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NATURE AND EXTENT OF GROUNDWATER CONTAMINATION

SUMMARY REPORT

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE
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GOLDEN, CO 80403-8200

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ACRONYMS AND ABBREVIATIONS

AOI	area of concern
BZ	Buffer Zone
CCR	Colorado Code of Regulations
CD	compact disk
CDPHE	Colorado Department of Public Health and Environment
CF	chloroform
CM	chloromethane
CRA	Comprehensive Risk Assessment
CT	carbon tetrachloride
D&D	Decontamination and Decommissioning
DCA	dichloroethane
DCE	dichloroethene
DO	dissolved oxygen
DOE	U.S. Department of Energy
DQO	data quality objectives
EPA	Environmental Protection Agency
FY	fiscal year
HSL	Hazardous Substance List
IA	Industrial Area
IAG	Interagency Agreement
IHSS	individual hazardous substance site
IM/IRA	Interim Measure/Interim Remedial Action
IMP	Integrated Monitoring Plan
K-H	Kaiser-Hill Company, L.L.C.

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LHSU	lower hydrostratigraphic unit
MC	methylene chloride
MCL	maximum contaminant levels
mg/L	milligrams per liter
NPL	National Priority List
O&G	oil and grease
OPWL	Original Process Waste Lines
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
pCi/L	picocuries per liter
PQL	practical quantitation limit
PRG	preliminary remediation goal
PU&D	Property Utilization and Disposal
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFCAB	Rocky Flats Citizens Advisory Board
RFCOLG	Rocky Flats Counsel of Local Governments
RFETS or Site	Rocky Flats Environmental Technology Site
RI/FS	Remedial Investigation/Feasibility Study
SEP	solar evaporation ponds
SR	Summary Report
SVOC	semivolatile organic compound
SWD	soil water database
SWMU	solid waste management unit

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TCE	trichloroethene
TDS	total dissolved solids
TIC	tentatively identified compounds
TOC	total organic carbon
TTHM	trihalomethanes
UBC	under building contamination
UHSU	upper hydrostratigraphic unit
USGS	U.S. Geological Survey
UTL	upper tolerance limits
VC	vinyl chloride
VOC	volatile organic compound

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1.0 INTRODUCTION

This Nature and Extent of Groundwater Contamination Summary Report (SR) has been prepared pursuant to Task 10 of the Final Work Plan for the Development of the Remedial Investigation/Feasibility Study (RI/FS) Report (DOE 2002). This SR will be incorporated into the RI/FS Report as Section 4.0.

The purpose of this SR is to define the current nature and extent of groundwater analytes of interest (AOIs) at the Rocky Flats Environmental Technology Site (RFETS or site) after the accelerated actions are complete. In determining the horizontal and vertical extent of groundwater AOIs, this SR evaluates groundwater constituents present in both the upper hydrostratigraphic unit (UHSU) and the lower hydrostratigraphic unit (LHSU) at RFETS. The UHSU at RFETS consists of the unconsolidated surficial deposits, weathered bedrock, and sandstones (for example, the Arapahoe No. 1 Sandstone) hydraulically connected to the overlying strata. The LHSU is comprised of the unweathered bedrock of the Arapahoe and upper Laramie Formations that underlie the UHSU. AOIs are those analytes that are present above background concentrations and surface water standards[1] or drinking water maximum contaminant levels (MCLs)[2] and form contiguous, mappable contaminant plumes. Groundwater AOIs will be further evaluated in Section 7.0, Fate and Transport, of the RI/FS Report.

Data used in this SR are the result of previous investigations conducted at the site, from sitewide sampling programs, from samples after accelerated actions were implemented, and from samples collected during the sitewide RI/FS effort to support the Comprehensive Risk Assessment (CRA). The groundwater nature and extent are based on data collected between June 28, 1991,[3] and December 31, 2004. Section 2.0 presents a brief chronology of groundwater monitoring at RFETS to provide a historical perspective of groundwater characterization and monitoring at the site.

