.0181 | 0.00905 | |
| FC4EFF | SL | 11/25/2013 | 13125822 | PU-239,240 | Plutonium-239, 240 | N002 | 0.00367 | pCi/L | U | F | 0.0192 | 0.0072 | |
| FC4EFF | SL | 11/25/2013 | 13125822 | 7440-61-1 | Uranium | N002 | 24.9 | ug/L | | F | 0.067 | | |
| GS05 | SL | 9/18/2013 | 13125843 | 7440-38-2 | Arsenic | N001 | 5 | ug/L | U | F | 5 | | |
| GS05 | SL | 9/18/2013 | 13125843 | 7440-41-7 | Beryllium | N001 | 1 | ug/L | U | F | 1 | | |
| GS05 | SL | 9/18/2013 | 13125843 | 7440-42-8 | Boron | N001 | 18 | ug/L | B | F | 15 | | |
| GS05 | SL | 9/18/2013 | 13125843 | 7440-43-9 | Cadmium | 0001 | 1 | ug/L | U | F | 1 | | |
| GS05 | SL | 9/18/2013 | 13125843 | 7440-47-3 | Chromium | N001 | 1 | ug/L | U | F | 1 | | |
| GS05 | SL | 9/18/2013 | 13125843 | 7440-50-8 | Copper | 0001 | 3 | ug/L | U | F | 3 | | |
| GS05 | SL | 9/18/2013 | 13125843 | 7439-92-1 | Lead | 0001 | 3.3 | ug/L | U | F | 3.3 | | |
| GS05 | SL | 9/18/2013 | 13125843 | 7439-97-6 | Mercury | N001 | 0.067 | ug/L | U | F | 0.067 | | |
| GS05 | SL | 9/18/2013 | 13125843 | 7440-02-0 | Nickel | 0001 | 1.5 | ug/L | U | F | 1.5 | | |
| GS05 | SL | 9/18/2013 | 13125843 | 7782-49-2 | Selenium | N001 | 6 | ug/L | U | F | 6 | | |
| GS05 | SL | 9/18/2013 | 13125843 | 7440-22-4 | Silver | 0001 | 1 | ug/L | U | F | 1 | | |
| GS05 | SL | 9/18/2013 | 13125843 | 7440-61-1 | Uranium | N002 | 2.98 | ug/L | | F | 0.067 | | |
| GS05 | SL | 9/18/2013 | 13125843 | 7440-66-6 | Zinc | 0001 | 5 | ug/L | B | F | 3.3 | | U |
| GS05 | SL | 10/29/2013 | 13115722 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| GS05 | SL | 10/29/2013 | 13115722 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.21 | ug/L | U | F | 0.21 | | |
| GS05 | SL | 10/29/2013 | 13115722 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.27 | ug/L | U | F | 0.27 | | |
| GS05 | SL | 10/29/2013 | 13115722 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.23 | ug/L | U | F | 0.23 | | |
| GS05 | SL | 10/29/2013 | 13115722 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.21 | ug/L | U | F | 0.21 | | |
| GS05 | SL | 10/29/2013 | 13115722 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.47 | ug/L | U | F | 0.47 | | |
| GS05 | SL | 10/29/2013 | 13115722 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.18 | ug/L | U | F | 0.18 | | |
| GS05 | SL | 10/29/2013 | 13115722 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.15 | ug/L | U | F | 0.15 | | |
| GS05 | SL | 10/29/2013 | 13115722 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.13 | ug/L | U | F | 0.13 | | |
| GS05 | SL | 10/29/2013 | 13115722 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.18 | ug/L | U | F | 0.18 | | |
| GS05 | SL | 10/29/2013 | 13115722 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.13 | ug/L | U | F | 0.13 | | |
| GS05 | SL | 10/29/2013 | 13115722 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| GS05 | SL | 10/29/2013 | 14015882 | 7440-38-2 | Arsenic | N002 | 4.4 | ug/L | U | F | 4.4 | | |
| GS05 | SL | 10/29/2013 | 13115722 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| GS05 | SL | 10/29/2013 | 14015882 | 7440-41-7 | Beryllium | N002 | 0.47 | ug/L | U | F | 0.47 | | |
| GS05 | SL | 10/29/2013 | 14015882 | 7440-42-8 | Boron | N002 | 12 | ug/L | J | F | 4.4 | | |
| GS05 | SL | 10/29/2013 | 13115722 | 75-27-4 | Bromodichloromethane | N001 | 0.17 | ug/L | U | F | 0.17 | | |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GS05 | SL | 10/29/2013 | 13115722 | 75-25-2 | Bromoform | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| GS05 | SL | 10/29/2013 | 13115722 | 74-83-9 | Bromomethane | N001 | 0.21 | ug/L | U | F | 0.21 | | |
| GS05 | SL | 10/29/2013 | 14015882 | 7440-43-9 | Cadmium | 0001 | 0.45 | ug/L | U | F | 0.45 | | |
| GS05 | SL | 10/29/2013 | 13115722 | 56-23-5 | Carbon tetrachloride | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| GS05 | SL | 10/29/2013 | 13115722 | 108-90-7 | Chlorobenzene | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| GS05 | SL | 10/29/2013 | 13115722 | 124-48-1 | Chlorodibromomethane | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| GS05 | SL | 10/29/2013 | 13115722 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| GS05 | SL | 10/29/2013 | 13115722 | 74-87-3 | Chloromethane | N001 | 0.3 | ug/L | U | F | 0.3 | | |
| GS05 | SL | 10/29/2013 | 14015882 | 7440-47-3 | Chromium | N002 | 0.67 | ug/L | J | F | 0.66 | | |
| GS05 | SL | 10/29/2013 | 13115722 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | |
| GS05 | SL | 10/29/2013 | 14015882 | 7440-50-8 | Copper | 0001 | 2.8 | ug/L | J | F | 1.4 | | |
| GS05 | SL | 10/29/2013 | 13115722 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| GS05 | SL | 10/29/2013 | 13115722 | 87-68-3 | Hexachlorobutadiene | N001 | 0.36 | ug/L | U | F | 0.36 | | |
| GS05 | SL | 10/29/2013 | 14015882 | 7439-92-1 | Lead | 0001 | 2.6 | ug/L | U | F | 2.6 | | |
| GS05 | SL | 10/29/2013 | 13115722 | 7439-97-6 | Mercury | N001 | 0.027 | ug/L | U | F | 0.027 | | |
| GS05 | SL | 10/29/2013 | 14015882 | 7439-97-6 | Mercury | N002 | 0.027 | ug/L | UH | F | 0.027 | | J |
| GS05 | SL | 10/29/2013 | 13115722 | 75-09-2 | Methylene chloride | N001 | 0.32 | ug/L | U | F | 0.32 | | |
| GS05 | SL | 10/29/2013 | 13115722 | 91-20-3 | Naphthalene | N001 | 0.22 | ug/L | U | F | 0.22 | | |
| GS05 | SL | 10/29/2013 | 14015882 | 7440-02-0 | Nickel | 0001 | 1.3 | ug/L | J | F | 1.3 | | |
| GS05 | SL | 10/29/2013 | 14015882 | 7782-49-2 | Selenium | N002 | 4.9 | ug/L | U | F | 4.9 | | |
| GS05 | SL | 10/29/2013 | 14015882 | 7440-22-4 | Silver | 0001 | 0.93 | ug/L | U | F | 0.93 | | |
| GS05 | SL | 10/29/2013 | 13115722 | 100-42-5 | Styrene | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| GS05 | SL | 10/29/2013 | 13115722 | 127-18-4 | Tetrachloroethene | N001 | 0.2 | ug/L | U | F | 0.2 | | |
| GS05 | SL | 10/29/2013 | 13115722 | 108-88-3 | Toluene | N001 | 0.75 | ug/L | J | F | 0.17 | | U |
| GS05 | SL | 10/29/2013 | 13115722 | 1330-20-7 | Total Xylenes | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| GS05 | SL | 10/29/2013 | 13115722 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | |
| GS05 | SL | 10/29/2013 | 13115722 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| GS05 | SL | 10/29/2013 | 13115722 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| GS05 | SL | 10/29/2013 | 14015882 | 7440-61-1 | Uranium | N002 | 1.1 | ug/L | | F | 0.05 | | |
| GS05 | SL | 10/29/2013 | 14015882 | 7440-61-1 | Uranium | N003 | 1.1 | ug/L | | F | 0.05 | | |
| GS05 | SL | 10/29/2013 | 13115722 | 75-01-4 | Vinyl chloride | N001 | 0.1 | ug/L | U | F | 0.1 | | |
| GS05 | SL | 10/29/2013 | 14015882 | 7440-66-6 | Zinc | 0001 | 5.6 | ug/L | J | F | 4.5 | | |
| GS08 | SL | 10/9/2013 | 13125787 | AM-241 | Americium-241 | N001 | 0.033 | pCi/L | | F | 0.0309 | 0.0244 | U |
| GS08 | SL | 10/9/2013 | 13125787 | PU-239,240 | Plutonium-239, 240 | N001 | 0.00487 | pCi/L | U | F | 0.0197 | 0.00844 | |
| GS08 | SL | 10/9/2013 | 13125787 | 7440-61-1 | Uranium | N001 | 13.3 | ug/L | | F | 0.067 | | |
| GS08 | SL | 11/14/2013 | 14015894 | AM-241 | Americium-241 | N001 | 0.00698 | pCi/L | U | F | 0.0227 | 0.0084 | |
| GS08 | SL | 11/14/2013 | 14015894 | PU-239,240 | Plutonium-239, 240 | N001 | 0.0125 | pCi/L | U | F | 0.0227 | 0.0115 | |
| GS08 | SL | 11/14/2013 | 14015894 | 7440-61-1 | Uranium | N001 | 15 | ug/L | | F | 0.067 | | |
| GS10 | SL | 10/1/2013 | 13105660 | AM-241 | Americium-241 | N001 | 0.0115 | pCi/L | U | F | 0.0159 | 0.0131 | |
| GS10 | SL | 10/1/2013 | 13105660 | PU-239,240 | Plutonium-239, 240 | N001 | 0.00519 | pCi/L | U | F | 0.0211 | 0.00899 | |
| GS10 | SL | 10/16/2013 | 13125799 | AM-241 | Americium-241 | N002 | 0.0417 | pCi/L | | F | 0.0253 | 0.0234 | J |
| GS10 | SL | 10/16/2013 | 13125799 | 7440-41-7 | Beryllium | N002 | 1 | ug/L | U | F | 1 | | |
| GS10 | SL | 10/16/2013 | 13125799 | 7440-43-9 | Cadmium | 0001 | 0.11 | ug/L | U | F | 0.11 | | |
| GS10 | SL | 10/16/2013 | 13125799 | 7440-47-3 | Chromium | N002 | 1 | ug/L | U | F | 1 | | |
| GS10 | SL | 10/16/2013 | 13125799 | HARDNESS | Hardness | N002 | 450 | mg/L | | F | 5 | | |
| GS10 | SL | 10/16/2013 | 13125799 | PU-239,240 | Plutonium-239, 240 | N002 | 0.00381 | pCi/L | U | F | 0.0231 | 0.014 | |
| GS10 | SL | 10/16/2013 | 13125799 | 7440-22-4 | Silver | 0001 | 0.2 | ug/L | U | F | 0.2 | | |
| GS10 | SL | 10/16/2013 | 13125799 | 7440-61-1 | Uranium | N002 | 18 | ug/L | | F | 0.067 | | |
| GS10 | SL | 10/17/2013 | 13105684 | AM-241 | Americium-241 | N001 | 0.0058 | pCi/L | U | F | 0.012 | 0.009 | |
| GS10 | SL | 10/17/2013 | 13105684 | PU-239,240 | Plutonium-239, 240 | N001 | 0.00654 | pCi/L | U | F | 0.0133 | 0.00678 | |
| GS10 | SL | 10/18/2013 | 13105677 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| GS10 | SL | 10/18/2013 | 13105677 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.21 | ug/L | U | F | 0.21 | | |
| GS10 | SL | 10/18/2013 | 13105677 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.27 | ug/L | U | F | 0.27 | | |
| GS10 | SL | 10/18/2013 | 13105677 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.23 | ug/L | U | F | 0.23 | | |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GS10 | SL | 10/18/2013 | 13105677 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.21 | ug/L | U | F | 0.21 | | |
| GS10 | SL | 10/18/2013 | 13105677 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.47 | ug/L | U | F | 0.47 | | |
| GS10 | SL | 10/18/2013 | 13105677 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.18 | ug/L | U | F | 0.18 | | |
| GS10 | SL | 10/18/2013 | 13105677 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.15 | ug/L | U | F | 0.15 | | |
| GS10 | SL | 10/18/2013 | 13105677 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.13 | ug/L | U | F | 0.13 | | |
| GS10 | SL | 10/18/2013 | 13105677 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.18 | ug/L | U | F | 0.18 | | |
| GS10 | SL | 10/18/2013 | 13105677 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.13 | ug/L | U | F | 0.13 | | |
| GS10 | SL | 10/18/2013 | 13105677 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| GS10 | SL | 10/18/2013 | 13105677 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| GS10 | SL | 10/18/2013 | 13105677 | 75-27-4 | Bromodichloromethane | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| GS10 | SL | 10/18/2013 | 13105677 | 75-25-2 | Bromoform | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| GS10 | SL | 10/18/2013 | 13105677 | 74-83-9 | Bromomethane | N001 | 0.21 | ug/L | U | F | 0.21 | | |
| GS10 | SL | 10/18/2013 | 13105677 | 56-23-5 | Carbon tetrachloride | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| GS10 | SL | 10/18/2013 | 13105677 | 108-90-7 | Chlorobenzene | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| GS10 | SL | 10/18/2013 | 13105677 | 124-48-1 | Chlorodibromomethane | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| GS10 | SL | 10/18/2013 | 13105677 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| GS10 | SL | 10/18/2013 | 13105677 | 74-87-3 | Chloromethane | N001 | 0.3 | ug/L | U | F | 0.3 | | |
| GS10 | SL | 10/18/2013 | 13105677 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 2.6 | ug/L | | F | 0.15 | | |
| GS10 | SL | 10/18/2013 | 13105677 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| GS10 | SL | 10/18/2013 | 13105677 | 87-68-3 | Hexachlorobutadiene | N001 | 0.36 | ug/L | U | F | 0.36 | | |
| GS10 | SL | 10/18/2013 | 13105677 | 75-09-2 | Methylene chloride | N001 | 0.32 | ug/L | U | F | 0.32 | | |
| GS10 | SL | 10/18/2013 | 13105677 | 91-20-3 | Naphthalene | N001 | 0.22 | ug/L | U | F | 0.22 | | |
| GS10 | SL | 10/18/2013 | 13105677 | 100-42-5 | Styrene | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| GS10 | SL | 10/18/2013 | 13105677 | 127-18-4 | Tetrachloroethene | N001 | 0.21 | ug/L | J | F | 0.2 | | |
| GS10 | SL | 10/18/2013 | 13105677 | 108-88-3 | Toluene | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| GS10 | SL | 10/18/2013 | 13105677 | 1330-20-7 | Total Xylenes | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| GS10 | SL | 10/18/2013 | 13105677 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | |
| GS10 | SL | 10/18/2013 | 13105677 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| GS10 | SL | 10/18/2013 | 13105677 | 79-01-6 | Trichloroethene | N001 | 0.65 | ug/L | J | F | 0.16 | | |
| GS10 | SL | 10/18/2013 | 13105677 | 75-01-4 | Vinyl chloride | N001 | 0.1 | ug/L | U | F | 0.1 | | |
| GS10 | SL | 10/31/2013 | 13115749 | AM-241 | Americium-241 | N001 | 0.00633 | pCi/L | U | F | 0.0199 | 0.00927 | |
| GS10 | SL | 10/31/2013 | 13115749 | PU-239,240 | Plutonium-239, 240 | N001 | 0.0863 | pCi/L | | F | 0.0215 | 0.0246 | |
| GS10 | SL | 11/13/2013 | 14015855 | AM-241 | Americium-241 | N002 | -2.66E-09 | pCi/L | U | F | 0.0284 | 0.0179 | |
| GS10 | SL | 11/13/2013 | 14015855 | 7440-41-7 | Beryllium | N002 | 1 | ug/L | U | F | 1 | | |
| GS10 | SL | 11/13/2013 | 14015855 | 7440-43-9 | Cadmium | 0001 | 0.11 | ug/L | U | F | 0.11 | | |
| GS10 | SL | 11/13/2013 | 14015855 | 7440-47-3 | Chromium | N002 | 1 | ug/L | U | F | 1 | | |
| GS10 | SL | 11/13/2013 | 14015855 | HARDNESS | Hardness | N002 | 527 | mg/L | | F | 2 | | |
| GS10 | SL | 11/13/2013 | 14015855 | PU-239,240 | Plutonium-239, 240 | N002 | 0.0113 | pCi/L | U | F | 0.0295 | 0.0128 | |
| GS10 | SL | 11/13/2013 | 14015855 | 7440-22-4 | Silver | 0001 | 0.2 | ug/L | U | F | 0.2 | | |
| GS10 | SL | 11/13/2013 | 14015855 | 7440-61-1 | Uranium | N002 | 17.3 | ug/L | | F | 0.067 | | |
| GS10 | SL | 11/14/2013 | 13115769 | AM-241 | Americium-241 | N001 | 0.00352 | pCi/L | U | F | 0.0181 | 0.0069 | |
| GS10 | SL | 11/14/2013 | 13115769 | PU-239,240 | Plutonium-239, 240 | N001 | 0.00405 | pCi/L | U | F | 0.0164 | 0.00701 | |
| GS10 | SL | 11/25/2013 | 13125822 | AM-241 | Americium-241 | N002 | 0 | pCi/L | U | F | 0.0189 | 0.0073 | |
| GS10 | SL | 11/25/2013 | 13125822 | PU-239,240 | Plutonium-239, 240 | N002 | 0.00119 | pCi/L | U | F | 0.0186 | 0.00838 | |
| GS11 | SL | 10/25/2013 | 13105710 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 8.3 | mg/L | | F | 0.019 | | |
| GS13 | SL | 9/14/2013 | 13125805 | 7440-61-1 | Uranium | N001 | 20 | ug/L | | F | 0.067 | | |
| GS13 | SL | 10/15/2013 | 13105685 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 49 | mg/L | | F | 0.095 | | |
| GS13 | SL | 10/25/2013 | 14015875 | 7440-61-1 | Uranium | N001 | 9.8 | ug/L | | F | 0.05 | | |
| GS13 | SL | 10/30/2013 | 13105704 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 39.4 | mg/L | | F | 1.7 | | |
| GS13 | SL | 10/30/2013 | 13115721 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N002 | 50 | mg/L | | F | 0.38 | | |
| GS13 | SL | 11/13/2013 | 13115755 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 62 | mg/L | | F | 1.9 | | |
| GS13 | SL | 11/26/2013 | 13125785 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 58 | mg/L | | F | 1.9 | | |
| GS13 | SL | 11/26/2013 | 14015856 | 7440-61-1 | Uranium | N003 | 16.2 | ug/L | | F | 0.067 | | |
| GS13 | SL | 12/11/2013 | 13125820 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 40 | mg/L | | F | 0.19 | | |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GS13 | SL | 12/24/2013 | 13125842 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 51 | mg/L | | F | 0.38 | | |
| GS13 | SL | 12/24/2013 | 13125842 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N002 | 53 | mg/L | | D | 1.9 | | |
| GS59 | SL | 10/3/2013 | 13125843 | 7440-38-2 | Arsenic | N001 | 5 | ug/L | U | F | 5 | | |
| GS59 | SL | 10/3/2013 | 13125843 | 7440-41-7 | Beryllium | N001 | 1 | ug/L | U | F | 1 | | |
| GS59 | SL | 10/3/2013 | 13125843 | 7440-42-8 | Boron | N001 | 18.8 | ug/L | B | F | 15 | | |
| GS59 | SL | 10/3/2013 | 13125843 | 7440-43-9 | Cadmium | 0001 | 1 | ug/L | U | F | 1 | | |
| GS59 | SL | 10/3/2013 | 13125843 | 7440-47-3 | Chromium | N001 | 1 | ug/L | U | F | 1 | | |
| GS59 | SL | 10/3/2013 | 13125843 | 7440-50-8 | Copper | 0001 | 3 | ug/L | U | F | 3 | | |
| GS59 | SL | 10/3/2013 | 13125843 | 7439-92-1 | Lead | 0001 | 3.3 | ug/L | U | F | 3.3 | | |
| GS59 | SL | 10/3/2013 | 13125843 | 7439-97-6 | Mercury | N001 | 0.067 | ug/L | U | F | 0.067 | | |
| GS59 | SL | 10/3/2013 | 13125843 | 7440-02-0 | Nickel | 0001 | 1.5 | ug/L | U | F | 1.5 | | |
| GS59 | SL | 10/3/2013 | 13125843 | 7782-49-2 | Selenium | N001 | 6 | ug/L | U | F | 6 | | |
| GS59 | SL | 10/3/2013 | 13125843 | 7440-22-4 | Silver | 0001 | 1 | ug/L | U | F | 1 | | |
| GS59 | SL | 10/3/2013 | 13125843 | 7440-61-1 | Uranium | N002 | 2.21 | ug/L | | F | 0.067 | | |
| GS59 | SL | 10/3/2013 | 13125843 | 7440-66-6 | Zinc | 0001 | 21.3 | ug/L | | F | 3.3 | | U |
| GS59 | SL | 10/29/2013 | 13115722 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| GS59 | SL | 10/29/2013 | 13115722 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.21 | ug/L | U | F | 0.21 | | |
| GS59 | SL | 10/29/2013 | 13115722 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.27 | ug/L | U | F | 0.27 | | |
| GS59 | SL | 10/29/2013 | 13115722 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.23 | ug/L | U | F | 0.23 | | |
| GS59 | SL | 10/29/2013 | 13115722 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.21 | ug/L | U | F | 0.21 | | |
| GS59 | SL | 10/29/2013 | 13115722 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.47 | ug/L | U | F | 0.47 | | |
| GS59 | SL | 10/29/2013 | 13115722 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.18 | ug/L | U | F | 0.18 | | |
| GS59 | SL | 10/29/2013 | 13115722 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.15 | ug/L | U | F | 0.15 | | |
| GS59 | SL | 10/29/2013 | 13115722 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.13 | ug/L | U | F | 0.13 | | |
| GS59 | SL | 10/29/2013 | 13115722 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.18 | ug/L | U | F | 0.18 | | |
| GS59 | SL | 10/29/2013 | 13115722 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.13 | ug/L | U | F | 0.13 | | |
| GS59 | SL | 10/29/2013 | 13115722 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| GS59 | SL | 10/29/2013 | 14025915 | 7440-38-2 | Arsenic | N002 | 4.4 | ug/L | U | F | 4.4 | | |
| GS59 | SL | 10/29/2013 | 13115722 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| GS59 | SL | 10/29/2013 | 14025915 | 7440-41-7 | Beryllium | N002 | 0.47 | ug/L | U | F | 0.47 | | |
| GS59 | SL | 10/29/2013 | 14025915 | 7440-42-8 | Boron | N002 | 16 | ug/L | J | F | 4.4 | | |
| GS59 | SL | 10/29/2013 | 13115722 | 75-27-4 | Bromodichloromethane | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| GS59 | SL | 10/29/2013 | 13115722 | 75-25-2 | Bromoform | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| GS59 | SL | 10/29/2013 | 13115722 | 74-83-9 | Bromomethane | N001 | 0.21 | ug/L | U | F | 0.21 | | |
| GS59 | SL | 10/29/2013 | 14025915 | 7440-43-9 | Cadmium | 0001 | 0.45 | ug/L | U | F | 0.45 | | |
| GS59 | SL | 10/29/2013 | 13115722 | 56-23-5 | Carbon tetrachloride | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| GS59 | SL | 10/29/2013 | 13115722 | 108-90-7 | Chlorobenzene | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| GS59 | SL | 10/29/2013 | 13115722 | 124-48-1 | Chlorodibromomethane | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| GS59 | SL | 10/29/2013 | 13115722 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| GS59 | SL | 10/29/2013 | 13115722 | 74-87-3 | Chloromethane | N001 | 0.3 | ug/L | U | F | 0.3 | | |
| GS59 | SL | 10/29/2013 | 14025915 | 7440-47-3 | Chromium | N002 | 0.66 | ug/L | U | F | 0.66 | | |
| GS59 | SL | 10/29/2013 | 13115722 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | |
| GS59 | SL | 10/29/2013 | 14025915 | 7440-50-8 | Copper | 0001 | 1.5 | ug/L | J | F | 1.4 | | |
| GS59 | SL | 10/29/2013 | 13115722 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| GS59 | SL | 10/29/2013 | 13115722 | 87-68-3 | Hexachlorobutadiene | N001 | 0.36 | ug/L | U | F | 0.36 | | |
| GS59 | SL | 10/29/2013 | 14025915 | 7439-92-1 | Lead | 0001 | 2.6 | ug/L | U | F | 2.6 | | |
| GS59 | SL | 10/29/2013 | 13115722 | 7439-97-6 | Mercury | N001 | 0.027 | ug/L | U | F | 0.027 | | |
| GS59 | SL | 10/29/2013 | 14025915 | 7439-97-6 | Mercury | N002 | 0.027 | ug/L | UH | F | 0.027 | | J |
| GS59 | SL | 10/29/2013 | 13115722 | 75-09-2 | Methylene chloride | N001 | 0.32 | ug/L | U | F | 0.32 | | |
| GS59 | SL | 10/29/2013 | 13115722 | 91-20-3 | Naphthalene | N001 | 0.22 | ug/L | U | F | 0.22 | | |
| GS59 | SL | 10/29/2013 | 14025915 | 7440-02-0 | Nickel | 0001 | 1.4 | ug/L | J | F | 1.3 | | |
| GS59 | SL | 10/29/2013 | 14025915 | 7782-49-2 | Selenium | N002 | 5.5 | ug/L | J | F | 4.9 | | |
| GS59 | SL | 10/29/2013 | 14025915 | 7440-22-4 | Silver | 0001 | 0.93 | ug/L | U | F | 0.93 | | |
| GS59 | SL | 10/29/2013 | 13115722 | 100-42-5 | Styrene | N001 | 0.17 | ug/L | U | F | 0.17 | | |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GS59 | SL | 10/29/2013 | 13115722 | 127-18-4 | Tetrachloroethene | N001 | 0.2 | ug/L | U | F | 0.2 | | |
| GS59 | SL | 10/29/2013 | 13115722 | 108-88-3 | Toluene | N001 | 0.81 | ug/L | J | F | 0.17 | | U |
| GS59 | SL | 10/29/2013 | 13115722 | 1330-20-7 | Total Xylenes | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| GS59 | SL | 10/29/2013 | 13115722 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | |
| GS59 | SL | 10/29/2013 | 13115722 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| GS59 | SL | 10/29/2013 | 13115722 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| GS59 | SL | 10/29/2013 | 14025915 | 7440-61-1 | Uranium | N002 | 2.8 | ug/L | | F | 0.05 | | |
| GS59 | SL | 10/29/2013 | 14025915 | 7440-61-1 | Uranium | N003 | 2.8 | ug/L | | F | 0.05 | | |
| GS59 | SL | 10/29/2013 | 13115722 | 75-01-4 | Vinyl chloride | N001 | 0.1 | ug/L | U | F | 0.1 | | |
| GS59 | SL | 10/29/2013 | 14025915 | 7440-66-6 | Zinc | 0001 | 5.6 | ug/L | J | F | 4.5 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 39 | ug/L | | F | 0.16 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.21 | ug/L | U | F | 0.21 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.27 | ug/L | U | F | 0.27 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 75-35-4 | 1,1-Dichloroethene | N001 | 11 | ug/L | | F | 0.23 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.42 | ug/L | J | F | 0.21 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.47 | ug/L | U | F | 0.47 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.18 | ug/L | U | F | 0.18 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.15 | ug/L | U | F | 0.15 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.22 | ug/L | J | F | 0.13 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.18 | ug/L | U | F | 0.18 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.13 | ug/L | U | F | 0.13 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 75-27-4 | Bromodichloromethane | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 75-25-2 | Bromoform | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 74-83-9 | Bromomethane | N001 | 0.21 | ug/L | U | F | 0.21 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 56-23-5 | Carbon tetrachloride | N001 | 14 | ug/L | | F | 0.19 | | J |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 108-90-7 | Chlorobenzene | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 124-48-1 | Chlorodibromomethane | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 67-66-3 | Chloroform | N001 | 7.7 | ug/L | | F | 0.16 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 74-87-3 | Chloromethane | N001 | 0.3 | ug/L | U | F | 0.3 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 300 | ug/L | | F | 1.5 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 87-68-3 | Hexachlorobutadiene | N001 | 0.36 | ug/L | U | F | 0.36 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 75-09-2 | Methylene chloride | N001 | 0.32 | ug/L | U | F | 0.32 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 91-20-3 | Naphthalene | N001 | 0.22 | ug/L | U | F | 0.22 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 100-42-5 | Styrene | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 127-18-4 | Tetrachloroethene | N001 | 95 | ug/L | | F | 2 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 108-88-3 | Toluene | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 1330-20-7 | Total Xylenes | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.59 | ug/L | J | F | 0.15 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 79-01-6 | Trichloroethene | N001 | 340 | ug/L | | F | 1.6 | | |
| MOUND R1-0 | TS | 10/18/2013 | 13105677 | 75-01-4 | Vinyl chloride | N001 | 5 | ug/L | | F | 0.1 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 180 | ug/L | | F | 1.6 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 2.1 | ug/L | U | F | 2.1 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 2.7 | ug/L | U | F | 2.7 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 75-35-4 | 1,1-Dichloroethene | N001 | 40 | ug/L | | F | 2.3 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 2.1 | ug/L | U | F | 2.1 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 4.7 | ug/L | U | F | 4.7 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 106-93-4 | 1,2-Dibromoethane | N001 | 1.8 | ug/L | U | F | 1.8 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 1.5 | ug/L | U | F | 1.5 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 107-06-2 | 1,2-Dichloroethane | N001 | 1.3 | ug/L | U | F | 1.3 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 78-87-5 | 1,2-Dichloropropane | N001 | 1.8 | ug/L | U | F | 1.8 | | |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 1.3 | ug/L | U | F | 1.3 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 1.6 | ug/L | U | F | 1.6 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 71-43-2 | Benzene | N001 | 1.6 | ug/L | U | F | 1.6 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 75-27-4 | Bromodichloromethane | N001 | 1.7 | ug/L | U | F | 1.7 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 75-25-2 | Bromoform | N001 | 1.9 | ug/L | U | F | 1.9 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 74-83-9 | Bromomethane | N001 | 2.1 | ug/L | U | F | 2.1 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 56-23-5 | Carbon tetrachloride | N001 | 66 | ug/L | | F | 1.9 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 108-90-7 | Chlorobenzene | N001 | 1.7 | ug/L | U | F | 1.7 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 124-48-1 | Chlorodibromomethane | N001 | 1.7 | ug/L | U | F | 1.7 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 67-66-3 | Chloroform | N001 | 38 | ug/L | | F | 1.6 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 74-87-3 | Chloromethane | N001 | 3 | ug/L | U | F | 3 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 2100 | ug/L | | F | 7.5 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 100-41-4 | Ethylbenzene | N001 | 1.6 | ug/L | U | F | 1.6 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 87-68-3 | Hexachlorobutadiene | N001 | 3.6 | ug/L | U | F | 3.6 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 75-09-2 | Methylene chloride | N001 | 3.2 | ug/L | U | F | 3.2 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 91-20-3 | Naphthalene | N001 | 2.2 | ug/L | U | F | 2.2 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 100-42-5 | Styrene | N001 | 1.7 | ug/L | U | F | 1.7 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 127-18-4 | Tetrachloroethene | N001 | 390 | ug/L | | F | 2 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 108-88-3 | Toluene | N001 | 1.7 | ug/L | U | F | 1.7 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 1330-20-7 | Total Xylenes | N001 | 1.9 | ug/L | U | F | 1.9 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 2.2 | ug/L | J | F | 1.5 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 1.9 | ug/L | U | F | 1.9 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 79-01-6 | Trichloroethene | N001 | 2300 | ug/L | | F | 8 | | |
| MOUND R1-0 | TS | 11/25/2013 | 13115772 | 75-01-4 | Vinyl chloride | N001 | 32 | ug/L | | F | 1 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.57 | ug/L | J | F | 0.16 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.21 | ug/L | U | F | 0.21 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.27 | ug/L | U | F | 0.27 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.84 | ug/L | J | F | 0.23 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.21 | ug/L | U | F | 0.21 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.47 | ug/L | U | F | 0.47 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.18 | ug/L | U | F | 0.18 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.15 | ug/L | U | F | 0.15 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.13 | ug/L | J | F | 0.13 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.18 | ug/L | U | F | 0.18 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.13 | ug/L | U | F | 0.13 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 75-27-4 | Bromodichloromethane | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 75-25-2 | Bromoform | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 74-83-9 | Bromomethane | N001 | 0.21 | ug/L | U | F | 0.21 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 56-23-5 | Carbon tetrachloride | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 108-90-7 | Chlorobenzene | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 124-48-1 | Chlorodibromomethane | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 67-66-3 | Chloroform | N001 | 0.63 | ug/L | J | F | 0.16 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 74-87-3 | Chloromethane | N001 | 0.3 | ug/L | U | F | 0.3 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 87 | ug/L | | F | 0.3 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 87-68-3 | Hexachlorobutadiene | N001 | 0.36 | ug/L | U | F | 0.36 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 75-09-2 | Methylene chloride | N001 | 0.32 | ug/L | U | F | 0.32 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 91-20-3 | Naphthalene | N001 | 0.22 | ug/L | U | F | 0.22 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 100-42-5 | Styrene | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 127-18-4 | Tetrachloroethene | N001 | 5.4 | ug/L | | F | 0.2 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 108-88-3 | Toluene | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 1330-20-7 | Total Xylenes | N001 | 0.19 | ug/L | U | F | 0.19 | | |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 79-01-6 | Trichloroethene | N001 | 7.9 | ug/L | | F | 0.16 | | |
| MOUND R2-E | TS | 10/18/2013 | 13105677 | 75-01-4 | Vinyl chloride | N001 | 6.3 | ug/L | | F | 0.1 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 1.3 | ug/L | | F | 0.16 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.21 | ug/L | U | F | 0.21 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.27 | ug/L | U | F | 0.27 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.83 | ug/L | J | F | 0.23 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.21 | ug/L | U | F | 0.21 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.47 | ug/L | U | F | 0.47 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.18 | ug/L | U | F | 0.18 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.15 | ug/L | U | F | 0.15 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.13 | ug/L | U | F | 0.13 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.18 | ug/L | U | F | 0.18 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.13 | ug/L | U | F | 0.13 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 75-27-4 | Bromodichloromethane | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 75-25-2 | Bromoform | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 74-83-9 | Bromomethane | N001 | 0.21 | ug/L | U | F | 0.21 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 56-23-5 | Carbon tetrachloride | N001 | 0.32 | ug/L | J | F | 0.19 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 108-90-7 | Chlorobenzene | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 124-48-1 | Chlorodibromomethane | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 67-66-3 | Chloroform | N001 | 0.9 | ug/L | J | F | 0.16 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 74-87-3 | Chloromethane | N001 | 0.3 | ug/L | U | F | 0.3 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 130 | ug/L | | F | 0.6 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 87-68-3 | Hexachlorobutadiene | N001 | 0.36 | ug/L | U | F | 0.36 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 75-09-2 | Methylene chloride | N001 | 0.32 | ug/L | U | F | 0.32 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 91-20-3 | Naphthalene | N001 | 0.22 | ug/L | U | F | 0.22 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 100-42-5 | Styrene | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 127-18-4 | Tetrachloroethene | N001 | 4.8 | ug/L | | F | 0.2 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 108-88-3 | Toluene | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 1330-20-7 | Total Xylenes | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 79-01-6 | Trichloroethene | N001 | 18 | ug/L | | F | 0.16 | | |
| MOUND R2-E | TS | 11/25/2013 | 13115772 | 75-01-4 | Vinyl chloride | N001 | 5.4 | ug/L | | F | 0.1 | | |
| P210089 | WL | 10/30/2013 | 13105704 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 71-55-6 | 1,1,1-Trichloroethane | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 79-00-5 | 1,1,2-Trichloroethane | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 75-35-4 | 1,1-Dichloroethene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 120-82-1 | 1,2,4-Trichlorobenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 106-93-4 | 1,2-Dibromoethane | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 95-50-1 | 1,2-Dichlorobenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P210089 | WL | 10/30/2013 | 13105704 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 107-06-2 | 1,2-Dichloroethane | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 78-87-5 | 1,2-Dichloropropane | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 541-73-1 | 1,3-Dichlorobenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 106-46-7 | 1,4-Dichlorobenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 71-43-2 | Benzene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 75-27-4 | Bromodichloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 75-27-4 | Bromodichloromethane | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 75-25-2 | Bromoform | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 75-25-2 | Bromoform | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 74-83-9 | Bromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 74-83-9 | Bromomethane | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 56-23-5 | Carbon tetrachloride | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 56-23-5 | Carbon tetrachloride | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 108-90-7 | Chlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 108-90-7 | Chlorobenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 124-48-1 | Chlorodibromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 124-48-1 | Chlorodibromomethane | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 67-66-3 | Chloroform | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 74-87-3 | Chloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 74-87-3 | Chloromethane | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 156-59-2 | cis-1,2-Dichloroethene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 100-41-4 | Ethylbenzene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 87-68-3 | Hexachlorobutadiene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 87-68-3 | Hexachlorobutadiene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 75-09-2 | Methylene chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 75-09-2 | Methylene chloride | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 91-20-3 | Naphthalene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 91-20-3 | Naphthalene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 292 | mg/L | | F | 8.5 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N002 | 289 | mg/L | | D | 8.5 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 100-42-5 | Styrene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 100-42-5 | Styrene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 127-18-4 | Tetrachloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 127-18-4 | Tetrachloroethene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 108-88-3 | Toluene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 108-88-3 | Toluene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 1330-20-7 | Total Xylenes | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 1330-20-7 | Total Xylenes | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 156-60-5 | trans-1,2-Dichloroethene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 10061-02-6 | trans-1,3-dichloropropene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 79-01-6 | Trichloroethene | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 7440-61-1 | Uranium | 0001 | 34.1 | ug/L | | F | 0.067 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 7440-61-1 | Uranium | 0002 | 33.1 | ug/L | | D | 0.067 | | FQ |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P210089 | WL | 10/30/2013 | 13105704 | 75-01-4 | Vinyl chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | FQ |
| P210089 | WL | 10/30/2013 | 13105704 | 75-01-4 | Vinyl chloride | N002 | 0.16 | ug/L | U | D | 0.16 | | FQ |
| P416589 | WL | 11/5/2013 | 13115725 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 105-67-9 | 2, 4-Dimethylphenol | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 95-95-4 | 2,4,5-Trichlorophenol | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 88-06-2 | 2,4,6-Trichlorophenol | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 120-83-2 | 2,4-Dichlorophenol | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 51-28-5 | 2,4-Dinitrophenol | N001 | 5.21 | ug/L | U | F | 5.21 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 121-14-2 | 2,4-Dinitrotoluene | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 606-20-2 | 2,6-Dinitrotoluene | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 91-58-7 | 2-Chloronaphthalene | N001 | 0.427 | ug/L | U | F | 0.427 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 95-57-8 | 2-Chlorophenol | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 91-94-1 | 3,3'-Dichlorobenzidine | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 534-52-1 | 4,6-Dinitro-2-methyl phenol | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 59-50-7 | 4-Chloro-3-methylphenol | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 100-02-7 | 4-Nitrophenol | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 83-32-9 | Acenaphthene | N001 | 0.313 | ug/L | U | F | 0.313 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 120-12-7 | Anthracene | N001 | 0.313 | ug/L | U | F | 0.313 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 7440-38-2 | Arsenic | 0001 | 14.8 | ug/L | B | F | 5 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 56-55-3 | Benz(a)anthracene | N001 | 0.313 | ug/L | U | F | 0.313 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 50-32-8 | Benzo(a)pyrene | N001 | 0.313 | ug/L | U | F | 0.313 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 205-99-2 | Benzo(b)fluoranthene | N001 | 0.313 | ug/L | U | F | 0.313 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 191-24-2 | Benzo(g,h,i)Perylene | N001 | 0.313 | ug/L | U | F | 0.313 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 207-08-9 | Benzo(k)fluoranthene | N001 | 0.313 | ug/L | U | F | 0.313 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 7440-41-7 | Beryllium | 0001 | 1 | ug/L | U | F | 1 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 111-44-4 | Bis(2-chloroethyl) ether | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 108-60-1 | Bis(2-chloroisopropyl) ether | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 117-81-7 | Bis(2-ethylhexyl) phthalate | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 7440-42-8 | Boron | 0001 | 15 | ug/L | U | F | 15 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 75-27-4 | Bromodichloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 75-25-2 | Bromoform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 74-83-9 | Bromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 85-68-7 | Butyl benzyl phthalate | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 7440-43-9 | Cadmium | 0001 | 1 | ug/L | U | F | 1 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 56-23-5 | Carbon tetrachloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 108-90-7 | Chlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 124-48-1 | Chlorodibromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 74-87-3 | Chloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 7440-47-3 | Chromium | 0001 | 1 | ug/L | U | F | 1 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 218-01-9 | Chrysene | N001 | 0.313 | ug/L | U | F | 0.313 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P416589 | WL | 11/5/2013 | 13115725 | 7440-50-8 | Copper | 0001 | 3 | ug/L | U | F | 3 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 53-70-3 | Dibenz(a,h)anthracene | N001 | 0.313 | ug/L | U | F | 0.313 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 84-66-2 | Diethyl phthalate | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 131-11-3 | Dimethyl phthalate | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 84-74-2 | Di-n-butyl phthalate | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 206-44-0 | Fluoranthene | N001 | 0.313 | ug/L | U | F | 0.313 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 86-73-7 | Fluorene | N001 | 0.313 | ug/L | U | F | 0.313 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 118-74-1 | Hexachlorobenzene | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 87-68-3 | Hexachlorobutadiene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 77-47-4 | Hexachlorocyclopentadiene | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 67-72-1 | Hexachloroethane | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 193-39-5 | Indeno(1,2,3-cd)pyrene | N001 | 0.313 | ug/L | U | F | 0.313 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 78-59-1 | Isophorone | N001 | 3.65 | ug/L | U | F | 3.65 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 7439-92-1 | Lead | 0001 | 3.3 | ug/L | U | F | 3.3 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 7439-97-6 | Mercury | 0001 | 0.076 | ug/L | B | F | 0.067 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 75-09-2 | Methylene chloride | N001 | 2.45 | ug/L | BJ | F | 0.16 | | UF |
| P416589 | WL | 11/5/2013 | 13115725 | 91-20-3 | Naphthalene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 7440-02-0 | Nickel | 0001 | 1.5 | ug/L | U | F | 1.5 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 98-95-3 | Nitrobenzene | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 621-64-7 | N-Nitrosodi-n-propylamine | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 87-86-5 | Pentachlorophenol | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 108-95-2 | Phenol | N001 | 3.13 | ug/L | U | F | 3.13 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 129-00-0 | Pyrene | N001 | 0.313 | ug/L | U | F | 0.313 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 7782-49-2 | Selenium | 0001 | 6.11 | ug/L | B | F | 6 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 7440-22-4 | Silver | 0001 | 1 | ug/L | U | F | 1 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 100-42-5 | Styrene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 127-18-4 | Tetrachloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 108-88-3 | Toluene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 1330-20-7 | Total Xylenes | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 7440-61-1 | Uranium | 0001 | 10 | ug/L | U | F | 10 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 75-01-4 | Vinyl chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | F |
| P416589 | WL | 11/5/2013 | 13115725 | 7440-66-6 | Zinc | 0001 | 3.3 | ug/L | U | F | 3.3 | | F |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.21 | ug/L | U | F | 0.21 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.27 | ug/L | U | F | 0.27 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.23 | ug/L | U | F | 0.23 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.21 | ug/L | U | F | 0.21 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.47 | ug/L | U | F | 0.47 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.18 | ug/L | U | F | 0.18 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.23 | ug/L | J | F | 0.15 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.13 | ug/L | U | F | 0.13 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.18 | ug/L | U | F | 0.18 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.13 | ug/L | U | F | 0.13 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.26 | ug/L | J | F | 0.16 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 7440-38-2 | Arsenic | N001 | 6.3 | ug/L | J | F | 4.4 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 71-43-2 | Benzene | N001 | 1.8 | ug/L | | F | 0.16 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 7440-41-7 | Beryllium | N001 | 0.47 | ug/L | U | F | 0.47 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 7440-42-8 | Boron | N001 | 1000 | ug/L | | F | 4.4 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 75-27-4 | Bromodichloromethane | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 75-25-2 | Bromoform | N001 | 0.19 | ug/L | U | F | 0.19 | | |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 74-83-9 | Bromomethane | N001 | 0.21 | ug/L | U | F | 0.21 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 7440-43-9 | Cadmium | 0001 | 0.45 | ug/L | U | F | 0.45 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 56-23-5 | Carbon tetrachloride | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 108-90-7 | Chlorobenzene | N001 | 0.49 | ug/L | J | F | 0.17 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 124-48-1 | Chlorodibromomethane | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 74-87-3 | Chloromethane | N001 | 0.3 | ug/L | U | F | 0.3 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 7440-47-3 | Chromium | N001 | 0.66 | ug/L | U | F | 0.66 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 7440-50-8 | Copper | 0001 | 1.4 | ug/L | U | F | 1.4 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 87-68-3 | Hexachlorobutadiene | N001 | 0.36 | ug/L | U | F | 0.36 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 7439-92-1 | Lead | 0001 | 2.6 | ug/L | U | F | 2.6 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 7439-97-6 | Mercury | N001 | 0.027 | ug/L | U | F | 0.027 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 75-09-2 | Methylene chloride | N001 | 0.32 | ug/L | U | F | 0.32 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 91-20-3 | Naphthalene | N001 | 20 | ug/L | | F | 0.22 | | J |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 7440-02-0 | Nickel | 0001 | 4.1 | ug/L | J | F | 1.3 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 7782-49-2 | Selenium | N001 | 4.9 | ug/L | U | F | 4.9 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 7440-22-4 | Silver | 0001 | 0.93 | ug/L | U | F | 0.93 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 100-42-5 | Styrene | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 127-18-4 | Tetrachloroethene | N001 | 0.2 | ug/L | U | F | 0.2 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 108-88-3 | Toluene | N001 | 1 | ug/L | | F | 0.17 | | U |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 1330-20-7 | Total Xylenes | N001 | 1.6 | ug/L | | F | 0.19 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 7440-61-1 | Uranium | N001 | 0.27 | ug/L | J | F | 0.05 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 7440-61-1 | Uranium | N002 | 0.32 | ug/L | | F | 0.05 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 75-01-4 | Vinyl chloride | N001 | 0.31 | ug/L | J | F | 0.1 | | |
| PLFSEEPINF | TS | 10/29/2013 | 13115722 | 7440-66-6 | Zinc | 0001 | 65 | ug/L | | F | 4.5 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.21 | ug/L | U | F | 0.21 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.27 | ug/L | U | F | 0.27 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.23 | ug/L | U | F | 0.23 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.21 | ug/L | U | F | 0.21 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.47 | ug/L | U | F | 0.47 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.18 | ug/L | U | F | 0.18 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.15 | ug/L | U | F | 0.15 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.13 | ug/L | U | F | 0.13 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.18 | ug/L | U | F | 0.18 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.13 | ug/L | U | F | 0.13 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 105-67-9 | 2, 4-Dimethylphenol | N001 | 0.73 | ug/L | U | F | 0.73 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 95-95-4 | 2,4,5-Trichlorophenol | N001 | 0.57 | ug/L | U | F | 0.57 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 88-06-2 | 2,4,6-Trichlorophenol | N001 | 0.37 | ug/L | U | F | 0.37 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 120-83-2 | 2,4-Dichlorophenol | N001 | 0.81 | ug/L | U | F | 0.81 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 51-28-5 | 2,4-Dinitrophenol | N001 | 13 | ug/L | U | F | 13 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 121-14-2 | 2,4-Dinitrotoluene | N001 | 2.1 | ug/L | U | F | 2.1 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 606-20-2 | 2,6-Dinitrotoluene | N001 | 2.4 | ug/L | U | F | 2.4 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 91-58-7 | 2-Chloronaphthalene | N001 | 0.33 | ug/L | U | F | 0.33 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 95-57-8 | 2-Chlorophenol | N001 | 2.5 | ug/L | U | F | 2.5 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 91-94-1 | 3,3'-Dichlorobenzidine | N001 | 2.5 | ug/L | U | F | 2.5 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 534-52-1 | 4,6-Dinitro-2-methyl phenol | N001 | 5 | ug/L | U | F | 5 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 59-50-7 | 4-Chloro-3-methylphenol | N001 | 3 | ug/L | U | F | 3 | | |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 100-02-7 | 4-Nitrophenol | N001 | 1.5 | ug/L | U | F | 1.5 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 83-32-9 | Acenaphthene | N001 | 0.95 | ug/L | J | F | 0.35 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 120-12-7 | Anthracene | N001 | 0.53 | ug/L | U | F | 0.53 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 7440-38-2 | Arsenic | N001 | 34 | ug/L | | F | 4.4 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 56-55-3 | Benz(a)anthracene | N001 | 0.44 | ug/L | U | F | 0.44 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 71-43-2 | Benzene | N001 | 0.38 | ug/L | J | F | 0.16 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 50-32-8 | Benzo(a)pyrene | N001 | 0.39 | ug/L | U | F | 0.39 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 205-99-2 | Benzo(b)fluoranthene | N001 | 0.67 | ug/L | U | F | 0.67 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 191-24-2 | Benzo(g,h,i)Perylene | N001 | 0.63 | ug/L | U | F | 0.63 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 207-08-9 | Benzo(k)fluoranthene | N001 | 0.58 | ug/L | U | F | 0.58 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 7440-41-7 | Beryllium | N001 | 0.47 | ug/L | U | F | 0.47 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 111-44-4 | Bis(2-chloroethyl) ether | N001 | 0.52 | ug/L | U | F | 0.52 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 108-60-1 | Bis(2-chloroisopropyl) ether | N001 | 0.35 | ug/L | U | F | 0.35 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 117-81-7 | Bis(2-ethylhexyl) phthalate | N001 | 0.71 | ug/L | U | F | 0.71 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 7440-42-8 | Boron | N001 | 740 | ug/L | | F | 4.4 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 75-27-4 | Bromodichloromethane | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 75-25-2 | Bromoform | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 74-83-9 | Bromomethane | N001 | 0.21 | ug/L | U | F | 0.21 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 85-68-7 | Butyl benzyl phthalate | N001 | 1.3 | ug/L | U | F | 1.3 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 7440-43-9 | Cadmium | 0001 | 0.45 | ug/L | U | F | 0.45 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 56-23-5 | Carbon tetrachloride | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 108-90-7 | Chlorobenzene | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 124-48-1 | Chlorodibromomethane | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 74-87-3 | Chloromethane | N001 | 0.3 | ug/L | U | F | 0.3 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 7440-47-3 | Chromium | N001 | 1.3 | ug/L | J | F | 0.66 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 218-01-9 | Chrysene | N001 | 0.68 | ug/L | U | F | 0.68 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 7440-50-8 | Copper | 0001 | 1.4 | ug/L | U | F | 1.4 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 53-70-3 | Dibenz(a,h)anthracene | N001 | 0.64 | ug/L | U | F | 0.64 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 84-66-2 | Diethyl phthalate | N001 | 0.48 | ug/L | U | F | 0.48 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 131-11-3 | Dimethyl phthalate | N001 | 0.26 | ug/L | U | F | 0.26 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 84-74-2 | Di-n-butyl phthalate | N001 | 1.5 | ug/L | U | F | 1.5 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 206-44-0 | Fluoranthene | N001 | 0.35 | ug/L | J | F | 0.25 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 86-73-7 | Fluorene | N001 | 0.91 | ug/L | J | F | 0.39 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 118-74-1 | Hexachlorobenzene | N001 | 0.83 | ug/L | U | F | 0.83 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 87-68-3 | Hexachlorobutadiene | N001 | 0.36 | ug/L | U | F | 0.36 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 77-47-4 | Hexachlorocyclopentadiene | N001 | 13 | ug/L | U | F | 13 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 67-72-1 | Hexachloroethane | N001 | 2.6 | ug/L | U | F | 2.6 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 193-39-5 | Indeno(1,2,3-cd)pyrene | N001 | 0.82 | ug/L | U | F | 0.82 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 78-59-1 | Isophorone | N001 | 0.26 | ug/L | U | F | 0.26 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 7439-92-1 | Lead | 0001 | 2.6 | ug/L | U | F | 2.6 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 7439-97-6 | Mercury | N001 | 0.027 | ug/L | U | F | 0.027 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 75-09-2 | Methylene chloride | N001 | 0.32 | ug/L | U | F | 0.32 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 91-20-3 | Naphthalene | N001 | 0.35 | ug/L | J | F | 0.22 | | J |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 7440-02-0 | Nickel | 0001 | 3.9 | ug/L | J | F | 1.3 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 98-95-3 | Nitrobenzene | N001 | 1 | ug/L | U | F | 1 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 621-64-7 | N-Nitrosodi-n-propylamine | N001 | 0.44 | ug/L | U | F | 0.44 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 86-30-6 | N-Nitrosodiphenylamine | N001 | 0.55 | ug/L | U | F | 0.55 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 87-86-5 | Pentachlorophenol | N001 | 25 | ug/L | U | F | 25 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 108-95-2 | Phenol | N001 | 2.5 | ug/L | U | F | 2.5 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 129-00-0 | Pyrene | N001 | 0.47 | ug/L | U | F | 0.47 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 7782-49-2 | Selenium | N001 | 4.9 | ug/L | U | F | 4.9 | | |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 7440-22-4 | Silver | 0001 | 0.93 | ug/L | U | F | 0.93 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 100-42-5 | Styrene | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 127-18-4 | Tetrachloroethene | N001 | 0.2 | ug/L | U | F | 0.2 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 108-88-3 | Toluene | N001 | 0.69 | ug/L | J | F | 0.17 | | U |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 1330-20-7 | Total Xylenes | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 7440-61-1 | Uranium | N001 | 0.94 | ug/L | J | F | 0.05 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 7440-61-1 | Uranium | N002 | 1 | ug/L | | F | 0.05 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 75-01-4 | Vinyl chloride | N001 | 0.21 | ug/L | J | F | 0.1 | | |
| PLFSYSEFF | TS | 10/29/2013 | 13115722 | 7440-66-6 | Zinc | 0001 | 19 | ug/L | J | F | 4.5 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.21 | ug/L | U | F | 0.21 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.27 | ug/L | U | F | 0.27 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.23 | ug/L | U | F | 0.23 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.21 | ug/L | U | F | 0.21 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.47 | ug/L | U | F | 0.47 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.18 | ug/L | U | F | 0.18 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.15 | ug/L | U | F | 0.15 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.13 | ug/L | U | F | 0.13 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.18 | ug/L | U | F | 0.18 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.13 | ug/L | U | F | 0.13 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 7440-38-2 | Arsenic | N001 | 12 | ug/L | | F | 0.33 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 71-43-2 | Benzene | N001 | 0.54 | ug/L | J | F | 0.16 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 75-27-4 | Bromodichloromethane | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 75-25-2 | Bromoform | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 74-83-9 | Bromomethane | N001 | 0.21 | ug/L | U | F | 0.21 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 56-23-5 | Carbon tetrachloride | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 108-90-7 | Chlorobenzene | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 124-48-1 | Chlorodibromomethane | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 74-87-3 | Chloromethane | N001 | 0.3 | ug/L | U | F | 0.3 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 87-68-3 | Hexachlorobutadiene | N001 | 0.36 | ug/L | U | F | 0.36 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 75-09-2 | Methylene chloride | N001 | 0.32 | ug/L | U | F | 0.32 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 91-20-3 | Naphthalene | N001 | 0.22 | ug/L | U | F | 0.22 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 100-42-5 | Styrene | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 127-18-4 | Tetrachloroethene | N001 | 0.2 | ug/L | U | F | 0.2 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 108-88-3 | Toluene | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 1330-20-7 | Total Xylenes | N001 | 0.49 | ug/L | J | F | 0.19 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| PLFSYSEFF | TS | 11/27/2013 | 13125786 | 75-01-4 | Vinyl chloride | N001 | 0.29 | ug/L | J | F | 0.1 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.21 | ug/L | U | F | 0.21 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.27 | ug/L | U | F | 0.27 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.23 | ug/L | U | F | 0.23 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.21 | ug/L | U | F | 0.21 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.47 | ug/L | U | F | 0.47 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.18 | ug/L | U | F | 0.18 | | |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| POM2 | SL | 11/20/2013 | 13115760 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.15 | ug/L | U | F | 0.15 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.13 | ug/L | U | F | 0.13 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.18 | ug/L | U | F | 0.18 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.13 | ug/L | U | F | 0.13 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 75-27-4 | Bromodichloromethane | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 75-25-2 | Bromoform | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 74-83-9 | Bromomethane | N001 | 0.21 | ug/L | U | F | 0.21 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 56-23-5 | Carbon tetrachloride | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 108-90-7 | Chlorobenzene | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 124-48-1 | Chlorodibromomethane | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 74-87-3 | Chloromethane | N001 | 0.3 | ug/L | U | F | 0.3 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 87-68-3 | Hexachlorobutadiene | N001 | 0.36 | ug/L | U | F | 0.36 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 75-09-2 | Methylene chloride | N001 | 0.32 | ug/L | U | F | 0.32 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 91-20-3 | Naphthalene | N001 | 0.22 | ug/L | U | F | 0.22 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 100-42-5 | Styrene | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 127-18-4 | Tetrachloroethene | N001 | 0.2 | ug/L | U | F | 0.2 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 108-88-3 | Toluene | N001 | 0.17 | ug/L | U | F | 0.17 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 1330-20-7 | Total Xylenes | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.15 | ug/L | U | F | 0.15 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.19 | ug/L | U | F | 0.19 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| POM2 | SL | 11/20/2013 | 13115760 | 75-01-4 | Vinyl chloride | N001 | 0.1 | ug/L | U | F | 0.1 | | |
| SEEP995 | SL | 10/10/2013 | 13105672 | AM-241 | Americium-241 | N001 | 0.0158 | pCi/L | U | F | 0.0187 | 0.0134 | |
| SEEP995 | SL | 10/10/2013 | 13105672 | PU-239,240 | Plutonium-239, 240 | N001 | 0.0236 | pCi/L | | F | 0.0192 | 0.0136 | J |
| SEEP995 | SL | 10/10/2013 | 13105672 | 7440-61-1 | Uranium | N001 | 18.2 | ug/L | | F | 0.067 | | |
| SEEP995 | SL | 10/17/2013 | 13105684 | AM-241 | Americium-241 | N001 | 0.0551 | pCi/L | | F | 0.0123 | 0.0209 | |
| SEEP995 | SL | 10/17/2013 | 13105684 | PU-239,240 | Plutonium-239, 240 | N001 | 0.15 | pCi/L | | F | 0.0179 | 0.0337 | |
| SEEP995 | SL | 10/17/2013 | 13105684 | 7440-61-1 | Uranium | N001 | 24.2 | ug/L | | F | 0.067 | | |
| SEEP995 | SL | 10/24/2013 | 13115728 | AM-241 | Americium-241 | N002 | 0.054 | pCi/L | | F | 0.0203 | 0.0234 | J |
| SEEP995 | SL | 10/24/2013 | 13115728 | PU-239,240 | Plutonium-239, 240 | N002 | 0.0829 | pCi/L | | F | 0.0254 | 0.0314 | |
| SEEP995 | SL | 10/24/2013 | 13115728 | 7440-61-1 | Uranium | N002 | 22 | ug/L | | F | 0.067 | | |
| SEEP995 | SL | 10/31/2013 | 13115749 | AM-241 | Americium-241 | N001 | 0.0713 | pCi/L | | F | 0.0197 | 0.0255 | |
| SEEP995 | SL | 10/31/2013 | 13115749 | PU-239,240 | Plutonium-239, 240 | N001 | 0.129 | pCi/L | | F | 0.0215 | 0.0312 | |
| SEEP995 | SL | 10/31/2013 | 13115749 | 7440-61-1 | Uranium | N001 | 24 | ug/L | | F | 0.067 | | |
| SEEP995 | SL | 11/14/2013 | 13115769 | AM-241 | Americium-241 | N001 | 0.0124 | pCi/L | U | F | 0.0159 | 0.00965 | |
| SEEP995 | SL | 11/14/2013 | 13115769 | PU-239,240 | Plutonium-239, 240 | N001 | 0.00385 | pCi/L | U | F | 0.0156 | 0.00665 | |
| SEEP995 | SL | 11/14/2013 | 13115769 | 7440-61-1 | Uranium | N001 | 18.5 | ug/L | | F | 0.067 | | |
| SEEP995 | SL | 11/25/2013 | 13125822 | AM-241 | Americium-241 | N002 | 0.00923 | pCi/L | U | F | 0.0191 | 0.00957 | |
| SEEP995 | SL | 11/25/2013 | 13125822 | PU-239,240 | Plutonium-239, 240 | N002 | -0.00216 | pCi/L | U | F | 0.017 | 0.00991 | |
| SEEP995 | SL | 11/25/2013 | 13125822 | 7440-61-1 | Uranium | N002 | 23.1 | ug/L | | F | 0.067 | | |
| SEEP995 | SL | 12/30/2013 | 14015856 | AM-241 | Americium-241 | N001 | 0.00211 | pCi/L | U | F | 0.0262 | 0.0124 | |
| SEEP995 | SL | 12/30/2013 | 14015856 | PU-239,240 | Plutonium-239, 240 | N001 | 0.00168 | pCi/L | U | F | 0.0264 | 0.0144 | |
| SEEP995 | SL | 12/30/2013 | 14015856 | 7440-61-1 | Uranium | N001 | 19.5 | ug/L | | F | 0.067 | | |
| SEEP995A | SL | 10/10/2013 | 13105672 | AM-241 | Americium-241 | N001 | 0.0408 | pCi/L | | F | 0.0199 | 0.0209 | J |
| SEEP995A | SL | 10/10/2013 | 13105672 | PU-239,240 | Plutonium-239, 240 | N001 | 0.0678 | pCi/L | | F | 0.0172 | 0.0204 | |
| SEEP995A | SL | 10/10/2013 | 13105672 | 7440-61-1 | Uranium | N001 | 19.1 | ug/L | | F | 0.067 | | |
| SEEP995A | SL | 10/17/2013 | 13105684 | AM-241 | Americium-241 | N001 | 0.0558 | pCi/L | | F | 0.0118 | 0.0201 | |
| SEEP995A | SL | 10/17/2013 | 13105684 | PU-239,240 | Plutonium-239, 240 | N001 | 0.123 | pCi/L | | F | 0.0181 | 0.03 | |
| SEEP995A | SL | 10/17/2013 | 13105684 | 7440-61-1 | Uranium | N001 | 23.1 | ug/L | | F | 0.067 | | |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEEP995A | SL | 10/24/2013 | 13115728 | AM-241 | Americium-241 | N002 | 0.0206 | pCi/L | U | F | 0.0242 | 0.019 | |
| SEEP995A | SL | 10/24/2013 | 13115728 | PU-239,240 | Plutonium-239, 240 | N002 | 0.0551 | pCi/L | | F | 0.0232 | 0.0229 | J |
| SEEP995A | SL | 10/24/2013 | 13115728 | 7440-61-1 | Uranium | N002 | 21.4 | ug/L | | F | 0.067 | | |
| SEEP995A | SL | 10/31/2013 | 13115749 | AM-241 | Americium-241 | N001 | 0.016 | pCi/L | U | F | 0.0188 | 0.0137 | |
| SEEP995A | SL | 10/31/2013 | 13115749 | PU-239,240 | Plutonium-239, 240 | N001 | 0.0541 | pCi/L | | F | 0.0208 | 0.0199 | J |
| SEEP995A | SL | 10/31/2013 | 13115749 | 7440-61-1 | Uranium | N001 | 23.5 | ug/L | | F | 0.067 | | |
| SEEP995A | SL | 11/14/2013 | 13115769 | AM-241 | Americium-241 | N001 | 0.0888 | pCi/L | | F | 0.0195 | 0.0281 | |
| SEEP995A | SL | 11/14/2013 | 13115769 | PU-239,240 | Plutonium-239, 240 | N001 | 0.19 | pCi/L | | F | 0.022 | 0.0408 | |
| SEEP995A | SL | 11/14/2013 | 13115769 | 7440-61-1 | Uranium | N001 | 21.3 | ug/L | | F | 0.067 | | |
| SEEP995A | SL | 11/25/2013 | 13125822 | AM-241 | Americium-241 | N002 | 0.203 | pCi/L | | F | 0.0166 | 0.0365 | |
| SEEP995A | SL | 11/25/2013 | 13125822 | PU-239,240 | Plutonium-239, 240 | N002 | 0.452 | pCi/L | | F | 0.0173 | 0.0564 | |
| SEEP995A | SL | 11/25/2013 | 13125822 | 7440-61-1 | Uranium | N002 | 27.8 | ug/L | | F | 0.067 | | |
| SEEP995A | SL | 12/30/2013 | 14015856 | AM-241 | Americium-241 | N001 | 0.0116 | pCi/L | U | F | 0.0289 | 0.0137 | |
| SEEP995A | SL | 12/30/2013 | 14015856 | PU-239,240 | Plutonium-239, 240 | N001 | 0.0155 | pCi/L | U | F | 0.027 | 0.0155 | |
| SEEP995A | SL | 12/30/2013 | 14015856 | 7440-61-1 | Uranium | N001 | 21.1 | ug/L | | F | 0.067 | | |
| SEEP995B | SL | 10/10/2013 | 13105672 | AM-241 | Americium-241 | N001 | 0.156 | pCi/L | | F | 0.0226 | 0.046 | |
| SEEP995B | SL | 10/10/2013 | 13105672 | PU-239,240 | Plutonium-239, 240 | N001 | 0.512 | pCi/L | | F | 0.0274 | 0.0836 | |
| SEEP995B | SL | 10/10/2013 | 13105672 | 7440-61-1 | Uranium | N001 | 21.9 | ug/L | | F | 0.067 | | |
| SEEP995B | SL | 10/17/2013 | 13105684 | AM-241 | Americium-241 | N001 | 0.00994 | pCi/L | U | F | 0.0118 | 0.00926 | |
| SEEP995B | SL | 10/17/2013 | 13105684 | PU-239,240 | Plutonium-239, 240 | N001 | 0.0226 | pCi/L | | F | 0.0138 | 0.011 | J |
| SEEP995B | SL | 10/17/2013 | 13105684 | 7440-61-1 | Uranium | N001 | 22.4 | ug/L | | F | 0.067 | | |
| SEEP995B | SL | 10/24/2013 | 13115728 | AM-241 | Americium-241 | N002 | 0.0311 | pCi/L | | F | 0.0195 | 0.017 | J |
| SEEP995B | SL | 10/24/2013 | 13115728 | PU-239,240 | Plutonium-239, 240 | N002 | 0.0881 | pCi/L | | F | 0.0228 | 0.0265 | |
| SEEP995B | SL | 10/24/2013 | 13115728 | 7440-61-1 | Uranium | N002 | 23.9 | ug/L | | F | 0.067 | | |
| SEEP995B | SL | 10/31/2013 | 13115749 | AM-241 | Americium-241 | N002 | 0.00385 | pCi/L | U | F | 0.0181 | 0.0107 | |
| SEEP995B | SL | 10/31/2013 | 13115749 | PU-239,240 | Plutonium-239, 240 | N002 | 0.0154 | pCi/L | U | F | 0.0173 | 0.00952 | |
| SEEP995B | SL | 10/31/2013 | 13115749 | 7440-61-1 | Uranium | N002 | 23.7 | ug/L | | F | 0.067 | | |
| SEEP995B | SL | 11/14/2013 | 13115769 | AM-241 | Americium-241 | N001 | 0.0126 | pCi/L | U | F | 0.0162 | 0.0107 | |
| SEEP995B | SL | 11/14/2013 | 13115769 | PU-239,240 | Plutonium-239, 240 | N001 | 0.0329 | pCi/L | | F | 0.0174 | 0.0154 | J |
| SEEP995B | SL | 11/14/2013 | 13115769 | 7440-61-1 | Uranium | N001 | 19.2 | ug/L | | F | 0.067 | | |
| SEEP995B | SL | 11/25/2013 | 13125822 | AM-241 | Americium-241 | N002 | 0.00172 | pCi/L | U | F | 0.0214 | 0.00891 | |
| SEEP995B | SL | 11/25/2013 | 13125822 | PU-239,240 | Plutonium-239, 240 | N002 | 0.0132 | pCi/L | U | F | 0.016 | 0.0115 | |
| SEEP995B | SL | 11/25/2013 | 13125822 | 7440-61-1 | Uranium | N002 | 23.1 | ug/L | | F | 0.067 | | |
| SEEP995B | SL | 12/30/2013 | 14015856 | AM-241 | Americium-241 | N001 | 0.00872 | pCi/L | U | F | 0.109 | 0.0784 | |
| SEEP995B | SL | 12/30/2013 | 14015856 | PU-239,240 | Plutonium-239, 240 | N001 | 0.127 | pCi/L | | F | 0.0206 | 0.028 | |
| SEEP995B | SL | 12/30/2013 | 14015856 | 7440-61-1 | Uranium | N001 | 18 | ug/L | | F | 0.067 | | |
| SEEP995C | SL | 10/10/2013 | 13105672 | AM-241 | Americium-241 | N001 | 0.0454 | pCi/L | | F | 0.0171 | 0.0202 | J |
| SEEP995C | SL | 10/10/2013 | 13105672 | PU-239,240 | Plutonium-239, 240 | N001 | 0.0592 | pCi/L | | F | 0.0226 | 0.0218 | J |
| SEEP995C | SL | 10/10/2013 | 13105672 | 7440-61-1 | Uranium | N001 | 16.8 | ug/L | | F | 0.067 | | |
| SEEP995C | SL | 10/17/2013 | 13105684 | AM-241 | Americium-241 | N001 | 0.0705 | pCi/L | | F | 0.0114 | 0.0205 | |
| SEEP995C | SL | 10/17/2013 | 13105684 | PU-239,240 | Plutonium-239, 240 | N001 | 0.145 | pCi/L | | F | 0.0201 | 0.0339 | |
| SEEP995C | SL | 10/17/2013 | 13105684 | 7440-61-1 | Uranium | N001 | 19.7 | ug/L | | F | 0.067 | | |
| SEEP995C | SL | 10/24/2013 | 13115728 | AM-241 | Americium-241 | N002 | 0.0223 | pCi/L | | F | 0.0191 | 0.0155 | U |
| SEEP995C | SL | 10/24/2013 | 13115728 | PU-239,240 | Plutonium-239, 240 | N002 | 0.0577 | pCi/L | | F | 0.0288 | 0.024 | J |
| SEEP995C | SL | 10/24/2013 | 13115728 | 7440-61-1 | Uranium | N002 | 19.6 | ug/L | | F | 0.067 | | |
| SEEP995C | SL | 10/31/2013 | 13115749 | AM-241 | Americium-241 | N001 | 0.0788 | pCi/L | | F | 0.0247 | 0.0302 | |
| SEEP995C | SL | 10/31/2013 | 13115749 | PU-239,240 | Plutonium-239, 240 | N001 | 0.143 | pCi/L | | F | 0.0227 | 0.0337 | |
| SEEP995C | SL | 10/31/2013 | 13115749 | 7440-61-1 | Uranium | N001 | 19.3 | ug/L | | F | 0.067 | | |
| SEEP995C | SL | 11/14/2013 | 13115769 | AM-241 | Americium-241 | N001 | 0.00652 | pCi/L | U | F | 0.0168 | 0.00905 | |
| SEEP995C | SL | 11/14/2013 | 13115769 | PU-239,240 | Plutonium-239, 240 | N001 | -0.00141 | pCi/L | U | F | 0.0171 | 0.0132 | |
| SEEP995C | SL | 11/14/2013 | 13115769 | 7440-61-1 | Uranium | N001 | 16 | ug/L | | F | 0.067 | | |
| SEEP995C | SL | 11/25/2013 | 13125822 | AM-241 | Americium-241 | N002 | 0.00312 | pCi/L | U | F | 0.0194 | 0.0075 | |
| SEEP995C | SL | 11/25/2013 | 13125822 | PU-239,240 | Plutonium-239, 240 | N002 | 0.0188 | pCi/L | | F | 0.0174 | 0.0105 | J |
| SEEP995C | SL | 11/25/2013 | 13125822 | 7440-61-1 | Uranium | N002 | 20.5 | ug/L | | F | 0.067 | | |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SPIN | TS | 10/30/2013 | 13105704 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 393 | mg/L | | F | 8.5 | | |
| SPIN | TS | 10/30/2013 | 13105704 | 7440-61-1 | Uranium | N001 | 67.2 | ug/L | | F | 0.067 | | |
| SPOUT | TS | 10/15/2013 | 13105685 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 950 | mg/L | | F | 1.9 | | |
| SPOUT | TS | 10/15/2013 | 13105685 | 7440-61-1 | Uranium | N001 | 44 | ug/L | | F | 0.05 | | |
| SPOUT | TS | 10/30/2013 | 13105704 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 308 | mg/L | | F | 8.5 | | |
| SPOUT | TS | 10/30/2013 | 13115721 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N002 | 3600 | mg/L | H | F | 9.5 | | R |
| SPOUT | TS | 10/30/2013 | 13105704 | 7440-61-1 | Uranium | N001 | 47.6 | ug/L | | F | 0.067 | | |
| SPOUT | TS | 10/30/2013 | 13115721 | 7440-61-1 | Uranium | N002 | 39 | ug/L | | F | 0.05 | | |
| SPOUT | TS | 11/13/2013 | 13115755 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 850 | mg/L | | F | 9.5 | | |
| SPOUT | TS | 11/13/2013 | 13115755 | 7440-61-1 | Uranium | N001 | 95 | ug/L | | F | 0.25 | | |
| SPOUT | TS | 11/27/2013 | 13125785 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 410 | mg/L | | F | 1.9 | | |
| SPOUT | TS | 11/27/2013 | 13125785 | 7440-61-1 | Uranium | N001 | 40 | ug/L | B | F | 0.05 | | |
| SPOUT | TS | 12/11/2013 | 13125820 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 250 | mg/L | | F | 9.5 | | |
| SPOUT | TS | 12/11/2013 | 13125820 | 7440-61-1 | Uranium | N001 | 45 | ug/L | B | F | 0.05 | | |
| SPOUT | TS | 12/24/2013 | 13125842 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 460 | mg/L | | F | 9.5 | | |
| SPOUT | TS | 12/24/2013 | 13125842 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N002 | 560 | mg/L | | D | 9.5 | | |
| SPOUT | TS | 12/24/2013 | 13125842 | 7440-61-1 | Uranium | N001 | 45 | ug/L | | F | 0.05 | | |
| SPOUT | TS | 12/24/2013 | 13125842 | 7440-61-1 | Uranium | N002 | 44 | ug/L | | D | 0.05 | | |
| SPPDISCHARGEGALLERY | TS | 10/30/2013 | 13105704 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 251 | mg/L | | F | 8.5 | | |
| SPPDISCHARGEGALLERY | TS | 10/30/2013 | 13105704 | 7440-61-1 | Uranium | N001 | 49.4 | ug/L | | F | 0.067 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 71-55-6 | 1,1,1-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 79-34-5 | 1,1,2,2-Tetrachloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 79-00-5 | 1,1,2-Trichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 75-35-4 | 1,1-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 120-82-1 | 1,2,4-Trichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 96-12-8 | 1,2-Dibromo-3-chloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 106-93-4 | 1,2-Dibromoethane | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 95-50-1 | 1,2-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 107-06-2 | 1,2-Dichloroethane | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 78-87-5 | 1,2-Dichloropropane | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 541-73-1 | 1,3-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 106-46-7 | 1,4-Dichlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 71-43-2 | Benzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 75-27-4 | Bromodichloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 75-25-2 | Bromoform | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 74-83-9 | Bromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 56-23-5 | Carbon tetrachloride | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 108-90-7 | Chlorobenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 124-48-1 | Chlorodibromomethane | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 67-66-3 | Chloroform | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 74-87-3 | Chloromethane | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 156-59-2 | cis-1,2-Dichloroethene | N001 | 0.43 | ug/L | J | F | 0.16 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 100-41-4 | Ethylbenzene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 87-68-3 | Hexachlorobutadiene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 75-09-2 | Methylene chloride | N001 | 2.51 | ug/L | BJ | F | 0.16 | | U |
| SW018 | SL | 11/5/2013 | 13115725 | 91-20-3 | Naphthalene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 100-42-5 | Styrene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 127-18-4 | Tetrachloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 108-88-3 | Toluene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 1330-20-7 | Total Xylenes | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 156-60-5 | trans-1,2-Dichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 10061-02-6 | trans-1,3-dichloropropene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 79-01-6 | Trichloroethene | N001 | 0.16 | ug/L | U | F | 0.16 | | |
| SW018 | SL | 11/5/2013 | 13115725 | 75-01-4 | Vinyl chloride | N001 | 0.16 | ug/L | U | F | 0.16 | | |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SW093 | SL | 10/15/2013 | 13125843 | AM-241 | Americium-241 | N002 | -0.00174 | pCi/L | U | F | 0.0216 | 0.00589 | |
| SW093 | SL | 10/15/2013 | 13125843 | 7440-41-7 | Beryllium | N002 | 1 | ug/L | U | F | 1 | | |
| SW093 | SL | 10/15/2013 | 13125843 | 7440-43-9 | Cadmium | 0001 | 1.06 | ug/L | | F | 0.11 | | |
| SW093 | SL | 10/15/2013 | 13125843 | 7440-47-3 | Chromium | N002 | 1 | ug/L | U | F | 1 | | |
| SW093 | SL | 10/15/2013 | 13125843 | HARDNESS | Hardness | N002 | 357 | mg/L | | F | 2 | | |
| SW093 | SL | 10/15/2013 | 13125843 | PU-239,240 | Plutonium-239, 240 | N002 | -0.0032 | pCi/L | U | F | 0.0252 | 0.00887 | |
| SW093 | SL | 10/15/2013 | 13125843 | 7440-22-4 | Silver | 0001 | 0.2 | ug/L | U | F | 0.2 | | |
| SW093 | SL | 10/15/2013 | 13125843 | 7440-61-1 | Uranium | N002 | 15.2 | ug/L | | F | 0.067 | | |
| SW093 | SL | 11/4/2013 | 14015856 | AM-241 | Americium-241 | N001 | 0 | pCi/L | U | F | 0.0273 | 0.0105 | |
| SW093 | SL | 11/4/2013 | 14015856 | 7440-41-7 | Beryllium | N001 | 1 | ug/L | U | F | 1 | | |
| SW093 | SL | 11/4/2013 | 14015856 | 7440-43-9 | Cadmium | 0001 | 0.11 | ug/L | U | F | 0.11 | | |
| SW093 | SL | 11/4/2013 | 14015856 | 7440-47-3 | Chromium | N001 | 1 | ug/L | U | F | 1 | | |
| SW093 | SL | 11/4/2013 | 14015856 | HARDNESS | Hardness | N001 | 474 | mg/L | | F | 2 | | |
| SW093 | SL | 11/4/2013 | 14015856 | PU-239,240 | Plutonium-239, 240 | N001 | 0.0112 | pCi/L | U | F | 0.025 | 0.0104 | |
| SW093 | SL | 11/4/2013 | 14015856 | 7440-22-4 | Silver | 0001 | 0.2 | ug/L | U | F | 0.2 | | |
| SW093 | SL | 11/4/2013 | 14015856 | 7440-61-1 | Uranium | N001 | 13 | ug/L | | F | 0.067 | | |
| WALPOC | SL | 10/25/2013 | 13125839 | AM-241 | Americium-241 | N002 | -0.00194 | pCi/L | U | F | 0.0242 | 0.00852 | |
| WALPOC | SL | 10/25/2013 | 13105710 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 5.7 | mg/L | | F | 0.019 | | |
| WALPOC | SL | 10/25/2013 | 13125839 | PU-239,240 | Plutonium-239, 240 | N002 | 0.0144 | pCi/L | U | F | 0.0174 | 0.00954 | |
| WALPOC | SL | 10/25/2013 | 13125839 | 7440-61-1 | Uranium | N002 | 17.7 | ug/L | | F | 0.067 | | |
| WALPOC | SL | 12/17/2013 | 13125842 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N001 | 2.2 | mg/L | | F | 0.019 | | |
| WALPOC | SL | 12/17/2013 | 13125842 | NO3+NO2 AS N | Nitrate + Nitrite as Nitrogen | N002 | 2.3 | mg/L | | D | 0.019 | | |
| WALPOC | SL | 12/18/2013 | 14015879 | AM-241 | Americium-241 | N001 | 0.00814 | pCi/L | U | F | 0.0169 | 0.00843 | |
| WALPOC | SL | 12/18/2013 | 14015879 | PU-239,240 | Plutonium-239, 240 | N001 | 0.00196 | pCi/L | U | F | 0.0308 | 0.0115 | |
| WALPOC | SL | 12/18/2013 | 14015879 | 7440-61-1 | Uranium | N001 | 18.7 | ug/L | | F | 0.067 | | |
| WOMPOC | SL | 10/7/2013 | 13115748 | AM-241 | Americium-241 | N001 | 0.00667 | pCi/L | U | F | 0.0157 | 0.00926 | |
| WOMPOC | SL | 10/7/2013 | 13115748 | PU-239,240 | Plutonium-239, 240 | N001 | 0.0075 | pCi/L | U | F | 0.0202 | 0.00884 | |
| WOMPOC | SL | 10/7/2013 | 13115748 | 7440-61-1 | Uranium | N001 | 4.07 | ug/L | | F | 0.067 | | |
| WOMPOC | SL | 11/7/2013 | 13125839 | AM-241 | Americium-241 | N001 | 0.00591 | pCi/L | U | F | 0.0184 | 0.00821 | |
| WOMPOC | SL | 11/7/2013 | 13125839 | PU-239,240 | Plutonium-239, 240 | N001 | 0.0073 | pCi/L | U | F | 0.0164 | 0.00794 | |
| WOMPOC | SL | 11/7/2013 | 13125839 | 7440-61-1 | Uranium | N001 | 5.89 | ug/L | | F | 0.067 | | |
| WOMPOC | SL | 12/17/2013 | 14015879 | AM-241 | Americium-241 | N001 | 0.0162 | pCi/L | U | F | 0.0183 | 0.0112 | |
| WOMPOC | SL | 12/17/2013 | 14015879 | PU-239,240 | Plutonium-239, 240 | N001 | 0.0134 | pCi/L | U | F | 0.0176 | 0.00987 | |
| WOMPOC | SL | 12/17/2013 | 14015879 | 7440-61-1 | Uranium | N001 | 5.9 | ug/L | | F | 0.067 | | |