[1] See Section 4.4 for the source of groundwater quality standards for RFETS groundwater.
[2] MCLs have been established by the U.S, Environmental Protection Agency (EPA) for many chemical contaminants and represent the maximum permissible level of a contaminant in drinking water. MCLs are listed at 40 Code of Federal Regulations (CFR) 141. Where an MCL for a particular contaminant is lacking, the residential groundwater ingestion-based preliminary remediation goal (PRG) will apply. If the practical quantitation limit (PQL) is higher than the surface water standard, MCL, or PRG, the PQL is used as the comparison value. For simplicity, MCLs, PRGs, and PQLs are hereinafter referred to as MCLs.
[3] This date correlates to the approval of work plans and Sampling and Analysis Plans (SAPs) developed pursuant to the 1991 Inter-Agency Agreement (IAG).

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2.0 GROUNDWATER MONITORING AT RFETS

Groundwater monitoring has been conducted at RFETS since the first groundwater monitoring wells were installed in the vicinity of the original Solar Evaporation Ponds (SEP) in 1954. Additional wells were installed in 1960, 1966, and 1971. Until 1974, groundwater monitoring focused primarily on the detection of select radionuclides and major ions (for example, nitrate and fluoride), and the measurement of pH (Boss 1973). Additional wells were installed, and the groundwater monitoring program was expanded in 1974 in conjunction with the U.S. Department of Energy (DOE) and U.S. Geological Survey (USGS) efforts to characterize the hydrology of the site (Hurr 1976). Additional wells were installed in 1981 and 1982 as part of the first Resource Conservation and Recovery Act (RCRA) groundwater monitoring program. The groundwater monitoring program was expanded significantly in 1986 when DOE entered into a Compliance Agreement with the State of Colorado, followed by the site being added to the National Priority List (NPL) by the U.S. Environmental Protection Agency (EPA) in 1989. Groundwater monitoring analytes after 1986 included hazardous and radiological constituents to understand the nature and extent of groundwater contamination.

In 1991, DOE, EPA, and the Colorado Department of Public Health and Environment (CDPHE) entered into the Interagency Agreement (IAG), which was superseded by the Rocky Flats Cleanup Agreement (RFCA) in 1996. The Integrated Monitoring Plan (IMP), required under RFCA to implement environmental media monitoring programs at the site, serves as the current groundwater monitoring plan for RFETS. The IMP outlines the monitoring goals for groundwater and describes the various components of the groundwater monitoring program. The IMP, originally published in May 1997, replaced the Groundwater Protection and Monitoring Program Plan (EG&G 1993). Since Fiscal Year (FY) 2004, the IMP has been updated quarterly (as needed) and annually to reflect changes to the monitoring programs.

IMP updates include input derived from consultation with the regulatory agencies (EPA and CDPHE), cities, and stakeholders. This consultative process determined the locations of new monitoring wells, analytical suites for new and existing monitoring wells, well abandonment and replacement, and the overall design of the current monitoring network. Agency and community input was obtained by DOE, and DOE strategies were transmitted to the communities through quarterly information exchange and Water Working Group meetings. In addition, IMP meetings were frequently scheduled to address the evolving nature of the IMP as the site moved toward closure. City and stakeholder participants include, but are not limited to, representatives of the City and County of Broomfield, City of Arvada, City of Westminster, City of Northglenn, City of Thornton, Rocky Flats Coalition of Local Governments (RFCOLG), and Rocky Flats Citizens Advisory Board (RFCAB).

Table 1 presents a summary of well installation and routine monitoring activities at the site to date. In the following discussion and Table 1, the term wells includes well points and piezometers, which were generally installed to measure water levels, but were properly developed and used to collect groundwater samples for analysis. However, not all of the wells listed in Table 1 have been sampled and analyzed for groundwater constituents. Wells that were not sampled did not meet the data quality objectives of the project.

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3.0 GROUNDWATER DATA

3.1 Data Source

Groundwater data used in this SR were extracted from the Soil Water Database (SWD) using procedures developed to support the CRA. Groundwater data within this superset (February 16, 2005, superset) consisted of analytical records that represented the time period from June 28, 1991, to December 31, 2004. Groundwater data have been collected from 939 UHSU wells (Figure 1) and 68 LHSU wells (Figure 2) since June 28, 1991. These records include analytical results for pesticides, herbicides, fungicides, aroclors (polychlorinated biphenyls [PCBs]), dioxins, semivolatile organic compounds (SVOCs), volatile organic compounds (VOCs), total and dissolved metals, total and dissolved radionuclides, and water quality parameters.

Data within the superset that were used to evaluate the groundwater nature and extent has 624,613 records, including 569,749 records for the UHSU and 54,864 records for the LHSU. This final data set included 900 records for tentatively identified compounds (TICs). The TICs found in the groundwater data are organic compounds that do not have surface water standards or MCLs and were not evaluated further in this SR. Specific data sets used for evaluation of the groundwater nature and extent are described below and presented on a disk in Appendices A (UHSU) and B (LHSU).

3.2 Data Adequacy and Quality

Groundwater data adequacy and quality of the final data set are evaluated in Appendices C and D of Appendix A to the RI/FS Report, Volume 2 of 15 (K-H 2005). Data used to evaluate the groundwater nature and extent met data adequacy and data quality criteria for the CRA.

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4.0 IDENTIFICATION OF GROUNDWATER AOIS

Groundwater AOIs were identified using the screening approach shown on Figure 3. This approach is described in the following sections. Groundwater analytes listed in Table 2 for the UHSU and Table 4 for the LHSU were screened using this approach to determine the AOIs for these hydrostratigraphic units.

4.1 AOI Screening Step 1 - Background Comparison

Groundwater analyte results were compared against background values where available. The background values used for comparison were obtained from Tables C-6 through C-10 in Appendix C of the Background Geochemical Characterization Report (DOE 1993). These values are 99/99 upper tolerance limits (UTLs) for various constituents by flow system (for example, UHSU or LHSU). A 99/99 UTL defines a value that contains 99 percent of the population with 99 percent confidence.

Background values are not available for organic constituents and other selected inorganic and radionuclide constituents. Detection of these constituents above the detection limit indicates their presence in the environment. Laboratory qualifier codes were used to identify whether a constituent is detected.

In AOI Screening Step 1, groundwater analytical results are compared with the corresponding background value (99/99 UTL). For those analytes where all past sample results are below the corresponding background concentration, the analyte is eliminated as a potential AOI. Analytes that have at least one sample result above the background concentration are carried forward to AOI Screening Step 2. For analytes that do not have a 99/99 UTL (for example, organic constituents) and are detected above the detection limit, this screening step is skipped and the analyte proceeds to AOI Screening Step 2.

4.2 AOI Screening Step 2 - Determination of Surface Water Standard

To evaluate the potential for impacts to surface water quality, AOI Screening Step 2 determines whether a surface water standard exists for the groundwater constituent. For constituents that have a surface water standard and appropriate methodology (that is, total versus dissolved analysis) (Table 2), the constituent is carried forward to AOI Screening Step 4. For constituents without a surface water standard, the constituent proceeds to AOI Screening Step 3, where it is compared to MCLs.

4.3 AOI Screening Step 3 - MCL Comparison

To evaluate the drinking water exposure pathway for those constituents that do not have a surface water standard, in AOI Screening Step 3 groundwater results are compared with the corresponding MCL. For groundwater analytes where sample results are below the MCL, the analyte is elminated as an AOI. Groundwater analytes that have one or more sample results above the MCL are retained, and the analyte proceeds to AOI Screening Step 5.

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4.4 AOI Screening Step 4 - Surface Water Standard Comparison

The Colorado Water Quality Regulations apply surface water standards as the groundwater quality standards for RFETS groundwater with the use classification defined as surface water quality protection (see 5 Colorado Code of Regulations (CCR) 1002-42.7[1]). The groundwater quality standards are the RFETS site-specific and statewide standards in 5 CCR 1002:

- Statewide surface water radioactive materials standards in Section 31.11(2);
- Statewide surface water interim organic pollutant standards in Section 31.11(3); and
- Site-specific surface water quality standards for segments 4a, 4b, and 5 of Big Dry Creek in Section 38.6 of the South Platte Basin Classifications and Standards.

In AOI Screening Step 4, groundwater results are compared with the corresponding surface water standard. The surface water standard in this SR is defined as the greater of the lowest surface water standard or the practical quantitation limit (PQL). Basic surface water standards considered include water supply, water+fish, fish ingestion, acute aquatic, chronic aquatic, aquatic life class 2, agriculture, and site-specific surface water standards for Walnut and Woman Creeks.

For groundwater analytes where all sample results are below the surface water standard, the analyte is elminated as an AOI. Groundwater analytes that have at least one sample result above the surface water standard are retained, and the analyte proceeds to AOI Screening Step 5.