## EXPLANATION

**SAMPLE_ID**

N00x = Sample was not filtered.
000x = Sample was filtered.

**WATER_UNIT_OF_MEASURE**

mg/L; ppm = milligrams per liter
pCi/L = picocuries per liter
ug/L = micrograms per liter
C = degrees celsius
mS/cm = milliSiemens per centimeter
NTU = normal turbidity units
s.u. = standard pH units
uS/cm = microSiemens per centimeter
umhos/cm = microSiemens per centimeter

**LAB_QUALIFIERS**

| | |
|---|---|
| * | Replicate analysis not within control limits. |
| + | Correlation coefficient for MSA < 0.995. |
| > | Result above upper detection limit. |
| A | TIC is a suspected aldol-condensation product. |
| B | Inorganic: Result is between the IDL and CRDL. Organic & Radiochemistry: Analyte also found in method blank. |
| C | Pesticide result confirmed by GC-MS. |
| D | Analyte determined in diluted sample. |
| E | Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS. |
| H | Holding time expired, value suspect. |
| I | Increased detection limit due to required dilution. |
| J | Estimated |
| M | GFAA duplicate injection precision not met. |
| N | Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compund (TIC). |

***RFLMA Data***

| LOCATION_CODE | LOCATION_TYPE | DATE SAMPLED | LAB REQUISITION NUMBER | CAS | ANALYTE | SAMPLE ID | RESULT | UNITS | LAB QUALIFIERS | SAMPLE TYPE | DETECTION LIMIT | UNCER-TAINTY | DATA VALIDATION QUALIFIERS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| | |
|---|---|
| P | > 25% difference in detected pesticide or Arochlor concentrations between 2 columns. |
| S | Result determined by method of standard addition (MSA). |
| U | Analytical result below detection limit. |
| W | Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance. |
| X | Laboratory defined (USEPA CLP organic) qualifier, see case narrative. |
| Y | Laboratory defined (USEPA CLP organic) qualifier, see case narrative. |
| Z | Laboratory defined (USEPA CLP organic) qualifier, see case narrative. |

**SAMPLE_TYPE**

F = Field Sample

D = Duplicate

**DATA_VALIDATION_QUALIFIERS**

| | |
|---|---|
| valid | Result is valid. |
| F | Low flow sampling method used. |
| G | Possible grout contamination, pH > 9. |
| J | Estimated value. |
| L | Less than 3 bore volumes purged prior to sampling. |
| Q | Qualitative result due to sampling technique |
| R | Unusable result. |
| U | Parameter analyzed for but was not detected. |
| X | Location is undefined. |
| 999 | Validation not complete |

**LOCATION_TYPE**

| | |
|---|---|
| SL | SURFACE LOCATION |
| TS | TREATMENT SYSTEM |
| WL | WELL |

**COLLECTION_METHOD**

| | |
|---|---|
| G | Grab |
| C | Composite |

# Appendix C: Landfill Inspection Forms - Fourth Quarter CY 2013

## C.1 Original Landfill

# ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

INSPECTOR: J. McLaughlin DATE: 10/28/13 TIME: 1200 REVIEWED BY: [illegible]

TEMPERATURE: 33°F WEATHER CONDITIONS: Pt. cloudy REVIEW DATE: 10-29-13

## SUBSIDENCE / CONSOLIDATION

| REGION | EVIDENCE OF CRACKS? | EVIDENCE OF DEPRESSIONS? | EVIDENCE OF SINK HOLES? | EVIDENCE OF PONDING? | OTHER (DESCRIBE BELOW) |
|---|---|---|---|---|---|
| COVER – WEST | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| COVER – EAST | ☒ Yes ☐ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| BUTTRESS FILL | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| DIVERSION BERM 1 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| DIVERSION BERM 2 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| DIVERSION BERM 3 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| DIVERSION BERM 4 | ☒ Yes ☐ No | ☒ Yes ☐ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| DIVERSION BERM 5 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| DIVERSION BERM 6 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| DIVERSION BERM 7 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |

Settlement Plates – Inspect integrity. Intact? ☒ Yes ☐ No

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

See Attachment 1 For details on Berm 4 cracks + subsidence.

# ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

## SLOPE STABILITY

| REGION | EVIDENCE OF CRACKS? | EVIDENCE OF SEEPS? | EVIDENCE OF BLOCK OR CIRCULAR FAILURE? | OTHER (DESCRIBE BELOW |
|---|---|---|---|---|
| COVER – WEST | ☐ Yes ☒ No | ☒ Yes ☐ No | ☐ Yes ☒ No | – |
| COVER – EAST | ☒ Yes ☐ No | ☒ Yes ☐ No | ☒ Yes ☐ No | – |
| BUTTRESS FILL SIDESLOPE | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| WEST PERIMETER CHANNEL SIDESLOPES | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| EAST PERIMETER CHANNEL SIDESLOPES | ☐ Yes ☒ No | ☒ Yes ☐ No | ☐ Yes ☒ No | – |
| COVER SEEPS (IF PRESENT) | ☐ Yes ☒ No | ☒ Yes ☐ No | ☐ Yes ☒ No | – |

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

See Attachment 1 For details on Seep locations.

# ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

## SOIL COVER

| REGION | EVIDENCE OF SOIL DEPOSITION OR EROSION? | EVIDENCE OF EROSION RILLS/GULLIES? | EVIDENCE OF BURROWING ANIMALS? | OTHER (DESCRIBE BELOW) |
|---|---|---|---|---|
| COVER – WEST | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| COVER – EAST | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| BUTTRESS FILL | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| BUTTRESS FILL SIDESLOPE | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

None.

Vegetation on the OLF cover has met success criteria outlined in the M+M Plan - No Further inspections are required.

# ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

## VEGETATION

| REGION | CONDITION OF GRASS | UNWANTED VEGETATION PRESENT*? | PERCENTAGE OF GRASS VERSUS BARE GROUND? | PERCENTAGE OF UNWANTED VEGETATION? |
|---|---|---|---|---|
| COVER- WEST | | ☐ Yes ☐ No | | |
| COVER - EAST | | ☐ Yes ☐ No | | |
| DIVERSION BERM 1 | | ☐ Yes ☐ No | | |
| DIVERSION BERM 2 | | ☐ Yes ☐ No | | |
| DIVERSION BERM 3 | | ☐ Yes ☐ No | JAN | |
| DIVERSION BERM 4 | | ☐ Yes ☐ No | | |
| DIVERSION BERM 5 | | ☐ Yes ☐ No | | |
| DIVERSION BERM 6 | | ☐ Yes ☐ No | | |
| DIVERSION BERM 7 | | ☐ Yes ☐ No | | |
| WEST PERIMETER CHANNEL | | ☐ Yes ☐ No | | |
| EAST PERIMETER CHANNEL | | ☐ Yes ☐ No | | |
| UPPER BUTTERESS FILL SIDESLOPE | | ☐ Yes ☐ No | | |
| LOWER BUTTRESS FILL SIDESLOPE | | ☐ Yes ☐ No | | |

* Unwanted vegetation includes weeds and "woody vegetation." Woody vegetation within the OLF waste footprint shall be removed. Other locations shall be evaluated per Section 3.5.

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

# ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

## STORMWATER MANAGEMENT STRUCTURES

### CHANNELS

| STRUCTURE | EVIDENCE OF EXCESSIVE EROSION, GULLYING, SCOUR, OR UNDERMINING? | EVIDENCE OF SETTLEMENT/ SUBSIDENCE OR DEPRESSIONS? | EVIDENCE OF BREACHING OR BANK FAILURE? | EVIDENCE OF BURROWING ANIMALS? | EVIDENCE OF SEDIMENT BUILD-UP OR OTHER BLOCKAGE? |
|---|---|---|---|---|---|
| DIVERSION BERM 1 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| DIVERSION BERM 2 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| DIVERSION BERM 3 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| DIVERSION BERM 4 | ☐ Yes ☒ No | ☒ Yes ☐ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| DIVERSION BERM 5 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| DIVERSION BERM 6 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| DIVERSION BERM 7 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| TEMPORARY CHECK DAMS* | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| WEST PERIMETER CHANNEL | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| EAST PERIMETER CHANNEL | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |

* Check dams may be removed after vegetation is established.

OTHER DEFICIENCIES?

None.

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

None.

## ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

## STORMWATER MANAGEMENT STRUCTURES (CONTINUED)

### OUTFALLS

CHECK EACH STRUCTURE FOR EXCESSIVE EROSION AND SEDIMENT DEPTH. IF SEDIMENT DEPTH IS COMPROMISING THE DESIGN CHARACTERISTICS, REMOVE SEDIMENT.

| STRUCTURE | CONDITION / SEDIMENT DEPTH |
|---|---|
| DIVERSION BERM OUTFALL 1 | Good condition / No sediment |
| DIVERSION BERM OUTFALL 2 | Fair condition - Needs repaired |
| DIVERSION BERM OUTFALL 3 | Fair condition - Needs repaired |
| DIVERSION BERM OUTFALL 4 | Good condition - Repaired 10/3/13 |
| DIVERSION BERM OUTFALL 5 | Good condition / No sediment |
| DIVERSION BERM OUTFALL 6 | Fair condition - Needs repaired |
| DIVERSION BERM OUTFALL 7 | Good condition - Needs new straw bales |
| WEST PERIMETER CHANNEL OUTFALL | Good condition / No sediment |
| EAST PERIMETER CHANNEL OUTFALL | ↓ |
| FRENCH DRAIN OUTFALL (SID) | |

OTHER DEFICIENCIES?

None

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

Maintenance to berm outfalls will be completed in late November or early December

# ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

## "RUN-ON" CONTROL

| AREA | ADVERSELY AFFECTING OLF? | | |
|---|---|---|---|
| NORTH OF THE ORIGINAL LANDFILL | ☐ Yes | ☒ No | COMMENT: — |
| WEST OF THE WEST PERIMETER CHANNEL | ☐ Yes | ☒ No | COMMENT: — |
| EAST OF THE EAST PERIMETER CHANNEL | ☐ Yes | ☒ No | COMMENT: — |
| NORTH OF WOMAN CREEK | ☐ Yes | ☒ No | COMMENT: — |

MAINTENANCE REQUIRED

None.

# ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

## INSTITUTIONAL CONTROLS

| ITEM | | | |
|---|---|---|---|
| EVIDENCE OF EXCAVATION(S) OF COVER AND IMMEDIATE VICINITY OF COVER? | ☒ Yes | ☐ No | COMMENT: Berm 4 repairs |
| EVIDENCE OF CONSTRUCTION OF ROADS, TRAILS, OR BUILDINGS ON COVER? | ☐ Yes | ☒ No | COMMENT: – |
| EVIDENCE OF DRILLING OF WELLS OR USE OF GROUNDWATER? | ☐ Yes | ☒ No | COMMENT: – |
| DAMAGE OR REMOVAL OF ANY SIGNAGE OR GROUNDWATER MONITORING WELLS? | ☐ Yes | ☒ No | COMMENT: – |

OTHER DEFICIENCIES / PHOTO LOG

None.

# ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

## ACTION ITEMS

| DEFICIENCY | DATE NOTED | ACTION | DATE COMPLETED | COMMENTS |
|---|---|---|---|---|
| Berm 4 needs drainage repaired | 9/16/13 | Install drainage tile to help drain water From Berm channel | 10/3/13 | See Attachment 1 For details |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

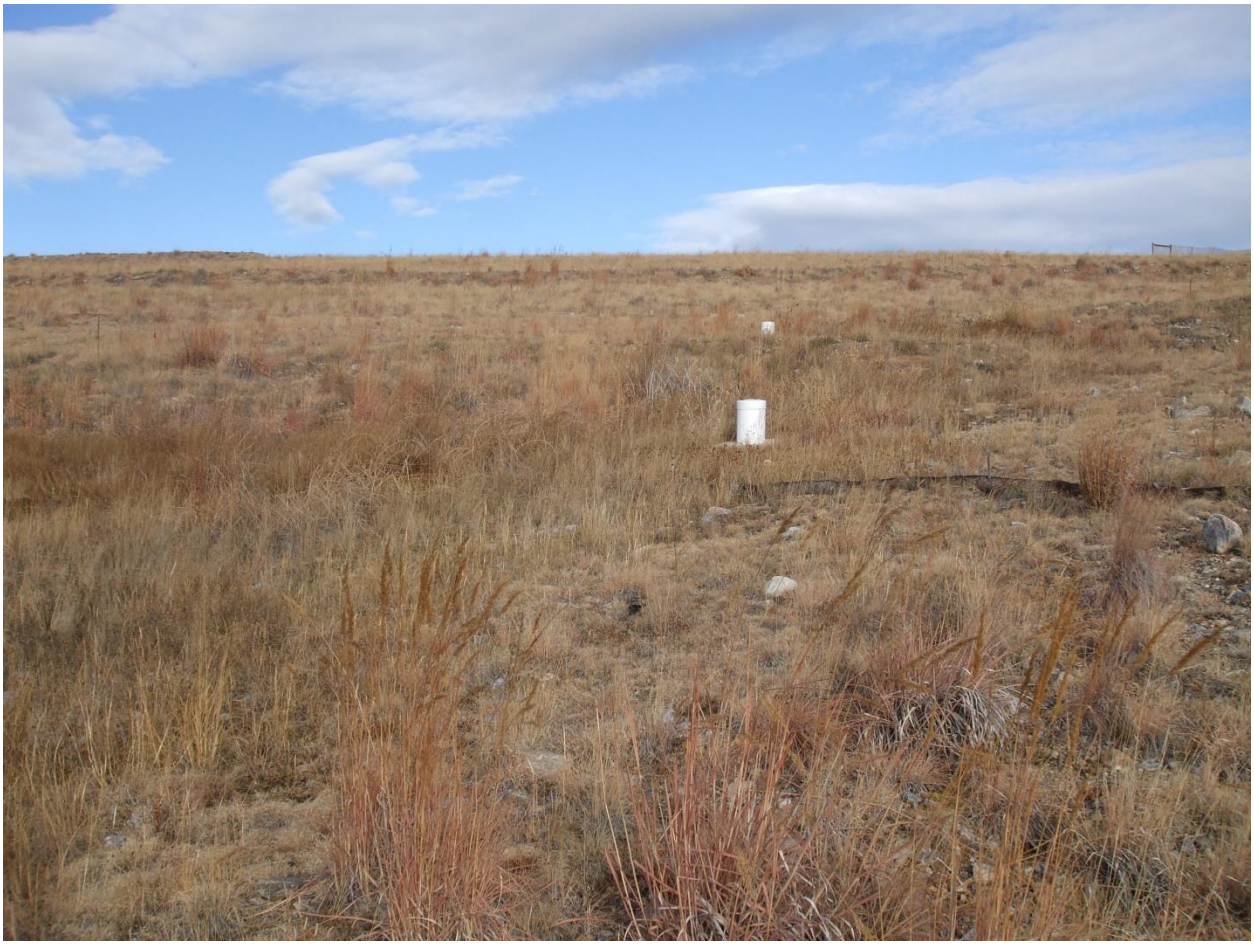
INSPECTOR SIGNATURE: [signature] DATE: 10/28/13

REVIEWER SIGNATURE: [signature] DATE: 10-29-13

**OLF October Monthly Inspection – Attachment 1**

The monthly inspection of the OLF was completed on October 28, 2013. The repairs completed on the surface cracks in the Berm 1 and Berm 4 areas remain in good condition with no new cracking observed. A drain consisting of 4" drainage tile bedded in ¾" gravel was installed in the channel of Berm 4 on October 3 to help remove water from the channel until more permanent repairs can be completed in that location. A geotechnical engineering firm is completing an evaluation of the slumping area on the OLF and will provide recommendations on a path forward for addressing the slumping and repairing the cover and berm outfalls. The repair project is tentatively scheduled to be completed in late November or early December.

The site received 2.24" of precipitation in October. The seep locations were all saturated except for Seep 1. Seep 2 and Seep 4 showed surface expression and Seep 8 was flowing at approximately 2 gallons per minute.