4.5 AOI Screening Step 5 - Determination of Contiguous, Mappable Plume

For each analyte that passes Screening Steps 3 or 4, the most recent available sample result from each well is plotted on a map to assess whether a contiguous, mappable plume exists. The most recent result at a well was selected to reflect current groundwater conditions at the site. A contiguous, mappable plume is defined in this SR as three or more adjacent wells with groundwater results that exceed the respective surface water standard or MCL. Based on the extensive well coverage at RFETS, three adjacent wells with groundwater contaminants above these standards are used as a basis for defining a contiguous plume for the following reasons:

- One well represents a potentially isolated occurrence of groundwater contamination.
- Two adjacent wells represent a localized occurrence of groundwater contamination with potentially limited spatial extent.
- Three or more adjacent wells represent a sufficient spatial extent to define a mappable, contiguous contaminant plume area.

The surface water standard or MCL is used in Screening Step 5 to delineate boundaries for a contiguous, mappable contaminant plume.

If a contiguous plume does not exist, the analyte is eliminated as an AOI. If a contiguous plume does exist, the analyte is retained and proceeds to AOI Screening Step 6.

4.6 AOI Screening Step 6 - Process Knowledge Evaluation

AOI Screening Step 6 involves the determination of whether a constituent that has a contiguous,

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mappable extent should be retained or eliminated as an AOI based on process knowledge or other criteria involving professional judgment. This screen involves an assessment of contaminants that cannot be reasonably expected to be AOIs based on historic site process knowledge, even though they may appear to form contiguous contaminant extents. AOI Screening Step 6 also involves other criteria (for example, stainless steel wells or pumps, improper well completion, aquifer geochemistry, and process knowledge) based on process knowledge, that may lead to the elimination of an analyte as an AOI. Process knowledge of a constituent's historical use at the site, or lack of use, and an understanding of a constituent's natural occurrence and distribution in the environment, all provide useful information regarding the distribution of a constituent in the environment.

For example, cross-contamination of a monitored interval can occur during borehole drilling and well completion by dragging contaminated surface soil down into the screened interval resulting in misleading groundwater results. An example of this has been shown for americium-241 and plutonium-239/240 at the 903 Pad by comparing the results of aseptically installed wells.

4.7 Results of UHSU AOI Screening

Based on the AOI screening process shown on Figure 3, 18 UHSU groundwater AOIs were identified and retained, including 12 VOCs, 2 metals, 1 radionuclide, and 3 water quality parameters. The frequency of detection for the UHSU AOIs above the surface water standards or MCLs ranges between greater than 0 percent and less than 1 percent (3 constituents), 1 to less than 5 percent (6 constituents), and greater than 5 percent (9 constituents). The AOIs identified and retained for the UHSU are listed in Table 3 along with summary statistics for each constituent. Figure 4 shows the location of site features discussed in the following sections. Figures 5 through 22 show the nature and extent of UHSU AOIs. The extent of other constituents evaluated in the UHSU that were not retained as AOIs are included on a compact disk (CD) as Figures A-1 through A-117 in Appendix A.

4.7.1 PCBs and Dioxins

No PCB or dioxin AOIs were identified in UHSU groundwater. Table 2 summarizes PCB and dioxin compounds analyzed for and reported in the data evaluated in this SR. UHSU PCB and dioxin AOIs that had concentrations above the surface water standards or MCLs at least once, but were not detected in three adjacent wells, are shown highlighted in Table 2 and on the extent maps in Appendix A (Figures A-1 through A-4).

4.7.2 Pesticides, Herbicides, and Fungicides

No pesticides, herbicides, or fungicides were identified as AOIs in UHSU groundwater. Table 2 summarizes pesticide, herbicide, and fungicide compounds analyzed for and reported in the data evaluated in this SR. UHSU pesticide, herbicide, and fungicide AOIs had concentrations that above the surface water standards or MCLs at least once, but were not detected in three adjacent wells, are shown highlighted in Table 2 and on the AOI extent maps in Appendix A (Figures A-5 through A-8).

4.7.3 SVOCs

No SVOCs were identified as AOIs in UHSU groundwater. Table 2 summarizes SVOC

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compounds analyzed for and reported in the data evaluated in this SR. UHSU SVOC AOIs that had concentrations above the surface water standards or MCLs at least once, but were not detected in three adjacent wells, are shown highlighted in Table 2 and on the extent maps in Appendix A (Figures A-9 through A-21).

4.7.4 VOCs

Table 2 summarizes VOCs analyzed for and reported in the data evaluated in this SR. UHSU VOCs that had concentrations above the surface water standards or MCLs at least once, but were not detected in three adjacent wells, are shown highlighted in Table 2 and on the extent maps in Appendix A (Figures A-22 through A-43). Table 3 lists 12 VOCs for analyzed and reported in the data evaluated in this SR and retained as AOIs. See Section 5.1.1 and Figures 5 through 16.

4.7.5 Metals

Table 2 summarizes metals analyzed for and reported in the data evaluated in this SR, but not retained as AOIs. UHSU metals that had concentrations above the surface water standards or MCLs at least once, but were not detected in three adjacent wells, are shown highlighted in Table 2 and on the extent maps in Appendix A (Figures A-44 through A-83). Table 3 lists two metals analyzed for and reported in the data evaluated in this SR and retained as AOIs. See Section 5.1.2 and Figures 17 and 18.

4.7.6 Radionuclides

Table 2 summarizes radionuclides analyzed for and reported in the data evaluated in this SR, but not retained as AOIs. UHSU radionuclides that had activities above the surface water standards or MCLs at least once, but were not detected in three adjacent wells, are shown highlighted in Table 2 and on the extent maps in Appendix A (Figures A-84 through A-112). Table 3 lists one radionuclide analyzed for and reported in the data evaluated in this SR and retained as an AOI. See Section 5.1.3 and Figure 19.

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4.7.7 Water Quality Parameters

Table 2 summarizes water quality parameters analyzed for and reported in the data evaluated in this SR, but not retained as AOIs. UHSU water quality parameters that had concentrations above the surface water standards or MCLs at least once, but were not detected in three adjacent wells are shown highlighted in Table 2 and on the extent maps in Appendix A (Figures A-112 through A-117). Table 3 lists three water quality parameters analyzed for and reported in the data evaluated in this SR and retained as AOIs. See Section 5.1.4 and Figures 20 through 22.

4.8 Results of LHSU AOI Screening

Based on the AOI screening process shown on Figure 3, no groundwater AOIs were identified in the LHSU. The extent of constituents in the LHSU that were not retained as AOIs are included on a CD as Figures B-1 through B-62 in Appendix B.

4.8.1 PCBs and Dioxins

No PCBs or dioxins were identified as AOIs in LHSU groundwater. Table 4 summarizes PCB and dioxin compounds analyzed for and reported in the data evaluated in this SR. Only hexachlorodibenzo-p-dioxin was detected above the surface water standard at least once, but was not detected in three adjacent wells, is shown highlighted in Table 4 and on the extent map in Appendix B (Figure B-1).

4.8.2 Pesticides, Herbicides, and Fungicides

No pesticides, herbicides, or fungicides were identified as AOIs in LHSU groundwater. Table 4 summarizes pesticide, herbicide, and fungicide compounds analyzed for and reported in the data evaluated in this SR. None of the pesticide, herbicide, or fungicide concentrations exceeded the surface water standards or MCLs.

4.8.3 SVOCs

No SVOCs were identified as AOIs in LHSU groundwater. Table 4 summarizes SVOCs analyzed for and reported in the data evaluated in this SR. Only bis(2-ethylhexyl)phthalate was above the surface water standard at least once, but was not detected in three adjacent wells, is shown highlighted in Table 4 and on the extent map in Appendix B (Figure B-2).

4.8.4 VOCs

No VOCs were identified as AOIs in LHSU groundwater. Table 4 summarizes VOCs analyzed for and reported in the data evaluated in this SR. LHSU VOCs that had concentrations above the surface water standards or MCLs at least once, but were not detected in three adjacent wells, are shown highlighted in Table 4 and on the extent maps in Appendix B (Figures B-3 through B-9).

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4.8.5 Metals

No metals were identified as AOIs in LHSU groundwater. Table 4 summarizes metal constituents analyzed for and reported in the data evaluated in this SR. LHSU metal constituents that had concentrations above the surface water standards or MCLs at least once, but were not detected in three adjacent wells, are shown highlighted in Table 4 and on the extent maps in Appendix B (Figures B-10 through 41).