*Seep 7 Area*

*Seep 2 Area*

*OLF Berm 4 Drainage Tile Installation*

*Berm 4 Drain Installed*

*Repaired Crack Location above Berm 4*

# ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

INSPECTOR: J. McLaughlin DATE: 11/19/13 TIME: 1300 REVIEWED BY: Jorge Sguk

TEMPERATURE: 55°F WEATHER CONDITIONS: Pt. cloudy REVIEW DATE: 11-21-13

## SUBSIDENCE / CONSOLIDATION

| REGION | EVIDENCE OF CRACKS? | EVIDENCE OF DEPRESSIONS? | EVIDENCE OF SINK HOLES? | EVIDENCE OF PONDING? | OTHER (DESCRIBE BELOW) |
|---|---|---|---|---|---|
| COVER – WEST | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| COVER – EAST | ☒ Yes ☐ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| BUTTRESS FILL | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| DIVERSION BERM 1 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| DIVERSION BERM 2 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| DIVERSION BERM 3 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| DIVERSION BERM 4 | ☒ Yes ☐ No | ☒ Yes ☐ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| DIVERSION BERM 5 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| DIVERSION BERM 6 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| DIVERSION BERM 7 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |

Settlement Plates – Inspect integrity. Intact? ☒ Yes ☐ No

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

See Attachment 1 for Berm 4 crack + subsidence details.

# ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

## SLOPE STABILITY

| REGION | EVIDENCE OF CRACKS? | EVIDENCE OF SEEPS? | EVIDENCE OF BLOCK OR CIRCULAR FAILURE? | OTHER (DESCRIBE BELOW |
|---|---|---|---|---|
| COVER – WEST | ☐ Yes ☒ No | ☒ Yes ☐ No | ☐ Yes ☒ No | – |
| COVER – EAST | ☒ Yes ☐ No | ☒ Yes ☐ No | ☒ Yes ☐ No | – |
| BUTTRESS FILL SIDESLOPE | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| WEST PERIMETER CHANNEL SIDESLOPES | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| EAST PERIMETER CHANNEL SIDESLOPES | ☐ Yes ☒ No | ☒ Yes ☐ No | ☐ Yes ☒ No | – |
| COVER SEEPS (IF PRESENT) | ☐ Yes ☒ No | ☒ Yes ☐ No | ☐ Yes ☒ No | – |

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

None. See Attachment 1 for Seep Flow data.

# ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

## SOIL COVER

| REGION | EVIDENCE OF SOIL DEPOSITION OR EROSION? | EVIDENCE OF EROSION RILLS/GULLIES? | EVIDENCE OF BURROWING ANIMALS? | OTHER (DESCRIBE BELOW) |
|---|---|---|---|---|
| COVER – WEST | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | — |
| COVER – EAST | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | — |
| BUTTRESS FILL | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | — |
| BUTTRESS FILL SIDESLOPE | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | — |

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

None.

Vegetation on the OLF cover has met success criteria - No further inspections are required.

# ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

## VEGETATION

| REGION | CONDITION OF GRASS | UNWANTED VEGETATION PRESENT*? | PERCENTAGE OF GRASS VERSUS BARE GROUND? | PERCENTAGE OF UNWANTED VEGETATION? |
|---|---|---|---|---|
| COVER- WEST | | ☐ Yes ☐ No | | |
| COVER - EAST | | ☐ Yes ☐ No | | |
| DIVERSION BERM 1 | | ☐ Yes ☐ No | | |
| DIVERSION BERM 2 | | ☐ Yes ☐ No | | |
| DIVERSION BERM 3 | | ☐ Yes ☐ No | | |
| DIVERSION BERM 4 | | ☐ Yes ☐ No | | |
| DIVERSION BERM 5 | | ☐ Yes ☐ No | | |
| DIVERSION BERM 6 | | ☐ Yes ☐ No | | |
| DIVERSION BERM 7 | | ☐ Yes ☐ No | | |
| WEST PERIMETER CHANNEL | | ☐ Yes ☐ No | | |
| EAST PERIMETER CHANNEL | | ☐ Yes ☐ No | | |
| UPPER BUTTERESS FILL SIDESLOPE | | ☐ Yes ☐ No | | |
| LOWER BUTTRESS FILL SIDESLOPE | | ☐ Yes ☐ No | | |

* Unwanted vegetation includes weeds and "woody vegetation." Woody vegetation within the OLF waste footprint shall be removed. Other locations shall be evaluated per Section 3.5.

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

# ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

## STORMWATER MANAGEMENT STRUCTURES

### CHANNELS

| STRUCTURE | EVIDENCE OF EXCESSIVE EROSION, GULLYING, SCOUR, OR UNDERMINING? | EVIDENCE OF SETTLEMENT/ SUBSIDENCE OR DEPRESSIONS? | EVIDENCE OF BREACHING OR BANK FAILURE? | EVIDENCE OF BURROWING ANIMALS? | EVIDENCE OF SEDIMENT BUILD-UP OR OTHER BLOCKAGE? |
|---|---|---|---|---|---|
| DIVERSION BERM 1 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| DIVERSION BERM 2 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| DIVERSION BERM 3 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| DIVERSION BERM 4 | ☐ Yes ☒ No | ☒ Yes ☐ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| DIVERSION BERM 5 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| DIVERSION BERM 6 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| DIVERSION BERM 7 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| TEMPORARY CHECK DAMS* | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| WEST PERIMETER CHANNEL | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| EAST PERIMETER CHANNEL | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |

* Check dams may be removed after vegetation is established.

OTHER DEFICIENCIES?

None.

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

None.

# ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

## STORMWATER MANAGEMENT STRUCTURES (CONTINUED)

### OUTFALLS

CHECK EACH STRUCTURE FOR EXCESSIVE EROSION AND SEDIMENT DEPTH. IF SEDIMENT DEPTH IS COMPROMISING THE DESIGN CHARACTERISTICS, REMOVE SEDIMENT.

| STRUCTURE | CONDITION / SEDIMENT DEPTH |
|---|---|
| DIVERSION BERM OUTFALL 1 | Good condition / No sediment |
| DIVERSION BERM OUTFALL 2 | Fair condition / Needs repaired |
| DIVERSION BERM OUTFALL 3 | Fair condition / Needs repaired |
| DIVERSION BERM OUTFALL 4 | Good condition / No sediment |
| DIVERSION BERM OUTFALL 5 | " " |
| DIVERSION BERM OUTFALL 6 | Fair condition / Needs repaired |
| DIVERSION BERM OUTFALL 7 | Good condition / No sediment |
| WEST PERIMETER CHANNEL OUTFALL | " " |
| EAST PERIMETER CHANNEL OUTFALL | " " |
| FRENCH DRAIN OUTFALL (SID) | " " |

OTHER DEFICIENCIES?

None

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

Repairs to berm outfalls will be completed during OLF Maintenance Project.

## ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

### "RUN-ON" CONTROL

| AREA | ADVERSELY AFFECTING OLF? | | |
|---|---|---|---|
| NORTH OF THE ORIGINAL LANDFILL | ☐ Yes | ☑ No | COMMENT: — |
| WEST OF THE WEST PERIMETER CHANNEL | ☐ Yes | ☑ No | COMMENT: — |
| EAST OF THE EAST PERIMETER CHANNEL | ☐ Yes | ☑ No | COMMENT: — |
| NORTH OF WOMAN CREEK | ☐ Yes | ☑ No | COMMENT: — |

MAINTENANCE REQUIRED

None.

# ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

## INSTITUTIONAL CONTROLS

| ITEM | | | |
|---|---|---|---|
| EVIDENCE OF EXCAVATION(S) OF COVER AND IMMEDIATE VICINITY OF COVER? | ☒ Yes | ☐ No | COMMENT: Repairs completed on Berm 4 |
| EVIDENCE OF CONSTRUCTION OF ROADS, TRAILS, OR BUILDINGS ON COVER? | ☐ Yes | ☒ No | COMMENT: – |
| EVIDENCE OF DRILLING OF WELLS OR USE OF GROUNDWATER? | ☐ Yes | ☒ No | COMMENT: – |
| DAMAGE OR REMOVAL OF ANY SIGNAGE OR GROUNDWATER MONITORING WELLS? | ☐ Yes | ☒ No | COMMENT: – |

OTHER DEFICIENCIES / PHOTO LOG

None

# ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

## ACTION ITEMS

| DEFICIENCY | DATE NOTED | ACTION | DATE COMPLETED | COMMENTS |
|---|---|---|---|---|
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INSPECTOR SIGNATURE: _____ DATE: 11/19/13

REVIEWER SIGNATURE: _____ DATE: 11-21-13

**OLF November Monthly Inspection – Attachment 1**

The monthly inspection of the OLF was completed on November 19, 2013. The repairs completed in the Berm 1 and Berm 4 areas remain in good condition with no new cracking observed. The 4" drainage tile that was installed in the channel of Berm 4 remains in good condition and is functioning properly. A geotechnical engineering firm has completed their evaluation of the slumping area on the OLF and has submitted recommendations for stabilizing the cover in that area. The maintenance project incorporating these recommended changes will be completed as soon as conditions permit.

The site received 0.29" of precipitation in November. The seep locations were all saturated except for Seep 1. Seeps 4 and 7 showed surface expression and Seep 8 was flowing at approximately 1-2 gallons per minute.

*Seep 4 Area*

*OLF Cover*

*Berm 7 Outfall*

*Berm 4 Drainage Tile Inlet*

*Repaired Crack Location above Berm 4*

# ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

INSPECTOR: J. McLaughlin / J. Walters DATE: 12/23/13 TIME: 1000 REVIEWED BY: Chris Synott

TEMPERATURE: 44° F WEATHER CONDITIONS: Pt. Cloudy REVIEW DATE: 1-2-14

## SUBSIDENCE / CONSOLIDATION

| REGION | EVIDENCE OF CRACKS? | EVIDENCE OF DEPRESSIONS? | EVIDENCE OF SINK HOLES? | EVIDENCE OF PONDING? | OTHER (DESCRIBE BELOW) |
|---|---|---|---|---|---|
| COVER – WEST | ☐ Yes ☒ No | ☒ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| COVER – EAST | ☒ Yes ☐ No | ☒ Yes ☐ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| BUTTRESS FILL | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| DIVERSION BERM 1 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| DIVERSION BERM 2 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| DIVERSION BERM 3 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| DIVERSION BERM 4 | ☒ Yes ☐ No | ☒ Yes ☐ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| DIVERSION BERM 5 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| DIVERSION BERM 6 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| DIVERSION BERM 7 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |

Settlement Plates – Inspect integrity. Intact? ☒ Yes ☐ No

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

See Attachment 1 for details on cracks and depressions on east side of OLF

# ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

## SLOPE STABILITY

| REGION | EVIDENCE OF CRACKS? | EVIDENCE OF SEEPS? | EVIDENCE OF BLOCK OR CIRCULAR FAILURE? | OTHER (DESCRIBE BELOW |
|---|---|---|---|---|
| COVER – WEST | ☐ Yes ☒ No | ☒ Yes ☐ No | ☐ Yes ☒ No | – |
| COVER – EAST | ☒ Yes ☐ No | ☒ Yes ☐ No | ☒ Yes ☐ No | – |
| BUTTRESS FILL SIDESLOPE | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| WEST PERIMETER CHANNEL SIDESLOPES | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| EAST PERIMETER CHANNEL SIDESLOPES | ☒ Yes ☐ No | ☒ Yes ☐ No | ☐ Yes ☒ No | – |
| COVER SEEPS (IF PRESENT) | ☐ Yes ☒ No | ☒ Yes ☐ No | ☐ Yes ☒ No | – |

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

A new crack along the top of the eastern side of the EPC was observed during this inspection. See Attachment 1 for details.

# ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

## SOIL COVER

| REGION | EVIDENCE OF SOIL DEPOSITION OR EROSION? | EVIDENCE OF EROSION RILLS/GULLIES? | EVIDENCE OF BURROWING ANIMALS? | OTHER (DESCRIBE BELOW) |
|---|---|---|---|---|
| COVER – WEST | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| COVER – EAST | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| BUTTRESS FILL | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| BUTTRESS FILL SIDESLOPE | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

None

Vegetation has met success criteria of M+M Plan - No inspection required.

# ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

## VEGETATION

| REGION | CONDITION OF GRASS | UNWANTED VEGETATION PRESENT*? | PERCENTAGE OF GRASS VERSUS BARE GROUND? | PERCENTAGE OF UNWANTED VEGETATION? |
|---|---|---|---|---|
| COVER- WEST | | ☐ Yes ☐ No | | |
| COVER - EAST | | ☐ Yes ☐ No | | |
| DIVERSION BERM 1 | | ☐ Yes ☐ No | | |
| DIVERSION BERM 2 | | ☐ Yes ☐ No | | |
| DIVERSION BERM 3 | | ☐ Yes ☐ No | | |
| DIVERSION BERM 4 | | ☐ Yes ☐ No | | |
| DIVERSION BERM 5 | | ☐ Yes ☐ No | | |
| DIVERSION BERM 6 | | ☐ Yes ☐ No | | |
| DIVERSION BERM 7 | | ☐ Yes ☐ No | | |
| WEST PERIMETER CHANNEL | | ☐ Yes ☐ No | | |
| EAST PERIMETER CHANNEL | | ☐ Yes ☐ No | | |
| UPPER BUTTERESS FILL SIDESLOPE | | ☐ Yes ☐ No | | |
| LOWER BUTTRESS FILL SIDESLOPE | | ☐ Yes ☐ No | | |

* Unwanted vegetation includes weeds and "woody vegetation." Woody vegetation within the OLF waste footprint shall be removed. Other locations shall be evaluated per Section 3.5.

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

# ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

## STORMWATER MANAGEMENT STRUCTURES

### CHANNELS

| STRUCTURE | EVIDENCE OF EXCESSIVE EROSION, GULLYING, SCOUR, OR UNDERMINING? | EVIDENCE OF SETTLEMENT/ SUBSIDENCE OR DEPRESSIONS? | EVIDENCE OF BREACHING OR BANK FAILURE? | EVIDENCE OF BURROWING ANIMALS? | EVIDENCE OF SEDIMENT BUILD-UP OR OTHER BLOCKAGE? |
|---|---|---|---|---|---|
| DIVERSION BERM 1 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| DIVERSION BERM 2 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| DIVERSION BERM 3 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| DIVERSION BERM 4 | ☐ Yes ☒ No | ☒ Yes ☐ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| DIVERSION BERM 5 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| DIVERSION BERM 6 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| DIVERSION BERM 7 | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| TEMPORARY CHECK DAMS* | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| WEST PERIMETER CHANNEL | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| EAST PERIMETER CHANNEL | ☐ Yes ☒ No | ☒ Yes ☐ No | ☒ Yes ☐ No | ☐ Yes ☒ No | ☐ Yes ☒ No |

* Check dams may be removed after vegetation is established.

OTHER DEFICIENCIES?

None.

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

Details and pictures of EPC + Berm 4 slumping and cracking are included in Attachment 1.

# ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

## STORMWATER MANAGEMENT STRUCTURES (CONTINUED)

### OUTFALLS

CHECK EACH STRUCTURE FOR EXCESSIVE EROSION AND SEDIMENT DEPTH. IF SEDIMENT DEPTH IS COMPROMISING THE DESIGN CHARACTERISTICS, REMOVE SEDIMENT.

| STRUCTURE | CONDITION / SEDIMENT DEPTH |
|---|---|
| DIVERSION BERM OUTFALL 1 | Good condition / No sediment |
| DIVERSION BERM OUTFALL 2 | Fair condition / Needs repaired |
| DIVERSION BERM OUTFALL 3 | " " |
| DIVERSION BERM OUTFALL 4 | Good condition / No sediment |
| DIVERSION BERM OUTFALL 5 | " " |
| DIVERSION BERM OUTFALL 6 | Fair condition / Needs repaired |
| DIVERSION BERM OUTFALL 7 | Good condition / No sediment |
| WEST PERIMETER CHANNEL OUTFALL | " " |
| EAST PERIMETER CHANNEL OUTFALL | " " |
| FRENCH DRAIN OUTFALL (SID) | " " |

OTHER DEFICIENCIES?

None

MAINTENANCE REQUIRED / COMMENTS / PHOTO LOG

Repairs to Berm 2, 3, + 6 outfalls will be completed during OLF Maintenance Project

## ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

## "RUN-ON" CONTROL

| AREA | ADVERSELY AFFECTING OLF? | | |
|---|---|---|---|
| NORTH OF THE ORIGINAL LANDFILL | ☐ Yes | ☒ No | COMMENT: — |
| WEST OF THE WEST PERIMETER CHANNEL | ☐ Yes | ☒ No | COMMENT: — |
| EAST OF THE EAST PERIMETER CHANNEL | ☐ Yes | ☒ No | COMMENT: — |
| NORTH OF WOMAN CREEK | ☐ Yes | ☒ No | COMMENT: — |

MAINTENANCE REQUIRED

None.

## ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

### INSTITUTIONAL CONTROLS

| ITEM | | | |
|---|---|---|---|
| EVIDENCE OF EXCAVATION(S) OF COVER AND IMMEDIATE VICINITY OF COVER? | ☒ Yes | ☐ No | COMMENT: Berm 4 area repairs |
| EVIDENCE OF CONSTRUCTION OF ROADS, TRAILS, OR BUILDINGS ON COVER? | ☐ Yes | ☒ No | COMMENT: – |
| EVIDENCE OF DRILLING OF WELLS OR USE OF GROUNDWATER? | ☐ Yes | ☒ No | COMMENT: – |
| DAMAGE OR REMOVAL OF ANY SIGNAGE OR GROUNDWATER MONITORING WELLS? | ☐ Yes | ☒ No | COMMENT: – |

OTHER DEFICIENCIES / PHOTO LOG

None

# ORIGINAL LANDFILL – MONITORING AND MAINTENANCE PLAN INSPECTION FORM

## ACTION ITEMS

| DEFICIENCY | DATE NOTED | ACTION | DATE COMPLETED | COMMENTS |
|---|---|---|---|---|
| cracking observed along top of EPC on east side | 12/23/13 | Fill in cracks with Rocky Flats Alluvium and compact | 12/23/13 | See Attachment 1 for details |
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INSPECTOR SIGNATURE: [signature] DATE: 12/23/13

REVIEWER SIGNATURE: [signature] DATE: 1-2-14

**OLF December Monthly Inspection – Attachment 1**

The monthly inspection of the OLF was completed on December 23, 2013. The repairs completed in the Berm 1 and Berm 4 areas remain in good condition. A new minor cracking location was observed along the top of the East Perimeter Channel on the eastern edge. The crack was approximately 2 inches wide and 10 feet long. The crack ran parallel to the upper eastern edge of the East Perimeter Channel slump that has been documented in previous inspections. The crack was filled and compacted with Rocky Flats Alluvium the same day it was observed. The extent of the crack location was also flagged to make it easier to locate and monitor in future inspections. Additional repairs to the OLF slumping and cracking areas will be completed during the OLF Maintenance Project which will be completed when soil conditions are more favorable.

The site received 0.50 inches of precipitation in December. The seep locations were all saturated except for Seep 1. Seeps 4 and 7 showed surface expression and Seep 8 was flowing at approximately 1 gallon per minute.

*Berm 1 Area*

*OLF Cover Facing East*

*Seep 4 Area*

*Seep 8*

*East Perimeter Channel Slump*

*New Crack Location above East Perimeter Channel Slump*

## C.2 Present Landfill

# PRESENT LANDFILL – MONITORING AND MAINTENANCE PROGRAM

## INSPECTION FORM

INSPECTOR: J. McLaughlin DATE: 11/20/13 TIME: 1100 REVIEWED BY: Guy Smith

TEMPERATURE: 57°F WEATHER CONDITIONS: Pt. Cloudy REVIEW DATE: 11-21-13

METEOROLOGICAL STATION LOCATION: NREL Wind Site

## SUBSIDENCE/CONSOLIDATION

| REGION | EVIDENCE OF CRACKS? | EVIDENCE OF DEPRESSIONS? | EVIDENCE OF SINK HOLES? | EVIDENCE OF PONDING? | OTHER (DESCRIBE BELOW) |
|---|---|---|---|---|---|
| TOP OF COVER – WEST | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| TOP OF COVER – EAST | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| COVER SIDESLOPE – NORTH | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| COVER SIDESLOPE – SOUTH | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| EAST FACE SLOPE – NORTH | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| EAST FACE SLOPE – SOUTH | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| EAST FACE SLOPE – CENTRAL | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| EAST FACE SLOPE – NORTH SEEP* | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |

Settlement Plates and side-slope monitoring points to be inspected for integrity. During Year 1, they will be surveyed quarterly, and annually thereafter

Integrity intact? ☒ Yes ☐ No

MAINTENANCE REQUIRED/COMMENTS/PHOTO LOG

None. The annual settlement monument surveys will be completed in December.

* AREA OF SEEP IS OUTSIDE OF LANDFILL COVER AND EAST OF THE COVER ANCHOR TRENCH

## SLOPE STABILITY

| REGION | EVIDENCE OF CRACKS? | EVIDENCE OF BLOCK OR CIRCULAR FAILURE? | EVIDENCE OF SEEPS? | OTHER (DESCRIBE BELOW) |
|---|---|---|---|---|
| COVER SIDESLOPE – NORTH | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| COVER SIDESLOPE – SOUTH | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| PERIMETER CHANNEL OUTER SLOPE – NORTH | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| PERIMETER CHANNEL OUTER SLOPE – SOUTH | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| EAST FACE SLOPE – NORTH | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| EAST FACE SLOPE – SOUTH | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| EAST FACE SLOPE – CENTRAL | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| EAST FACE SLOPE – NORTH SEEP* | ☐ Yes ☒ No | ☐ Yes ☒ No | ☒ Yes ☐ No | – |

MAINTENANCE REQUIRED/COMMENTS/PHOTO LOG

The North Seep location was saturated at the time of this inspection, but had no surface expression.

* AREA OF SEEP IS OUTSIDE OF LANDFILL COVER AND EAST OF THE COVER ANCHOR TRENCH

## SOIL COVER

| REGION | EVIDENCE OF SOIL DEPOSITION OR EROSION? | EVIDENCE OF EROSION RILLS/GULLIES? | EVIDENCE OF BURROWING ANIMALS? | OTHER (DESCRIBE BELOW) |
|---|---|---|---|---|
| TOP OF COVER – WEST | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| TOP OF COVER – EAST | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| COVER SIDESLOPE – NORTH | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| COVER SIDESLOPE – SOUTH | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| EAST FACE SLOPE – NORTH | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| EAST FACE SLOPE – SOUTH | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| EAST FACE SLOPE -- CENTRAL | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| AREA WHERE EAST SLOPE CENTRAL MEETS EAST SLOPE NORTH | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| AREA WHERE EAST SLOPE CENTRAL MEETS EAST SLOPE SOUTH | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | – |
| | **VENT CAPS IN PLACE & SECURE?** | **STANDPIPES IN GOOD CONDITION?** | **BIRDS OR INSECTS IN VENT CAPS?** | |
| COVER – BAROMETRIC VENTS | ☒ Yes ☐ No | ☒ Yes ☐ No | ☐ Yes ☒ No | |

MAINTENANCE REQUIRED/COMMENTS/PHOTO LOG

None.

The vegetation on the PLF cover has met the success criteria outlined in the M+M Plan. No vegetation inspection is required.

## VEGETATION

| REGION | CONDITION OF GRASS | UNWANTED VEGETATION PRESENT*? | OTHER (DESCRIBE BELOW) |
|---|---|---|---|
| TOP OF COVER – WEST | | ☐ Yes ☐ No | |
| TOP OF COVER – EAST | | ☐ Yes ☐ No | |
| EAST FACE SLOPE – NORTH | | ☐ Yes ☐ No | |
| EAST FACE SLOPE – SOUTH | | ☐ Yes ☐ No | |
| EAST FACE SLOPE – CENTRAL | | ☐ Yes ☐ No | |
| COVER SIDESLOPE – NORTH | | ☐ Yes ☐ No | |
| COVER SIDESLOPE – SOUTH | | ☐ Yes ☐ No | |
| VEGETATION-LINED PERIMETER CHANNEL – NORTH | | ☐ Yes ☐ No | |
| VEGETATION-LINED PERIMETER CHANNEL – SOUTH | | ☐ Yes ☐ No | |

* Unwanted vegetation includes weeds and deep-rooting trees.

MAINTENANCE REQUIRED/COMMENTS/PHOTO LOG

## SEEP TREATMENT SYSTEM

| REGION | EVIDENCE OF PLUGGING, OBSTRUCTIONS, OR EXCESS DEBRIS? | EVIDENCE OF CRACKS OR DETERIORATION? | OTHER (DESCRIBE BELOW) |
|---|---|---|---|
| GWIS INLET PIPES | ☐ Yes ☑ No | ☐ Yes ☑ No | – |
| STRIP DRAIN INLET PIPE | ☐ Yes ☑ No | ☐ Yes ☑ No | – |
| NORTH MANHOLE OUTLET PIPE | ☐ Yes ☑ No | ☐ Yes ☑ No | – |
| SOUTH MANHOLE OUTLET PIPE | ☐ Yes ☑ No | ☐ Yes ☑ No | – |
| TREATMENT UNIT | ☐ Yes ☑ No | ☐ Yes ☑ No | – |
| TREATMENT UNIT OUTLET PIPE | ☐ Yes ☑ No | ☐ Yes ☑ No | – |
| NORTH MANHOLE | ☐ Yes ☑ No | ☐ Yes ☑ No | – |
| SOUTH MANHOLE | ☐ Yes ☑ No | ☐ Yes ☑ No | – |
| TREATMENT UNIT GRATING | NA | ☐ Yes ☑ No | – |

MAINTENANCE REQUIRED/COMMENTS/PHOTO LOG

None.

# STORMWATER MANAGEMENT STRUCTURES

## CHANNELS/LINING

| STRUCTURE | EVIDENCE OF EXCESSIVE EROSION, GULLYING, SCOUR, OR UNDERMINING? | EVIDENCE OF SETTLEMENT/ SUBSIDENCE OR DEPRESSIONS? | EVIDENCE OF BREACHING OR BANK FAILURE? | EVIDENCE OF BURROWING ANIMALS? | EVIDENCE OF SEDIMENT BUILD-UP OR OTHER BLOCKAGE? | EVIDENCE OF LINING DETERIORATION, HOLES, RIPS, OR SEPARATION? | EVIDENCE OF LINING DISPLACEMENT? |
|---|---|---|---|---|---|---|---|
| DIVERSION BERM | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| VEGETATION-LINED PERIMETER CHANNEL – NORTH | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| VEGETATION-LINED PERIMETER CHANNEL – SOUTH | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| RIPRAP-LINED PERIMETER CHANNEL | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| C350-LINED EAST FACE | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| EAST FACE RIPRAP CHANNEL – NORTH | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No |
| EAST FACE RIPRAP CHANNEL – SOUTH | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | ☐ Yes ☒ No | |

OTHER DEFICIENCIES?

None.

MAINTENANCE REQUIRED/COMMENTS/PHOTO LOG

None.

## STORMWATER MANAGEMENT STRUCTURES (CONTINUED)

### OUTFALLS

CHECK EACH STRUCTURE FOR EXCESSIVE EROSION AND SEDIMENT DEPTH. IF SEDIMENT DEPTH IS COMPROMISING THE DESIGN CHARACTERISTICS, REMOVE SEDIMENT.

| STRUCTURE | CONDITION/SEDIMENT DEPTH |
|---|---|
| DIVERSION BERM OUTFALL – NORTH | Good condition / No sediment |
| DIVERSION BERM OUTFALL – SOUTH | ↓ |
| CULVERT 1 OUTFALL | |
| CULVERT 2 OUTFALL | |
| SOUTHWEST CULVERT OUTFALL | |

### CULVERTS

CHECK EACH STRUCTURE FOR BLOCKAGE, SURROUNDING CONDITIONS, BREACHING, SEDIMENT BUILD-UP, AND INLET/OUTLET CONDITIONS.

| STRUCTURE | CONDITION |
|---|---|
| CULVERT 1 | Good condition |
| CULVERT 2 | ↓ |
| SOUTHWEST CULVERT | |

MAINTENANCE REQUIRED/PHOTO LOG

None.

## "RUN-ON" EROSION CONTROL

| AREA | ADVERSELY AFFECTING PLF? | | |
|---|---|---|---|
| RUN-ON INTO PERIMETER CHANNEL – NORTH | ☐ Yes | ☒ No | COMMENT: – |
| RUN-ON INTO PERIMETER CHANNEL – SOUTH | ☐ Yes | ☒ No | COMMENT: – |
| NATURAL DRAINAGE FED BY CULVERT 1 | ☐ Yes | ☒ No | COMMENT: – |
| NATURAL DRAINAGE FED BY NORTHEAST PERIMETER CHANNEL | ☐ Yes | ☒ No | COMMENT: – |
| NATURAL DRAINAGE FED BY RIPRAP | ☐ Yes | ☒ No | COMMENT: – |

MAINTENANCE REQUIRED/PHOTO LOG

None.

## INSTITUTIONAL CONTROLS

| ITEM | | | |
|---|---|---|---|
| EVIDENCE OF EXCAVATION(S) OF COVER AND IMMEDIATE VICINITY OF COVER? | ☐ Yes | ☒ No | COMMENT: — |
| EVIDENCE OF CONSTRUCTION OF ROADS OR TRAILS ON COVER OR BUILDINGS? | ☐ Yes | ☒ No | COMMENT: — |
| EVIDENCE OF UNAUTHORIZED ENTRY? | ☐ Yes | ☒ No | COMMENT: — |
| EVIDENCE OF DRILLING OF WELLS OR USE OF GROUNDWATER? | ☐ Yes | ☒ No | COMMENT: — |
| DISRUPTION OR DAMAGE OF SEEP TREATMENT SYSTEM? | ☐ Yes | ☒ No | COMMENT: — |
| DAMAGE OR REMOVAL OF ANY SIGNAGE OR GROUNDWATER MONITORING WELLS? | ☐ Yes | ☒ No | COMMENT: — |

OTHER DEFICIENCIES/PHOTO LOG

None.

## ACTION ITEMS

| DEFICIENCY | DATE NOTED | ACTION | DATE COMPLETED | COMMENTS |
|---|---|---|---|---|
| | | | | |
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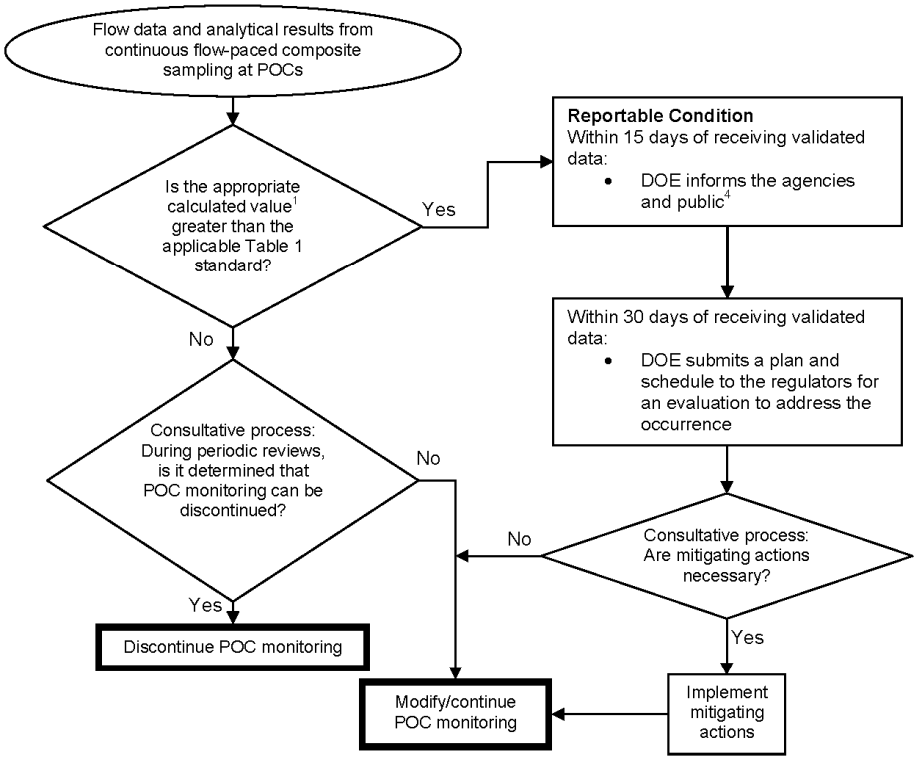
INSPECTOR SIGNATURE: _____ DATE: 11/20/13

REVIEWER SIGNATURE: _____ DATE: 11-21-13

# Appendix D: Data Evaluation Flowcharts Reproduced from RFLMA and the RFSOG

## D.1 Points of Compliance






Notes: see Fig. 1 and Tables 1 and 2 for locations, standards, and sampling criteria.

[1] Calculated values for determining Reportable Condition and exceedances of remedy performance standards at POCs.

- Reportable conditions (according to Section 6.0):
  - **plutonium, americium, uranium, nitrate** → 30-day average[2]
- Reportable Conditions and evaluation of compliance with remedy performance standards in Table 1:
  - **plutonium, americium, uranium, nitrate** → 12-month rolling average[3] for POCs inside COU; 30-day average for GS01 and GS03.

[2] The 30-day average for a particular day is calculated as a volume-weighted average of a "window" of time containing the previous 30 days with measurable flow. Each day has its own discharge volume (measured with a flow meter) and activity/concentration (from the sample carboy in place at the end of that day). Therefore, there are 365 30-day moving averages for a location that flows all year. At locations that have intermittent flows, 30-day averages are reported as averages of the previous 30 days of greater than zero flow. For days where no analytical result is available, either due to failed laboratory analysis or non-sufficient quantity (NSQ) for analysis, no 30-day average is reported.

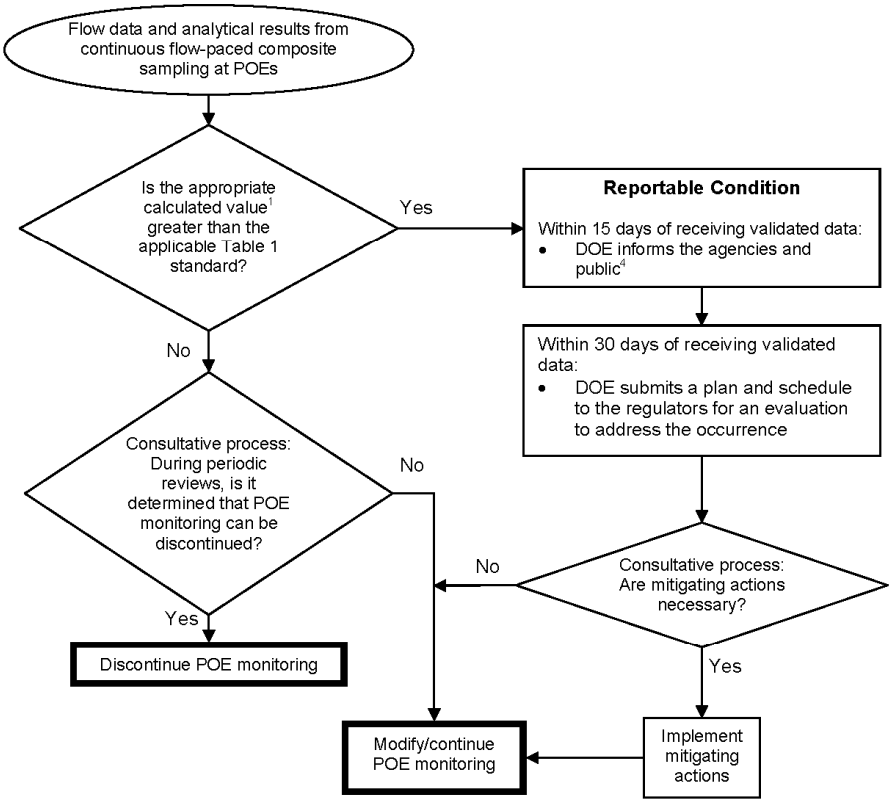
[3] The 12-month rolling average for the last day of a particular month is calculated as a volume-weighted average of a "window" of time containing the previous 12 months. Each 12-month "window" includes daily discharge volumes (measured with a flow meter) and daily activities/concentrations (from the sample carboy in place at the end of that day). Therefore, there are twelve 12-month rolling averages for a given calendar year. Days with no flow or no analytical result, either due to failed laboratory analysis or NSQ for analysis, are not included in the average. When no flow has occurred in the previous 12 months, no 12-month rolling average is reported.

[4] Agencies: EPA, CDPHE, and USFWS
Public: Cities of Broomfield, Northglenn, Thornton, and Westminster; Rocky Flats Stewardship Council (RFSC)

*Figure 5. Points of Compliance*

## D.2 Points of Evaluation






Notes: see Fig. 1 and Tables 1 and 2 for locations, standards, and sampling criteria.

[1] Calculated Values by analytes (see Table 2 for reference)
- plutonium, americium, uranium → 12-month rolling average[2]
- dissolved Cd and Ag, total Be and Cr → 85th percentile of 30-day averages[3] for previous calendar year

[2] The 12-month rolling average for the last day of a particular month is calculated as a volume-weighted average of a "window" of time containing the previous 12 months. Each 12-month "window" includes daily discharge volumes (measured with a flow meter) and daily activities/concentrations (from the sample carboy in place at the end of that day). Therefore, there are twelve 12-month rolling averages for a given calendar year. Days with no flow or no analytical result, either due to failed laboratory analysis or NSQ for analysis, are not included in the average. When no flow has occurred in the previous 12 months, no 12-month rolling average is reported.

[3] The 30-day average for a particular day is calculated as a volume-weighted average of a "window" of time containing the previous 30 days with measurable flow. Each day has its own discharge volume (measured with a flow meter) and activity/concentration (from the sample carboy in place at the end of that day). Therefore, there are 365 30 day moving averages for a location that flows all year. At locations that have intermittent flows, 30-day averages are reported as averages of the previous 30 days of greater than zero flow. For days where no analytical result is available, either due to failed laboratory analysis or NSQ for analysis, no 30-day average is reported.

[4] Agencies: EPA, CDPHE, and USFWS
Public: Cities of Broomfield, Northglenn, Thornton, and Westminster; Rocky Flats Stewardship Council (RFSC)

*Figure 6. Points of Evaluation*

## D.3 Area of Concern Wells and SW018



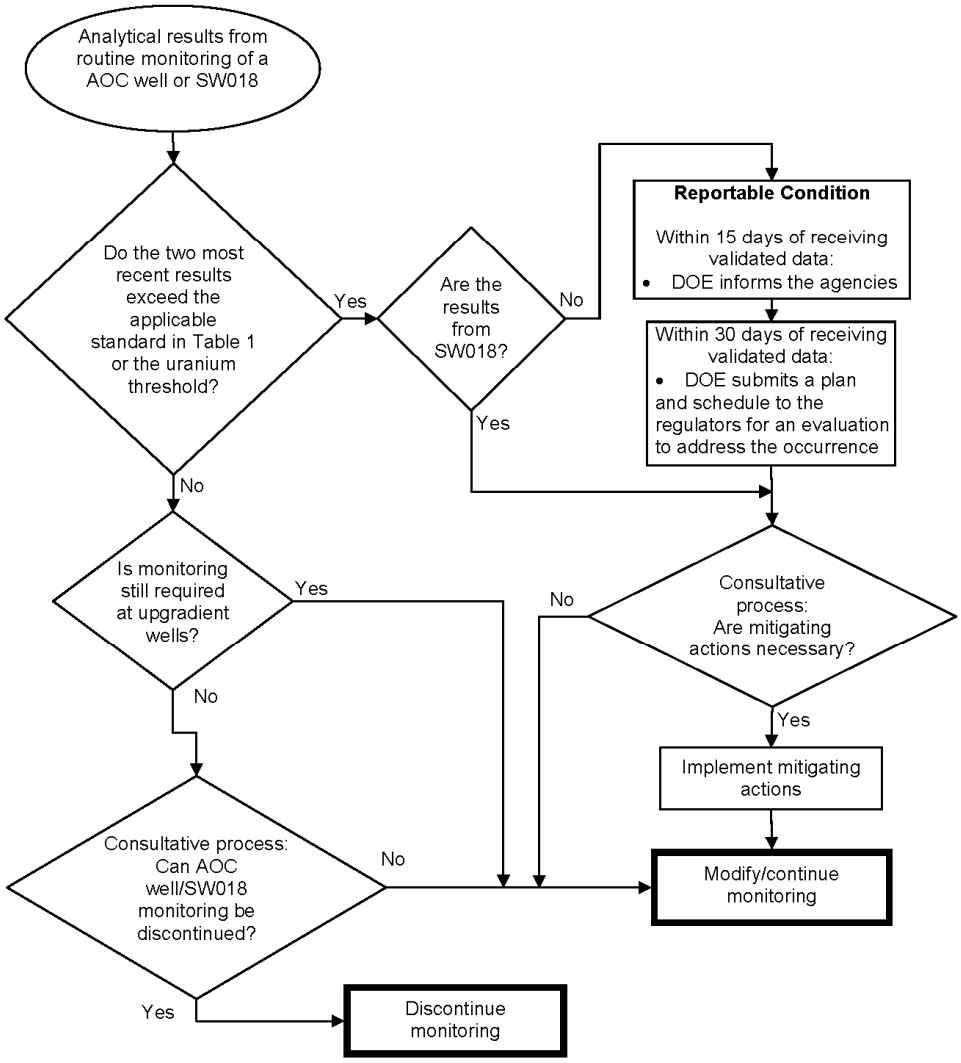
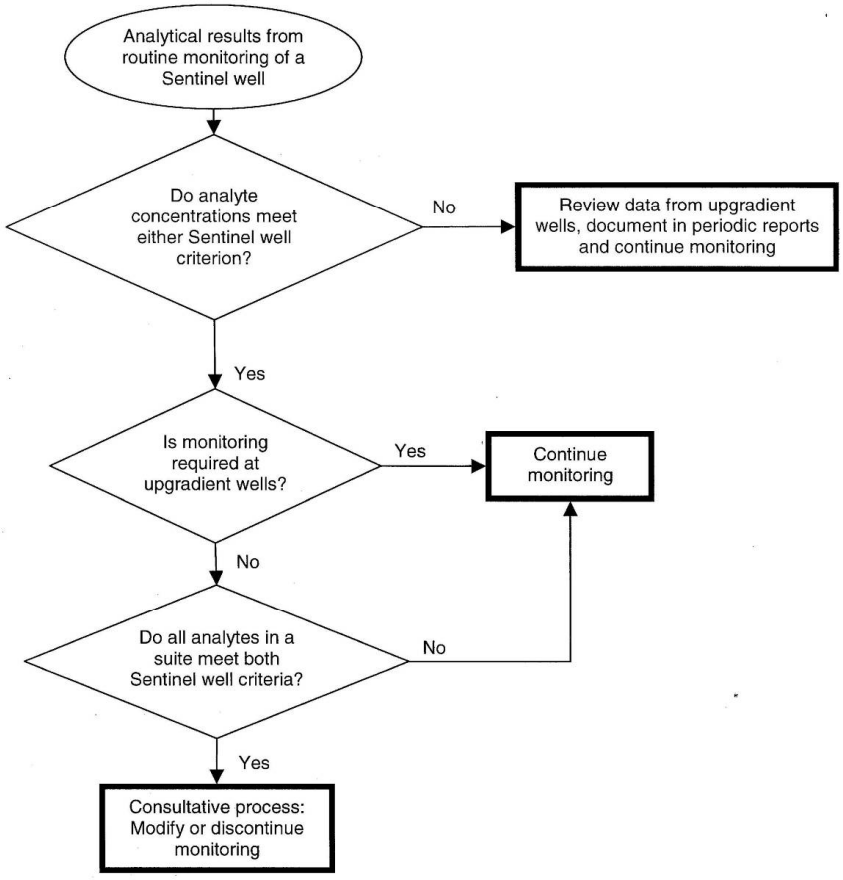



*Figure 7. Area of Concern Wells and SW018*

## D.4 Sentinel Wells






Notes: see Fig. 1 and Tables 1 and 2 for locations, standards, and sampling criteria.

- Sentinel wells are sampled twice each year; see Table 2.
- Decisions related to uranium are based upon a 120 ug/L threshold for AOC wells (basis: a grand mean of results from Site-wide high-resolution uranium analyses performed in the late 1990s through mid-2000s), rather than the standard in Table 1.

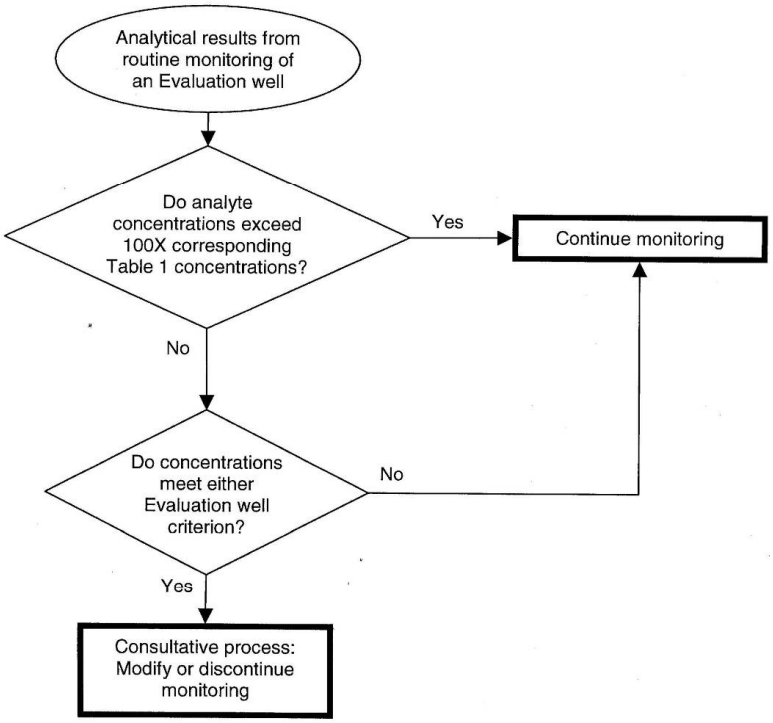
Sentinel Well Criteria

1. The 85th percentile concentration of an analyte *is less than or equal to* the corresponding concentration in Table 1 or, for uranium, the 85th percentile concentration does not exceed 2x120 ug/L or the highest calendar year 2005 concentration, whichever is higher.
2. Analyte concentrations exhibit an indeterminate or statistically-significant *decreasing* trend at the 95% confidence level.

*Figure 8. Sentinel Wells*

## D.5 Evaluation Wells






Notes: see Fig. 1 and Tables 1 and 2 for locations, standards, and sampling criteria.

- Evaluation wells are listed in Table 2.

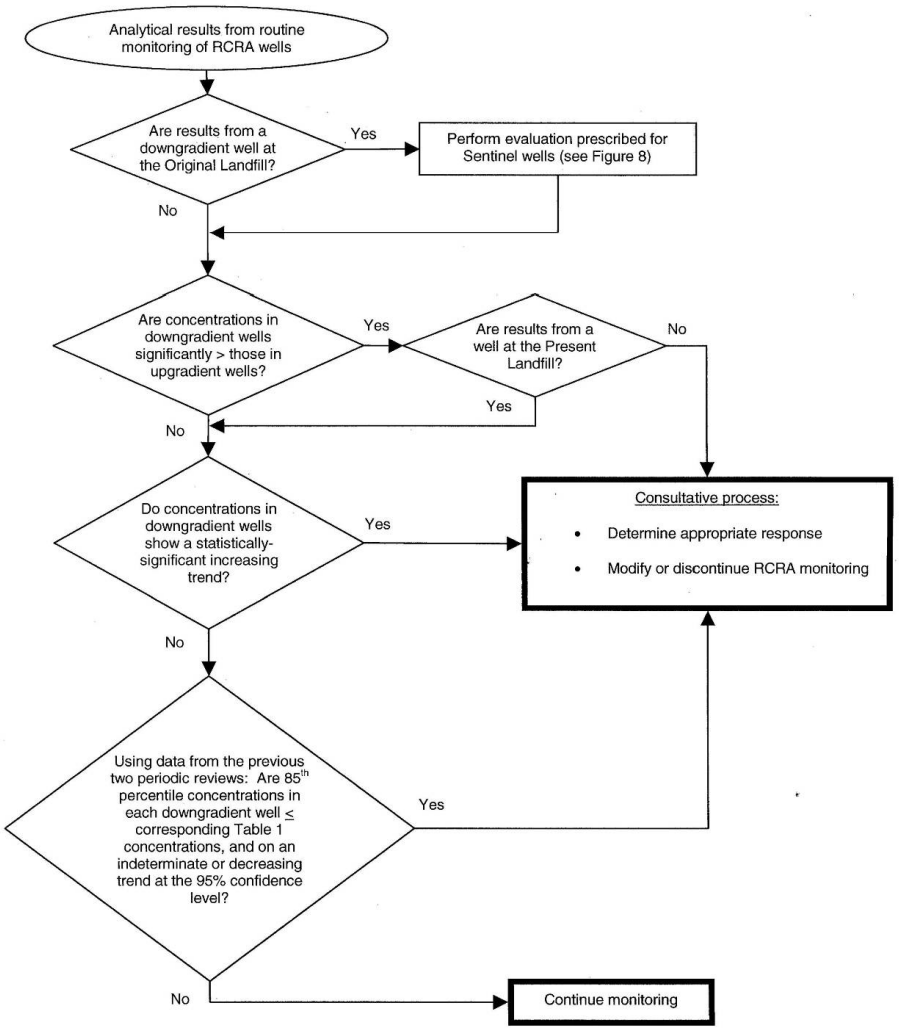
Evaluation Well Criteria:

1. The 85th percentile concentration of an analyte *is less than or equal to* the corresponding concentration in Table 1, or, for uranium, 240 ug/L or highest pre-CY05 concentration, whichever is higher.
2. Analyte concentrations exhibit an indeterminate or statistically-significant *decreasing* trend at the 95% confidence level.

*Figure 9. Evaluation Wells*

## D.6 RCRA Wells






Notes: see Fig. 1 and Tables 1 and 2 for locations, standards, and sampling criteria.
RCRA wells are sampled quarterly; see Table 2.

*Figure 10. RCRA Wells*

## D.7 Groundwater Treatment Systems



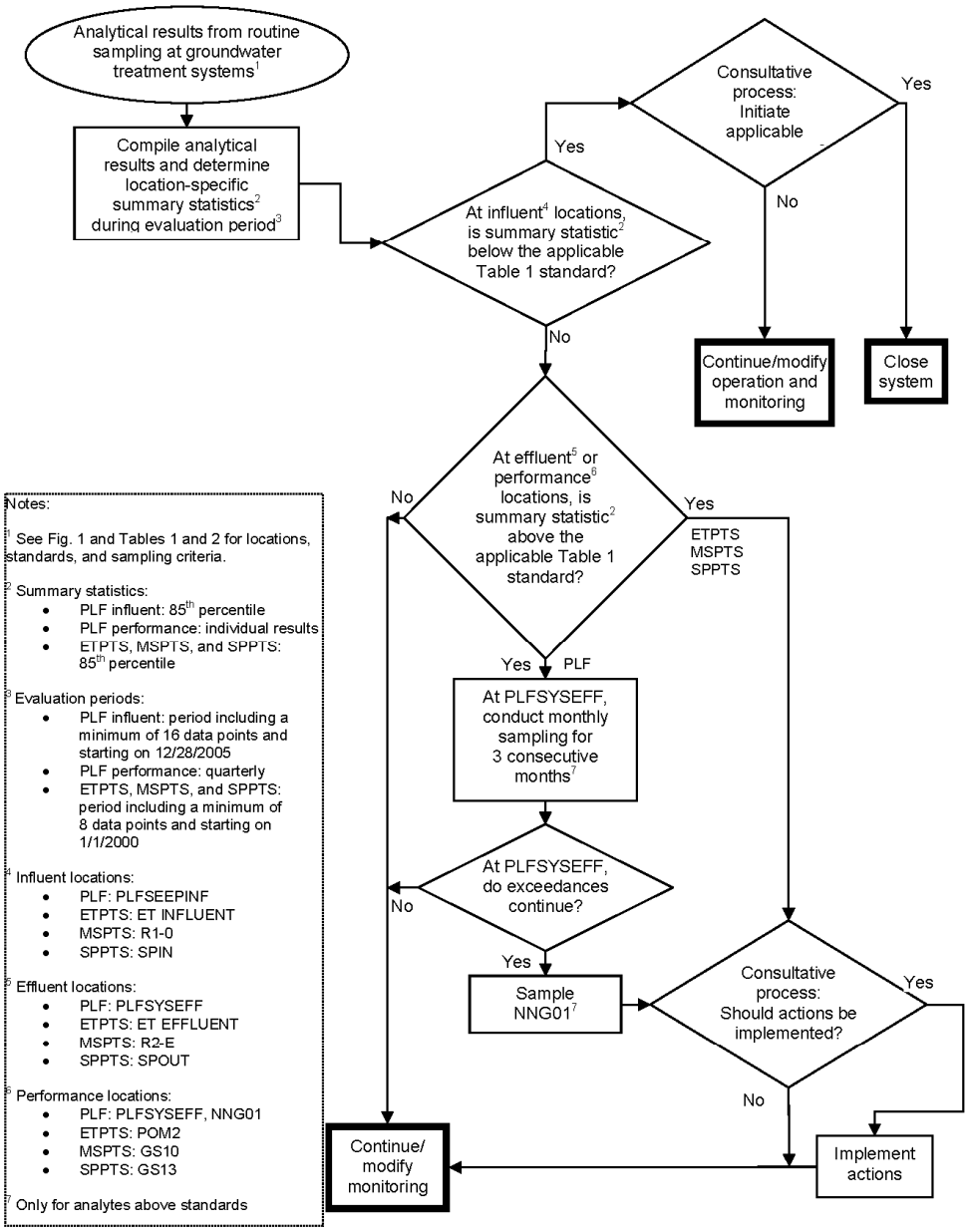



*Figure 11. Groundwater Treatment Systems*

## D.8 Original Landfill Surface Water



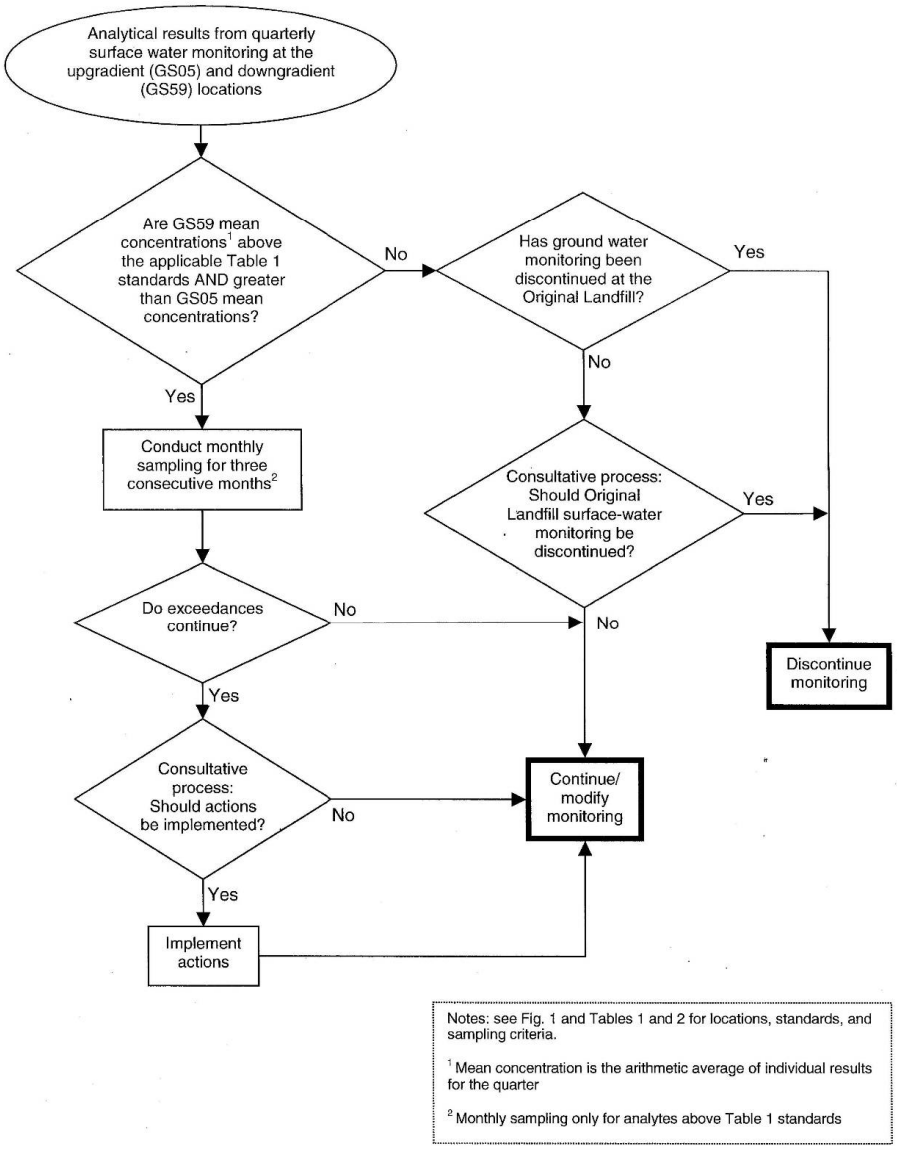



*Figure 12. Original Landfill Surface Water*

## D.9 Pre-discharge Pond Sampling



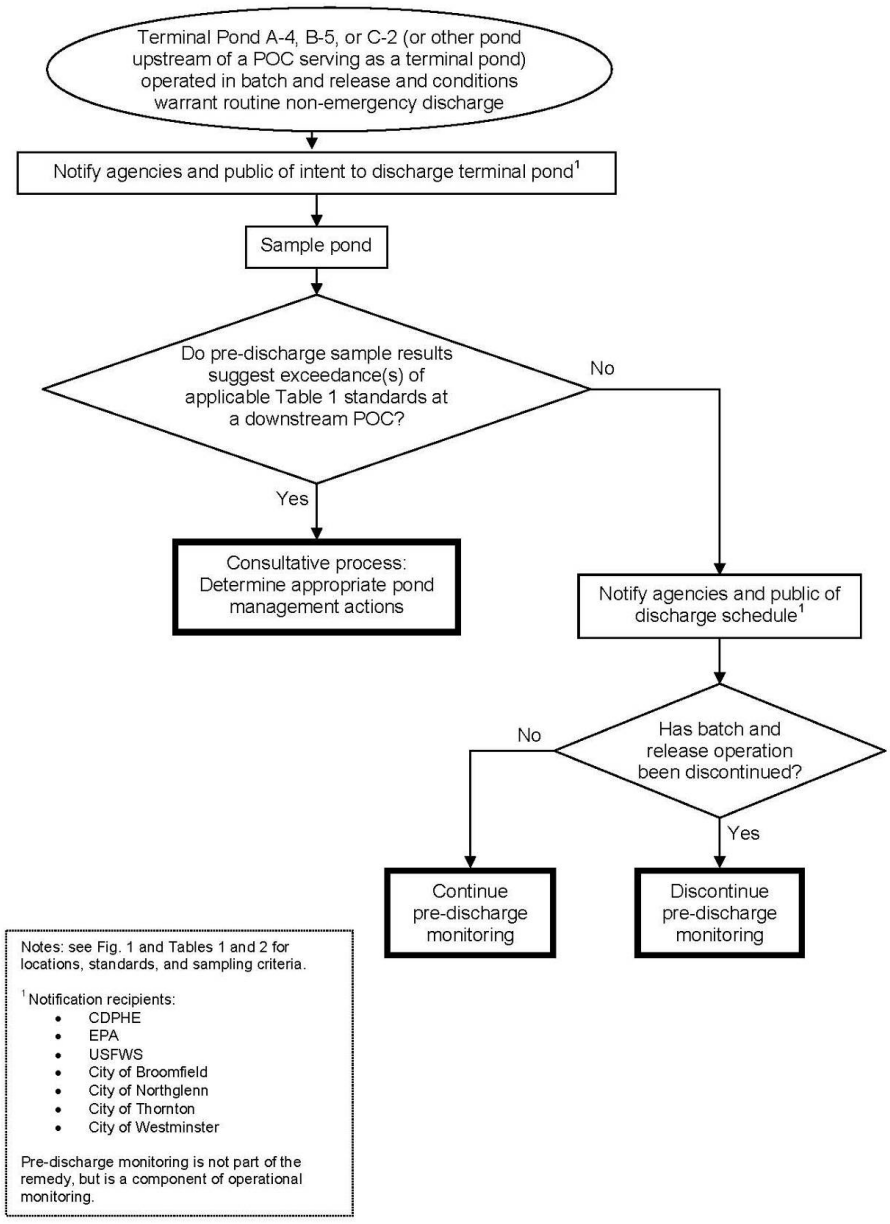



*Figure 13. Pre-discharge Pond Sampling*

3801 Automation Way Suite 100
Fort Collins CO 80525
Tel 970.223.9600 Fax 970.223.7171
www.tetratech.com

# Technical Memorandum

| | | | |
|---|---|---|---|
| **To:** | Ms. Linda Kaiser | **From:** | Thomas A. Chapel, CPG, PE |
| **Company:** | S. M. Stoller Corporation | **Date:** | March 21, 2014 |
| **Re:** | Instrumentation and Monitoring, Rocky Flats OLF | **Tt Project #:** | 114-181750 |

## Introduction

This technical memorandum provides a summary and evaluation of data collected from inclinometer and piezometer instrumentation at the Rocky Flats Original Landfill (OLF) during calendar year 2013. Previously collected data has been updated with information collected during 2013. Data from piezometers located on the outside of the inclinometer casings were also reviewed and evaluated for possible correlation with the inclinometer data. However, the last functional readings of the piezometers were recorded on March 4, 2013. At some point shortly after those measurements were recorded, the remaining piezometers stopped functioning.

Background information regarding the results of the geotechnical investigation conducted in 2008 (Tetra Tech 2008) during which the inclinometers were installed has been provided in our previous technical memorandums and is not repeated here (Tetra Tech, 2010, Tetra Tech, 2011, Tetra Tech, 2012).

## Background

Minor localized surface cracking, differential settlement, slumping and subsidence have been previously documented at the site, and similar minor distress continued during 2013. Following a major precipitation event on the Front Range during September 2013 (see Appendix B, Figure B-1), visible slope movement occurred in the northeast quadrant of the OLF. Significant movement of several of the inclinometers was measured following that event. Figure 1, Plan View of the OLF Site, shows the locations of the localized cracking, slumping and settling, seeps, test pits for the 2008 geotechnical investigation and the inclinometers. A summary of performance of the instruments prior to this reporting is provided in the following sections for clarity.

## Instrumentation and Monitoring

Water level and inclinometer readings began on April 13, 2008. Piezometers are located near the base of each inclinometer tube and on the outside of the tube within each borehole. Piezometers were grouted in place according to standard practice for this type of instrument at the time each

borehole was grouted as required to encase the inclinometer tube. The piezometers include automatic data loggers set to take readings at even intervals. The readings can be converted to water levels using the manufacturers' calibration curves. Hourly data readings were logged from April 2008 through late December 2008. On December 22, 2008 S.M. Stoller decided to switch to daily readings in order to increase the battery life of the data logger. The daily reading interval has been used since December 22, 2008.

Deflections of the inclinometers were manually read approximately monthly throughout each year, starting on April 13, 2008. Inclinometer readings are obtained by inserting a 32 inch long probe into the inclinometer tube, and taking electronic readings of the vertical and horizontal orientation of the instrument at one foot intervals along the length of the tube. Wheels on the top and bottom of the probe align the measurement instrument in precise grooves along the length of the tube. Inclinometer readings are taken in two perpendicular directions created by the orientation of the grooves, relative to the A-axis and the B-axis of the inclinometer tube. The direction of the slope movement is indicated by the relative movement of each inclinometer tube along both the A and B-axes. A lack of movement along both axes indicates a stable slope. Due to the length and diameter of the probe, large inclinometer tube deflections and deformations can prevent the probe from being inserted over the full length of the tube. Large enough deflections can cause the tube to break, also preventing insertion of the probe beyond the point of the break. Inclinometer data are included in Appendix A, precipitation data are included in Appendix B, and piezometer data are included in Appendix C. The location of each borehole instrumented with piezometers and inclinometers is shown on Figure 1.

## Inclinometer Data

Little movement was observed for any of the inclinometers from April 2008 to April 2009. Following a period of heavy precipitation in April 2009 deflections became apparent. The largest deflections were noted in inclinometers Tt-2, Tt-3 and Tt-4, on the western edge of the OLF. This was the area with the most pronounced differential settling, slumping and surface cracking observed in 2007. Following another period of heavy precipitation in September 2013 slope movement was observed in the northeast quadrant of the OLF. This movement was corroborated by distress in Tt-7, which is the only inclinometer in this area.

Inclinometer Tt-1 was installed to a depth of 30 feet, and continued to function properly through 2013. Movement less than 0.1 inches has been measured to date.

Inclinometer Tt-2 was installed to a depth of 34 feet. Sometime after the August 19, 2009 reading, slope movement resulted in inclinometer tube deformation or breakage and the inclinometer could not be read below a depth of 25 feet. Therefore, subsequent readings have been taken to a depth of 25 feet. Between January 31 and December 19, 2013, movements of 1.5 inches and 0.8 inches were recorded for the A axis and B axis, respectively.

Inclinometer Tt-3 was installed to a depth of 38 feet. Slope movement at this location also resulted in inclinometer tube deformation or breakage, and the inclinometer could not be read below a depth of 33 feet. Therefore, subsequent readings have been taken to a depth of 33 feet. Deflections of less than 0.25 inches were recorded during 2013.

After April 19, 2010, the inclinometer probe could not be lowered beyond the 13 foot level in Tt-4. During 2013, deflections of 0.3 inches and 0.1 inches were recorded for the A axis and B axis, respectively.

During 2013, Tt-5 remained functional to the original depth of 35 feet, with most of the deflection occurring at a depth of 30 feet. The measured deflection during 2013 was 0.7 inches on the A axis and 0.2 inches on the B axis.

Inclinometer Tt-6 remained functional to a total depth of 29 feet. Deflections occurred at a depth of 19 feet, with a total movement during 2013 of 0.3 inches and 0.1 inches on the A axis and B axis, respectively.

Visible slope movement occurred in the vicinity of Tt-7 following the September precipitation event. When measurements were attempted on September 26, 2013, the instrument could not be lowered more than 9 feet. That depth is coincident with the depth at which previous deflections had been measured. The bottom of the instrument had dirt on it when pulled up, suggesting that the tube was broken as a result of that movement. Readings taken during 2013 show that approximately 1.8 inches of movement had occurred in alignment with the A axis, and about 2.1 inches of total movement had occurred in alignment with the B axis through August 2013. During August and September 2013, 0.7 additional inches of deflection were recorded on the A axis, and 2 additional inches of deflection were recorded on the B axis. Between September and December 2013 less than 0.1 inches of deflection was recorded on both the A axis and B axis.

The deformed or broken casings likely indicate movement of the slope at or near the location of the break/obstruction. For the inclinometer in Tt-2, the depth at which the casing deformed or broke corresponds with the depth in the boring where soft clay was found. For the inclinometer in Tt-3, the casing is deformed or broken at a depth of 33 feet, which corresponds to a location in the subsurface where the geologic materials changed from sandy gravelly clay to claystone bedrock.
It is our opinion that monitoring of the inclinometers at the OLF should continue, in order to monitor the relative movement over time to the depths that can be measured.

**Piezometer Data**

Piezometers Tt-2, Tt-4 and Tt-5 began to show erratic readings in the summer of 2008. Piezometers Tt-3 and Tt-7 began to show erratic readings in November 2008 and January 2009, respectively. The readings were considered erratic because the fluctuations varied more than half a foot within a one hour time period. Following measurements recorded in March 2013, all of the piezometers ceased to function reliably. It is not clear whether the lack of data logger data, or erratic and unreliable readings are the result of distress caused by deflections of the inclinometers, instrument failure, problems with response of the piezometers to changing water levels, or other causes such as fluctuating water levels over time above and below the level of the piezometer.

Piezometer data through March 4, 2013 are presented in Appendix C. For ease of viewing, the unreliable data are not plotted on the graphs in Appendix A. For completeness, the unfiltered data are presented in Appendix C.

Tetra Tech noted previously that in general, there is a correlation between water in the subsurface and the movement that is occurring at the OLF. Some of the change in the subsurface water condition is likely related to recharge of the upper hydrostratigraphic unit that occurs well upgradient of the OLF, and some of the change is due to an influx of water into the subsurface in the vicinity of the OLF. This observation appears to have been confirmed by the deflections that occurred after the precipitation event that occurred in September 2013. The relative influence of these two sources on the movement that is occurring remains unknown. Measures that are undertaken to decrease infiltration of surface water in the immediate vicinity of the OLF will not affect the up-gradient infiltration and therefore will not impact movement that results from up-gradient infiltration.

Because the piezometers are no longer functioning, direct correlations between the water levels and movement that has occurred are not possible. In general it appears that deflections increased after the precipitation event that occurred in September 2013.The precipitation in the area was measured by S.M. Stoller using on-site devices during the period of record for the inclinometers and piezometers. S.M. Stoller has noted that some inaccuracy of the measurements is likely during events when significant snowfall accumulates on the devices. When significant snow accumulates some of the snow may blow or fall off the device instead of accumulating in the device. Graphs prepared by S.M. Stoller showing monthly average precipitation values for 2013 are included in Appendix B.

## Recommendations

The recommendations made in the original report (Tetra Tech, 2008) and our 2010 Technical Memorandum remain valid. The instrumentation indicates that instability is caused by one or more weak layers in the shallow subsurface, and movement is exacerbated by precipitation events and elevated water levels. Slope stability modeling indicates the large scale, overall slope is stable. However, localized failures have occurred on the OLF under elevated water level conditions. A reduction in the water level alone is not considered adequate to ensure the long term stability of the slope, however it is possible that the reduced movements recorded by inclinometers during 2011 are related to drainage improvements constructed at the OLF during the same time frame. Drainage features designed during 2013 (Tetra Tech, 2013) may reduce movements in the eastern portion of the OLF, if constructed. Continued monitoring and regular maintenance of distress are recommended.

## Limitations

The above opinions and recommendations are based on a reasonable degree of certainty. This report has been prepared based upon a review of climate, weather and design documents, field investigation and testing, geotechnical engineering analyses, site visits, and our experience. The conclusions represent our best judgment based on the information available. Should additional information become available we should be allowed to review that information and modify our conclusions accordingly.

## References

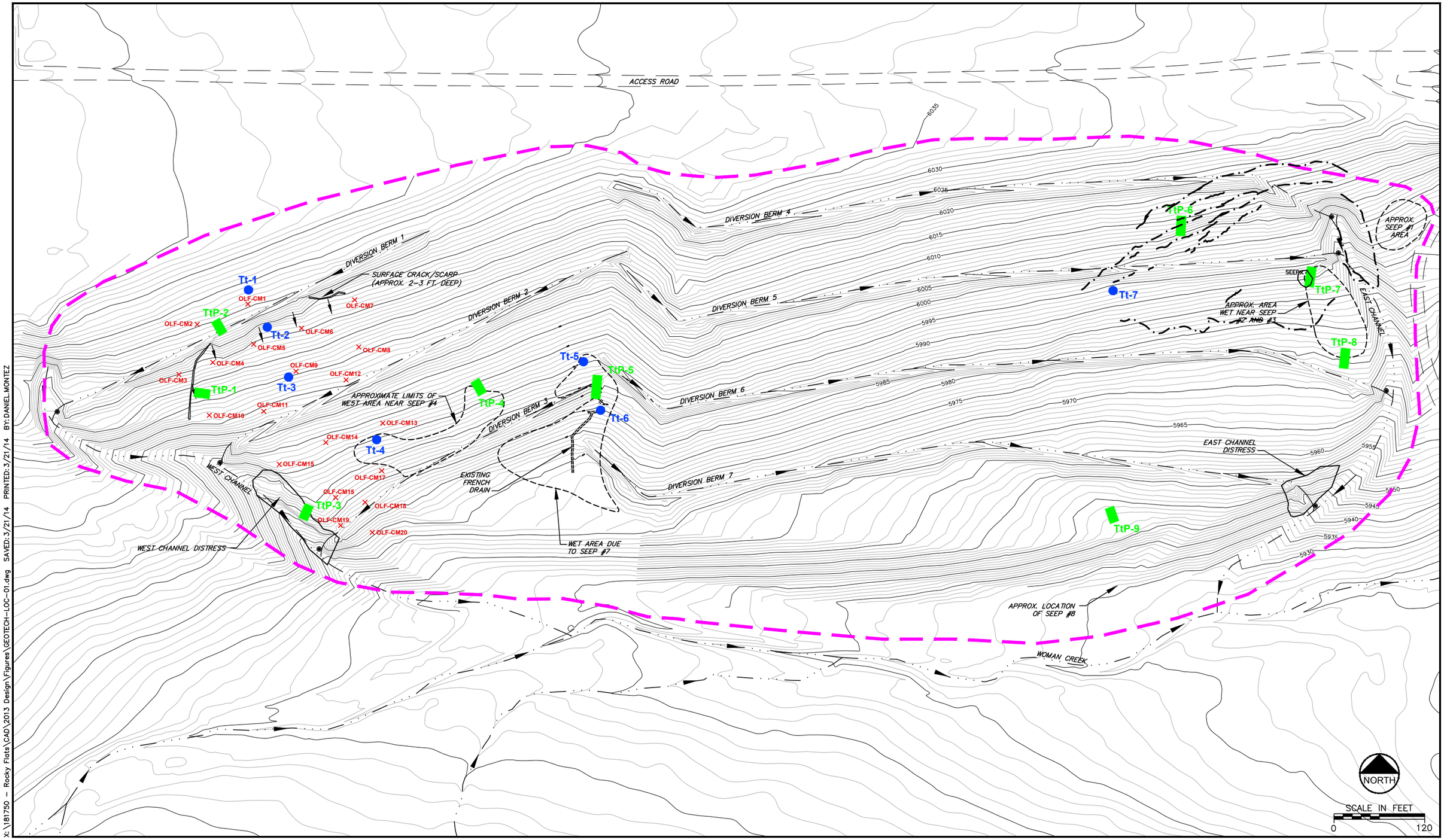

Tetra Tech, Inc. 2008. Rocky Flats Original Landfill Geotechnical Investigation Report. Jefferson County, Colorado. June.

Tetra Tech, Inc. 2010. Technical Memorandum, Instrumentation and Monitoring, Rocky Flats OLF, April.

Tetra Tech, Inc. 2011. Technical Memorandum, Instrumentation and Monitoring, Rocky Flats OLF, April.

Tetra Tech, Inc. 2012. Technical Memorandum, Instrumentation and Monitoring, Rocky Flats OLF, April.

Tetra Tech, Inc. 2013. OLF East Perimeter Channel and Berm Modifications, Rocky Flats Site, CO. November 22.




X:\181750 - Rocky Flats\CAD\2013 Design\Figures\GEOTECH-LOC-01.dwg SAVED: 3/21/14 PRINTED: 3/21/14 BY: DANIEL MONTEZ

Project No. 181750

March 2014

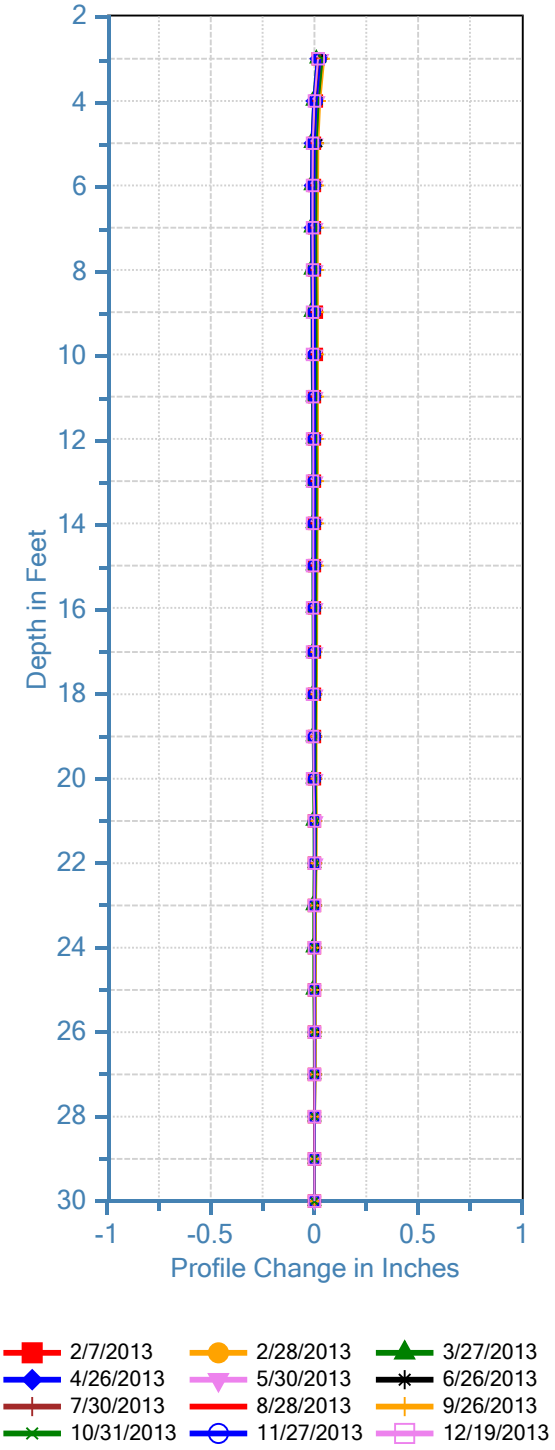
LEGEND:

- DITCH/CHANNEL/CREEK
- SLUMP OR SUBSIDENCE LINE AND DIRECTION
- ROAD
- × SETTLEMENT MONUMENT (EXISTING)
- APPROXIMATE LIMITS OF GEOTECHNICAL INVESTIGATION
- TEST PIT LOCATION
- TEST BORING AND INCLINOMETER LOCATION
- CRACKS OBSERVED FOLLOWING SEPTEMBER 2013 HEAVY PRECIPITATION EVENT

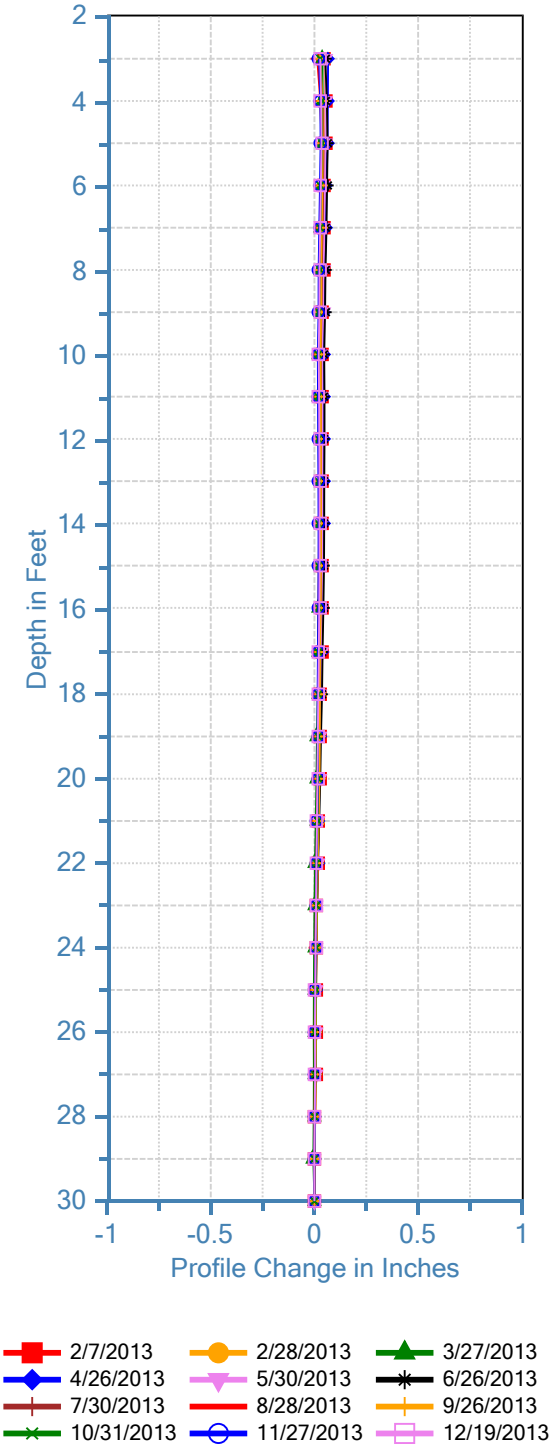
**Figure 1**
**Plan View of OLF Site**

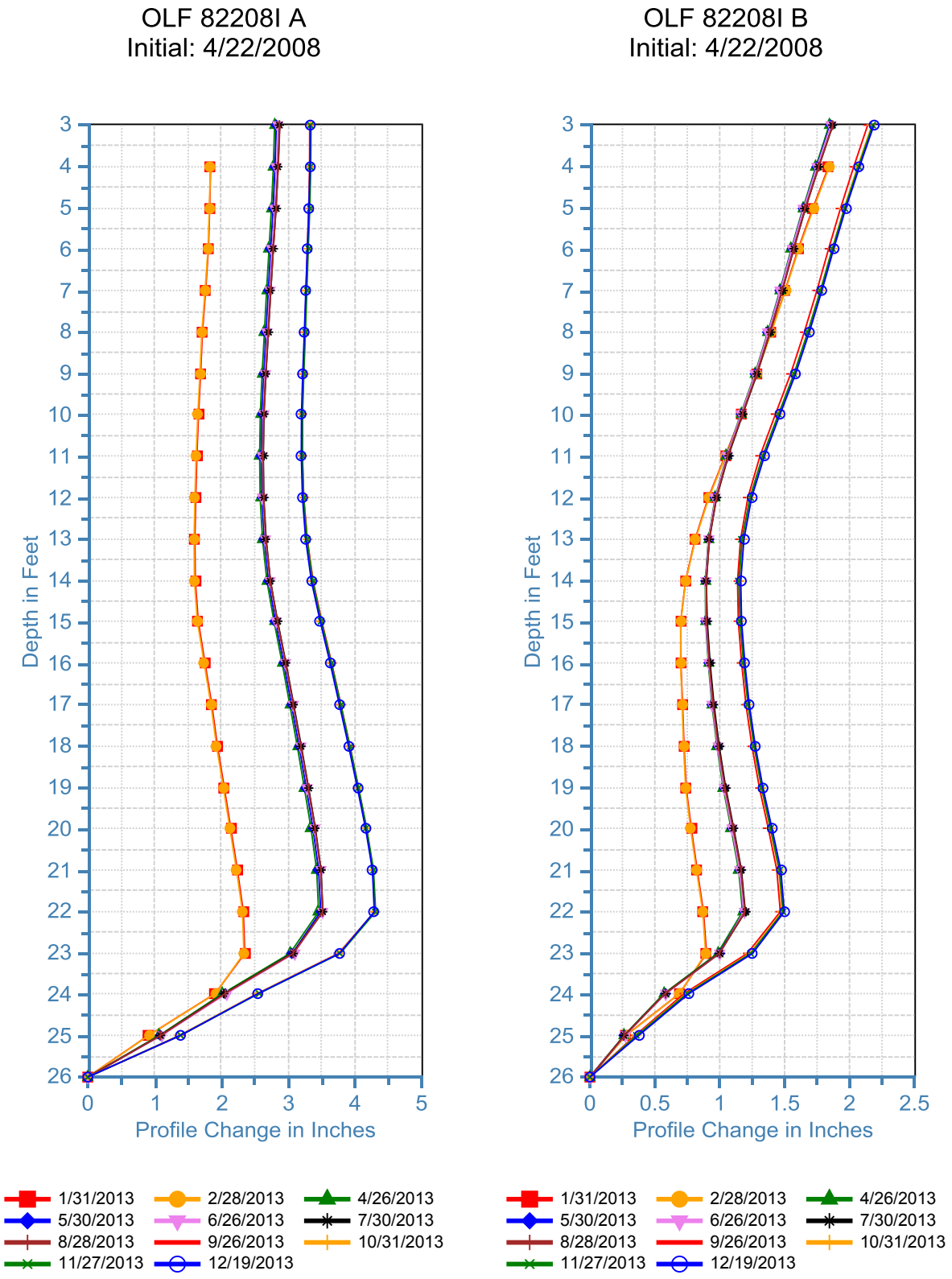
**Attachment A**
**Inclinometer and Filtered Piezometer Graphs**

OLF 82108I A
Initial: 4/22/2008

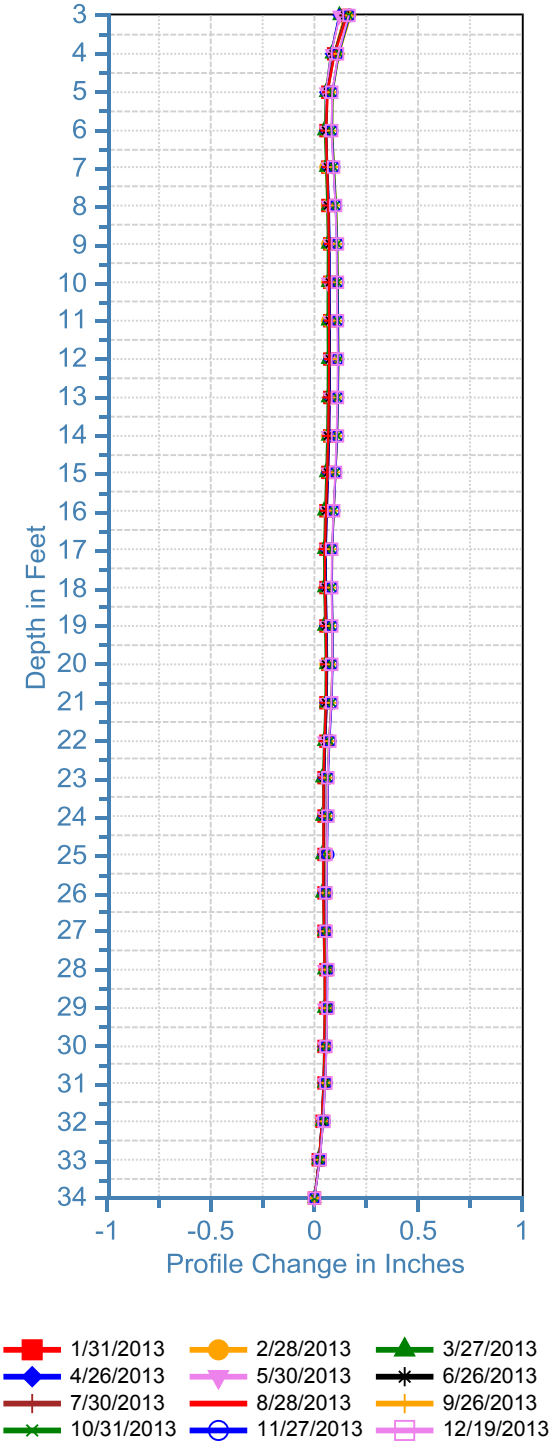



OLF 82108I B
Initial: 4/22/2008

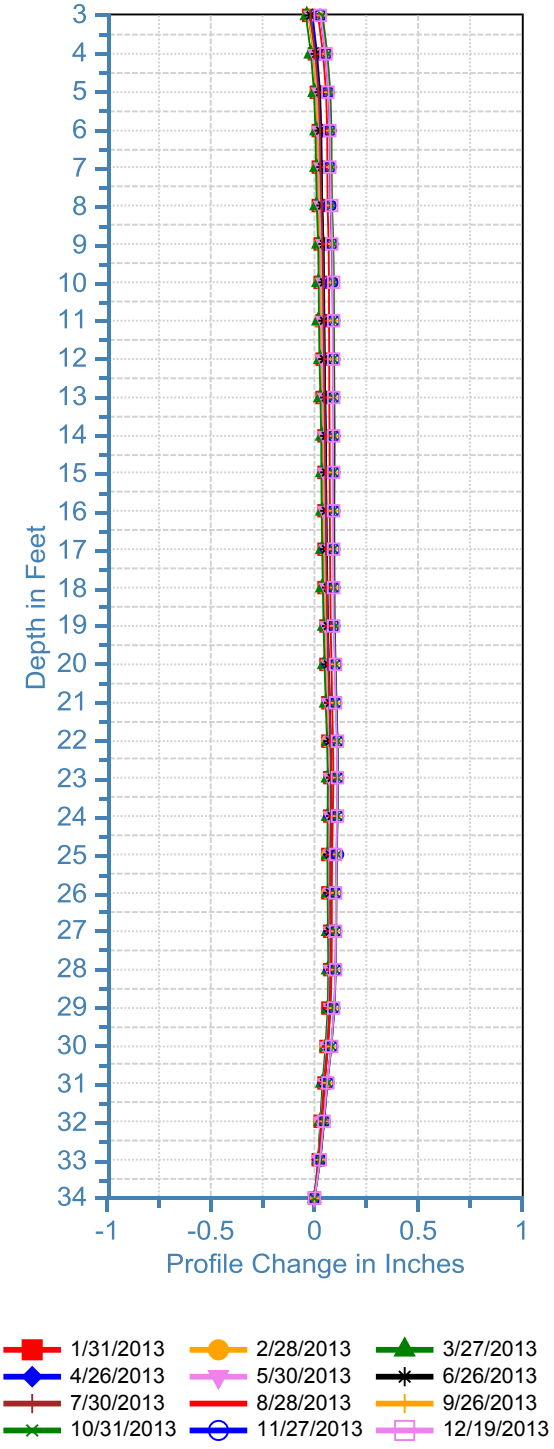


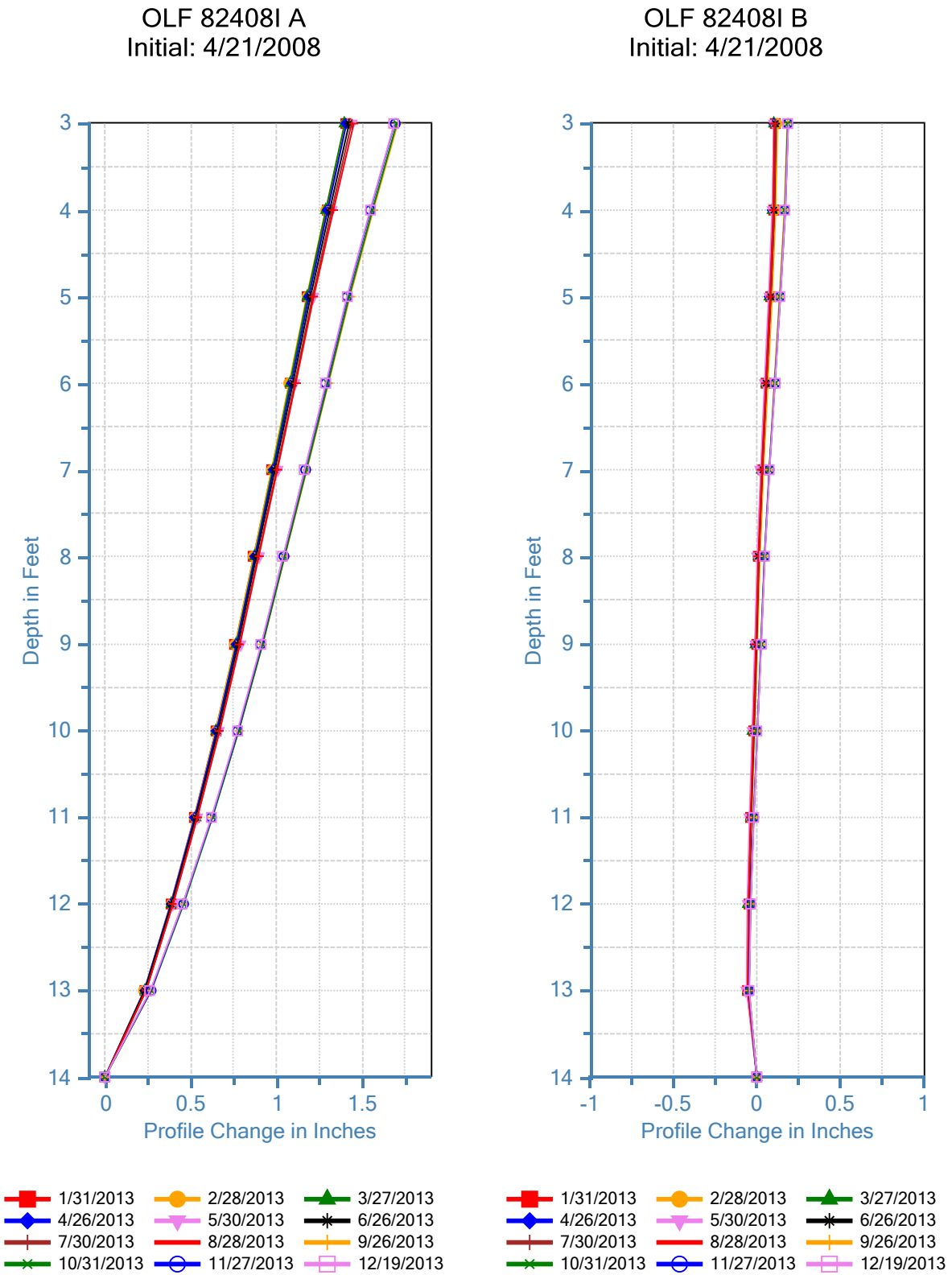

OLF 82208I A
Initial: 4/22/2008
OLF 82208I B
Initial: 4/22/2008
Depth in Feet
Profile Change in Inches
1/31/2013
2/28/2013
4/26/2013
5/30/2013
6/26/2013
7/30/2013
8/28/2013
9/26/2013
10/31/2013
11/27/2013
12/19/2013

OLF 82308I A
Initial: 4/21/2008

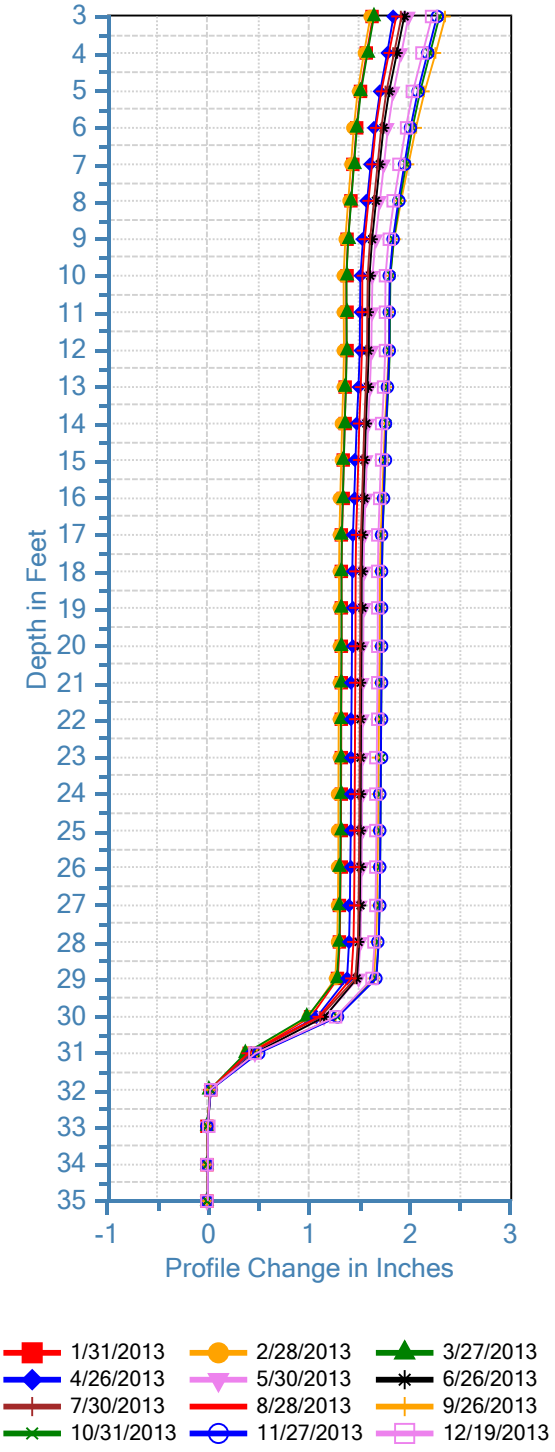



OLF 82308I B
Initial: 4/21/2008




OLF 82408I A
Initial: 4/21/2008
Depth in Feet
Profile Change in Inches
OLF 82408I B
Initial: 4/21/2008
Depth in Feet
Profile Change in Inches
1/31/2013
2/28/2013
3/27/2013
4/26/2013
5/30/2013
6/26/2013
7/30/2013
8/28/2013
9/26/2013
10/31/2013
11/27/2013
12/19/2013

OLF 82508I A
Initial: 4/21/2008

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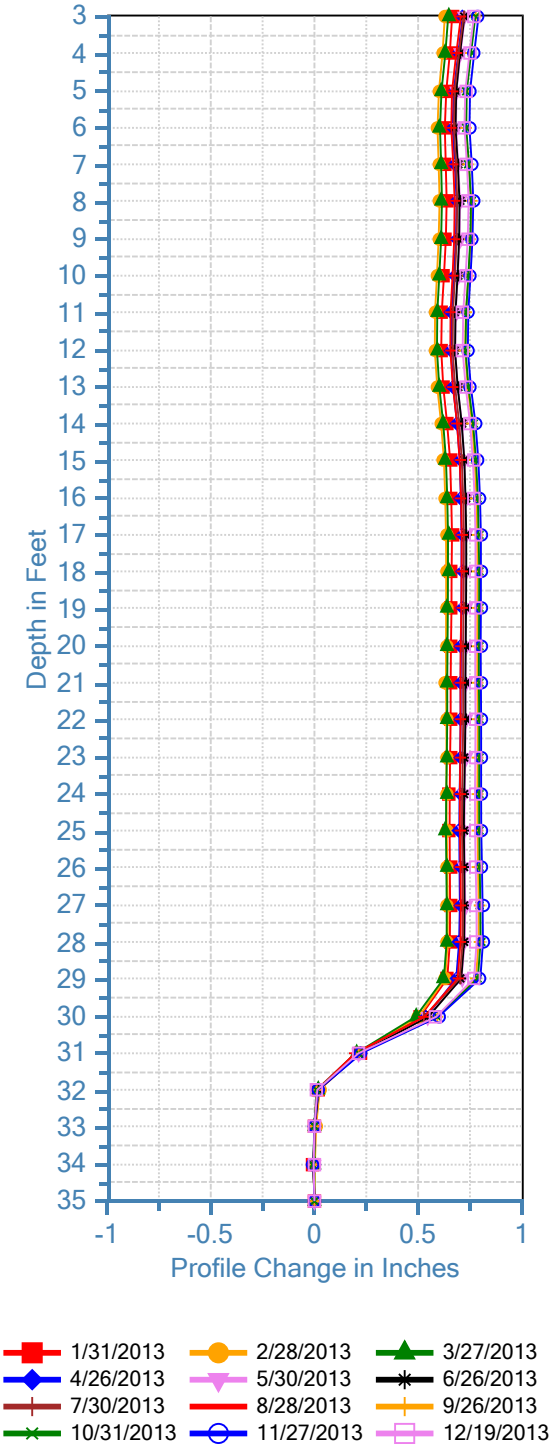
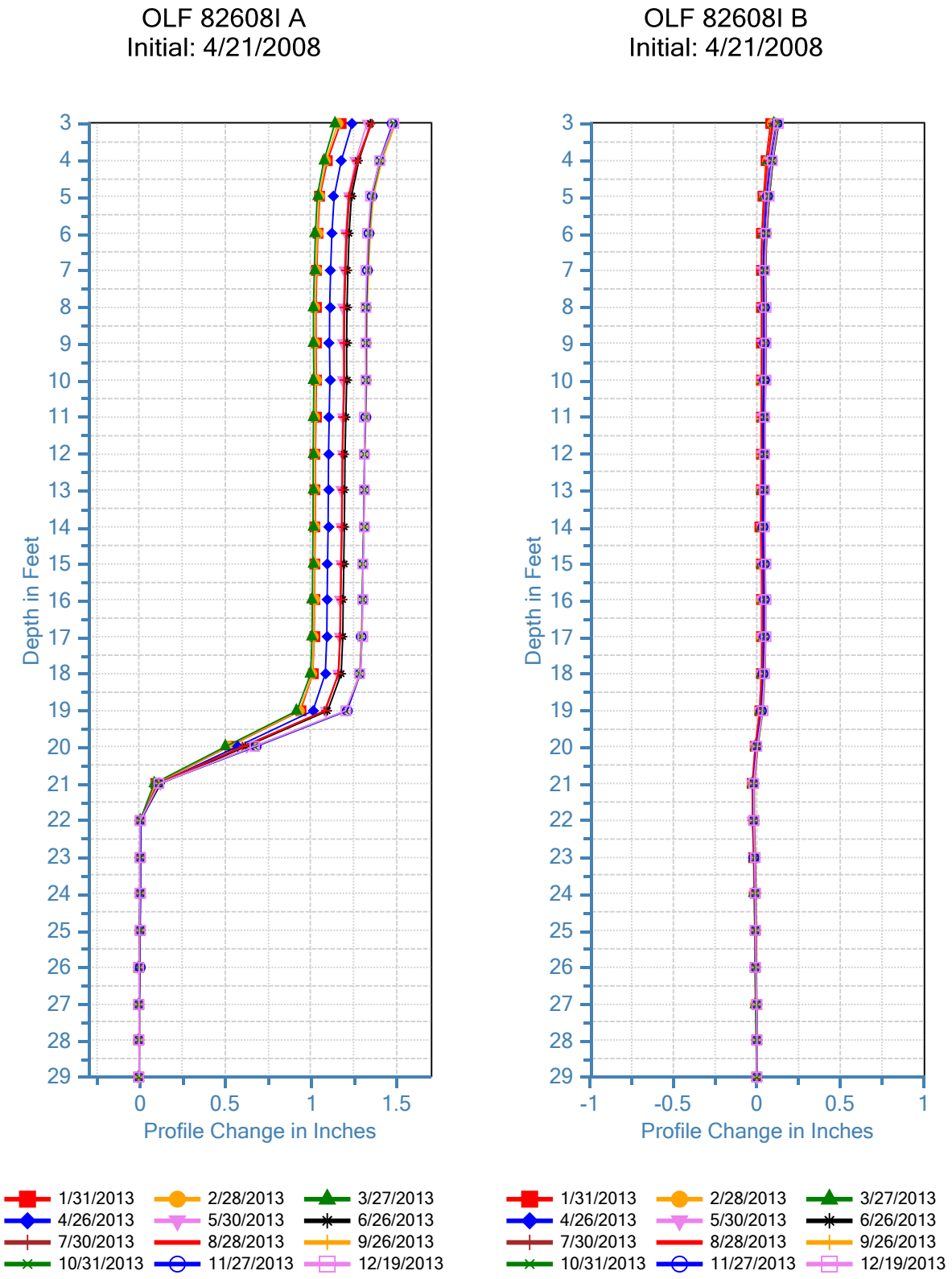
Initial: 4/21/2008

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OLF 82608I B
Initial: 4/21/2008
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Profile Change in Inches
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2/28/2013
3/27/2013
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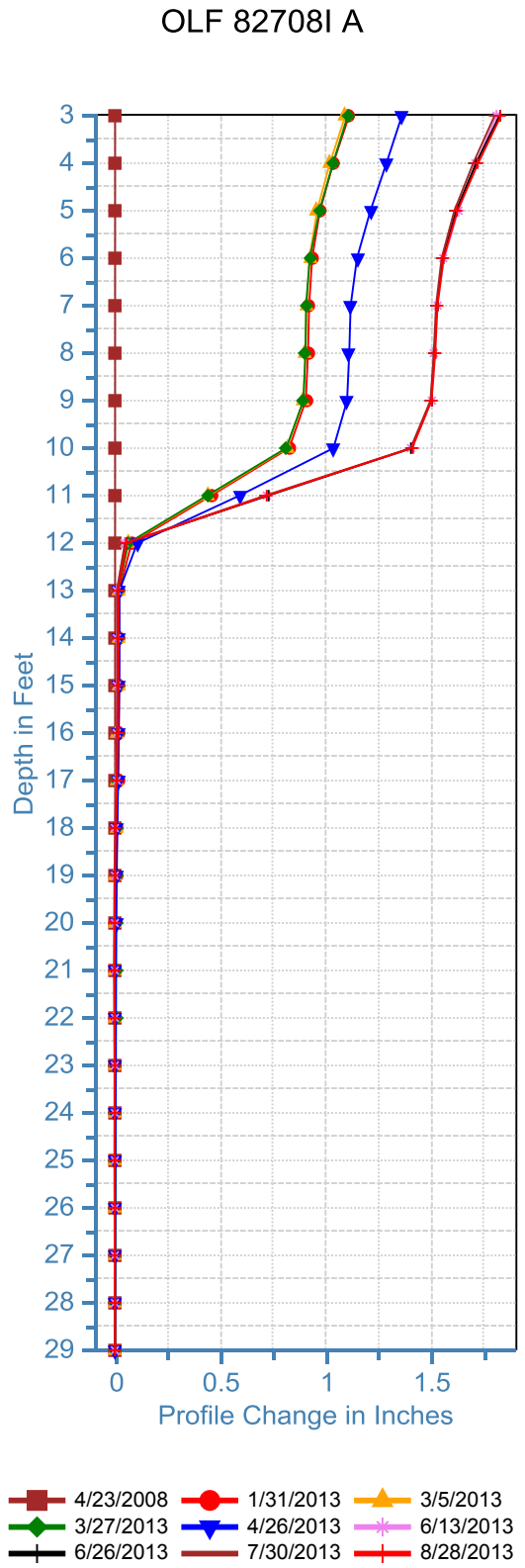
11/27/2013
12/19/2013


OLF 82708I A
Depth in Feet
Profile Change in Inches
4/23/2008
1/31/2013
3/5/2013
3/27/2013
4/26/2013
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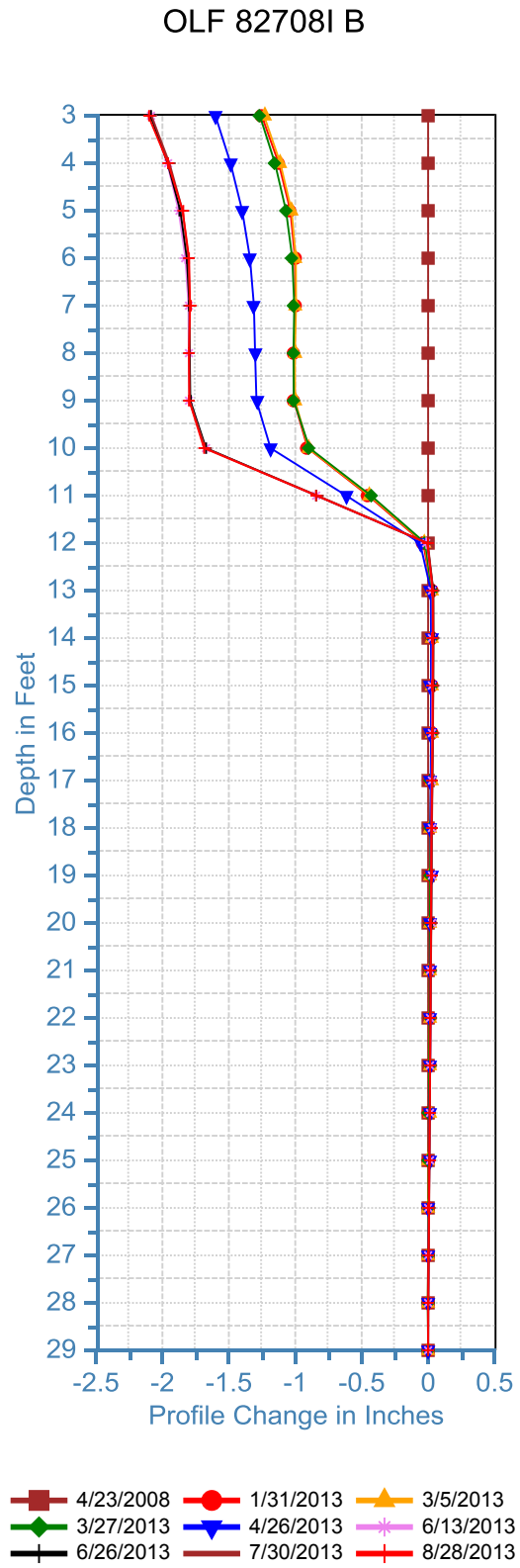
6/26/2013
7/30/2013
8/28/2013


OLF 82708I B
Depth in Feet
Profile Change in Inches
4/23/2008
1/31/2013
3/5/2013
3/27/2013
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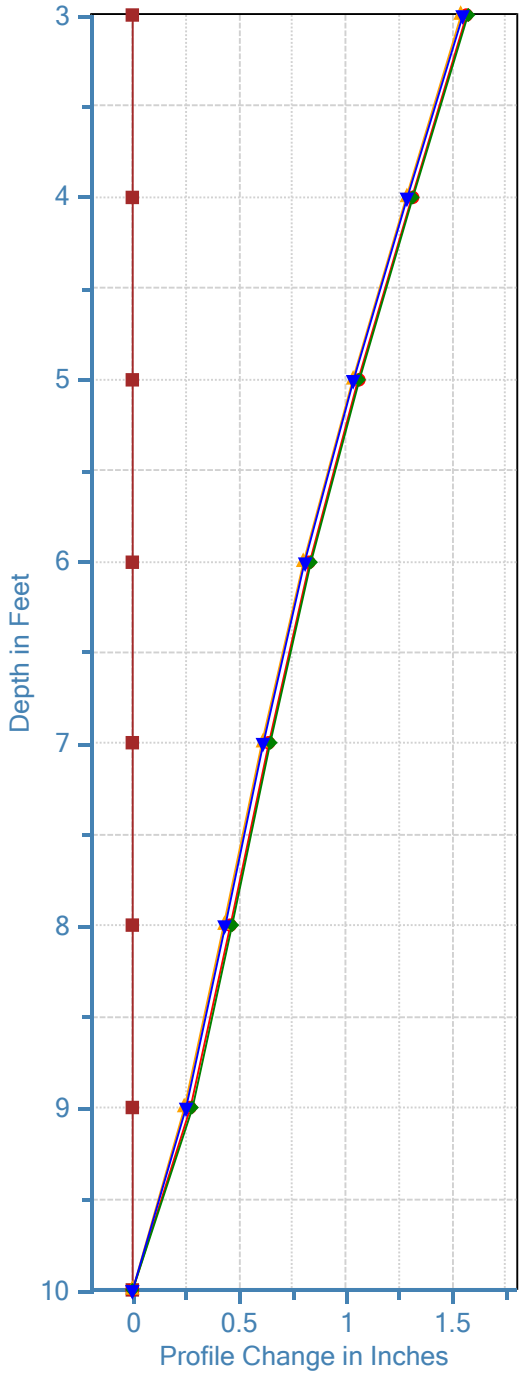
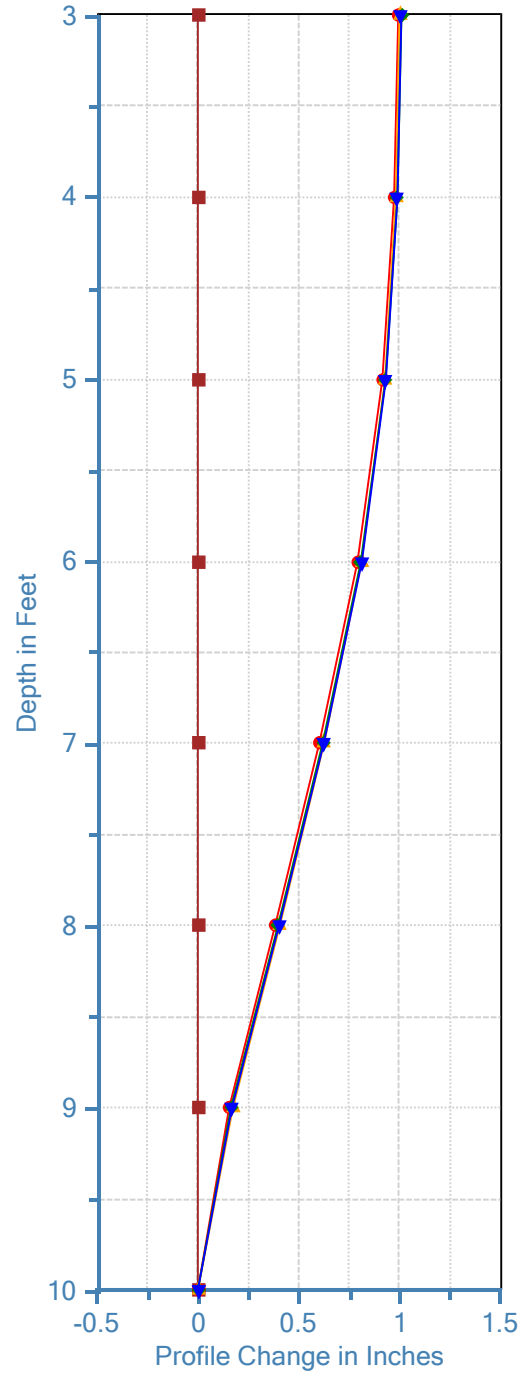
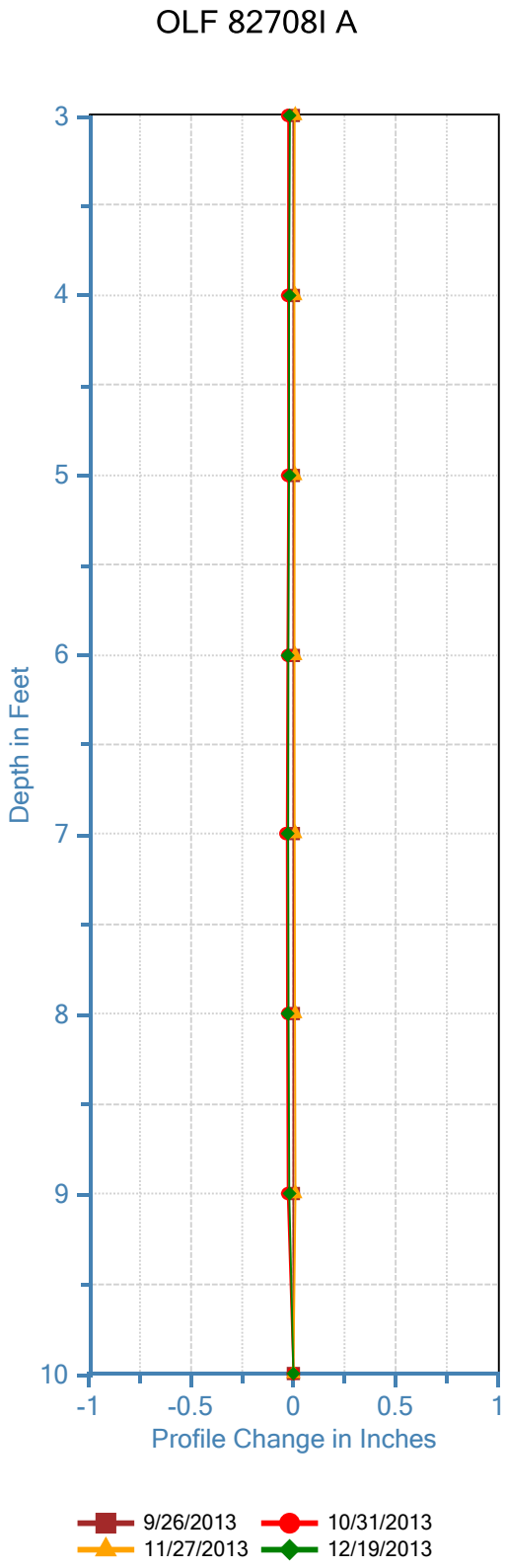
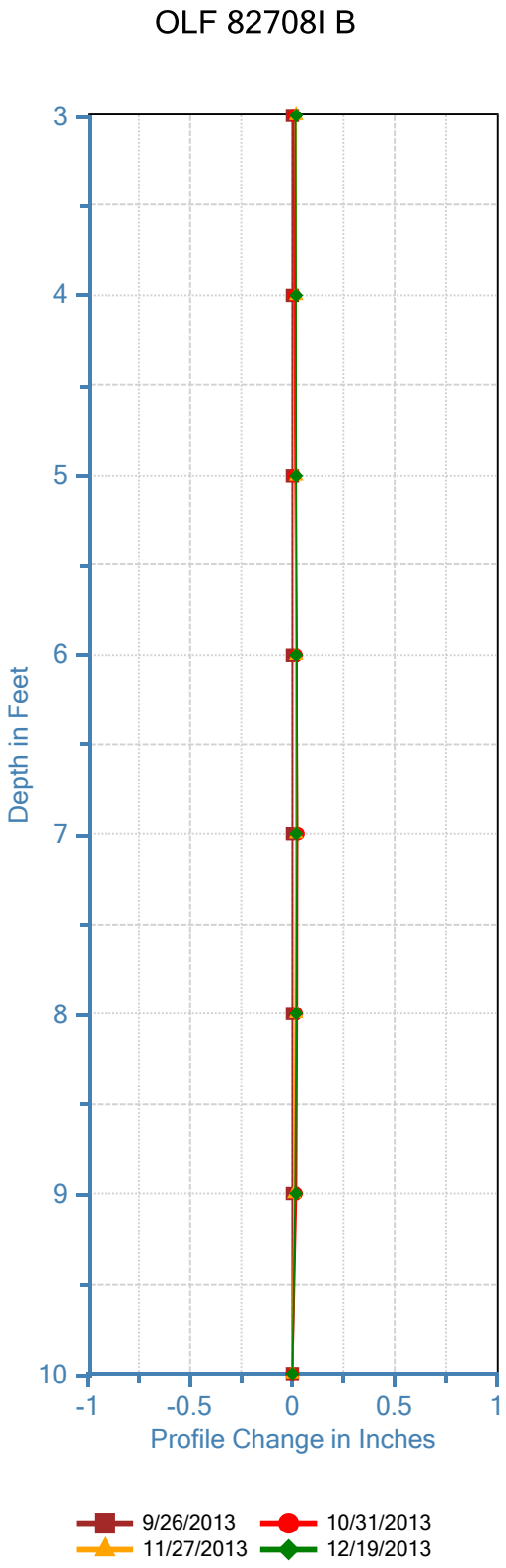
6/26/2013
7/30/2013
8/28/2013


OLF 82708I A
Depth in Feet
3
4
5
6
7
8
9
10
0
0.5
1
1.5
Profile Change in Inches
4/23/2008
9/26/2013
10/31/2013
11/27/2013
12/19/2013


OLF 82708I B
Depth in Feet
3
4
5
6
7
8
9
10
-0.5
0
0.5
1
1.5
Profile Change in Inches
4/23/2008
9/26/2013
10/31/2013
11/27/2013
12/19/2013


OLF 82708I A
Depth in Feet
3
4
5
6
7
8
9
10
-1
-0.5
0
0.5
1
Profile Change in Inches
9/26/2013
10/31/2013
11/27/2013
12/19/2013


OLF 82708I B
Depth in Feet
3
4
5
6
7
8
9
10
-1
-0.5
0
0.5
1
Profile Change in Inches
9/26/2013
10/31/2013
11/27/2013
12/19/2013

**Attachment B**
**2011 Precipitation Data**

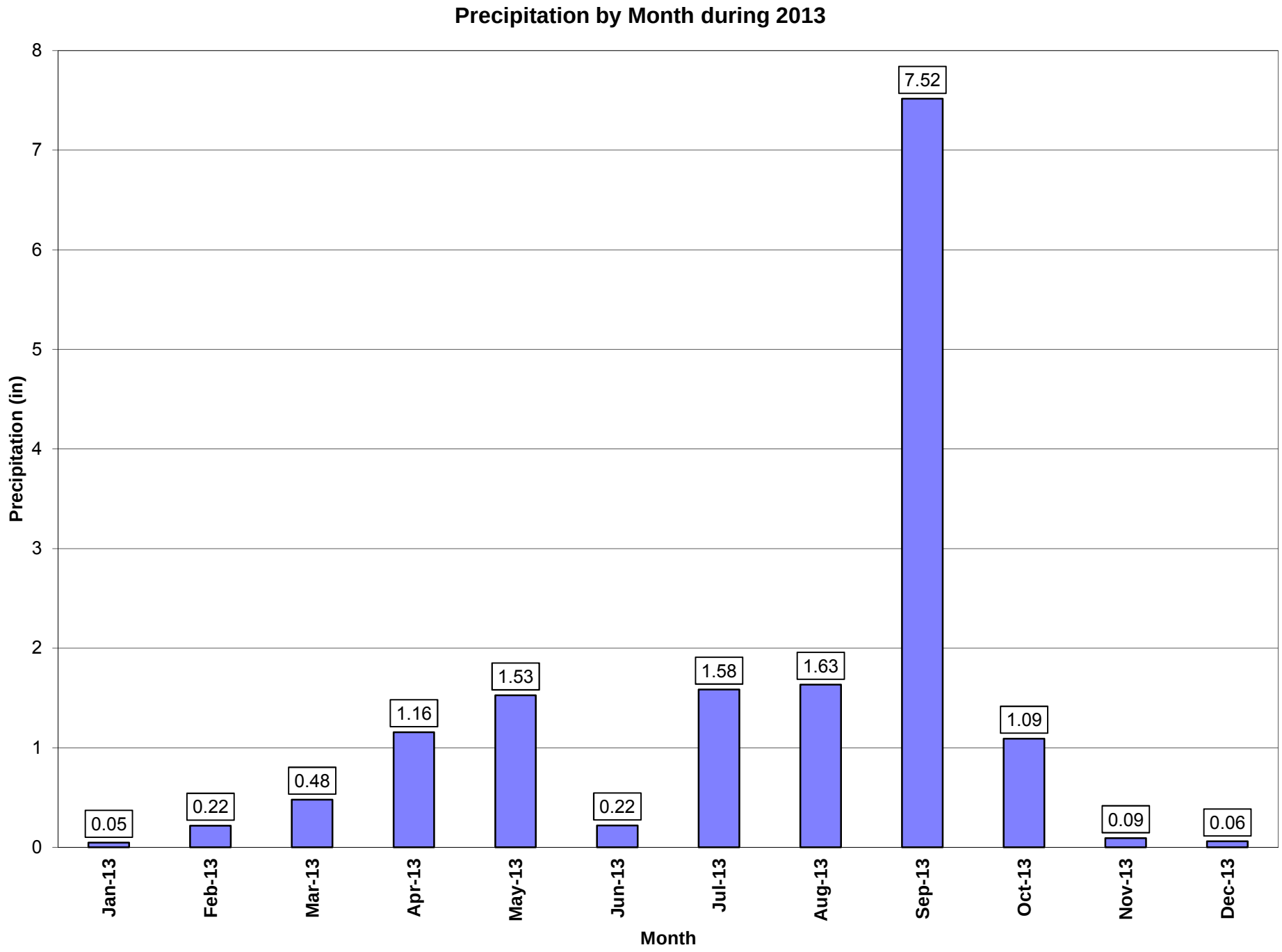

Precipitation by Month during 2013
Precipitation (in)
8
7
6
5
4
3
2
1
0
0.05
0.22
0.48
1.16
1.53
0.22
1.58
1.63
7.52
1.09
0.09
0.06
Jan-13
Feb-13
Mar-13
Apr-13
May-13
Jun-13
Jul-13
Aug-13
Sep-13
Oct-13
Nov-13
Dec-13
Month

**Figure B-1**

**Attachment C**
**Unfiltered Piezometer Data**

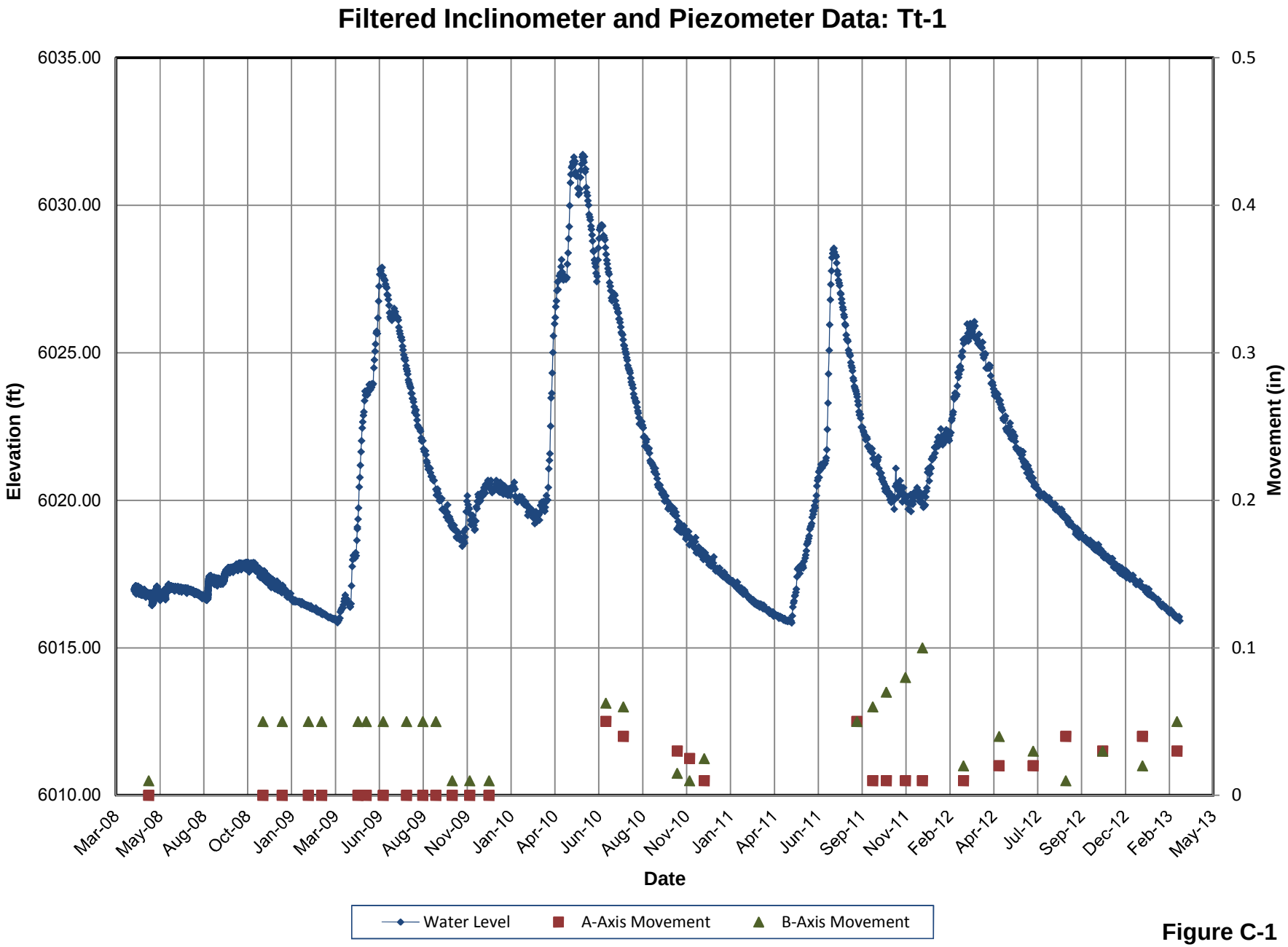

Filtered Inclinometer and Piezometer Data: Tt-1
Elevation (ft)
6035.00
6030.00
6025.00
6020.00
6015.00
6010.00
Movement (in)
0.5
0.4
0.3
0.2
0.1
0
Mar-08
May-08
Aug-08
Oct-08
Jan-09
Mar-09
Jun-09
Aug-09
Nov-09
Jan-10
Apr-10
Jun-10
Aug-10
Nov-10
Jan-11
Apr-11
Jun-11
Sep-11
Nov-11
Feb-12
Apr-12
Jul-12
Sep-12
Dec-12
Feb-13
May-13
Date
Water Level
A-Axis Movement
B-Axis Movement

Figure C-1

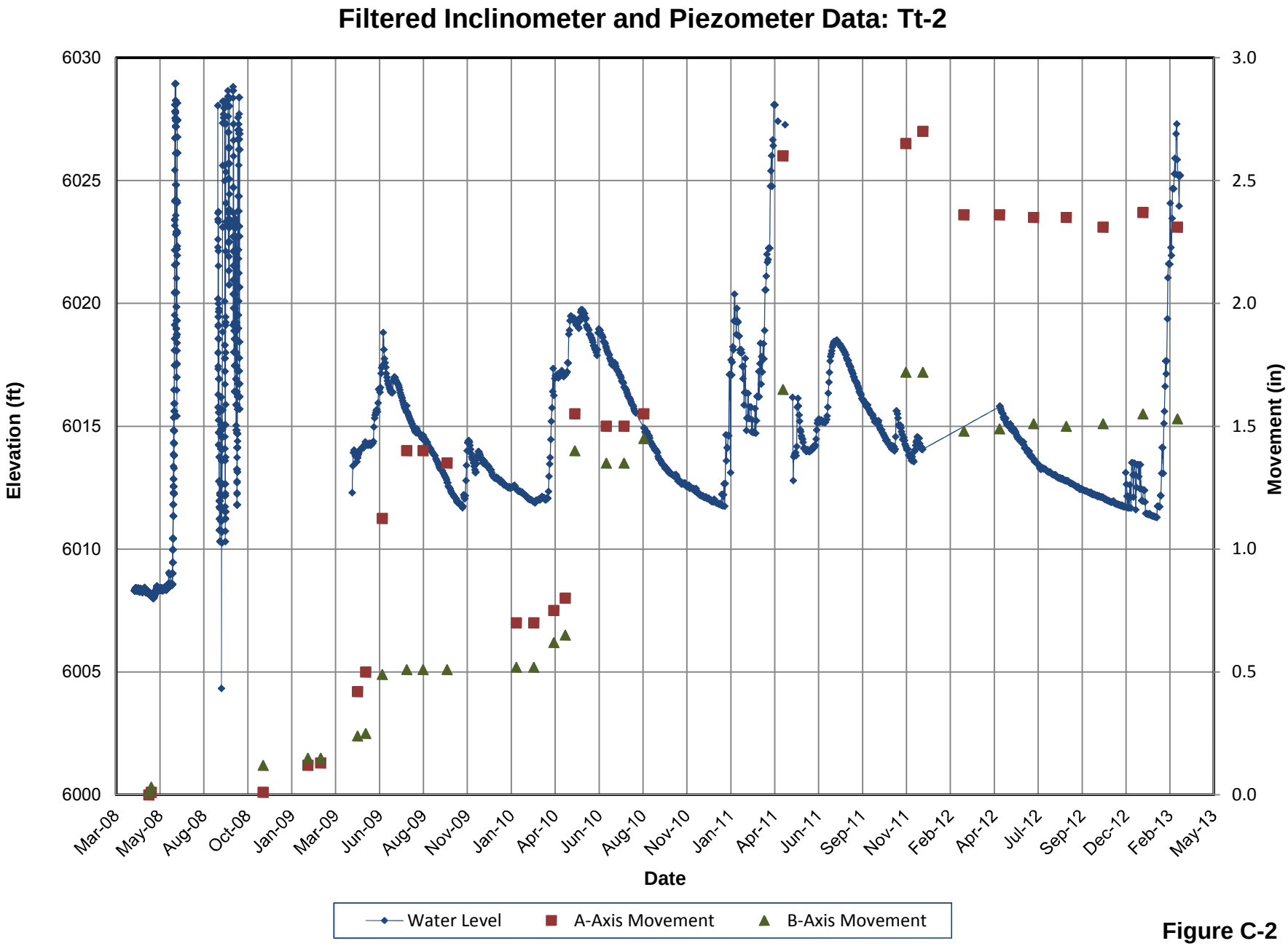

Filtered Inclinometer and Piezometer Data: Tt-2
Elevation (ft)
6030
6025
6020
6015
6010
6005
6000
Movement (in)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Mar-08
May-08
Aug-08
Oct-08
Jan-09
Mar-09
Jun-09
Aug-09
Nov-09
Jan-10
Apr-10
Jun-10
Aug-10
Nov-10
Jan-11
Apr-11
Jun-11
Sep-11
Nov-11
Feb-12
Apr-12
Jul-12
Sep-12
Dec-12
Feb-13
May-13
Date
Water Level
A-Axis Movement
B-Axis Movement

Figure C-2

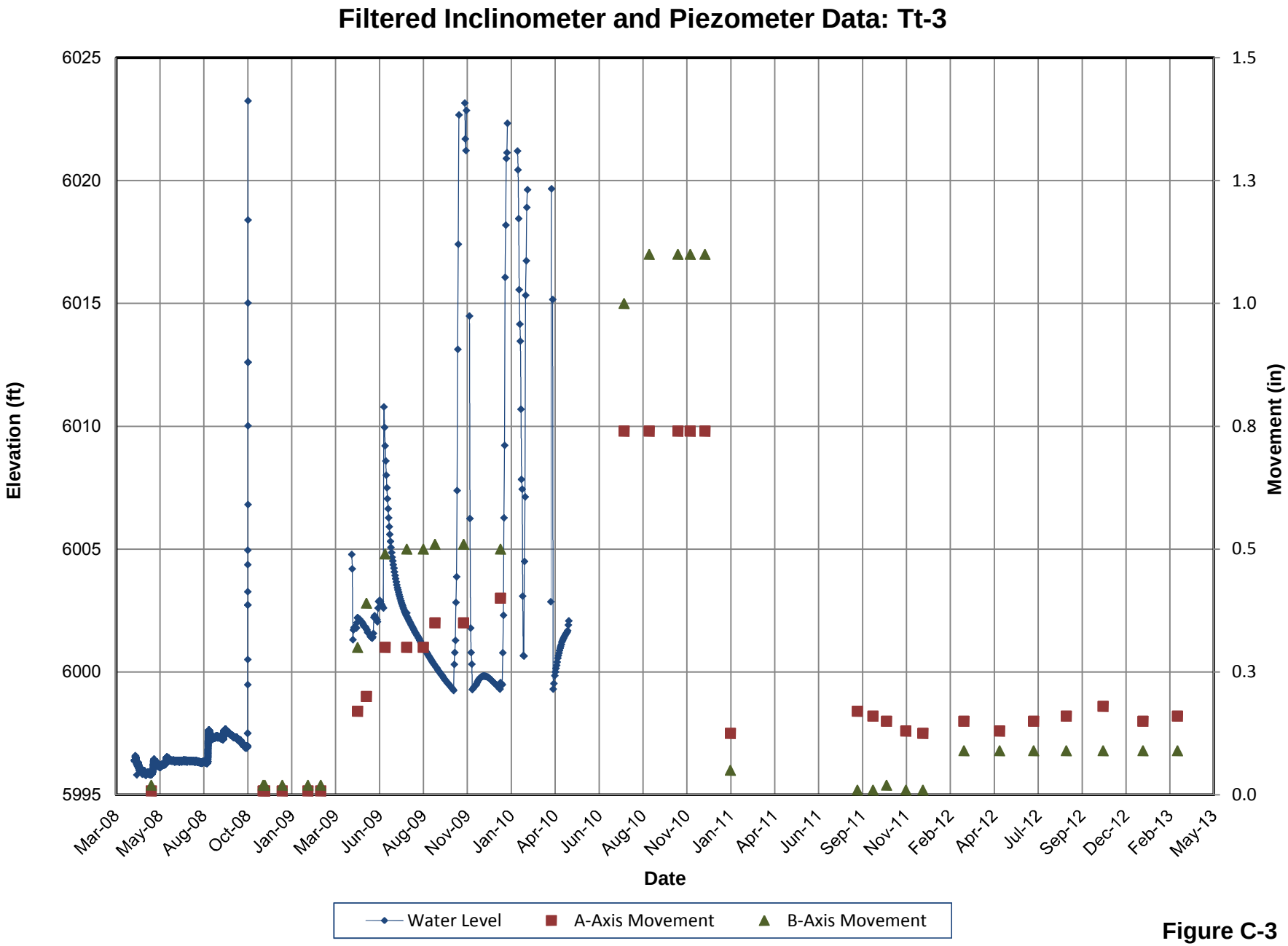

Filtered Inclinometer and Piezometer Data: Tt-3
Elevation (ft)
6025
6020
6015
6010
6005
6000
5995
Movement (in)
1.5
1.3
1.0
0.8
0.5
0.3
0.0
Mar-08
May-08
Aug-08
Oct-08
Jan-09
Mar-09
Jun-09
Aug-09
Nov-09
Jan-10
Apr-10
Jun-10
Aug-10
Nov-10
Jan-11
Apr-11
Jun-11
Sep-11
Nov-11
Feb-12
Apr-12
Jul-12
Sep-12
Dec-12
Feb-13
May-13
Date
Water Level
A-Axis Movement
B-Axis Movement

Figure C-3

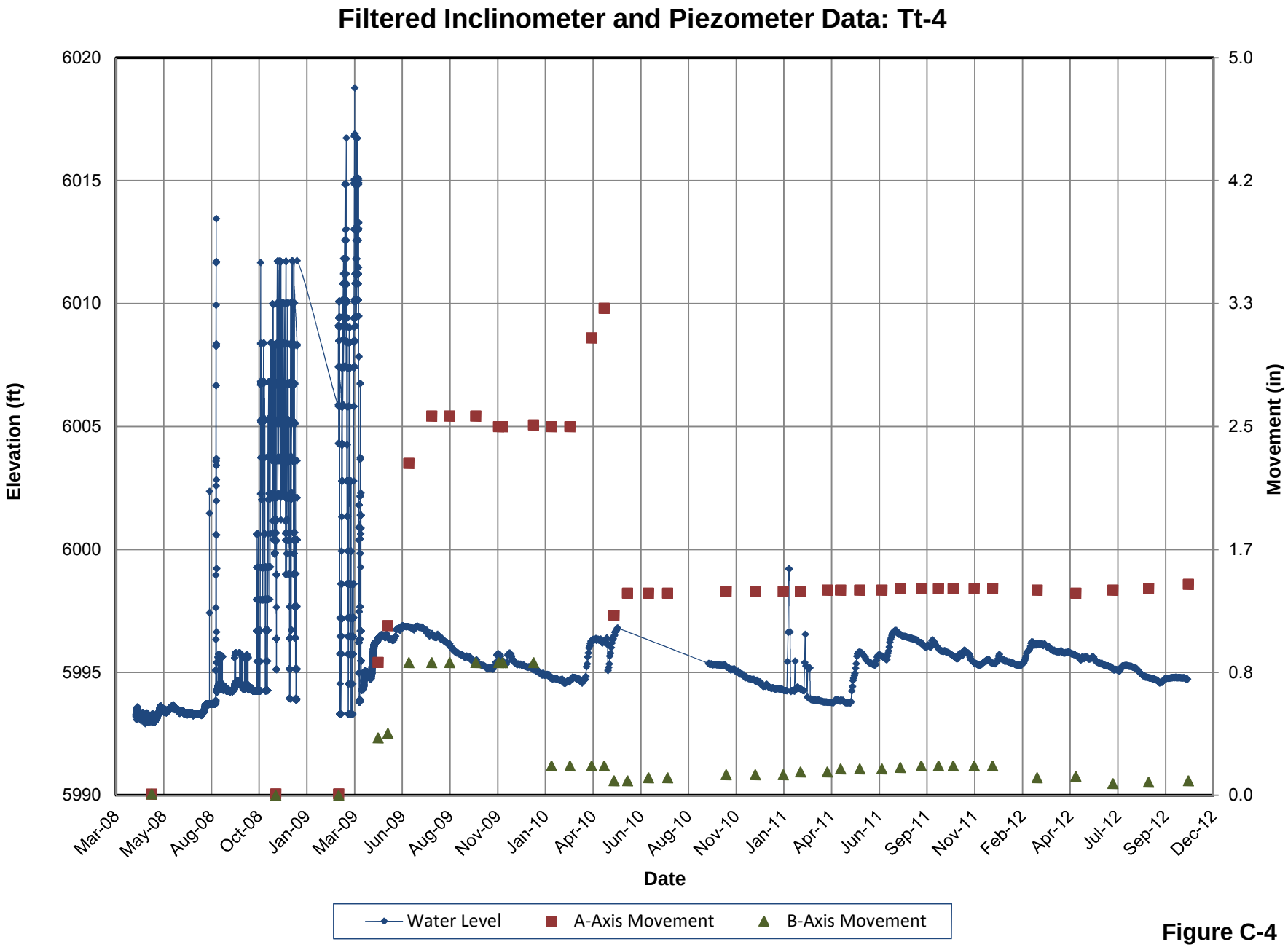

Filtered Inclinometer and Piezometer Data: Tt-4
Elevation (ft)
6020
6015
6010
6005
6000
5995
5990
Movement (in)
5.0
4.2
3.3
2.5
1.7
0.8
0.0
Mar-08
May-08
Aug-08
Oct-08
Jan-09
Mar-09
Jun-09
Aug-09
Nov-09
Jan-10
Apr-10
Jun-10
Aug-10
Nov-10
Jan-11
Apr-11
Jun-11
Sep-11
Nov-11
Feb-12
Apr-12
Jul-12
Sep-12
Dec-12
Date
Water Level
A-Axis Movement
B-Axis Movement

Figure C-4

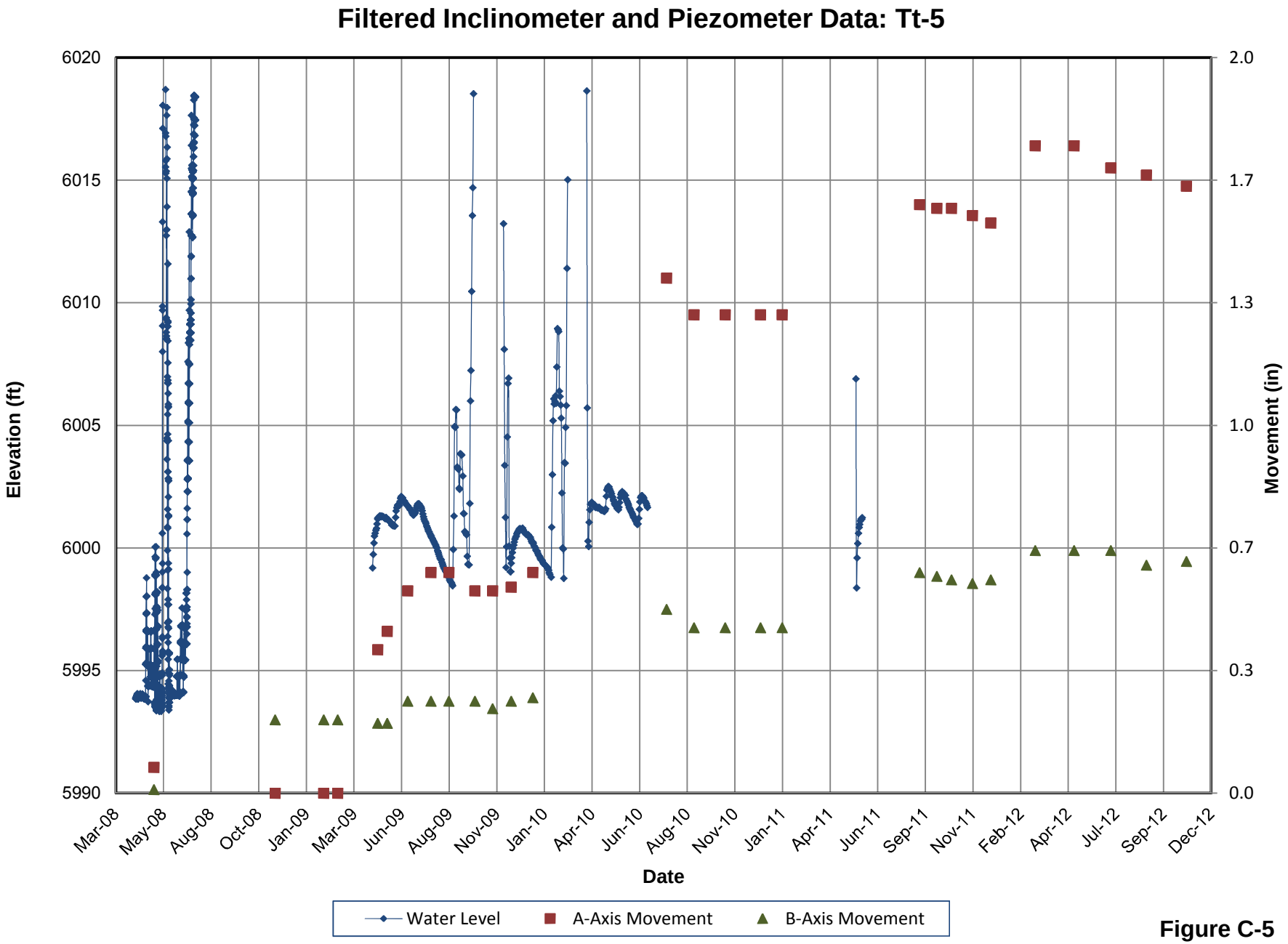

Filtered Inclinometer and Piezometer Data: Tt-5
Elevation (ft)
6020
6015
6010
6005
6000
5995
5990
Movement (in)
2.0
1.7
1.3
1.0
0.7
0.3
0.0
Mar-08
May-08
Aug-08
Oct-08
Jan-09
Mar-09
Jun-09
Aug-09
Nov-09
Jan-10
Apr-10
Jun-10
Aug-10
Nov-10
Jan-11
Apr-11
Jun-11
Sep-11
Nov-11
Feb-12
Apr-12
Jul-12
Sep-12
Dec-12
Date
Water Level
A-Axis Movement
B-Axis Movement

Figure C-5

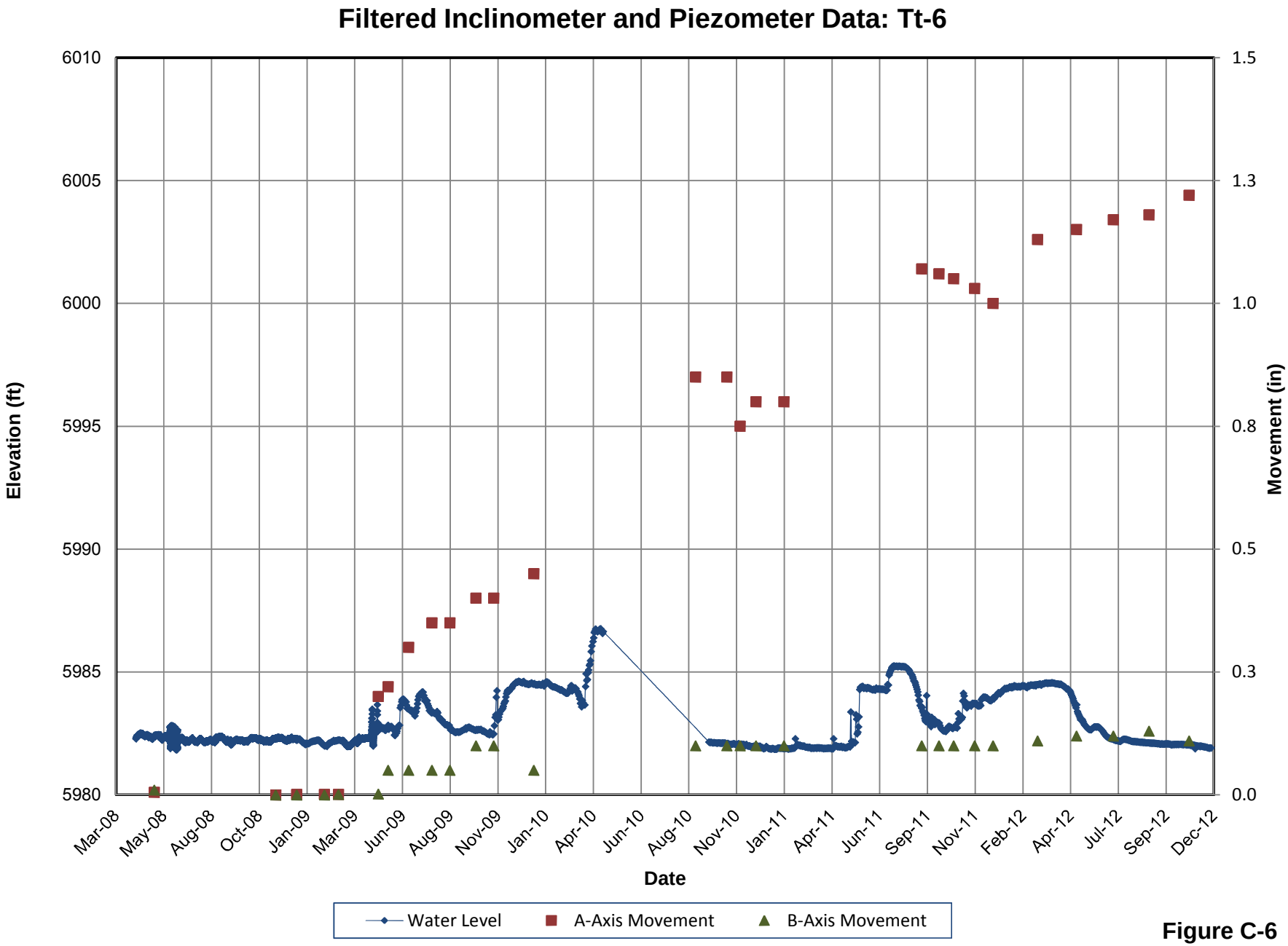

Filtered Inclinometer and Piezometer Data: Tt-6
Elevation (ft)
6010
6005
6000
5995
5990
5985
5980
Movement (in)
1.5
1.3
1.0
0.8
0.5
0.3
0.0
Mar-08
May-08
Aug-08
Oct-08
Jan-09
Mar-09
Jun-09
Aug-09
Nov-09
Jan-10
Apr-10
Jun-10
Aug-10
Nov-10
Jan-11
Apr-11
Jun-11
Sep-11
Nov-11
Feb-12
Apr-12
Jul-12
Sep-12
Dec-12
Date
Water Level
A-Axis Movement
B-Axis Movement

Figure C-6

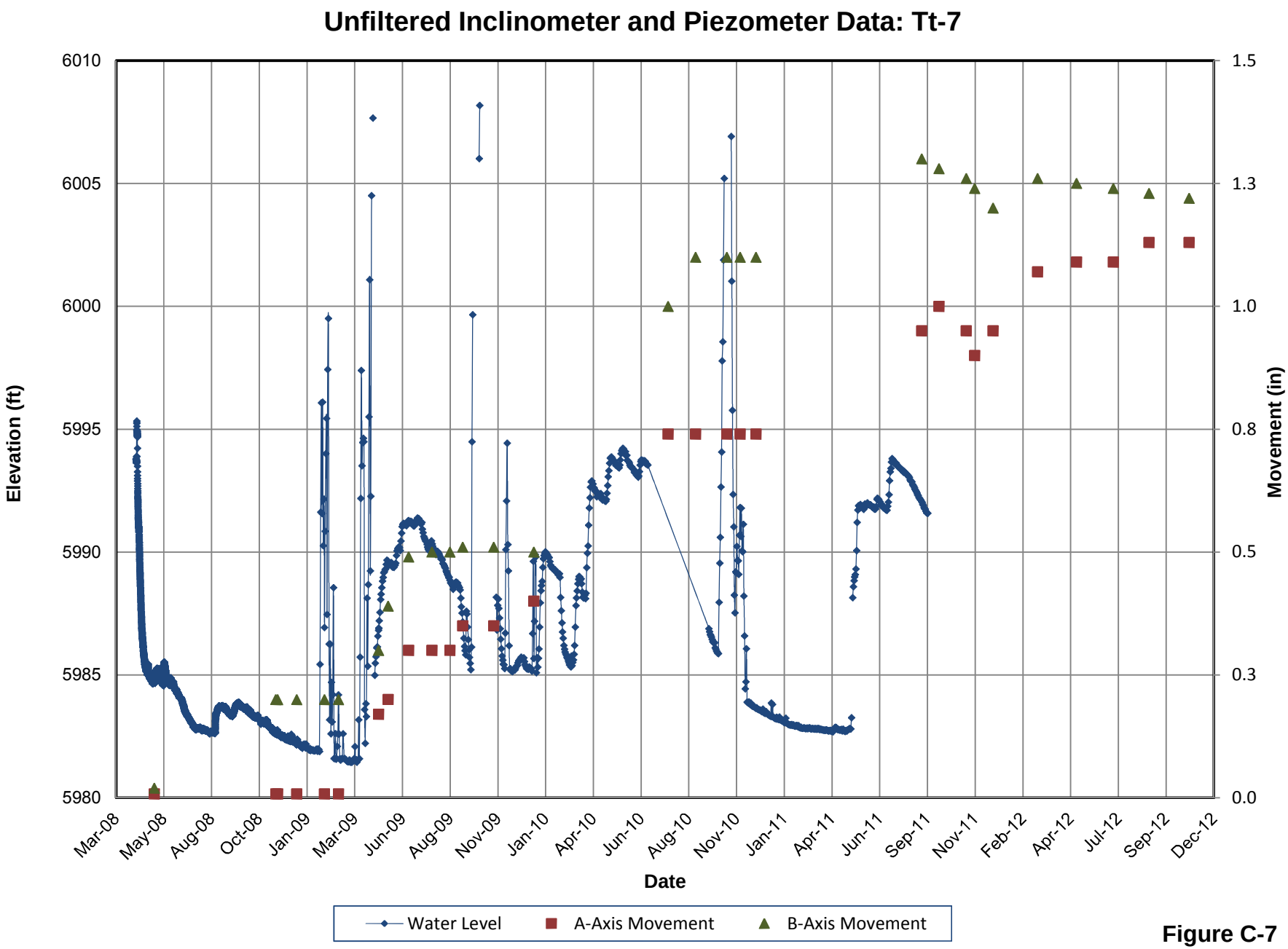

Unfiltered Inclinometer and Piezometer Data: Tt-7
Elevation (ft)
6010
6005
6000
5995
5990
5985
5980
Movement (in)
1.5
1.3
1.0
0.8
0.5
0.3
0.0
Mar-08
May-08
Aug-08
Oct-08
Jan-09
Mar-09
Jun-09
Aug-09
Nov-09
Jan-10
Apr-10
Jun-10
Aug-10
Nov-10
Jan-11
Apr-11
Jun-11
Sep-11
Nov-11
Feb-12
Apr-12
Jul-12
Sep-12
Dec-12
Date
Water Level
A-Axis Movement
B-Axis Movement

Figure C-7

TETRA TECH

# Technical Memorandum

| | | | |
|---|---|---|---|
| To: | Rick DiSalvo, Stephen Pitton, Mel Madril | From: | Jackie Blumberg, PE |
| Company: | U.S. Department of Energy | Date: | December 19, 2013 |
| CC: | Tom Chapel, PE; Amber Kauffman, PE | Project No.: | 114-181750 |
| Re: | OLF Berm Height Evaluation Using Site-Specific Data | | |

## INTRODUCTION

Tetra Tech performed statistical analyses on rainfall data collected at the Rocky Flats site over a period of 21 years and determined the 100-year, 24-hour rainfall depth to be 3.7 inches and the 1,000-year, 24-hour rainfall depth to be 5.5 inches. Tetra Tech developed design flow rates from these rainfall depths and evaluated the Original Landfill (OLF) berm heights considering the revised precipitation depths. The approach and results are presented within this memorandum.

## DISCUSSION

Tetra Tech divided the OLF berm drainage areas into sub-basins and, consistent with previous studies (Tetra Tech, 2008), and applied the National Resource Conservation Service (NRCS) Graphical Peak Discharge method to determine peak flow rates for the 100-year and 1,000-year storms. Runoff was calculated using:

$$Q = \frac{(P - I_a)^2}{P + 0.8S}$$

where

$Q$ = runoff (inches)
$P$ = precipitation (inches)
$I_a$ = initial abstraction (inches)
$S$ = soil retention (inches)

and

$$S = (1{,}000/CN) - 10$$

and

$$I_a = 0.2S$$

A curve number, CN, equal to 86 was selected, consistent with previous studies (Tetra Tech, 2008), resulting in a soil retention value of 1.628 inches and an initial abstraction of 0.326 inches. Design precipitation depths of 3.7 and 5.5 inches yielded runoff depths of 2.3 and 3.9 inches for the 100-year and 1,000-year events, respectively. Times of concentration, or the travel time from the most remote point in each sub-basin to the outlet, were also assumed to be unchanged from previous studies. Given times of concentration and parameters calculated above, the following equation may be used to determine peak discharge:

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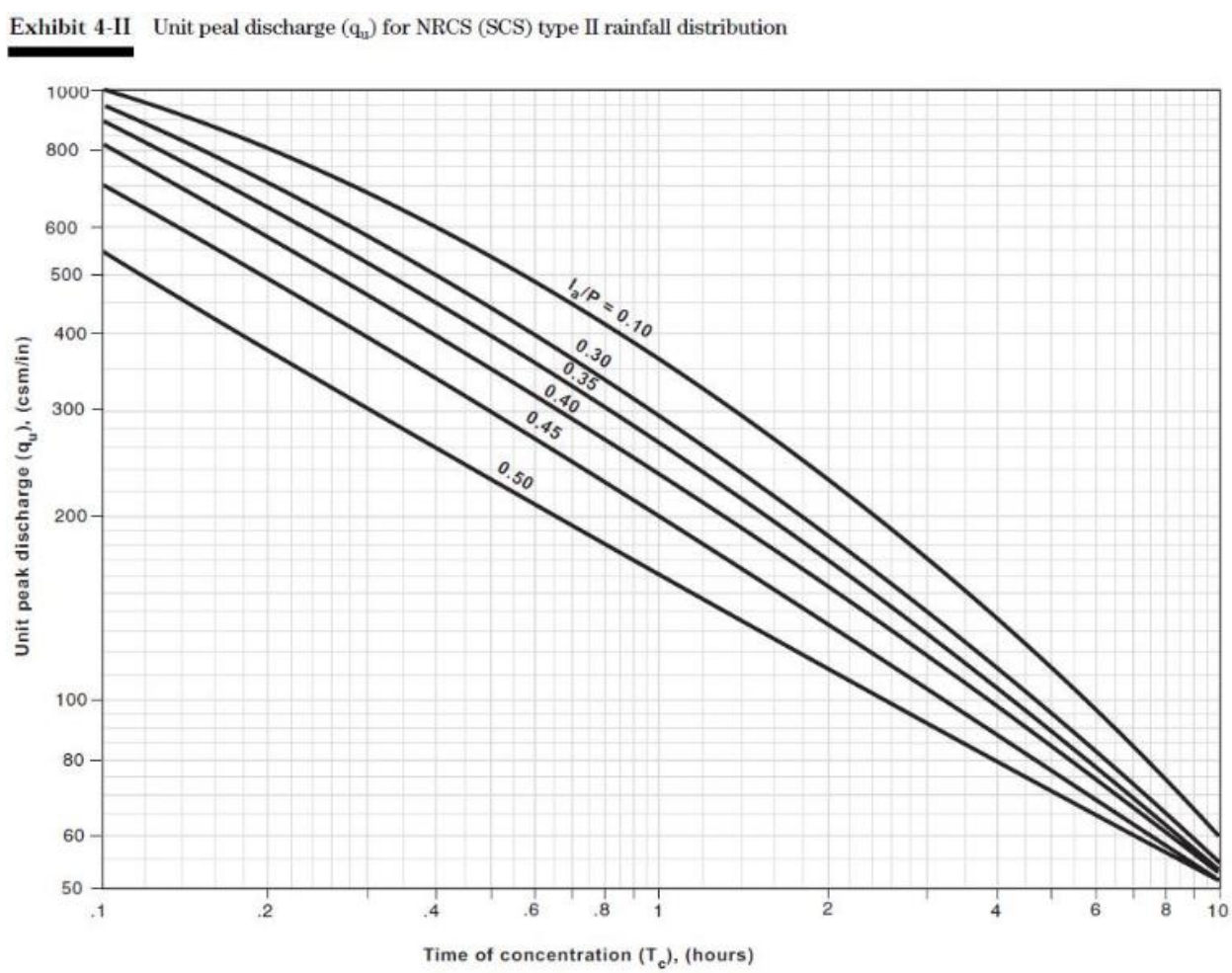
$$q_p = q_u A \mathrm{QF}_p$$

where

| | | |
|---|---|---|
| $q_p$ | = | peak discharge (cubic feet per second [cfs]) |
| $q_u$ | = | unit peak discharge (cfs/square-mile/inch) |
| $A$ | = | sub-basin area (square-mile) |
| $Q$ | = | runoff (inches) |
| $F_p$ | = | ponding factor (1 for this analysis) |

Unit peak discharge is obtained from Figure 1, assuming an NRCS Type II storm distribution, which is both regionally applicable and conservative. The parameter, $I_a/P$ is equal to 0.1 for the 100-year and the 1,000-year storms.

**Figure 1: NRCS Unit Peak Discharge Determination**




Tetra Tech calculated peak flows using the above equations and values. Peak flows for each sub-basin are presented in Table 1.

**Table 1: 100-Year and 1,000-Year Sub-Basin Peak Flow Rates and Depths**

| Area ID | Sub-basin ID | $T_c$ (hours) from 2008 Study | Basin Area (acres) | Min Slope (%) | 1,000-Year Discharge (cfs) | 1,000-Year Normal Depth (feet) | 100-Year Discharge (cfs) | 100-Year Normal Depth (feet) |
|---|---|---|---|---|---|---|---|---|
| DB-1 | A | 0.064 | 0.53 | 2.22 | 11.56 | 0.99 | 6.69 | 0.81 |
| DB-1 | B | 0.051 | 0.8 | 0.44 | 8.30 | 1.19 | 4.80 | 0.97 |
| DB-1 | C | 0.029 | 0.55 | 0.55[1] | 3.38 | 0.81 | 1.96 | 0.66 |
| DB-2 | A | 0.077 | 0.58 | 2.03 | 14.27 | 1.09 | 8.25 | 0.89 |
| DB-2 | B | 0.058 | 0.69 | 0.24 | 10.70 | 1.46 | 6.19 | 1.19 |
| DB-2 | C | 0.036 | 1.05 | 0.06 | 6.46 | 1.57 | 3.73 | 1.28 |
| DB-3 | A | 0.061 | 0.75 | 0.85[1] | 9.29 | 1.1 | 5.37 | 0.89 |
| DB-3 | B | 0.038 | 0.76 | 0.76 | 4.67 | 0.86 | 2.70 | 0.7 |
| DB-4 | A | 0.113 | 0.27 | 1.74 | 9.29 | 0.96 | 5.37 | 0.78 |
| DB-4 | B | 0.095 | 0.3 | 0.48 | 7.63 | 1.13 | 4.41 | 0.92 |
| DB-4 | C | 0.073 | 0.33 | 0.08 | 5.78 | 1.43 | 3.34 | 1.16 |
| DB-4 | D | 0.051 | 0.33 | 1.43 | 3.75 | 0.71 | 2.17 | 0.58 |
| DB-4 | E | 0.028 | 0.28 | 1.86[1] | 1.72 | 0.5 | 1.00 | 0.41 |
| DB-5 | A | 0.118 | 0.36 | 1.08 | 14.64 | 1.24 | 8.46 | 1.01 |
| DB-5 | B | 0.1 | 0.51 | 0.41 | 12.42 | 1.4 | 7.18 | 1.14 |
| DB-5 | C | 0.077 | 0.53 | 0.53 | 9.29 | 1.2 | 5.37 | 0.97 |
| DB-5 | D | 0.055 | 0.51 | 1.11 | 6.03 | 0.89 | 3.49 | 0.72 |
| DB-5 | E | 0.033 | 0.47 | 1.61 | 2.89 | 0.63 | 1.67 | 0.51 |
| DB-6 | A | 0.128 | 0.73 | 0.81[1] | 16.81 | 1.38 | 9.72 | 1.12 |
| DB-6 | B | 0.1 | 0.55 | 1.32 | 12.55 | 1.13 | 7.26 | 0.92 |
| DB-6 | C | 0.078 | 0.55 | 0.56 | 9.16 | 1.18 | 5.30 | 0.96 |
| DB-6 | D | 0.055 | 0.52 | 0.85 | 5.78 | 0.92 | 3.34 | 0.75 |
| DB-6 | E | 0.033 | 0.42 | 0.89 | 2.58 | 0.67 | 1.49 | 0.55 |
| DB-7 | A | 0.118 | 0.69 | 1.96 | 16.79 | 1.17 | 9.71 | 0.95 |
| DB-7 | B | 0.098 | 0.6 | 1.7 | 12.55 | 1.08 | 7.26 | 0.88 |
| DB-7 | C | 0.075 | 0.5 | 1 | 8.86 | 1.04 | 5.12 | 0.85 |
| DB-7 | D | 0.053 | 0.51 | 0.55 | 5.78 | 0.99 | 3.34 | 0.81 |
| DB-7 | E | 0.031 | 0.43 | 0.76 | 2.64 | 0.7 | 1.53 | 0.57 |

[1]Localized segments containing adverse slopes could not be analyzed. Evaluation used limiting non-adverse slopes.

Tetra Tech evaluated the peak flows using Bentley's FlowMaster software. Berm side slopes of 3 Horizontal to 1 Vertical (3H:1V) and 5.6H:1V were assumed to be unchanged from previous studies (U.S. Department of Energy, 2009). Minimal longitudinal slopes were identified within the 2013 Plan and Profile drawings (Tetra Tech, 2013). Several localized channel segments contained adverse longitudinal slopes that do not allow positive drainage along the channel. Limiting non-adverse slopes were analyzed in these zones. A bed roughness analogous to a "very rough channel, with grass" was assumed, yielding a Manning's N-value of 0.05. The flow depths resulting from the hydraulic analysis are summarized in Table 1. Sub-basins are ordered from the most downstream (outlet) location, A, and progress upstream. FlowMaster summary reports for the berm outlets are presented as attachments to

this memorandum. The minimum berm requirements from the 2008 study are compared to the 2013 site-specific results in

Table 2 below. The site-specific results indicate a lower berm height requirement for all locations with the exception of Diversion 4, sub-basin C. The 2008 study indicated that the limiting slope for sub-basin C was 0.8 percent. The 2013 drawings indicate that the limiting slope for sub-basin C is 0.08 percent, resulting in a greater flow depth. The previous berm height was specified as 1.29 feet; the required berm height determined in the current analysis was 1.43 feet, indicating a required additional height of 0.14 feet.

**Table 2: 2008 Study and 2013 Site-Specific Minimum Berm Requirement Comparison**

| Area ID | Sub-basin ID | 2008 100-Year Normal Depth (ft) | 2013 100-Year Normal Depth (ft) | 2008 Minimum Berm Height (1,000-Year Depth) (ft) | 2013 Minimum Berm Height (1,000-Year Depth) (ft) | 1,000-Year Depth Difference (2008-2013) (ft) |
|---|---|---|---|---|---|---|
| DB-1 | A | 1.37 | 0.81 | 1.48 | 0.99 | 0.49 |
| | B | 1.56 | 0.97 | 1.68 | 1.19 | 0.49 |
| | C | 1.35 | 0.66 | 1.46 | 0.81 | 0.65 |
| DB-2 | A | 1.55 | 0.89 | 1.66 | 1.09 | 0.57 |
| | B | 1.58 | 1.19 | 1.69 | 1.46 | 0.23 |
| | C | 1.47 | 1.28 | 1.57 | 1.57 | 0.00 |
| DB-3 | A | 1.51 | 0.89 | 1.62 | 1.1 | 0.52 |
| | B | 1.23 | 0.7 | 1.34 | 0.86 | 0.48 |
| DB-4 | A | 1.24 | 0.78 | 1.33 | 0.96 | 0.37 |
| | B | 1.42 | 0.92 | 1.52 | 1.13 | 0.39 |
| | C | 1.2 | 1.16 | 1.29 | 1.43 | -0.14 |
| | D | 0.97 | 0.58 | 1.06 | 0.71 | 0.35 |
| | E | 1 | 0.41 | 1.06 | 0.5 | 0.56 |
| DB-5 | A | 1.68 | 1.01 | 1.8 | 1.24 | 0.56 |
| | B | 1.56 | 1.14 | 1.67 | 1.4 | 0.27 |
| | C | 1.39 | 0.97 | 1.51 | 1.2 | 0.31 |
| | D | 1.28 | 0.72 | 1.39 | 0.89 | 0.50 |
| | E | 1.44 | 0.51 | 1.52 | 0.63 | 0.89 |
| DB-6 | A | 1.87 | 1.12 | 2.01 | 1.38 | 0.63 |
| | B | 1.84 | 0.92 | 1.97 | 1.13 | 0.84 |
| | C | 1.44 | 0.96 | 1.55 | 1.18 | 0.37 |
| | D | 1.24 | 0.75 | 1.33 | 0.92 | 0.41 |
| | E | 1.14 | 0.55 | 1.21 | 0.67 | 0.54 |
| DB-7 | A | 1.76 | 0.95 | 1.9 | 1.17 | 0.73 |
| | B | 1.56 | 0.88 | 1.67 | 1.08 | 0.59 |
| | C | 1.64 | 0.85 | 1.74 | 1.04 | 0.70 |
| | D | 1.36 | 0.81 | 1.47 | 0.99 | 0.48 |

| Area ID | Sub-basin ID | 2008 100-Year Normal Depth (ft) | 2013 100-Year Normal Depth (ft) | 2008 Minimum Berm Height (1,000-Year Depth) (ft) | 2013 Minimum Berm Height (1,000-Year Depth) (ft) | 1,000-Year Depth Difference (2008-2013) (ft) |
|---|---|---|---|---|---|---|
| | E | 1.14 | 0.57 | 1.23 | 0.7 | 0.53 |

# CONCLUSION

Tetra Tech evaluated berm heights at the OLF using site specific rainfall depths for the 100-year and 1,000-year storm events. The greatest runoff depths associated with the 100-year storm occurred at the outlets from Diversion Berms 6 and 7 to the East Perimeter Channel and did not exceed 1.3 feet. These areas also exhibited the greatest 1,000-year runoff depths, which did not exceed 1.6 feet. The runoff depths presented in Table 1 are lower than the values presented in the 2008 study, which are based on National Oceanic and Atmospheric Administration data and are included as an attachment to this memorandum for comparison. Tetra Tech recommends the use of site specific runoff depths and berm heights as shown on Table 2, for OLF berm height evaluation.

# REFERENCES

Haan CT, Barfield BJ, Hayes JC. 1994. Design Hydrology and Sedimentology of Small Catchments. Academic Press, San Diego, California.

[NRCS] National Resource Conservation Service. June, 1986. Urban Hydrology for Small Watersheds, Technical Report 55.

Tetra Tech. November, 2013. Statistical Analysis of Rocky Flats Site-Specific Data.

Tetra Tech. August, 2008. OLF Design Berm Analyses.

[USDOE] United States Department of Energy. September, 2009. Original Landfill Monitoring and Maintenance Plan.

# ATTACHMENT A
# HYDRAULIC SUMMARY REPORT

# RFETS OLF 100-YR & 1,000-YR Report

| Label | Solve For | Friction Method | Roughness Coefficient | Channel Slope (ft/ft) | Normal Depth (ft) |
|---|---|---|---|---|---|
| DB1-A-100YR | Normal Depth | Manning Formula | 0.050 | 0.02220 | 0.81 |
| DB2-A-100YR | Normal Depth | Manning Formula | 0.050 | 0.02030 | 0.89 |
| DB3-A-100YR | Normal Depth | Manning Formula | 0.050 | 0.00850 | 0.89 |
| DB4-A-100YR | Normal Depth | Manning Formula | 0.050 | 0.01740 | 0.78 |
| DB5-A-100YR | Normal Depth | Manning Formula | 0.050 | 0.01080 | 1.01 |
| DB6-A-100YR | Normal Depth | Manning Formula | 0.050 | 0.00810 | 1.12 |
| DB7-A-100YR | Normal Depth | Manning Formula | 0.050 | 0.01960 | 0.95 |
| DB1-A-1000YR | Normal Depth | Manning Formula | 0.050 | 0.02220 | 0.99 |
| DB2-A-1000YR | Normal Depth | Manning Formula | 0.050 | 0.02030 | 1.09 |
| DB3-A-1000YR | Normal Depth | Manning Formula | 0.050 | 0.00850 | 1.10 |
| DB4-A-1000YR | Normal Depth | Manning Formula | 0.050 | 0.01740 | 0.96 |
| DB5-A-1000YR | Normal Depth | Manning Formula | 0.050 | 0.01080 | 1.24 |
| DB6-A-1000YR | Normal Depth | Manning Formula | 0.050 | 0.00810 | 1.38 |
| DB7-A-1000YR | Normal Depth | Manning Formula | 0.050 | 0.01960 | 1.17 |

| Left Side Slope (ft/ft (H:V)) | Right Side Slope (ft/ft (H:V)) | Discharge ($ft^3/s$) | Flow Area ($ft^2$) | Wetted Perimeter (ft) | Hydraulic Radius (ft) |
|---|---|---|---|---|---|
| 3.00 | 5.60 | 6.69 | 2.82 | 7.16 | 0.39 |
| 3.00 | 5.60 | 8.25 | 3.41 | 7.88 | 0.43 |
| 3.00 | 5.60 | 5.37 | 3.42 | 7.90 | 0.43 |
| 3.00 | 5.60 | 5.37 | 2.62 | 6.90 | 0.38 |
| 3.00 | 5.60 | 8.46 | 4.40 | 8.95 | 0.49 |
| 3.00 | 5.60 | 9.72 | 5.44 | 9.95 | 0.55 |
| 3.00 | 5.60 | 9.71 | 3.90 | 8.43 | 0.46 |
| 3.00 | 5.60 | 11.56 | 4.24 | 8.79 | 0.48 |
| 3.00 | 5.60 | 14.27 | 5.14 | 9.68 | 0.53 |
| 3.00 | 5.60 | 9.29 | 5.16 | 9.70 | 0.53 |
| 3.00 | 5.60 | 9.29 | 3.95 | 8.48 | 0.47 |
| 3.00 | 5.60 | 14.64 | 6.64 | 11.00 | 0.60 |
| 3.00 | 5.60 | 16.81 | 8.20 | 12.22 | 0.67 |
| 3.00 | 5.60 | 16.79 | 5.88 | 10.35 | 0.57 |

# RFETS OLF 100-YR & 1,000-YR Report

| Top Width (ft) | Critical Depth (ft) | Critical Slope (ft/ft) | Velocity (ft/s) | Velocity Head (ft) | Specific Energy (ft) |
|---|---|---|---|---|---|
| 6.96 | 0.68 | 0.05411 | 2.38 | 0.09 | 0.90 |
| 7.66 | 0.74 | 0.05262 | 2.42 | 0.09 | 0.98 |
| 7.67 | 0.63 | 0.05572 | 1.57 | 0.04 | 0.93 |
| 6.71 | 0.63 | 0.05572 | 2.05 | 0.07 | 0.85 |
| 8.70 | 0.75 | 0.05244 | 1.92 | 0.06 | 1.07 |
| 9.67 | 0.80 | 0.05148 | 1.79 | 0.05 | 1.17 |
| 8.19 | 0.79 | 0.05149 | 2.49 | 0.10 | 1.05 |
| 8.54 | 0.85 | 0.05031 | 2.73 | 0.12 | 1.11 |
| 9.40 | 0.93 | 0.04891 | 2.78 | 0.12 | 1.21 |
| 9.42 | 0.78 | 0.05180 | 1.80 | 0.05 | 1.15 |
| 8.24 | 0.78 | 0.05179 | 2.35 | 0.09 | 1.04 |
| 10.68 | 0.94 | 0.04875 | 2.21 | 0.08 | 1.32 |
| 11.88 | 0.99 | 0.04786 | 2.05 | 0.07 | 1.45 |
| 10.06 | 0.99 | 0.04786 | 2.85 | 0.13 | 1.30 |

| Froude Number | Flow Type | Notes | Messages |
|---|---|---|---|
| 0.66 | Subcritical | | |
| 0.64 | Subcritical | | |
| 0.41 | Subcritical | | |
| 0.58 | Subcritical | | |
| 0.48 | Subcritical | | |
| 0.42 | Subcritical | | |
| 0.64 | Subcritical | | |
| 0.68 | Subcritical | | |
| 0.66 | Subcritical | | |
| 0.43 | Subcritical | | |
| 0.60 | Subcritical | | |
| 0.49 | Subcritical | | |
| 0.43 | Subcritical | | |
| 0.66 | Subcritical | | |

# ATTACHMENT B
# TETRA TECH 2008 OLF BERM DESIGN SUMMARY TABLE

**BERM HEIGHT SUMMARY**
**ROCKY FLATS - ORIGINAL LANDFILL**

| Area ID | | Maximum Flow Depth, ft | |
|---|---|---|---|
| | | 100-YR | 1,000-YR |
| DB-1 | A | 1.37 | 1.48 |
| | B | 1.56 | 1.68 |
| | C | 1.35 | 1.46 |
| | | | |
| DB-2 | A | 1.55 | 1.66 |
| | B | 1.58 | 1.69 |
| | C | 1.47 | 1.57 |
| | | | |
| DB-3 | A | 1.51 | 1.62 |
| | B | 1.23 | 1.34 |
| | | | |
| DB-4 | A | 1.24 | 1.33 |
| | B | 1.42 | 1.52 |
| | C | 1.20 | 1.29 |
| | D | 0.97 | 1.06 |
| | E | 1.00 | 1.06 |
| | | | |
| DB-5 | A | 1.68 | 1.80 |
| | B | 1.56 | 1.67 |
| | C | 1.39 | 1.51 |
| | D | 1.28 | 1.39 |
| | E | 1.44 | 1.52 |
| | | | |
| DB-6 | A | 1.87 | 2.01 |
| | B | 1.84 | 1.97 |
| | C | 1.44 | 1.55 |
| | D | 1.24 | 1.33 |
| | E | 1.14 | 1.21 |
| | | | |
| DB-7 | A | 1.76 | 1.90 |
| | B | 1.56 | 1.67 |
| | C | 1.64 | 1.74 |
| | D | 1.36 | 1.47 |
| | E | 1.14 | 1.23 |

U Isotopic Compositions and Concentrations of the First Batch of Rocky Flats Water Samples Submitted to LBNL

John N. Christensen

Report date 9/16/13

Thirteen samples were submitted by SM Stoller to Lawrence Berkeley National Laboratory for uranium isotopic and concentration analysis- 12 surface water samples from two sites (WALPOC and GS10) covering the period Sept. 2011 to April 2013, and one groundwater sample taken on 5/14/12 from well 79102 (Table 1).

Uranium isotopic compositions of the samples were determined at LBNL by MC-ICPMS (IsoProbe, Mfd. by Micromass) on chemically separated U. All processes used high purity reagents, new, never used before Teflon vials, and fresh separation resin. Details of the analytical processes are provided below.

Based on U concentrations provided by Stoller, aliquots from each sample were taken by volumetric pipette sufficient to yield 90 ng of uranium and transferred to new Teflon vials and dried down. After drying down, the samples were taken up in 8N HNO3 and re-dried. The samples were then taken up in 1.5 N HNO3, centrifuged and pipetted onto small volume Teflon columns filled with TRU resin (Eichrom, Inc.). Prior to sample introduction, the columns were filled with fresh TRU resin, and cleaned with 0.2 M HCl and 0.3 M HF; and then conditioned with 1.5 N HNO3. After sample loading, the columns were eluted with 1.5 N HNO3, and then U was rinsed from the columns and collected with 0.5 N HF. After collection, a drop of HClO4 was added, and the separate dried down in a perchloric hood. After the HClO4 was driven off, a drop of concentrated HNO3 was used to take up the U sample, and again dried down nearly to complete dryness. At this point, sufficient 0.3 N HNO3 was added to bring up a solution of U at a concentration of 30 ppb. This is the solution that was used for mass spectrometry. Procedural blank for U were much less than 0.1% of the sample size (i.e. <50 pg). No $^{236}U$ was detectible in the procedural blank solution.

Uranium isotopic compositions ($^{234}U/^{238}U$, $^{235}U/^{238}U$ and $^{236}U/^{238}U$) were measured on an IsoProbe (MC-ICPMS) at. Uranium isotopes 235 and 238 were measured simultaneously on separate Faraday cups, while 234 and 236 were measured on a Daly ion counting system situated behind a wide-angle retardation potential lens. Two separate static simultaneous measurement routines were used, one for $^{235}U/^{238}U$ and $^{234}U/^{238}U$ and a second for $^{236}U/^{238}U$. Corrections for mass fractionation, Daly-Faraday inter-calibration and for any peak-tail under mass 236 were calculated from bracketed analyses of an in-house secular equilibrium natural uranium standard (30 ppb solution of U ore from the Schwartzwalder Mine, CO provided by W. Sharp, Berkeley Geochronology Center). Isotopic compositions were normalized to the natural $^{238}U/^{235}U$ ratio (= 137.88 by convention (Steiger and Jäger 1977) of the standard solution using an exponential mass fractionation law. Sample solutions were introduced to the MC-ICPMS via a desolvation system (Aridus II manufactured by CETAC Inc.) equipped with a low uptake micro-concentric nebulizer. Typical precision for $^{235}U/^{238}U$ is ±0.05% 2σ or better, for $^{234}U/^{238}U$ and $^{236}U/^{238}U$ it is ±0.15% 2σ. $^{236}U/^{238}U$ can be measured down to and below the $10^{-7}$ range where precision degrades by about a factor of ten with a minimum measurable ratio of $\sim 5 \times 10^{-8}$.

Uranium and Strontium concentrations were determined on separate 2 ml sample aliquots using quadrupole ICMP-MS (Perkin Elmer SCIEX Elan DRC II) using a four-standard concentration calibration and an internal check through spiking each sample with Ga to a known concentration.

The results of the U isotopic analyses, and the U and Sr concentration determinations are provided in Table 1. The data is also presented in Figures 1 and 2. Calculated mass concentrations of $^{234}U$, $^{235}U$, $^{236}U$ and $^{238}U$ based on the measured isotopic compositions and U concentrations (measured at LBNL) are presented in Table 2. The percentages of presumed end-members (depleted U, enriched U and natural U) were calculated using the Los Alamos model spreadsheet and are provided in Table 3.

Surface water samples taken at WALPOC show little U isotopic variation over the period September 2011 to May 2013, while over a similar period the four samples from GSO10 describe a much greater range that appears to be systematic reflecting variable mixtures of natural and contaminant U (dominated by depleted U) that is not consistent with the groundwater U composition from well 79102 (Fig. 1). Plotting the inverse of the U concentration against $^{236}U/^{238}U$ ratios (Fig. 2) suggests that in the case of the WALPOC samples, variation of U concentration is due to simple dilution (e.g. rainwater with virtually zero U), though loss of U due to mineral (e.g. carbonate) precipitation is also possible and can't be ruled out without further geochemical information. A plot of the inverse of Sr concentration against $^{236}U/^{238}U$ gives a very similar pattern (Fig. 3). It may be interesting to try $^{87}Sr/^{86}Sr$ as a supplementary tracer. For the four surface water samples from GS10, Fig. 2 and Fig. 3 suggests mixing between a natural U source (or a WALPOC endmember) and an emdmember consisting mainly of depleted U and a small fraction of enriched U, though not apparently corresponding to the groundwater sample from 79102.

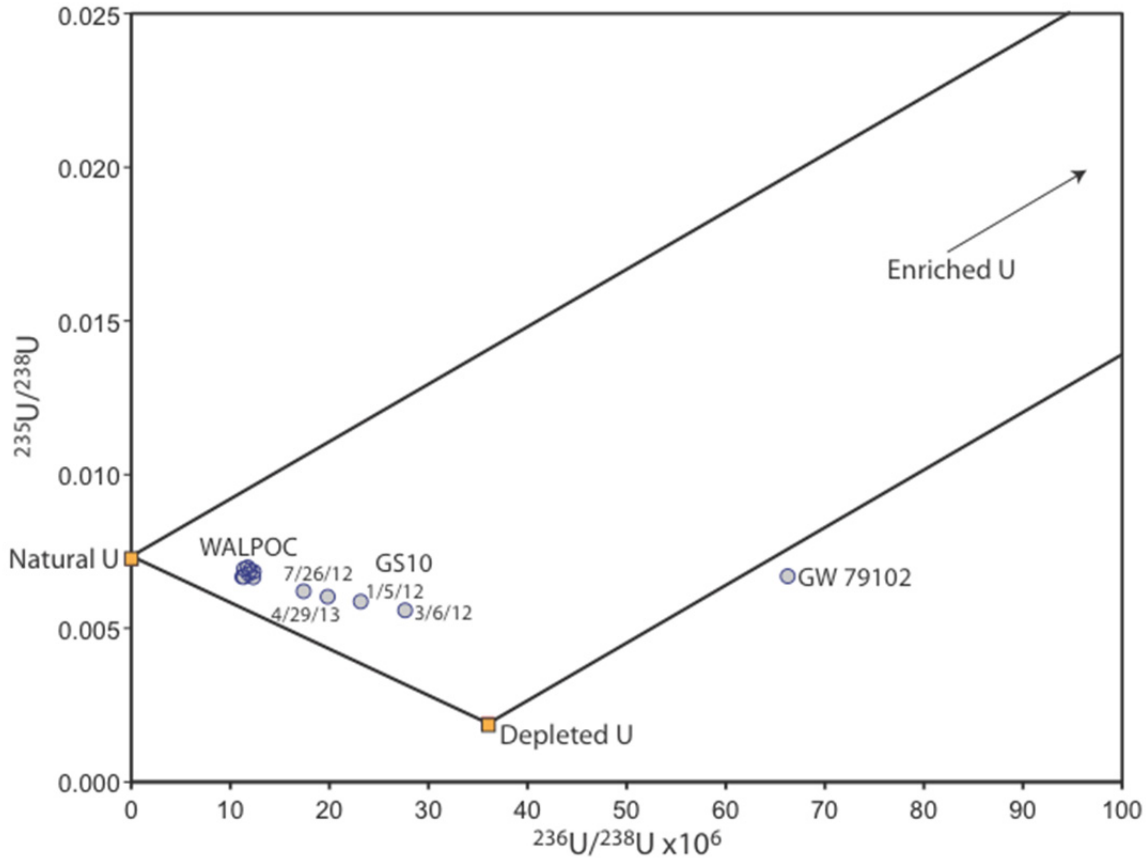

0.025
0.020
0.015
0.010
0.005
0.000
235U/238U
Enriched U
Natural U
WALPOC
GS10
7/26/12
1/5/12
4/29/13
3/6/12
GW 79102
Depleted U
0
10
20
30
40
50
60
70
80
90
100
236U/238U x10^6

Figure 1

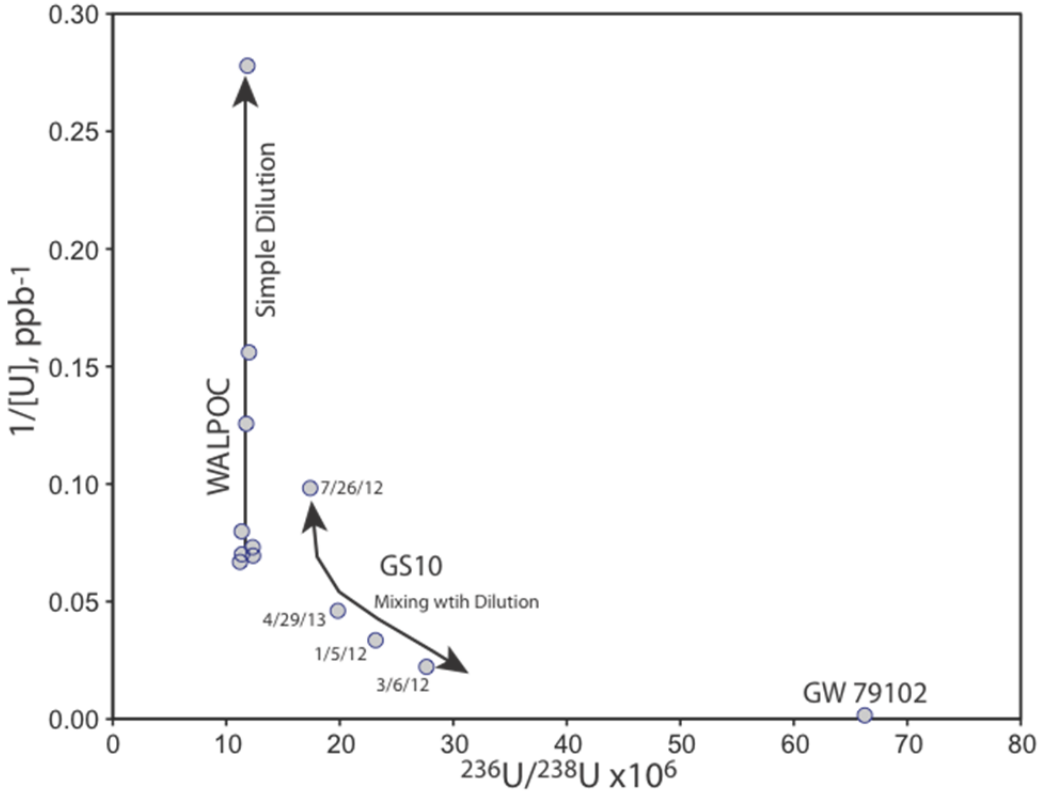



Figure 2.

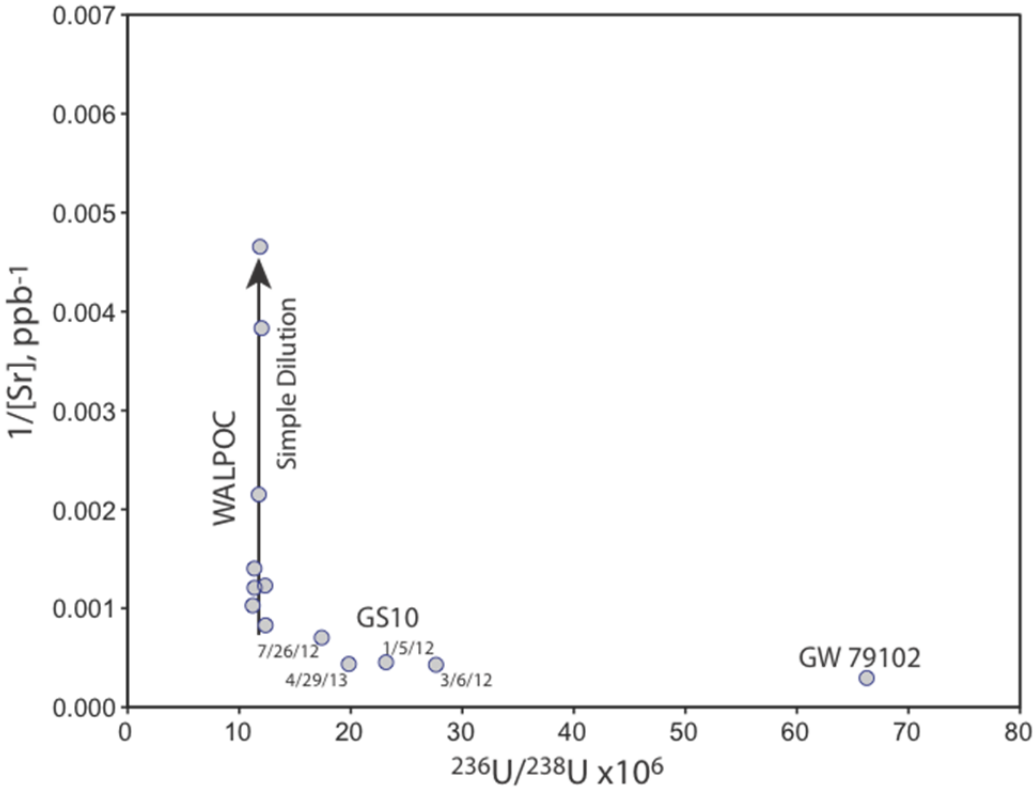



Figure 3.

Table 1. U isotopic compositions, U and Sr concentrations

| Sample Location | Sample Date | Total U (ug/L) | Uncert. | Sr, ppb | $^{234}U/^{238}u$ x1e6 | ±2s abs | $^{238}U/^{235}U$ | ±2s abs | $^{235}U/^{238}U$ | ±2s abs | $^{236}U/^{238}U$ x1e6 | ±2s abs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WALPOC | 9/22/11 | 14.4 | 0.3 | 1206.6 | 64.88 | 0.11 | 146.166 | 0.1 | 0.0068415 | 0.0000047 | 12.36 | 0.057 |
| WALPOC | 9/27/11 | 3.6 | 0.1 | 214.8 | 64.38 | 0.14 | 147.711 | 0.2 | 0.0067700 | 0.0000092 | 11.866 | 0.036 |
| WALPOC | 1/3/12 | 14.3 | 0.3 | 827.7 | 65.84 | 0.12 | 144.353 | 0.07 | 0.0069275 | 0.0000034 | 11.375 | 0.057 |
| WALPOC | 2/23/12 | 8.0 | 0.3 | 465.0 | 66.23 | 0.1 | 143.245 | 0.07 | 0.0069810 | 0.0000034 | 11.757 | 0.026 |
| WALPOC | 3/6/12 | 6.4 | 0.2 | 261.0 | 65.51 | 0.13 | 145.114 | 0.2 | 0.0068911 | 0.0000095 | 12.005 | 0.039 |
| WALPOC | 4/13/12 | 12.5 | 0.3 | 713.0 | 62.85 | 0.12 | 149.952 | 0.100 | 0.0066688 | 0.0000044 | 11.359 | 0.034 |
| WALPOC | 4/21/13 | 15.0 | 0.3 | 972.5 | 62.82 | 0.09 | 149.867 | 0.08 | 0.0066726 | 0.0000036 | 11.208 | 0.056 |
| WALPOC | 5/3/13 | 13.7 | 0.3 | 813.2 | 62.82 | 0.09 | 150.149 | 0.12 | 0.0066601 | 0.0000053 | 12.325 | 0.024 |
| GS10 | 1/5/12 | 29.8 | 1.0 | 2198.8 | 52.82 | 0.11 | 170.395 | 0.150 | 0.0058687 | 0.0000052 | 23.162 | 0.048 |
| GS10 | 3/6/12 | 45.0 | 1.5 | 2327.8 | 49.53 | 0.11 | 179.077 | 0.100 | 0.0055842 | 0.0000031 | 27.64 | 0.043 |
| GS10 | 7/26/12 | 10.2 | 0.2 | 1421.4 | 57.31 | 0.1 | 161.159 | 0.15 | 0.0062051 | 0.0000058 | 17.395 | 0.06 |
| GS10 | 4/29/13 | 21.7 | 0.8 | 2289.7 | 55.23 | 0.13 | 165.956 | 0.07 | 0.0060257 | 0.0000025 | 19.828 | 0.055 |
| 79102 | 5/14/12 | 623 | 22 | 3386.0 | 60.85 | 0.1 | 149.398 | 0.075 | 0.0066935 | 0.0000034 | 66.256 | 0.059 |

Table 2. Concentrations of U isotopes in samples

| Sample Location | Sample Date | $^{234}U$ µg/L | $^{235}U$ µg/L | $^{236}U$ µg/L | $^{238}U$ µg/L |
|---|---|---|---|---|---|
| WALPOC | 9/22/11 | 9.1E-04 | 9.7E-02 | 1.8E-04 | 14.3 |
| WALPOC | 9/27/11 | 2.3E-04 | 2.4E-02 | 4.2E-05 | 3.6 |
| WALPOC | 1/3/12 | 9.2E-04 | 9.7E-02 | 1.6E-04 | 14.2 |
| WALPOC | 2/23/12 | 5.1E-04 | 5.4E-02 | 9.2E-05 | 7.9 |
| WALPOC | 3/6/12 | 4.1E-04 | 4.3E-02 | 7.6E-05 | 6.4 |
| WALPOC | 4/13/12 | 7.7E-04 | 8.2E-02 | 1.4E-04 | 12.4 |
| WALPOC | 4/21/13 | 9.2E-04 | 9.8E-02 | 1.7E-04 | 14.9 |
| WALPOC | 5/3/13 | 8.4E-04 | 8.9E-02 | 1.7E-04 | 13.6 |
| GS10 | 1/5/12 | 1.5E-03 | 1.7E-01 | 6.8E-04 | 29.6 |
| GS10 | 3/6/12 | 2.2E-03 | 2.5E-01 | 1.2E-03 | 44.7 |
| GS10 | 7/26/12 | 5.7E-04 | 6.2E-02 | 1.7E-04 | 10.1 |
| GS10 | 4/29/13 | 1.2E-03 | 1.3E-01 | 4.2E-04 | 21.6 |
| 79102 | 5/14/12 | 3.7E-02 | 4.1E+00 | 4.1E-02 | 618.7 |

Table 3. Percentages of end-members calculated using the LANL model.

| Sample Location | Sample Date | depleted | enriched | natural |
|---|---|---|---|---|
| WALPOC | 9/22/11 | 22.53% | 0.08% | 77.39% |
| WALPOC | 9/27/11 | 22.36% | 0.07% | 77.57% |
| WALPOC | 1/3/12 | 20.30% | 0.07% | 79.63% |
| WALPOC | 2/23/12 | 20.44% | 0.08% | 79.48% |
| WALPOC | 3/6/12 | 21.57% | 0.08% | 78.35% |
| WALPOC | 4/13/12 | 22.41% | 0.06% | 77.53% |
| WALPOC | 4/21/13 | 22.15% | 0.06% | 77.79% |
| WALPOC | 5/3/13 | 23.98% | 0.07% | 75.95% |
| GS10 | 1/5/12 | 47.30% | 0.11% | 52.59% |
| GS10 | 3/6/12 | 56.58% | 0.13% | 43.29% |
| GS10 | 7/26/12 | 35.59% | 0.08% | 64.33% |
| GS10 | 4/29/13 | 40.84% | 0.09% | 59.07% |
| 79102 | 5/14/12 | 100.00% | 0.50% | -0.50% |

U Isotopic Compositions and Concentrations of Rocky Flats Water Samples Collected During 9/13/13 to 11/25/13 and Submitted to LBNL

John N. Christensen

Report date 3/20/14

Fourteen unique samples and one duplicate sample were submitted by SM Stoller to Lawrence Berkeley National Laboratory for uranium isotopic and concentration analysis. The unique samples include four from the WALPOC location, four from GS10, two from FC4EFF, two from SEEP995A, and one each from 79302 and 79502. The last two represent groundwater samples, and all others are surface water samples. These samples cover the period from June 2013 to November 2013.

**METHOD:**

Uranium isotopic compositions of the samples were determined at LBNL by multiple-collector inductively coupled plasma mass spectrometry (MC-ICPMS; IsoProbe model, Mfd. by Micromass) on chemically separated U. All processes used high purity reagents; new, never used before Teflon vials; and fresh separation resin. Details of the analytical processes are provided below.

Based on U concentrations provided or estimated by Stoller, aliquots from each sample were taken by volumetric pipette sufficient to yield 90 ng of uranium and transferred to new Teflon vials and dried down. After drying down, the samples were taken up in 8 N $HNO_3$ and re-dried. The samples were then taken up in 1.5 N $HNO_3$, centrifuged, and pipetted onto small volume Teflon columns.. Prior to sample introduction, the columns were filled with fresh TRU resin (Eichrom, Inc.), and cleaned with 0.2 M HCl and 0.3 M HF, and then conditioned with 1.5 N $HNO_3$. After sample loading, the columns were eluted with 1.5 N $HNO_3$, and then U was rinsed from the columns and collected with 0.5 N HF. After collection, a drop of concentrated $HClO_4$ was added, and the separate dried down in a perchloric hood. After the $HClO_4$ was driven off, a drop of concentrated $HNO_3$ was used to take up the U sample, and again dried down nearly to complete dryness. At this point, sufficient 0.3 N $HNO_3$ was added to bring up a solution of U at a concentration of 30 ppb. This

is the solution that was used for MC-ICPMS analysis. Procedural blanks for U were much less than 0.1% of the sample size (i.e., <50 pg). No $^{236}U$ was detectible in the procedural blank solution.

Uranium isotopic compositions ($^{234}U/^{238}U$, $^{235}U/^{238}U$ and $^{236}U/^{238}U$) were measured on an IsoProbe MC-ICPMS at LBNL. Uranium isotopes 235 and 238 were measured simultaneously on separate Faraday cups, while isotopes 234 and 236 were measured on a Daly ion counting system situated behind a wide-angle retardation potential lens. Two separate, static, and simultaneous measurement routines were used, one for $^{235}U/^{238}U$ and $^{234}U/^{238}U$ and a second for $^{236}U/^{238}U$. Corrections for mass fractionation, Daly-Faraday intercalibration, and any peak-tail under mass 236 were calculated from bracketed analyses of an in-house, secular equilibrium natural uranium standard (30 ppb solution of U ore from the Schwartzwalder Mine, CO provided by W. Sharp, Berkeley Geochronology Center). Isotopic compositions were normalized to the natural $^{238}U/^{235}U$ ratio (137.88 by convention (Steiger and Jäger 1977)) of the standard solution using an exponential mass fractionation law. Sample solutions were introduced to the MC-ICPMS via a desolvation system (Aridus II manufactured by CETAC Inc.) equipped with a low uptake micro-concentric nebulizer. Typical precision for $^{235}U/^{238}U$ is ±0.05% 2σ or better; for $^{234}U/^{238}U$ and $^{236}U/^{238}U$ it is ±0.15% 2σ. $^{236}U/^{238}U$ can be measured down to and below the $10^{-7}$ range where precision degrades by approximately a factor of ten, with a minimum measurable ratio of $\sim 3 \times 10^{-8}$.

Using data from the IsoProbe taken through the isotopic analyses, the uranium concentrations were estimated through a comparison of the size of the $^{238}U$ beam of the sample to the average $^{238}U$ beam size of the bracketing 30 ppb U isotopic standard. This estimate depends on the column yield for the U separation chemistry, which is 90% or better. The given concentrations assume 100% column yield, so could be underestimated by as much as10%.

**RESULTS AND DISCUSSION:**

The results of the U isotopic analyses and the U concentration estimates using IsoProbe data, are provided in Table 1. The data are also presented in Figures 1 through 4. Calculated mass concentrations of $^{234}U$, $^{235}U$, $^{236}U$, and $^{238}U$ based on the measured isotopic compositions and estimated U concentrations are presented in Table 2. The percentages of presumed endmembers (depleted U, enriched U, and natural U) were calculated using the Los Alamos National Laboratory (LANL) model spreadsheet and are provided in Table 3.

All analyzed samples fall within the triangle defined by natural U, the LANL-defined depleted U and enriched U endmembers (Fig. 1). Figure 2 shows a blow-up of the region of Figure 1 and compares the results of Batch #1 to Batch #2. (Batch #1 samples were collected from September 2011 through May 2013.) In Figure 2, WALPOC water samples collected on 6/4/13 and 9/13/13 have similar U isotopic compositions to previously-analyzed WALPOC samples (see report on Batch #1 samples), falling within the cluster defined by those earlier samples (grey circles). The two WALPOC samples collected on 9/14/13 and 9/16/13 fall outside this cluster toward the depleted and enriched endmembers. The four samples from GS10 fall along an extension of the trend seen in the previous GS10 samples toward the WALPOC cluster. The sample collected from FC4EFF on 11/25/13 matches nearly exactly in U isotopic composition the GS10 sample collected on the same date (Figure 2). Likewise, the FC4EFF sample of 9/30/13 is tightly bracketed in uranium isotopic composition by GS10 samples collected on 9/24/13 and 10/1/13. Samples from SEEP995A collected on 9/30/13 and 11/25/13, together with a sample collected from well 79302 on 10/29/13, appear to fall along an array sub-parallel to that formed by the WALPOC-GS10 samples but at higher fractions of the enriched endmember. A sample collected from well 79502 (near 79302) on 10/29/13 has the lowest $^{236}U/^{238}U$ ratio ($1.79 \pm 0.02 \times 10^{-6}$) of any sample we have analyzed so far, and has near-normal $^{235}U/^{238}U$ (Table 1) indicating the sample is 97% natural U (Table 3).

Combining the data for the WALPOC location from the first and second batches, a set of time-series plots can be constructed providing limited view of the changing mixture of the endmembers over the period from September 2011 through September 2013 (Figure 3). Though the limited frequency of sampling prevents firm conclusions a few observations can be made. Between 9/27/11 and 3/6/12 the fraction of enriched U changed in opposition to the fraction of depleted U, while the fraction of natural U mirrored the pattern for the fraction of depleted U. The second period of note is in the second half of 2013 where the fractions of depleted U and enriched U changed in parallel, culminating over the period 9/13/13 to 9/16/13 in a distinct, though small, rise in $^{236}U/^{238}U$ and modest increases in the fractions of enriched and depleted U.

A similar set of time series plots can be made for data from GS10 covering a similar period, although at even less sample frequency. GS10 shows an increase in $^{236}U/^{238}U$ and both the fractions of enriched and depleted U between 1/5/12 and 3/6/12; however, this is only based on two samples.

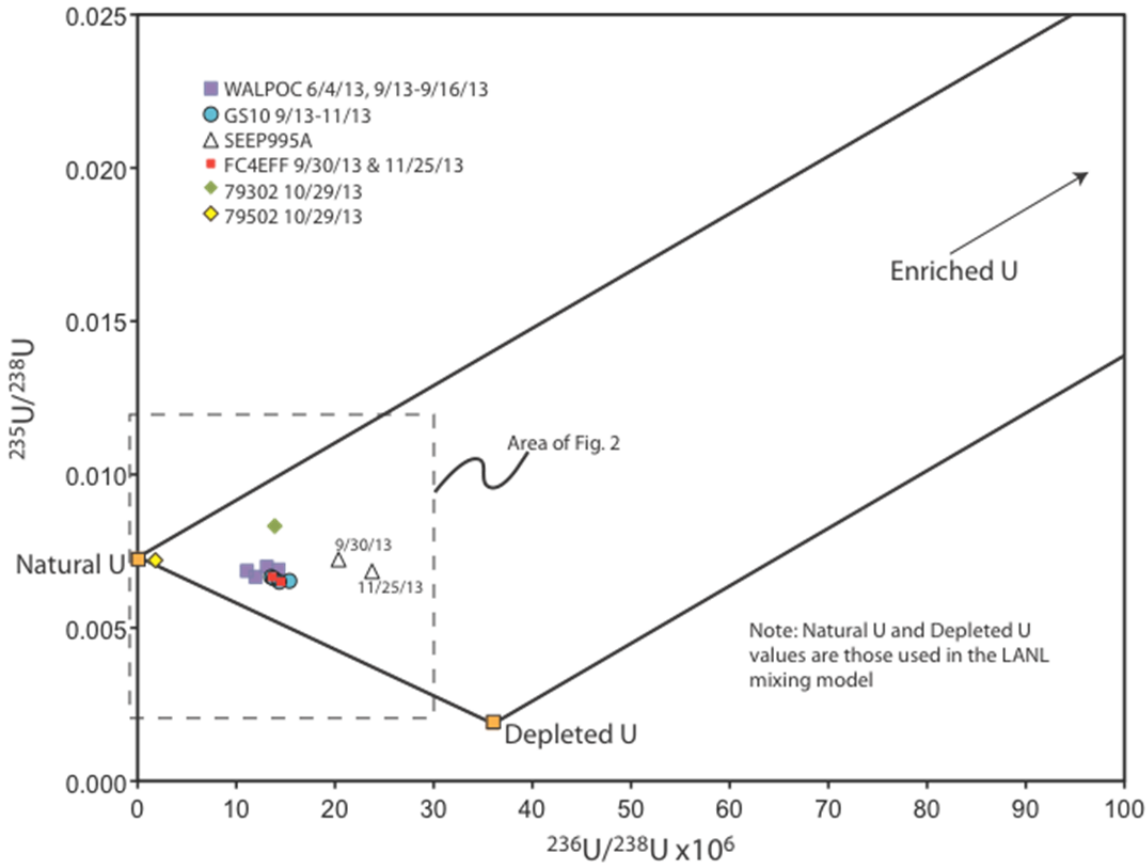

WALPOC 6/4/13, 9/13-9/16/13
GS10 9/13-11/13
SEEP995A
FC4EFF 9/30/13 & 11/25/13
79302 10/29/13
79502 10/29/13
Enriched U
Area of Fig. 2
9/30/13
11/25/13
Natural U
Depleted U
Note: Natural U and Depleted U values are those used in the LANL mixing model
0.025
0.020
0.015
0.010
0.005
0.000
235U/238U
0
10
20
30
40
50
60
70
80
90
100
236U/238U x10^6

Figure 1.

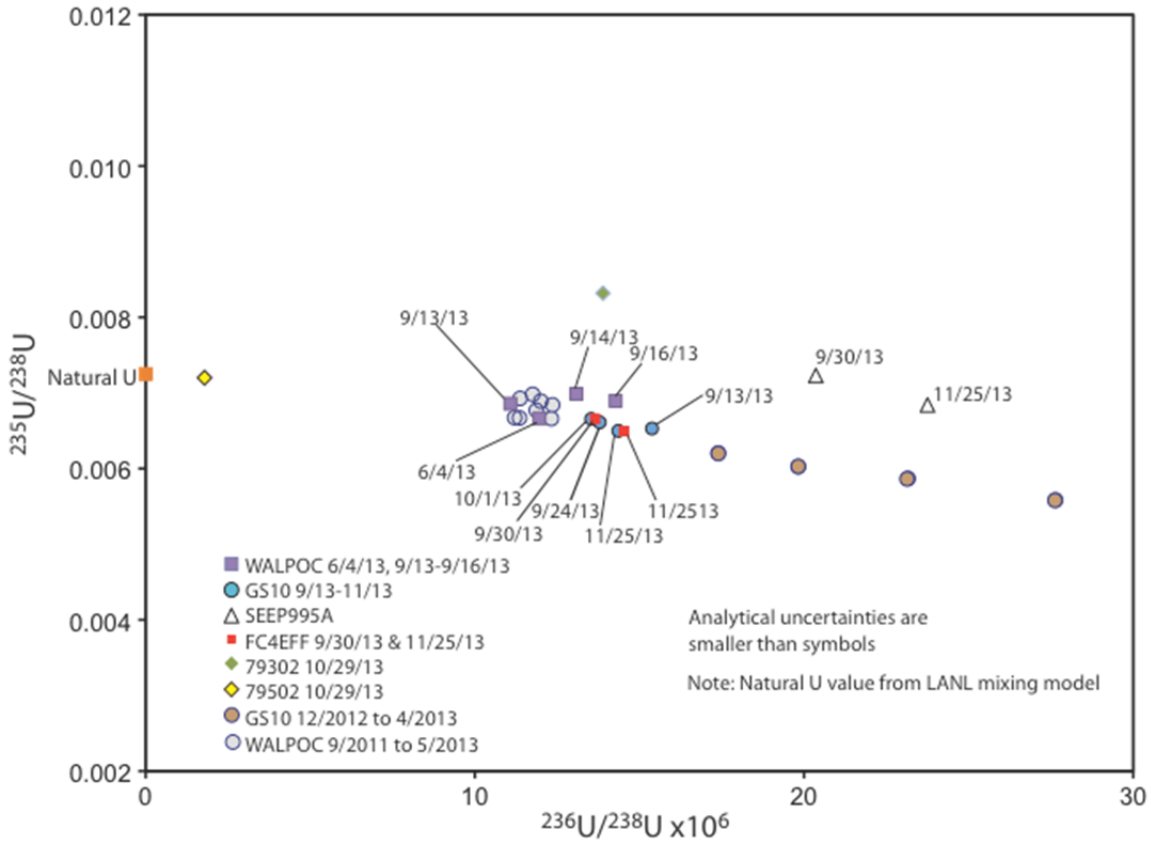

0.012
0.010
0.008
0.006
0.004
0.002
Natural U
235U/238U
0
10
20
30
236U/238U x10^6
9/13/13
9/14/13
9/16/13
9/30/13
11/25/13
9/13/13
6/4/13
10/1/13
9/24/13
9/30/13
11/25/13
11/2513
WALPOC 6/4/13, 9/13-9/16/13
GS10 9/13-11/13
SEEP995A
FC4EFF 9/30/13 & 11/25/13
79302 10/29/13
79502 10/29/13
GS10 12/2012 to 4/2013
WALPOC 9/2011 to 5/2013
Analytical uncertainties are smaller than symbols
Note: Natural U value from LANL mixing model

Figure 2.

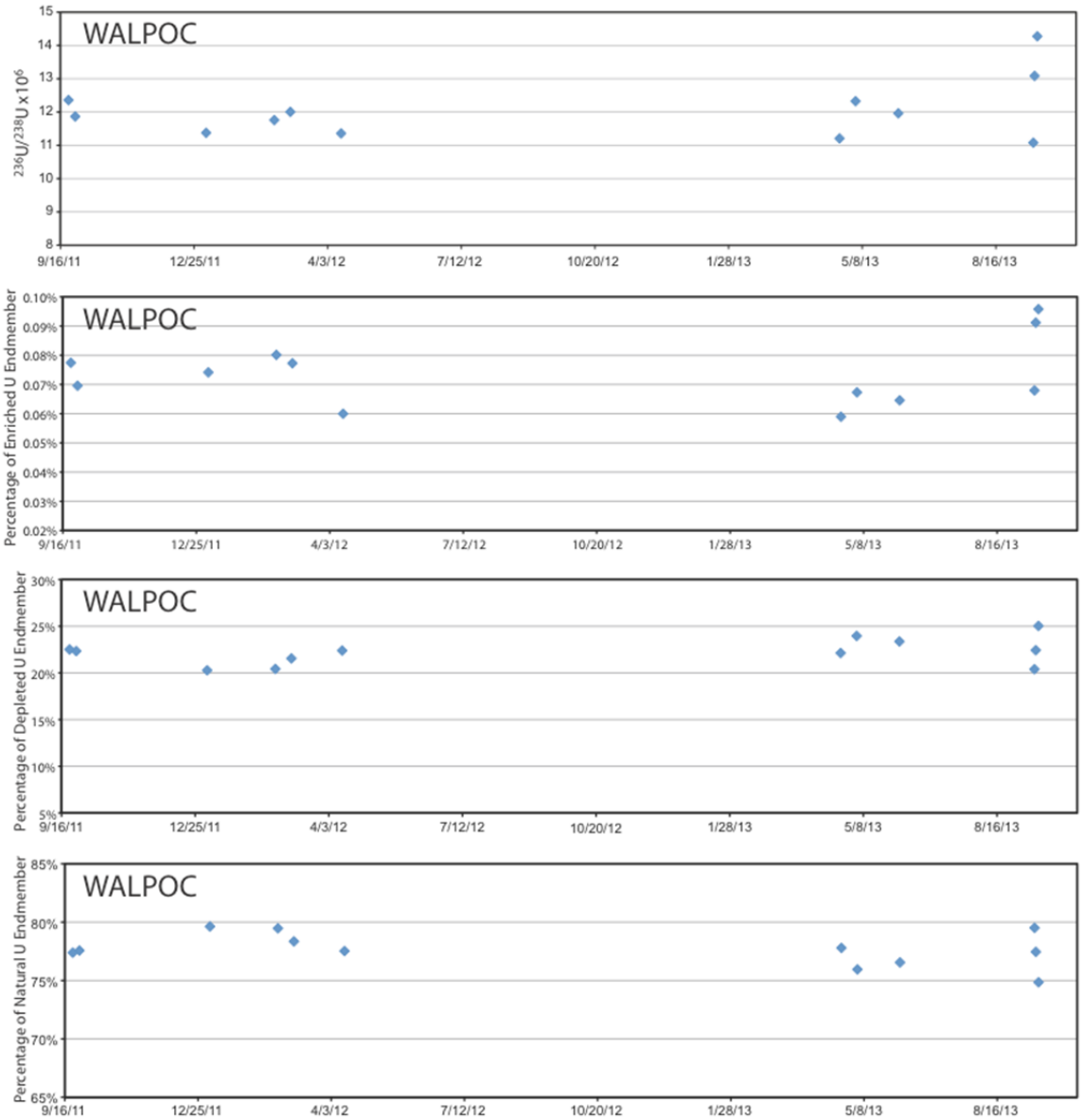

WALPOC
236U/238U x 10^6
15
14
13
12
11
10
9
8
9/16/11
12/25/11
4/3/12
7/12/12
10/20/12
1/28/13
5/8/13
8/16/13
WALPOC
Percentage of Enriched U Endmember
0.10%
0.09%
0.08%
0.07%
0.06%
0.05%
0.04%
0.03%
0.02%
WALPOC
Percentage of Depleted U Endmember
30%
25%
20%
15%
10%
5%
WALPOC
Percentage of Natural U Endmember
85%
80%
75%
70%
65%

Figure 3.

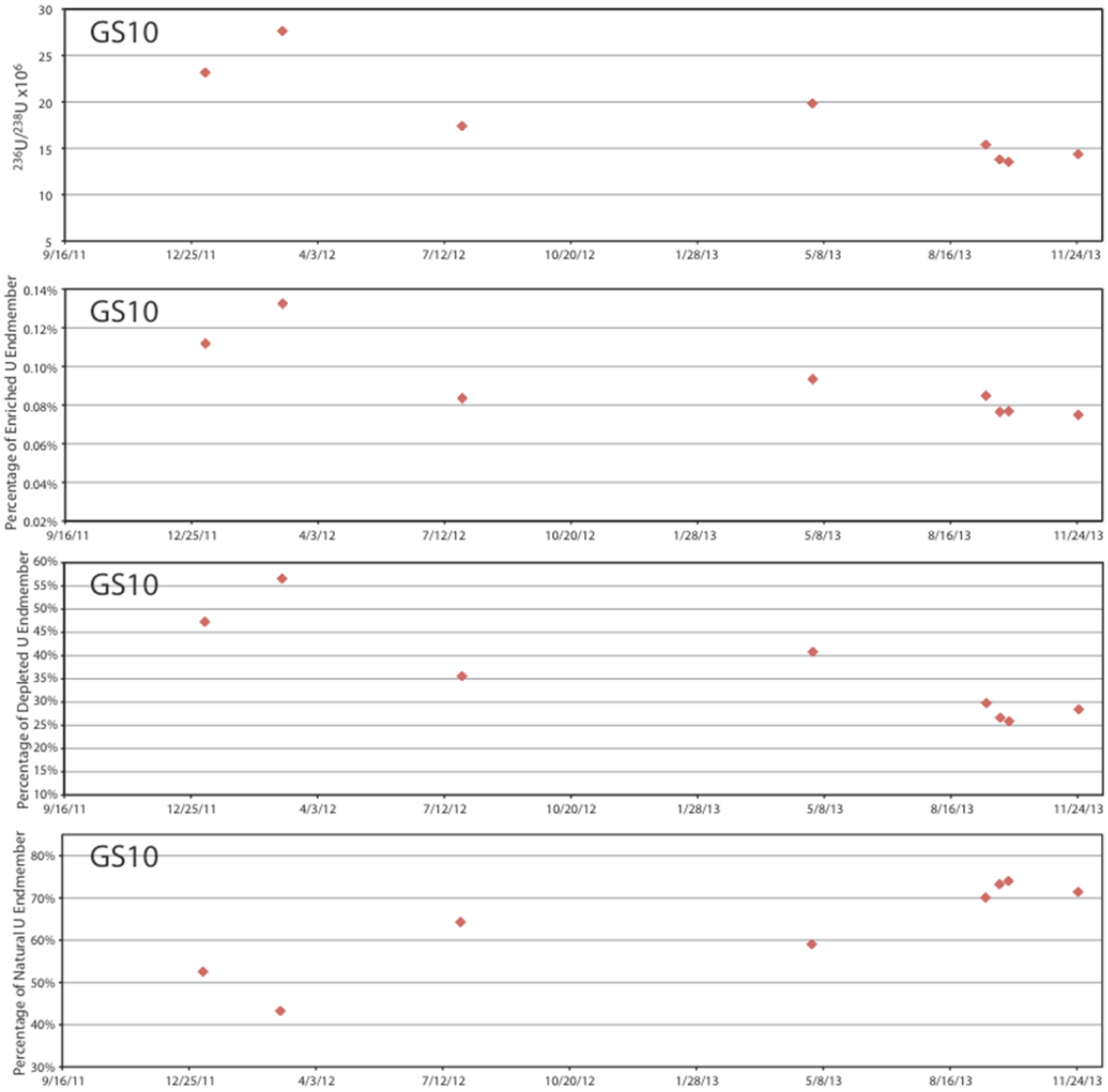

GS10
236U/238U x10^6
30
25
20
15
10
5
9/16/11
12/25/11
4/3/12
7/12/12
10/20/12
1/28/13
5/8/13
8/16/13
11/24/13
GS10
Percentage of Enriched U Endmember
0.14%
0.12%
0.10%
0.08%
0.06%
0.04%
0.02%
GS10
Percentage of Depleted U Endmember
60%
55%
50%
45%
40%
35%
30%
25%
20%
15%
10%
GS10
Percentage of Natural U Endmember
80%
70%
60%
50%
40%
30%

Figure 4.

Table 1. U isotopic compositions and U concentrations

| Sample Location | Sample Date | Est. Total U (ug/L) | $^{234}U/^{238}U$ x1e6 | ±2s abs | $^{238}U/^{235}U$ | ±2s abs | $^{235}U/^{238}U$ | ±2s abs | $^{236}U/^{238}U$ x1e6 | ±2s abs |
|---|---|---|---|---|---|---|---|---|---|---|
| FC4EFF | 9/30/13 | 13.3 | 61.56 | 0.10 | 150.217 | 0.095 | 0.0066570 | 0.0000042 | 13.652 | 0.028 |
| FC4EFF | 11/25/13 | 16.5 | 60.15 | 0.12 | 153.953 | 0.09 | 0.0064955 | 0.0000038 | 14.531 | 0.027 |
| 79302 | 10/29/13 | 182.8 | 91.55 | 0.14 | 120.224 | 0.08 | 0.0083178 | 0.0000055 | 13.894 | 0.034 |
| 79502 | 10/29/13 | 11.0 | 97.51 | 0.14 | 138.844 | 0.082 | 0.0072023 | 0.0000043 | 1.786 | 0.020 |
| SEEP995A | 11/25/13 | 19.3 | 64.39 | 0.12 | 146.165 | 0.09 | 0.0068416 | 0.0000042 | 23.753 | 0.038 |
| SEEP995A | 9/30/13 | 11.2 | 69.29 | 0.13 | 138.311 | 0.08 | 0.0072301 | 0.0000042 | 20.36 | 0.032 |
| GS10 | 9/13/13 | 5.9 | 58.47 | 0.11 | 153.171 | 0.08 | 0.0065287 | 0.0000034 | 15.382 | 0.029 |
| GS10 | 9/24/13 | 8.1 | 60.17 | 0.11 | 151.253 | 0.09 | 0.0066114 | 0.0000039 | 13.794 | 0.035 |
| GS10 | 10/1/13 | 11.3 | 61.56 | 0.13 | 150.244 | 0.1 | 0.0066558 | 0.0000044 | 13.535 | 0.034 |
| GS10 | 11/25/13 | 19.4 | 60.18 | 0.10 | 153.885 | 0.085 | 0.0064984 | 0.0000036 | 14.360 | 0.024 |
| WALPOC | 6/4/13 | 3.6 | 61.69 | 0.15 | 150.062 | 0.22 | 0.0066639 | 0.0000098 | 11.962 | 0.032 |
| WALPOC | 9/13/13 | 1.7 | 64.50 | 0.10 | 145.823 | 0.078 | 0.0068576 | 0.0000037 | 11.079 | 0.029 |
| WALPOC | 9/14/13 | 1.9 | 65.78 | 0.09 | 143.126 | 0.12 | 0.0069869 | 0.0000059 | 13.085 | 0.030 |
| WALPOC | 9/16/13 | 7.0 | 65.17 | 0.11 | 145.031 | 0.075 | 0.0068951 | 0.0000036 | 14.275 | 0.030 |
| 2500 | 11/25/13 | 19.7 | 59.04 | 0.1 | 153.947 | 0.095 | 0.0064957 | 0.0000040 | 14.522 | 0.025 |

Notes: ±2s abs = two times the standard deviation in absolute terms

Locations 79302 and 79502 represent monitoring wells, all others are surface water locations. Location 2500 represents duplicate of sample from GS10 dated 11/25/13. All WALPOC samples are all composites, as are the GS10 samples dated 9/13/13 and 9/24/13; all other samples are grab samples.

Table 2. Concentrations of U isotopes in samples based on total U concentrations estimated from IsoProbe data

| **Sample Location** | **Sample Date** | $^{234}U$ µg/L | $^{235}U$ µg/L | $^{236}U$ µg/L | $^{238}U$ µg/L |
|---|---|---|---|---|---|
| FC4EFF | 9/30/13 | 8.0E-04 | 8.7E-02 | 1.8E-04 | 13.2 |
| FC4EFF | 11/25/13 | 9.7E-04 | 1.1E-01 | 2.4E-04 | 16.4 |
| 79302 | 10/29/13 | 1.6E-02 | 1.5E+00 | 2.5E-03 | 181.3 |
| 79502 | 10/29/13 | 1.0E-03 | 7.7E-02 | 1.9E-05 | 10.9 |
| Seep 995a | 11/25/13 | 1.2E-03 | 1.3E-01 | 4.5E-04 | 19.2 |
| Seep 995a | 9/30/13 | 7.6E-04 | 8.0E-02 | 2.3E-04 | 11.2 |
| GS10 | 9/13/13 | 3.4E-04 | 3.8E-02 | 9.0E-05 | 5.9 |
| GS10 | 9/24/13 | 4.8E-04 | 5.3E-02 | 1.1E-04 | 8.0 |
| GS10 | 10/1/13 | 6.8E-04 | 7.4E-02 | 1.5E-04 | 11.3 |
| GS10 | 11/25/13 | 1.1E-03 | 1.2E-01 | 2.7E-04 | 19.2 |
| WALPOC | 6/4/13 | 2.2E-04 | 2.3E-02 | 4.2E-05 | 3.6 |
| WALPOC | 9/13/13 | 1.1E-04 | 1.2E-02 | 1.9E-05 | 1.7 |
| WALPOC | 9/14/13 | 1.2E-04 | 1.3E-02 | 2.4E-05 | 1.9 |
| WALPOC | 9/16/13 | 4.4E-04 | 4.7E-02 | 9.8E-05 | 6.9 |
| 2500 | 11/25/13 | 1.1E-03 | 1.3E-01 | 2.8E-04 | 19.6 |

Note: Locations 79302 and 79502 represent monitoring wells, all others are surface water locations. Location 2500 represents duplicate of sample from GS10 dated 11/25/13. All WALPOC samples are all composites, as are the GS10 samples dated 9/13/13 and 9/24/13; all other samples are grab samples.

Table 3. Percentages of endmembers calculated using the LANL model

| Sample Location | Sample Date | Depleted | Enriched | Natural |
|---|---|---|---|---|
| FC4EFF | 9/30/13 | 26.06% | 0.08% | 73.86% |
| FC4EFF | 11/25/13 | 28.75% | 0.08% | 71.17% |
| 79302 | 10/29/13 | 12.69% | 0.17% | 87.14% |
| 79502 | 10/29/13 | 3.18% | 0.01% | 96.81% |
| SEEP995A | 11/25/13 | 40.16% | 0.17% | 59.67% |
| SEEP995A | 9/30/13 | 31.70% | 0.16% | 68.14% |
| GS10 | 9/13/13 | 29.80% | 0.08% | 70.12% |
| GS10 | 9/24/13 | 26.65% | 0.08% | 73.27% |
| GS10 | 10/1/13 | 25.89% | 0.08% | 74.04% |
| GS10 | 11/25/13 | 28.47% | 0.07% | 71.46% |
| WALPOC | 6/4/13 | 23.39% | 0.06% | 76.55% |
| WALPOC | 9/13/13 | 20.42% | 0.07% | 79.52% |
| WALPOC | 9/14/13 | 22.45% | 0.09% | 77.46% |
| WALPOC | 9/16/13 | 25.05% | 0.10% | 74.85% |
| 2500 | 11/25/13 | 28.74% | 0.08% | 71.19% |

Note: Locations 79302 and 79502 represent monitoring wells, all others are surface water locations. Location 2500 represents duplicate of sample from GS10 dated 11/25/13. All WALPOC samples are all composites, as are the GS10 samples dated 9/13/13 and 9/24/13; all other samples are grab samples.

# ROCKY FLATS SITE
# REGULATORY CONTACT RECORD

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**Purpose:** GS10 Flume Replacement Project and Soil Disturbance Review Plan

**Contact Record Approval Date:** May 2, 2013

**Site Contact(s)/Affiliation(s):** Scott Surovchak, U.S. Department of Energy (DOE); Rick DiSalvo, S.M. Stoller Corporation (Stoller); Linda Kaiser, Stoller; George Squibb, Stoller

**Regulatory Contact(s)/Affiliation(s):** Carl Spreng, Colorado Department of Public Health and Environment (CDPHE); Vera Moritz, U.S. Environmental Protection Agency (EPA)

**Date of Consultation Meeting:** March 13, 2013

**Consultation Meeting Participants:** Carl Spreng, CDPHE; Vera Moritz, EPA; Scott Surovchak, DOE; John Boylan, Rick DiSalvo, Linda Kaiser, George Squibb, Stoller

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**Introduction:** The flume for Rocky Flats Legacy Management Agreement (RFLMA) Point of Evaluation (POE) monitoring location GS10 in South Walnut Creek was originally installed in 1993. DOE considered replacing the GS10 flume in 2000, when it replaced flumes for several other monitoring locations, but it was a low priority in relation to other cleanup and closure work at the time. The new surface water configuration resulting from breaching the dams for former retention ponds B-1, B-2, B-3, and B-4 in 2009 now allows DOE to propose replacing the GS10 flume and to move its location slightly downstream.

The GS10 flume is located just upstream of a massive, deeply anchored, approximately 50-foot-wide concrete diversion structure that blocks the stream channel. The diversion structure has three openings to allow creek water to flow through in corrugated metal pipes (CMPs). The CMP openings are fitted with gate valves, or "headgates." Water monitored at GS10 flows through the diversion structure, as controlled by the position of the headgates. One headgate controls flow through a 24-inch-diameter CMP into the channel just upstream of the former retention pond B-1. The other two headgates control flow into a concrete distribution box connected to a single 48-inch-diameter CMP that serves as a bypass line around former retention ponds B-1, B-2, and B-3. The concrete distribution box and the CMPs, except the downstream open ends, are buried below the surface on the downstream side of the diversion structure.

The 48-inch-diameter discharge end of the CMP bypass line is downstream and south of former retention pond B-3, so that water flowing through the bypass line goes to former retention pond B-4. The 48-inch-diameter headgates of the CMP bypass line were closed in 2009, and the headgate for the 24-inch-diameter CMP to former retention pond B-1 was opened so that creek water monitored at GS10 now only flows into former retention pond B-1.

The GS10 flume is located at the bottom of fairly steep channel banks, and the bank on the south side has visible localized slumping and sliding toward the creek and GS10. The area just upstream and surrounding GS10 promotes the growth of thick stands of willow saplings, which must be cut periodically to allow access to maintain the flume.

Figure 1 is an aerial photograph of the GS10 flume area, showing the location of the various features described above.

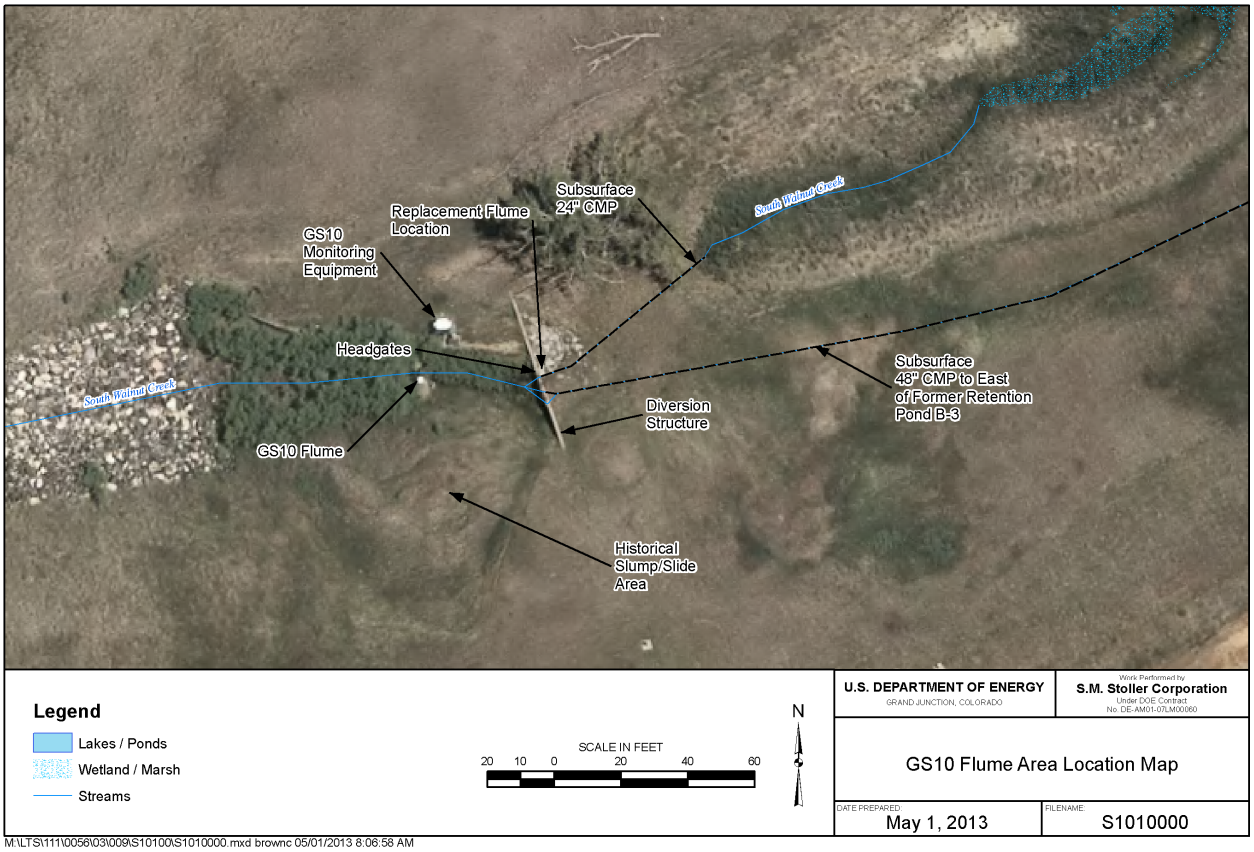


*Figure 1. GS10 Flume Area*

**Discussion:** DOE will replace the GS10 flume and move the flume location to the downstream side of the diversion structure, which will, among other things, make flume operation and maintenance easier. The creek channel upstream of the diversion structure will be filled and graded to raise the channel elevation, and the diversion structure will be notched at the top to an elevation slightly above the regraded channel elevation. Creek water will then flow through the diversion structure notch instead of through the diversion structure via the subsurface CMPs.

Although the GS10 metal flume currently is operational, additional structure aging and movement of the south hillside could compromise the quality of data collected in the future. Also, the new flume will be a fiberglass H-flume, better designed to measure the lower postclosure flow rate ranges in this portion of South Walnut Creek. The new fiberglass flume will be physically attached to the downstream side of the diversion structure.

The 48-inch-diameter CMP bypass line is no longer used or needed and the new flume location will eliminate the need for the 24-inch-diameter CMP. The headgates will be removed, and the CMP openings will be plugged and placed in a stable configuration as a good management practice.

As part of the construction work, the depression formed by the localized instability on the south side of the creek will be filled and graded to raise and contour the topography consistent with the regraded channel upstream of the diversion structure. This will serve to stabilize this area.

*GS10 Reportable Condition:* DOE is currently implementing the evaluation plans for the RFLMA reportable conditions for americium, plutonium, and uranium concentrations at GS10 in accordance with Contact Records 2011-04, 2011-05, and 2012-08. Information regarding the evaluation monitoring is reported in RFLMA quarterly and annual reports. The monitoring results show that water quality downstream of GS10 continuously meets RFLMA standards. This, along with the results of other evaluation monitoring upstream of GS10, does not suggest that actions besides continued evaluation monitoring to gather additional data are needed at this time. DOE will continue to conduct evaluation monitoring upstream and downstream of GS10 in accordance with the evaluation plans, in accordance with RFLMA Attachment 2, "Legacy Management Requirements," Section 6.0, "Action Determinations."

The RFLMA parties agree that conducting the GS10 flume replacement project as described in this Contact Record is not likely to impede the reportable condition evaluation. They also agree that replacement of the GS10 flume complies with RFLMA water monitoring requirements. The new flume will be approximately 40 feet east of its present location.

Because of the proximity of the new flume to the current flume location, this monitoring location will continue to be identified as GS10, and no changes to the tables or figures in RFLMA Attachment 2 that relate to GS10 are needed.

*Flume Replacement Scope and Sequence*: Figures 2 and 3 show the project area and the main features related to the work sequence.

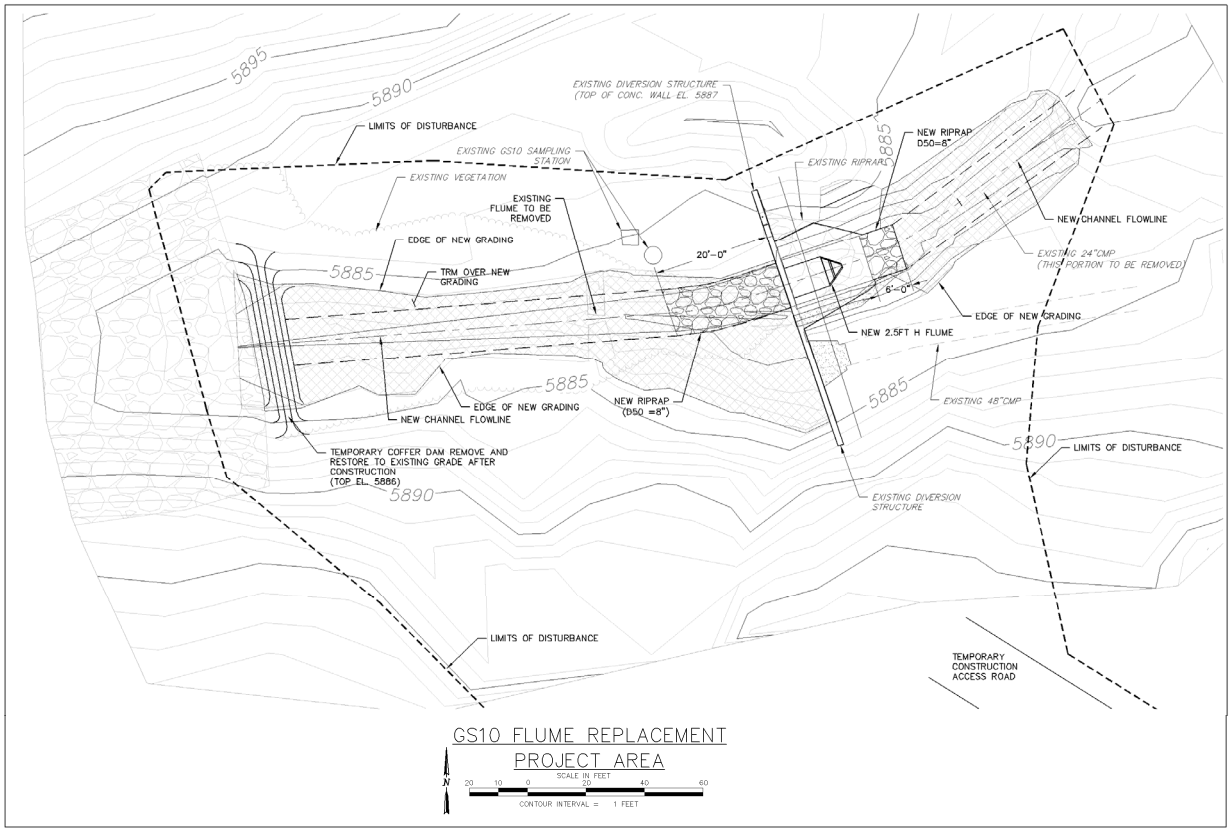


*Figure 2. GS10 Flume Replacement Project Area*

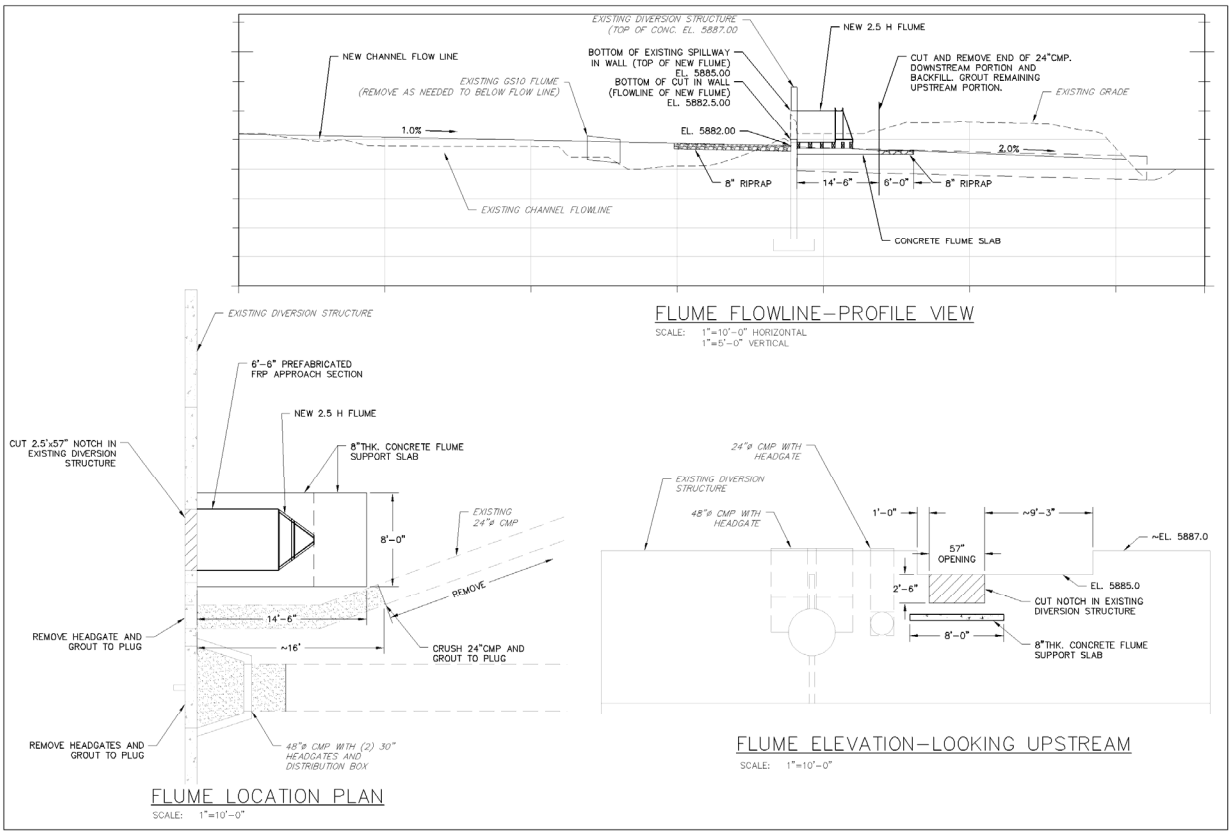


*Figure 3. GS10 Flume Replacement Features*

The work will be sequenced as follows to provide continual monitoring at GS10 to the extent practicable during the anticipated 2- to 3-week active construction period.

1. Construction perimeter and access points will be marked, and preconstruction erosion controls will be installed.
2. The notch will be cut at the top of the cutoff wall and concrete pads for the new fiberglass flume and the associated monitoring equipment will be installed.
3. At an appropriate time during the grading of the downstream channel, the 24-inch-diameter CMP headgate will be closed, and the downstream end of the CMP will be removed and the area filled to the extent needed to complete grading of the downstream channel.
4. The area downstream of the new flume will be graded and contoured to form a channel to convey the water flowing through the new flume to former retention pond B-1.
5. The new flume and associated monitoring equipment will be installed and made operational on the downstream side of the cutoff wall.
6. A cofferdam will be constructed using imported fill upstream of GS10 to block the flow of creek water.
7. Water that accumulates behind the cofferdam and at the closed headgates will be pumped through the new GS10 flume and sampled in accordance with RFLMA requirements during the rest of the construction.

8. The headgates will be removed and the CMP openings plugged with grout or other suitable material to seal the openings and provide long-term stability to eliminate this potential flow path.
9. The current GS10 flume will be removed to the extent needed for grading the channel, and the monitoring equipment for the current flume location will be removed. The concrete base for the flume and concrete equipment pad will be removed to a depth suitable for backfilling the remnants in place for the final grading.
10. Filling, grading, and contouring of the area upstream of the cutoff wall will be completed.
11. The cofferdam will be removed.
12. Post construction erosion controls and revegetation will be completed.

Excess soil generated by grading the area downstream of the diversion structure and clean imported fill will be used to raise the elevation of the area upstream of the diversion structure. No excavation below the current elevation will be done upstream of the diversion structure. The final fill elevation will be above the current headgate elevation.

Removed pieces of the current GS10 flume, 24-inch-diameter CMP, headgates, and associated hardware and concrete that is removed will be properly managed as waste, or recycled if eligible for recycling.

The 48-inch-diameter CMP bypass line will be left in place, sealed at the upstream end, at the completion of this project. After the upstream end is sealed, there is no present geotechnical reason to remove or fill the remaining bypass line.

*Institutional Controls Evaluation:* The construction will involve some excavation deeper than 3 feet below existing grade to remove portions of the 24-inch-diameter CMP, to construct the concrete pad and to place riprap, as needed. Subsequent filling and grading to complete construction will result in some portions of the area downstream of the cutoff wall being slightly below the preconstruction elevation. Filling and grading upstream of the cutoff wall will result in elevations higher than the preconstruction elevation.

The soil disturbance work is subject to the *Rocky Flats Legacy Management Agreement*, Attachment 2, Institutional Controls (ICs) 2 and 3. The work also involves an engineered component of the remedy, surface water monitoring location GS10, so it is also subject to IC 7. Table 1 recaps these ICs.

*Table 1. Institutional Controls*

| | |
|---|---|
| IC 2 | Excavation, drilling, and other intrusive activities below a depth of three feet are prohibited, without prior regulatory review and approval pursuant to the Soil Disturbance Review Plan in RFLMA Attachment 2. |
| | **Objective:** Prevent unacceptable exposure to residual subsurface contamination.<br>**Rationale:** Contaminated structures, such as building basements, exist in certain areas of the Central OU, and the Comprehensive Risk Assessment did not evaluate the risks posed by exposure to this residual contamination. Thus, this restriction eliminates the possibility of unacceptable exposures. Additionally, it prevents damage to subsurface engineered components of the remedy. |
| IC 3 | No grading, excavation, digging, tilling, or other disturbance of any kind of surface soils is permitted, except in accordance with an erosion control plan (including Surface Water Protection Plans submitted to EPA under the Clean Water Act) approved by CDPHE or EPA. Soil disturbance that will not restore the soil surface to preexisting grade or higher may not be performed without prior regulatory review and approval pursuant to the Soil Disturbance Review Plan in RFLMA Attachment 2. |
| | **Objective:** Prevent migration of residual surface soil contamination to surface water.<br>**Rationale:** Certain surface soil contaminants, notably plutonium-239/240, were identified in the fate and transport evaluation in the Remedial Investigation as having complete pathways to surface water if disturbed. This restriction minimizes the possibility of such disturbance and resultant impacts to surface water. Restoring the soil surface to preexisting grade maintains the current depth to subsurface contamination or contaminated structures. |
| IC 7 | Activities that may damage or impair the proper functioning of any engineered component of the response action, including but not limited to any treatment system, monitoring well, landfill cap, or surveyed benchmark, are prohibited. The preceding sentence shall not be construed to prohibit the modification, removal, replacement, or relocation of any engineered component of the response action in accordance with the action determinations in RFLMA Attachment 2. |
| | **Objective:** Ensure the continued proper functioning of engineered portions of the remedy.<br>**Rationale:** This restriction helps ensure the integrity of other engineered components of the remedy, including monitoring and survey points. |

The required Soil Disturbance Review Plan is in Attachment 1. The information in the Discussion section demonstrates that the Objective and Rationale of IC 7 will be met.

**Resolution:** CDPHE has reviewed information regarding the proposed soil disturbance and excavation and, after consultation with EPA, has approved the proposed activity. CDPHE has determined that the proposed activity will not compromise or impair the function of the remedy or result in an unacceptable release or exposure to residual subsurface contamination. CDPHE has also determined that the proposed project meets the rationale and objectives of ICs 2, 3, and 7.

DOE will not conduct the approved soil disturbance and excavation until 10 calendar days after this Contact Record is posted on the Rocky Flats website and stakeholders are notified of the posting in accordance with the RFLMA Public Involvement Plan.

**Closeout of Contact Record:** This Contact Record will be closed when the work is completed, post construction reseeding has been performed, and post construction erosion controls are in place.

**Approval:** Carl Spreng, CDPHE, approved this Contact Record.

**Contact Record Prepared by:** Rick DiSalvo

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**Distribution:**
Carl Spreng, CDPHE
Scott Surovchak, DOE
Linda Kaiser, Stoller
Rocky Flats Contact Record File

**Rocky Flats Legacy Management Agreement (RFLMA)**
**Soil Disturbance Review Plan**

**Proposed Project:** Soil Disturbance Review Plan—GS10 Flume Replacement Project

This Soil Disturbance Review Plan provides information required by RFLMA Attachment 2, "Legacy Management Requirements," Section 4.1, "Soil Disturbance Review Plan," regarding the work proposed by DOE.

Description of the proposed project, including the purpose, the location, and the lateral and vertical extent of excavation.

The purpose of the project is to replace the flume for RFLMA POE GS10, as described in Contact Record 2013-01.

Contact Record 2013-01 Figures 2 and 3 show the location and the lateral and vertical extent of the excavation. The material excavated from the cut areas, plus an additional approximately 11 cubic yards of clean fill will be placed in the fill areas shown in Figures 2 and 3. The source of the additional clean fill will be from onsite stockpiled soil remaining from construction and maintenance of gravel road rock crossings, from the temporary soil ramp and pad made from imported clean fill used to support the geoprobe unit in sampling of the Solar Ponds Plume Treatment System media and from the regrading of the eastern end of the Original Landfill diversion berm 7. Clean fill material may also be imported from the Bestway, Inc. commercial gravel pit located directly west of the Central Operable Unit. Depending on the availability and pricing of suitable fill material from the Bestway, Inc. pit, an alternative commercial source, such as the Pioneer, Inc. supply yard on Highway 93 just north of Golden, CO will be used. When completed, the new surface elevations will be tapered into the north and south side of the creek as shown in Figure 2, and the creek flowline will be consistent with the profile view shown in Figure 3.

Information about any remaining subsurface structures in the vicinity of the proposed project.

Remaining subsurface structures in the vicinity of the proposed project include the diversion structure and buried CMP and the concrete base for the current GS10 flume components. A downstream portion of the 24-inch-diameter CMP will be removed, and the concrete base for the current GS10 flume will be removed to an appropriate depth below the planned finished grade. The headgates and associated components on the upstream side of the diversion structure will be removed, and the CMP openings sealed. The portion of the 24-inch-diameter CMP not removed and all of the 48-inch-diameter CMP will remain in the subsurface. The upstream side of the diversion structure will be filled and graded so that the sealed CMP openings and former headgates will be in the subsurface.

Process knowledge (i.e., familiarity based on past experience at the site) regarding the characteristics for each removed item will be confirmed by visual inspection. If process knowledge cannot be confirmed by visual inspection, additional characterization will be performed to determine proper disposal. Based on process knowledge, it is expected that removed items will be disposed of offsite as solid waste or recycled, as appropriate. However, routine radiological field screening of these waste items which will be accessible when they are removed will also be performed to determine if offsite

disposal under DOE directives and policy as radioactive waste is required. Items removed for disposal will be staged in a manner to prevent run-on and runoff of precipitation pending offsite disposition.

Information about any former Individual Hazardous Substance Sites (IHSSs), Potential Areas of Concern (PACs), or other known or potential soil or groundwater contamination in the vicinity of the proposed project.

The project area is located in former IHSS 190, Caustic Leak (also referred to as Central Avenue Ditch). Approximately 1,000 to 1,500 gallons of 2.5 Normal sodium hydroxide was released from a tank in 1978 into the Central Avenue Ditch and was diverted into South Walnut Creek. A 1- to 3-gallon spill of concentrated sodium hydroxide also occurred from the same tank in 1989. The 1978 release was neutralized with alum. Based on the steps taken to neutralize the caustic solution, the large volume of water conveyed in the creek since the spill, and results of characterization soil sampling, the IHSS was approved for No Further Action in 2004. The summary for this IHSS is in Appendix B, "Historical Release Report," in the June 2006 *RCRA Facility Investigation – Remedial Investigation/Corrective Measures Study – Feasibility Study Report for the Rocky Flats Environmental Technology Site* (RI/FS).

The project area is in the Upper Walnut Drainage Area Exposure Unit (EU) evaluated in the Comprehensive Risk Assessment, in Appendix A of the RI/FS. The only contaminant of concern (COC) identified for this EU is benzo(a)pyrene in surface soil/surface sediment, resulting in an estimated total excess lifetime cancer risk of $2 \times 10^{-6}$ based on the wildlife refuge worker exposure scenario. There were no COCs identified for subsurface soil or subsurface sediment in this EU.

Concentrations of americium, plutonium, and uranium have been measured above their respective RFLMA standards at GS10, which constitutes an RFLMA reportable condition, as described in Contact Records 2011-04, 2011-05, and 2012-08. DOE is currently implementing an evaluation plan consisting of additional monitoring at locations upstream and downstream of GS10 and expedited analysis of samples collected at GS10. Information regarding the evaluation monitoring is reported in RFLMA quarterly and annual reports.

The RFLMA standards for americium, plutonium, and uranium are based on Colorado health-based standards for a drinking water exposure scenario. Incidental contact with contaminated surface water was determined to be a complete, but insignificant, exposure pathway for the Comprehensive Risk Assessment exposure scenario. There is no actual drinking water use onsite, and incidental exposure resulting from the work to complete this project will be minimized by DOE hazard control procedures (no eating, drinking, or smoking in the construction area), construction worker personal protective equipment (gloves, eye protection, and work boots) use, and good hygiene practices (hand washing before eating or drinking).

Upstream from the GS10 project area is the Mound Site Plume Treatment System (MSPTS). The MSPTS intercepts volatile organic compound (VOC)–contaminated groundwater to remove VOC loading from South Walnut Creek from the groundwater to surface water pathway. The MSPTS discharges treated water to a subsurface discharge gallery located upgradient of GS10, and GS10 serves as the RFLMA surface water performance monitoring location for the MSPTS. Groundwater

treated by the MSPTS meets RFLMA standards at the effluent monitoring location and water at GS10 meets RFLMA standards for VOCs.

To the south of the GS10 project area is the western end of the groundwater intercept barrier for the East Trenches Plume Treatment System (ETPTS). Like the MSPTS, the ETPTS intercepts VOC-contaminated groundwater to remove VOC loading from South Walnut Creek from the groundwater to surface water pathway. The ETPTS subsurface discharge gallery is located to the south of former retention pond B-4. The project will not impact the ETPTS intercept barrier.

# ROCKY FLATS SITE
# REGULATORY CONTACT RECORD

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**Purpose:** Reportable Condition at the Original Landfill (OLF)

**Contact Record Approval Date:** October 21, 2013

**Site Contact(s)/Affiliation(s):** Scott Surovchak, U.S. Department of Energy (DOE); Rick DiSalvo, S.M. Stoller Corporation (Stoller); Linda Kaiser, Stoller; Jeremiah McLaughlin, Stoller

**Regulatory Contact(s)/Affiliation(s):** Carl Spreng, Colorado Department of Public Health and Environment (CDPHE); Vera Moritz, U.S. Environmental Protection Agency (EPA)

**Date of Consultation Meeting:** September 18, 2013

**Consultation Meeting Participants:** Carl Spreng, CDPHE; Vera Moritz, EPA; Scott Surovchak, DOE; John Boylan Stoller; Rick DiSalvo, Stoller; Linda Kaiser, Stoller

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**Introduction:** A rainfall event from September 9 through September 16, 2013, caused catastrophic flooding in northeastern Colorado. Based on preliminary data, the amount of rainfall received at the Rocky Flats Site during this event was at least 8 inches.

Because the event produced more than 1 inch of rainfall within a 24-hour period, the OLF cover and storm water management system were inspected after this storm event in accordance with the Rocky Flats Legacy Management Agreement (RFLMA) Attachment 2, Table 3, "Present and Original Landfill Inspection and Maintenance Requirements."

Localized surface cracking and differential settlement in the northeastern portion of the cover were noted during the inspection on September 16, 2013. In accordance with RFLMA Attachment 2, Section 6.0, "Action Determinations," DOE determined this was a reportable condition affecting the effectiveness of the OLF cover. Section 6.0 provides:

> When reportable conditions occur (except in the case of evidence of violation of institutional controls as described below), DOE will inform CDPHE and EPA within 15 days of receiving the inspection reports or validated data. Within 30 days of receiving inspection reports or validated analytical data documenting a reportable condition, DOE will submit a plan and a schedule for an evaluation to address the condition. DOE will consult as described in RFLMA Paragraph 11 to determine if mitigating actions are necessary. Final plans and schedules for mitigating actions, if any, will be approved by CDPHE in consultation with EPA. DOE is not, however, precluded from undertaking timely mitigation once a reportable condition has been identified.

Cracks with vertical displacement of up to approximately 2 feet and cracks up to approximately 0.5 feet wide were observed during the inspection. The cracking and settling extended through portions of Diversion Berms 4 and 5, and a minor depression was formed in the Diversion Berm 4 channel between the cracks. Figure 1 shows the general location of the observed cracks based on handheld GPS measurements.

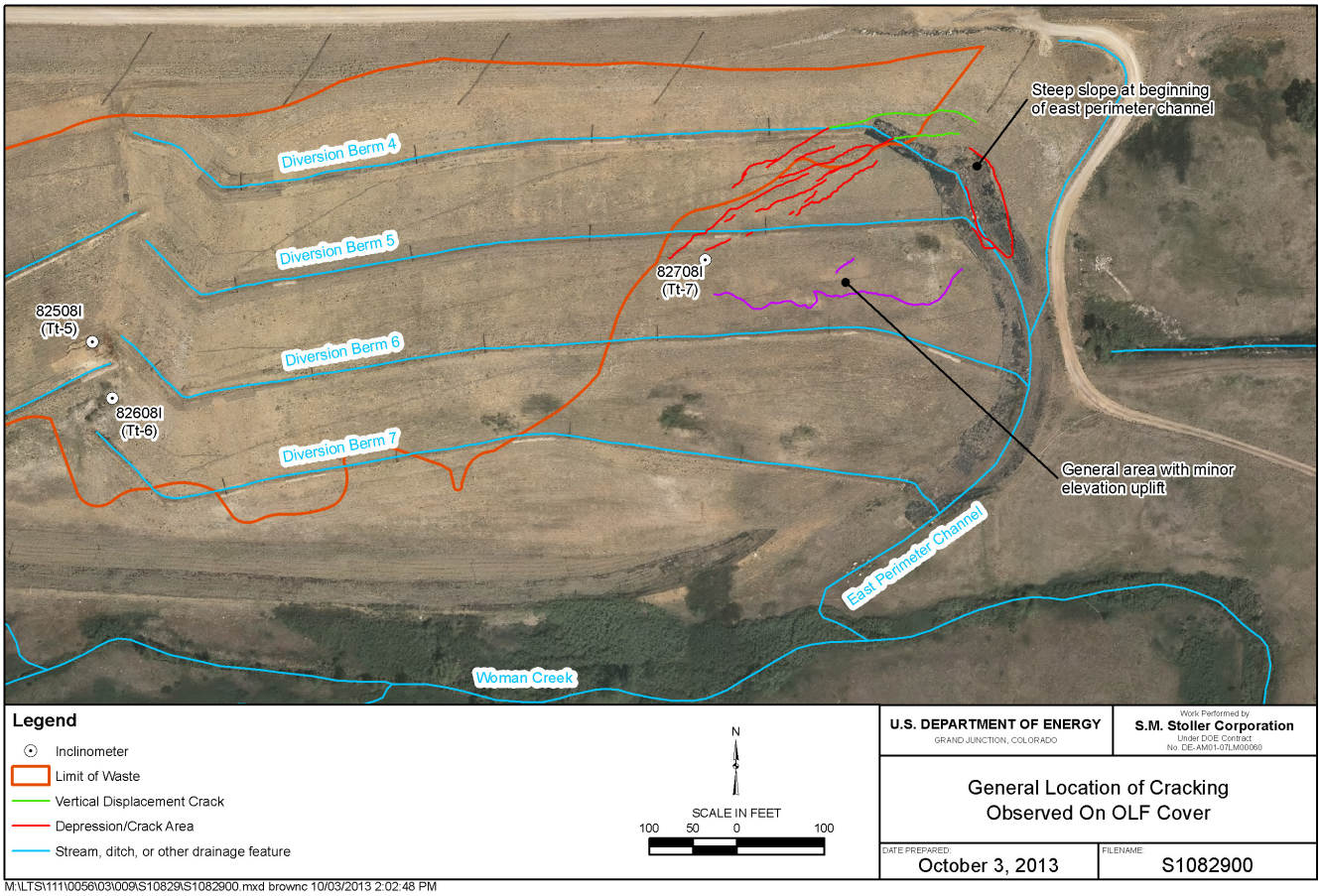


*Figure 1. General Location of Cracking Observed on OLF Cover*

DOE informed CDPHE and EPA of the cracking on the northeast side of the OLF on September 17, 2013. DOE, CDPHE, and EPA personnel toured the area on September 18 to start the consultative process to develop a proposed course of action.

**Background**: Minor surface cracking north of the beginning of the East Perimeter Channel (EPC) was noted in August 2010. A qualified geotechnical engineer evaluated the observed cracking in August 2010 and in September 2011. The evaluations concluded that, based on the proximity and shape of the cracks, they appeared to be related to the abrupt slope change at the beginning of the EPC. The geotechnical engineer recommended in 2010 that the cracks be monitored for expansion and be filled and tamped to prevent infiltration of precipitation as part of routine maintenance. This routine maintenance has been performed since that time. The condition of the observed cracking has also been noted on the OLF monthly inspection reports.

This repair methodology is (1) consistent with the conclusions and recommendations in the June 2008 geotechnical investigation report, which is discussed in Contact Record 2008-07, and (2) related to localized instability cracking on the northwest side of the OLF observed in 2007. The new cracking on the northeast side of the OLF appears similar to the cracking that was previously observed and repaired on the northwest side.

The geotechnical engineer's recommendation was reiterated after observation of the area in 2011, and no significant expansion of the cracking was observed until the September 16, 2013, inspection. The 2008 geotechnical investigation concluded for the northwest side OLF instability that a weak clay layer containing organic materials at or near the bedrock contact appeared to be a weak interface area. Modeling predicted small-scale instability due to percolating moisture that lubricates this weak interval. It is likely that the northeast side OLF instability is also associated with the effects of moisture from this precipitation event.

The localized instability observed in 2008 in the northwest side of the OLF was addressed by adding fill to reduce the depth of the West Perimeter Channel (WPC), regrading the relatively steep side slopes of portions on the WPC, and adding additional drainage features to reduce potential water infiltration. This work, done in 2008, along with routine maintenance to address minor surface cracking by smoothing and tamping cracks to fill any openings, appears to be successful.

**Discussion:** The "Maintenance Action Activities" subsections in Section 3.2, "Subsidence and Consolidation"; Section 3.3, "Slope Stability"; Section 3.4, "Soil Cover"; and Section 3.6, "Stormwater Management Systems," of the *Original Landfill Monitoring and Maintenance Plan* (OLF M&M Plan) are relevant to development of a plan and schedule to address the new reportable condition.

The goals of the maintenance actions that are or may be required after further evaluation by a qualified geotechnical engineer are as follows:

- To eliminate the potential for ponding and to correct the slope of the surface
- To address any potential slope failure that would likely compromise the remedy
- To maintain the minimum soil cover thickness and diversion-berm design heights
- To remove and relocate eroded soils (if necessary)
- To remove blockages in diversion berm channels, repair any channel disturbances, and replace temporary erosion control mats

In general, the new maintenance actions may include, but are not limited to, regrading affected areas, filling areas, maintaining positive drainage of surface water, constructing seep drains, and regrading steep EPC slopes to achieve side slopes grade of no greater than 4 horizontal:1 vertical. If soil is needed, Rocky Flats Alluvium (RFA) is to be used.

Prior to the September 2013 precipitation event, diversion berm height maintenance had been planned to begin on September 23, 2013. This work involves adding RFA to the tops of those portions of the diversion berms that, due to minor settling of the berms over time, do not meet the minimum height

requirements. Generally, measurements show that most portions needing adjustment are low by an inch or two, but the planned maintenance approach is to add RFA to the berm tops in 6-inch lifts, compact the lifts, seed the added RFA, and cover the added RFA with erosion matting.

The minimum diversion berm heights were calculated (based on modeling) to be sufficient to convey the runoff from a 100-year/24-hour storm event to the perimeter channels, with additional height (freeboard) based on a projected 1,000-year/24-hour storm event. Inspections of the OLF during and after the precipitation event demonstrated that the diversion berms were more than adequate to convey the runoff without causing significant water level elevations in the berm channels. It appeared that runoff collected and conveyed by the diversion berms was approximately 6 to 10 inches deep in the berm channels. The fast moving water did cause some erosion and gullying at the ends of several diversion berms where they joined the perimeter channels. However, there was no evidence of any significant erosion of the OLF cover or the perimeter channels or loss of existing vegetation from run on and runoff.

Based on these observations, it appears that, except for the northeast side of the OLF, the storm water management systems performed very well and that these features are robust. The RFLMA parties agreed that the planned berm-height maintenance can be delayed until DOE can compare performance of the diversion berms in relation to this event and then evaluate a possible modification to the minimum berm-height criteria.

Previous instances of localized instability and cracking have been successfully addressed by (1) regrading and filling cracks to maintain the integrity of the cover and (2) adding drainage features to minimize infiltration of precipitation. Since such repair activities involve the use of construction machinery, any needed berm-height maintenance can be performed at the same time as the repair activities.

*Initial Response:* Initial mitigation steps were undertaken by DOE to minimize the potential for infiltration of precipitation. Initial steps included (1) regrading the differential displacement cracks to seal the openings using the RFA from the adjacent area and (2) filling minor cracks by smoothing and tamping the surrounding surface. Erosion mats were placed over the regraded area. This work was completed on September 20, 2013. This area will be inspected weekly and any continuation of the cracking will be filled by smoothing out and tamping the surface as needed.

A qualified geotechnical engineer and Stoller engineering staff visited the OLF on September 24, 2013, to view the affected area, to provide recommendations for additional near term repairs, and to assist in developing a plan and schedule to address the conditions.

EPA and CDPHE concurred with the initial mitigation steps outlined above and with the need for additional work to maintain positive drainage in the Diversion Berm 4 channel.

The cracks with vertical displacement running through Diversion Berm 4 created a slight depression about 50 feet long in the berm channel. The depression prevents positive storm water drainage. This was temporarily corrected by installing perforated drain pipe and drain rock in the channel to convey runoff and to prevent ponding in this channel.

The work is subject to the *Rocky Flats Legacy Management Agreement*, Attachment 2, Section 4.0, "Institutional Controls" (ICs). The work involves an authorized response action on the OLF cover, which is subject to IC 6, shown in Table 1.

*Table 1. Institutional Controls*

| | |
|---|---|
| IC 6 | Digging, drilling, tilling, grading, excavation, construction of any sort (including construction of any structures, paths, trails or roads), and vehicular traffic are prohibited on the covers of the Present Landfill and the Original Landfill, except for authorized response actions. |
| | **Objective:** Ensure the continued proper functioning of the landfill covers.<br>**Rationale:** This restriction helps ensure the integrity of the landfill covers. |

The initial response information in this contact record demonstrates that the objective and rationale of IC 6 will be met.

**Evaluation Plan and Schedule:** The evaluation of localized instability and recommendations by a qualified geotechnical engineer is included in Attachment 1.

Drawings of the proposed grading and additional drainage features and an estimate of the time needed to complete the repairs to the OLF cover will be submitted by November 25, 2013, for CDPHE review and approval, as required under RFLMA. The schedule for completing the repairs will be dependent upon CDPHE's review and any changes that are required for DOE to obtain CDPHE approval of the final design.

In accordance with RFLMA, DOE is not prohibited from taking any mitigating actions it deems necessary while the evaluation and design is being completed. The RFLMA Parties shall use the consultative process to discuss DOE's mitigating actions as necessary. DOE will document mitigating actions in e-mail or other written correspondence, and will provide summaries of the actions taken in RFLMA quarterly or annual reports of site surveillance and maintenance activities.

**Resolution:** CDPHE concurs with DOE's conduct of the initial response work described above. The work meets the objective and rationale of IC 6.

CDPHE, after consultation with EPA, approves the plan and schedule for evaluation.

DOE will provide information regarding the outcome of further consultation related to this reportable condition and the progress of the evaluation in RFLMA quarterly and annual reports.

**Closeout of Contact Record:** This contact record will be closed when the construction is completed, post-construction reseeding has been performed, and post-construction erosion controls are in place.

**Approval:** Carl Spreng, CDPHE, approved this contact record.

**Contact Record Prepared By:** Rick DiSalvo

**Distribution:**
Carl Spreng, CDPHE
Scott Surovchak, DOE
Linda Kaiser, Stoller
Rocky Flats Contact Record File

# Attachment 1

# Geotechnical Engineer Technical Memorandum

TETRA TECH

# Technical Memorandum

| | | | |
|---|---|---|---|
| To: | Mr. Rick DiSalvo<br>Mr. Melvin Madril, PE<br>Mr. Stephen Pitton | From: | Thomas A. Chapel, CPG, PE |
| Company: | S.M. Stoller Corporation | Date: | October 10, 2013 |
| Re: | Rocky Flats OLF Berm 4 Grading and Drainage | Project No.: | 114-181750 |

This memorandum summarizes Tetra Tech's observations, opinions, and recommendations regarding recent soil movement near Berm 4 at the Original Land Fill (OLF) area within the Rocky Flats Environmental Technology Site (RFETS). Minor cracking and localized slope distress have been observed occasionally in the area of Berm 4 since approximately 2010 (see Tetra Tech's 2010 memorandum). Cracks were also noted during a walk down in September 2011. Similar movements have been observed elsewhere on and adjacent to the OLF.

Such cracking and associated movement were evaluated as part of a geotechnical engineering investigation conducted by Tetra Tech for S. M. Stoller in 2008. Results of that investigation were published in a report titled Rocky Flats Original Landfill Geotechnical Investigation Report, dated June 4, 2008. The investigation included site visits and "walk downs", geophysical seismic and resistivity surveys, test excavations, exploratory borings, laboratory testing, slope stability modeling, and engineering analyses. The report concluded that the distress generally includes small-scale, localized slump features that typically originate in a comparatively weak, native clay layer that underlies the OLF. During extreme precipitation events or prolonged periods of wet weather, surface water penetrates the cover and shallow soil deposits, reducing the stability of the shallow subsurface. Computer modeling indicated that large scale, global failure of the OLF slopes is unlikely.

Recommendations in the geotechnical report included a range of possible measures that could be implemented to mitigate the localized distress. In accordance with approved procedures, S.M. Stoller selected a method of hand tamping soil in and adjacent to cracks to reduce water infiltraton in distressed areas. This measure seems to have been successful, because little movement has been noted by S.M. Stoller during periods of typical precipitation that occurred between 2010 and the recent heavy and prolonged precipitation event.

## RECENT EVENTS

During the period September 11 through September 13, 2013, rainfall of historic proportions fell in the vicinity of the OLF. Shortly after that event S.M. Stoller conducted a walk down of the OLF and observed several curvilinear cracks near the eastern terminus of Berm 4. The most significant of these cracks was located upslope from the area where Berm 4 outfalls into the East Perimeter Channel (EPC), and was on the order of 200 feet long with up to approximately two feet of downward displacement on the downhill side of the crack. Informal measurements of the crack depth indicated it progressed more than 18 inches below the ground surface and had a width of two to three inches. S.M. Stoller mapped the cracks, then filled them in by hand and using lightweight construction equipment to prevent additional surface water and precipitation from entering the cracks.

Tetra Tech
3801 Automation Way, Suite 100, Fort Collins, CO 80525
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On September 24, S.M. Stoller and Tetra Tech met and walked the OLF to examine the ground, specifically the eastern portion of Berm 4 and nearby areas. At the time of our visit, no new movement was visible after the crack described above had been repaired. Traces of minor additional cracks were visible and had a similar alignment to the larger crack described above.

As a result of the crack and displacement described above, a segment of Berm 4 is now lower than adjacent segments of Berm 4, which may impact the ability of Berm 4 to convey the needed surface water volume in the event of future precipitation events similar in magnitude to those that occurred in September 2013. Further, the lower segment of channel will hold water and cause increased surface water infiltration in the distressed area.

Any condition that results in an increase in water in the shallow subsurface will contribute to instability of the slope. Localized failures can be expected under these conditions. We do not believe that a broad-scale, global failure of the OLF slope is more likely at this time than was predicted during the previous study. Recommendations to mitigate the localized instability of the eastern portion of the OLF are described below.

## RECOMMENDATIONS

We recommended a phased approach to repair, monitor, and mitigate the localized instability observed in the vicinity of Berm 4. Items 1 and 2 are considered immediate and short-term measures; items 3 and 4 are longer-term engineering remedies. In order of implementation, we suggest the following:

1. **Monitor the distress.** Frequency of observations of the OLF should be increased to approximately weekly in the short term to look for evidence of additional movement of the existing cracks or development of new distress. If or as distress is observed, cracks should continue to be filled in accordance with existing procedures. New cracks should be mapped if or as they occur. This process has been used successfully in other parts of the OLF. The repair methodology is consistent with the conclusions and recommendations in Tetra Tech's geotechnical investigation report dated June 4, 2008, and with the recommendations described in our Technical Memorandum dated August 10, 2010.

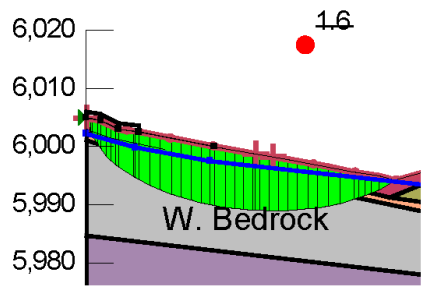
2. **Evaluate and repair Berm 4.** In its current condition, Berm 4 will hold water in the distressed area should additional precipitation and runoff occur. Ponding water in this area will exacerbate the instability and could result in additional or accelerated movement of localized, marginally stable zones. This condition should be repaired as soon as practical to reduce the risk of additional movement.

   We have considered two alternative, short-term methods for reducing the occurrence of standing water in this area. Fill could be placed on the berm and in the channel invert to raise the lower portion so that positive drainage will occur across the zone. This alternative adds additional weight to the cracked area which tends to decrease the stability. Using previous slope stability models that we constructed as part of our geotechnical engineering evaluation, Tetra Tech simulated a wet condition and placement of additional fill by increasing the water level in the model and adding a surcharge to the ground surface at the failure plane. The surcharge applied approximates a two-foot layer of Rocky Flats Alluvium placed at the upper portion of the failure zone. Figure 1 (below) illustrates these conditions. Figure 1(a) shows the slope and localized failure with no surcharge, but with an elevated water level. The model calculated a minimum factor of safety (FoS) of 1.6, with failure occurring in the upper portion of the weathered claystone bedrock. Figure 1(b) shows the effect of adding a two-foot layer of fill as a surcharge. The calculated minimum FoS dropped

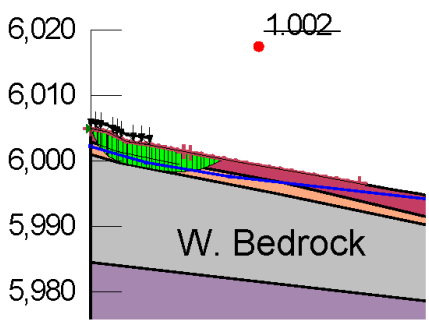
to 1.002 and the failure is predicted to occur in the organic layer at the surface of the weathered bedrock. These results indicate that the slope is marginally stable and on the verge of failure following the addition of two feet of fill. Because a localized, minor failure did actually occur when the water level increased, but without an additional surcharge, the model results may actually under-predict the potential risk of additional failures if surcharge is added.

**Figure 1. Slope Stability Model Results**

(a) Elevated water table, no surcharge.




(b) Elevated water table and a surcharge approximating a two foot fill in the upper portion of the failure zone.




Another alternative that would appear to have a lower risk for decreasing stability of the area is the construction of a temporary drain in the invert of Berm 4 to convey water from the low segment eastward to the outfall. This could be a trench and flexible drain pipe constructed such that the upper end of the drain is at the downstream end of the low segment and the drain outfall is at the eastern end of Berm 4 or in the EPC. This drain could be removed when longer term remedies have been designed and constructed (see below).

3. **Trench Drains and EPC Grading**. To improve drainage within the channels of Berms 4 through 7, thus decreasing the risk of future localized failures, a shallow trench drain could

be designed and constructed in the invert of each of the berms. Details would need to be designed, but the concept involves a trench excavated approximately one foot wide by one foot deep from a location upstream of the distressed area to the channel outfall in the EPC. This concept was used on some channels on the west side of the OLF, and it appears to have been successful in reducing the cracking and localized slope failures in that area.

The upstream terminus of the EPC includes a steep "headwall" that is adjacent to berm 4 at its east end. The steep slopes of this headwall may contribute to slope instability of the areas upslope from the EPC. The EPC should be re-graded to reduce the slopes to 3H:1V or shallower. This should be possible by placing approximately 5 feet of fill at the toe of the existing headwall and by "laying back" the existing slope at the upper end, generally on the north and east over a small area. The capacity of the EPC must be maintained and should be verified as part of the hydraulic analysis described below.

4. **Hydraulic Modeling and Design Review.** Because of the recent record setting precipitation and flood events, there is an opportunity to evaluate rainfall intensity and other hydrologic data at the OLF to evaluate the berm height in order to protect the area from damage due to future events. The analysis would require an engineer to obtain and review the daily precipitation records from Rocky Flats. A statistical analysis would be performed on the data to compare the rainfall event that occurred the week of September 11, 2013 to the projected period of record. This could be evaluated against previous recommendations for berm height along the drainage channels at the OLF to determine the actual level of protection that exists for the berms.

# ROCKY FLATS SITE
# REGULATORY CONTACT RECORD

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**Purpose:** Soil Disturbance Review Plan (SDRP) for Regrading the East Perimeter Channel (EPC) and Associated Diversion Berms at the Original Landfill (OLF)

**Contact Record Approval Date:** November 22, 2013

**Site Contact(s)/Affiliation(s):** Scott Surovchak, U.S. Department of Energy (DOE); Rick DiSalvo, S.M. Stoller Corporation (Stoller); Linda Kaiser, Stoller; Jeremiah McLaughlin, Stoller

**Regulatory Contact(s)/Affiliation(s):** Carl Spreng, Colorado Department of Public Health and Environment (CDPHE); Vera Moritz, U.S. Environmental Protection Agency (EPA)

**Date of Consultation Meeting:** November 19, 2013. Continuation of consultation process that began September 18, 2013
**Consultation Meeting Participants:** Carl Spreng, CDPHE; Scott Surovchak, DOE; Rick DiSalvo, Stoller; Linda Kaiser, Stoller

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**Introduction:** Rocky Flats Legacy Management Agreement (RFLMA) Contact Record (CR) 2013-02 documents the outcome of consultation between the DOE, CDPHE and EPA (the RFLMA parties) regarding DOE's response to localized distress cracking conditions on the OLF soil cover. These conditions were noted after the heavy precipitation event along the Front Range of Colorado from September 9 through September 16, 2013. The localized distress resulted in a reportable condition under RFLMA Attachment 2, Legacy Management Requirements. CR 2013-02 provides an evaluation plan and schedule for addressing the reportable condition, which included proposed regrading of the EPC and associated diversion berm ends to reduce slope grades in this area to improve soil cover stability and adding drainage features to further minimize the potential for infiltration of precipitation.

In accordance with the evaluation plan and schedule, drawings of the proposed grading and additional drainage features and an estimate of the time needed to complete the repairs to the OLF cover are to be submitted by November 25, 2013, for CDPHE review and approval. The schedule for completing the repairs will be dependent upon CDPHE's review and any changes that are required for DOE to obtain CDPHE approval of the final design.

**Discussion:** DOE and CDPHE met on November 19, 2013, to review DOE's proposed grading plan which results primarily in raising the EPC elevations but some areas will have slightly lower elevations. Figure 1 shows the location and anticipated aerial extent of the soil disturbance. A slotted drain pipe bedded in crushed rock was installed in the eastern end of diversion berm 4 as part of the initial response to the localized distress (see CR 2013-02) and this will be left in place.

The soil disturbance, filling and grading on the OLF cover is subject to the requirements of certain RFLMA institutional controls (ICs) as discussed below. An approved SDRP is required and the RFLMA parties agree that the preliminary design provides sufficient information for the SDRP for the proposed work.

*Institutional Controls Evaluation:* The soil disturbance work is subject to ICs 3 and 6. Table 1 recaps these ICs.

*Table 1. Institutional Controls*

| | |
|---|---|
| IC 3 | No grading, excavation, digging, tilling, or other disturbance of any kind of surface soils is permitted, except in accordance with an erosion control plan (including Surface Water Protection Plans submitted to EPA under the Clean Water Act) approved by CDPHE or EPA. Soil disturbance that will not restore the soil surface to preexisting grade or higher may not be performed without prior regulatory review and approval pursuant to the Soil Disturbance Review Plan in RFLMA Attachment 2. |
| | **Objective:** Prevent migration of residual surface soil contamination to surface water.<br>**Rationale:** Certain surface soil contaminants, notably plutonium-239/240, were identified in the fate and transport evaluation in the Remedial Investigation as having complete pathways to surface water if disturbed. This restriction minimizes the possibility of such disturbance and resultant impacts to surface water. Restoring the soil surface to preexisting grade maintains the current depth to subsurface contamination or contaminated structures. |
| IC 6 | Digging, drilling, tilling, grading, excavation, construction of any sort (including construction of any structures, paths, trails or roads), and vehicular traffic are prohibited on the covers of the Present Landfill and the Original Landfill, except for authorized response actions. |
| | **Objective:** Ensure the continued proper functioning of the landfill covers.<br>**Rationale:** This restriction helps ensure the integrity of the landfill covers. |

The required SDRP is in Attachment 1. The *Erosion Control Plan for Rocky Flats Property Central Operable Unit*, which has been approved by CDPHE and EPA, provides erosion control best management practices that meet the IC 3 requirements.

**Resolution:** CDPHE has reviewed information regarding the proposed soil disturbance and excavation and, after consultation with EPA, has approved the proposed activity and the proposed grading plan. CDPHE has determined that the proposed activity will not compromise or impair the function of the remedy or result in an unacceptable release or exposure to residual subsurface contamination. CDPHE has also determined that the proposed project meets the rationale and objectives of ICs 3 and 6.

The work will be conducted after CDPHE approval of the final grading design, but DOE will not conduct the approved soil disturbance until 10 calendar days after this CR is posted on the Rocky Flats website and stakeholders are notified of the posting in accordance with the RFLMA Public Involvement Plan. The work is planned to be conducted and completed in mid-December, 2013.

CDPHE approval of the final grading design, progress and the completion of the work will be reported by DOE in RFLMA quarterly and annual reports of surveillance and maintenance activities for the period(s) in which these activities occur.

**Closeout of Contact Record:** This Contact Record will be closed when the work is completed, post construction reseeding has been performed, and post construction erosion controls are in place.

**Approval:** Carl Spreng, CDPHE, approved this contact record.

**Contact Record Prepared By:** Rick DiSalvo

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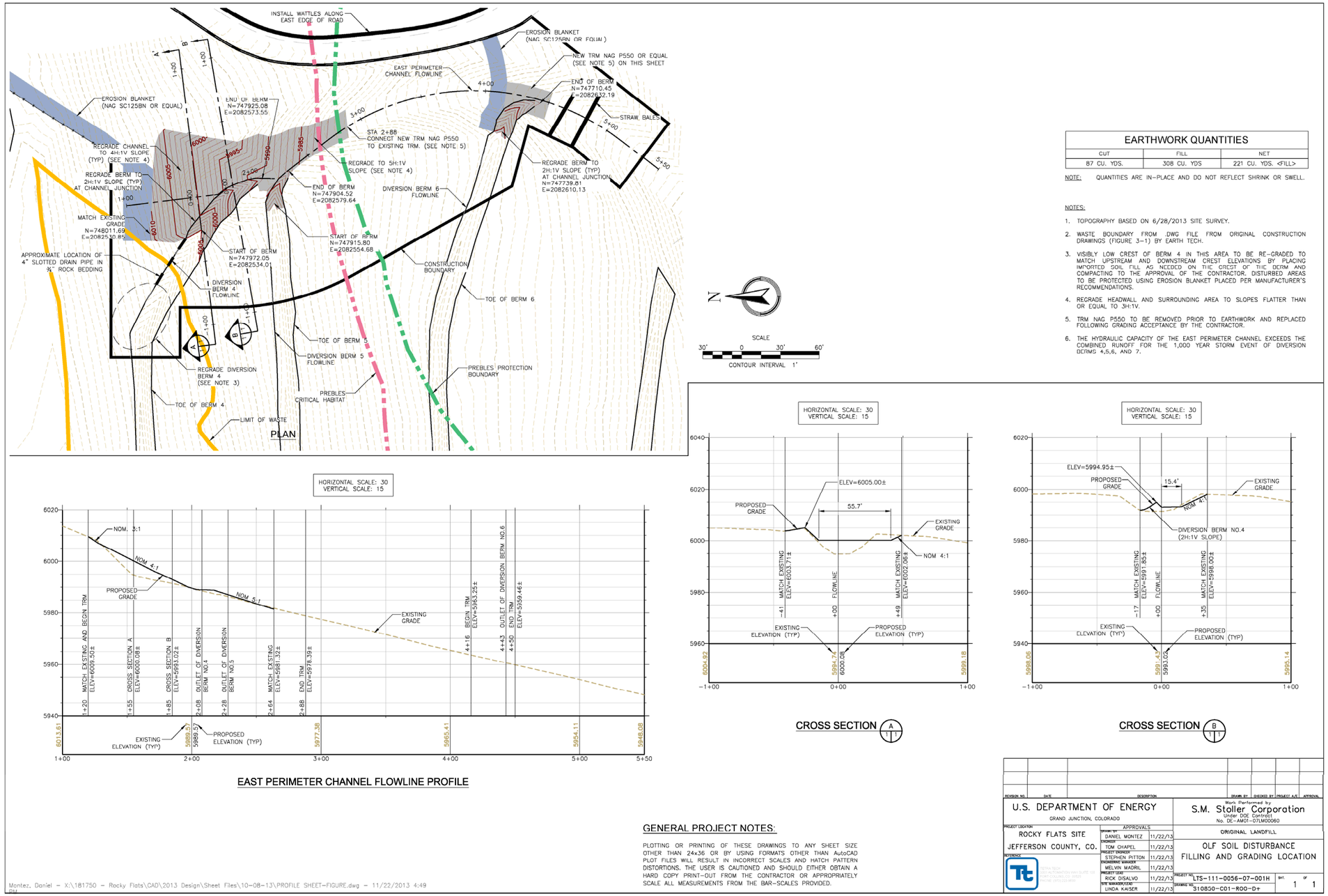
**Distribution:**
Carl Spreng, CDPHE
Scott Surovchak, DOE
Linda Kaiser, Stoller
Rocky Flats Contact Record File




## EARTHWORK QUANTITIES

| CUT | FILL | NET |
|---|---|---|
| 87 CU. YDS. | 308 CU. YDS | 221 CU. YDS. <FILL> |

NOTE: QUANTITIES ARE IN-PLACE AND DO NOT REFLECT SHRINK OR SWELL.

NOTES:

1. TOPOGRAPHY BASED ON 6/28/2013 SITE SURVEY.
2. WASTE BOUNDARY FROM .DWG FILE FROM ORIGINAL CONSTRUCTION DRAWINGS (FIGURE 3-1) BY EARTH TECH.
3. VISIBLY LOW CREST OF BERM 4 IN THIS AREA TO BE RE-GRADED TO MATCH UPSTREAM AND DOWNSTREAM CREST ELEVATIONS BY PLACING IMPORTED SOIL FILL AS NEEDED ON THE CREST OF THE BERM AND COMPACTING TO THE APPROVAL OF THE CONTRACTOR. DISTURBED AREAS TO BE PROTECTED USING EROSION BLANKET PLACED PER MANUFACTURER'S RECOMMENDATIONS.
4. REGRADE HEADWALL AND SURROUNDING AREA TO SLOPES FLATTER THAN OR EQUAL TO 3H:1V.
5. TRM NAG P550 TO BE REMOVED PRIOR TO EARTHWORK AND REPLACED FOLLOWING GRADING ACCEPTANCE BY THE CONTRACTOR.
6. THE HYDRAULIC CAPACITY OF THE EAST PERIMETER CHANNEL EXCEEDS THE COMBINED RUNOFF FOR THE 1,000 YEAR STORM EVENT OF DIVERSION BERMS 4,5,6, AND 7.

*Figure 1. OLF Soil Disturbance, Filling and Grading Location*

**Rocky Flats Legacy Management Agreement (RFLMA)**
**Soil Disturbance Review Plan**

**Proposed Project:** Soil Disturbance Review Plan (SDRP) for Regrading the East Perimeter Channel (EPC) and Associated Diversion Berms at the Original Landfill (OLF)

This Soil Disturbance Review Plan provides information required by RFLMA Attachment 2, "Legacy Management Requirements," Section 4.1, "Soil Disturbance Review Plan," regarding the work proposed by DOE.

Description of the proposed project, including the purpose, the location, and the lateral and vertical extent of excavation.

The purpose of the proposed project is regrading of the EPC and associated diversion berm ends to reduce slope grades in this area to improve soil cover stability, and adding drainage features to further minimize the potential for infiltration of precipitation.

Contact Record 2013-03 Figure 1 shows the location and the lateral and vertical extent of the excavation and soil disturbance. The material (Rocky Flats Alluvium) (RFA) excavated from the cut areas will be used as fill in the fill areas. Additional clean RFA fill will be needed to complete the regrading. The additional clean RFA fill material will come from the Bestway, Inc. commercial gravel pit located directly west of the Central Operable Unit.

Information about any remaining subsurface structures in the vicinity of the proposed project.

There are no remaining subsurface structures in the vicinity of the proposed project. A buried natural gas line operated by Xcel Energy is in the utility easement corridor north of the OLF. The location and alignment of the natural gas line is well known and marked with signs. It is well outside of the soil disturbance area.

Information about any former Individual Hazardous Substance Sites (IHSSs), Potential Areas of Concern (PACs), or other known or potential soil or groundwater contamination in the vicinity of the proposed project.

The OLF is former IHSS 115. The OLF has a 2 foot thick soil cover over the location of the disposed waste materials and clean RFA fill surrounding the disposed materials for the placement and configuration of stormwater and seepwater management features. Limits of the waste area are shown in Contact Record 2013-03 Figure 1.

The project area is in the Upper Woman Drainage Exposure Unit (EU) evaluated in the Comprehensive Risk Assessment, in Appendix A of the RI/FS. The only contaminant of concern (COC) identified for this EU are benzo(a)pyrene and dioxins/furans for surface soil/surface sediment.

Dioxin/furan concentrations were converted to 2,3,7,8-tetrachorodibenzo-p-dioxin (TCDD) toxicity equivalents (TEQs) for COC screening and risk characterization. Noncancer risks for benzo(a)pyrene and 2,3,7,8-TCDD (TEQ) were not evaluated because those COCs do not have noncancer toxicity values. Risks were calculated for benzo(a)pyrene and 2,3,7,8 TCDD (TEQ). The estimated Tier 1 total

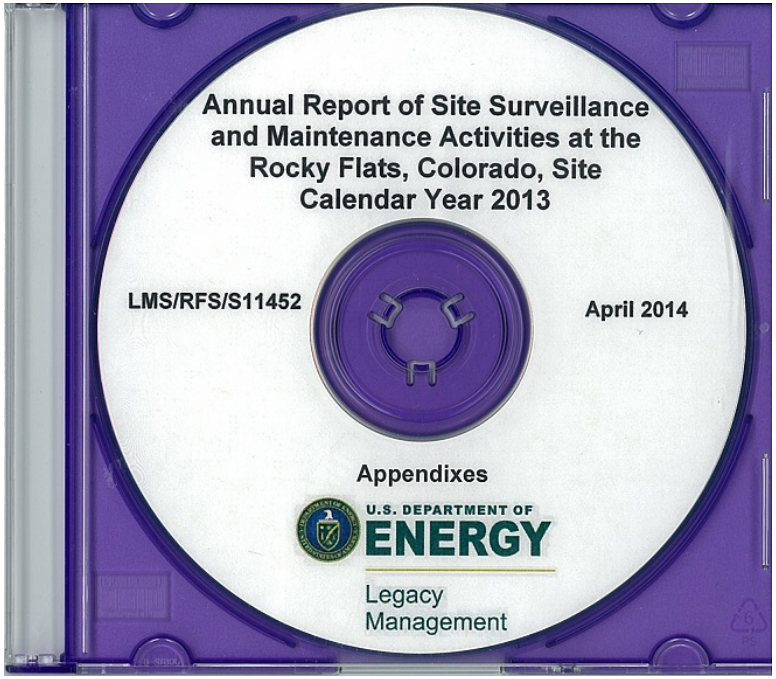
excess lifetime cancer risk to the wildlife refuge worker (WRW) at the UWOEU is 8E-06, and the Tier 2 risk is 4E-06. It is important to note that the samples with the highest benzo(a)pyrene concentrations are located in an area that is now several feet beneath OLF cover. There were no COCs identified for subsurface soil or subsurface sediment in this EU.

The soil disturbance, regarding and drainage feature installation work will not intrude below the 2 foot thick soil cover within the limits of the waste location. The work primarily involves filling portions of the EPC to reduce the slope grades.

PD-A-000586

2013 Annual Report – Appendices

This document is maintained in electronic form on DVD and may be requested by emailing rfinfo@LM.doe.gov.



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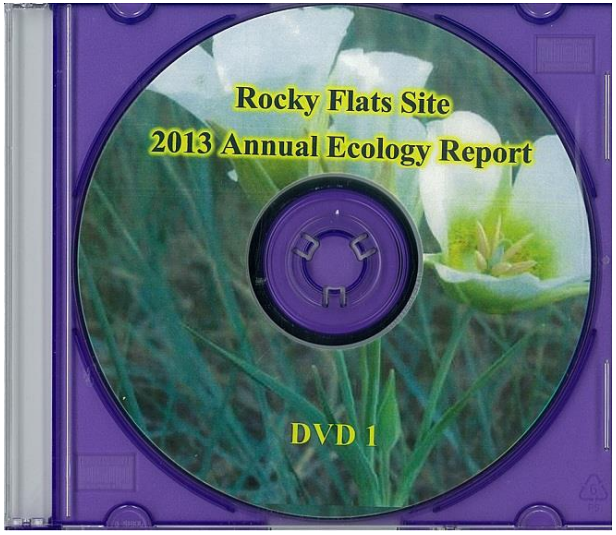
2013 Annual Ecology Report

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