4.8.6 Radionuclides

No radionuclides were identified as AOIs in LHSU groundwater. Table 4 summarizes radionuclides analyzed for and reported in the data evaluated in this SR. LHSU radionuclides that had activities above the surface water standards or MCLs at least once, but were not detected in three adjacent wells, are shown highlighted in Table 4 and on the extent maps in Appendix B (Figures B-42 through B-58).

4.8.7 Water Quality Parameters

No water quality parameters were identified as AOIs in LHSU groundwater. Table 4 summarizes water quality parameters analyzed for and reported in the data evaluated in this SR. LHSU water quality parameters that had concentrations above the surface water standards or MCLs at least once, but were not detected in three adjacent wells, are shown highlighted in Table 4 and on the extent maps in Appendix B (Figures B-59 through B-62).

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5.0 NATURE AND EXTENT OF GROUNDWATER CONTAMINATION

This section summarizes the nature and extent of AOIs present in UHSU at RFETS. For each of the 18 AOIs in the UHSU, maps were created to show the relative concentration and extent of AOIs at the site. These figures are presented as Figures 5 through 22. For each figure, the results are displayed as six categories, as listed below, to identify the predominant areas of contaminant occurrence and extent:

- Locations where the AOI is not detected. VOCs with blank qualifiers (B) were treated as not detected results at the request of CDPHE;
- Locations where the AOI is detected but is less than or equal to the 99/99 UTL. For organic constituents and other constituents without a 99/99 UTL, the 99/99 UTL is not applicable because background is assumed to be zero;
- Locations where the AOI is detected but is less than or equal to the surface water standard (that is, lowest surface water standard or PQL, whichever is higher);
- Locations where the AOI concentration is greater than the surface water standard and less than or equal to the MCL;
- Locations where the AOI concentration is greater than the MCL and less than or equal to 100 times the MCL; and
- Locations where the AOI concentration is greater than 100 times the MCL.

AOI sampling location symbols are designed to show the 5-year time interval that the sample was collected. The time intervals identified on the AOI extent figures are defined as:

- Sample collected between June 28, 1991, and December 31, 1994;
- Sample collected between January 1, 1995, and December 31, 1999; and
- Sample collected since January 1, 2000.

5.1 Extent of AOIs in UHSU Groundwater

Each of the UHSU AOIs are mapped on Figures 5 through 22 and are discussed by analyte group below. Figure 4 shows the location of site features discussed in the text.

5.1.1 VOCs

Benzene, carbon tetrachloride (CT), chloroform (CF), chloromethane (CM), cis-1,2-dichloroethene (cis-1,2-DCE), 1,1-dichlorethene (1,1-DCE), 1,2-dichloroethane (1,2-DCA), methylene chloride (MC), tetrachloroethene (PCE), trichloroethene (TCE), total trihalomethanes (TTHM), and vinyl chloride (VC) were identified as AOIs in UHSU groundwater (Table 3). Figures 5 through 16 show the areal distribution of the VOC AOIs in UHSU groundwater.

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Figure 5 shows the extent of 1,1-DCE in UHSU groundwater. 1,1-DCE concentrations in UHSU groundwater are above the surface water standard (7.2 percent), MCL (7.2 percent), and 100 times the MCL (0.4 percent). 1,1-DCE occurrences above these standards are primarily found at Oil Burn Pit #2, the Mound area, the East Trenches area, the 903 Pad, Individual Hazardous Substance Site (IHSS) 119.1 (Operable Unit [OU1]), the Property Utilization and Disposal (PU&D) Yard, Building 771, and an area southeast of Building 371.

Figure 6 shows the extent of 1,2-DCA in UHSU groundwater. 1,2-DCA concentrations in UHSU groundwater are above the surface water standard (1.0 percent) and MCL (0.6 percent), but less than 100 times the MCL. 1,2-DCA occurrences above these standards are primarily found in the Mound area.

Figure 7 shows the extent of benzene in UHSU groundwater. Benzene concentrations in UHSU groundwater are above the surface water standard (0.8 percent) and MCL (0.4 percent), but less than 100 times the MCL. Benzene occurrences above these standards are primarily found beneath the Present Landfill.

Figure 8 shows the extent of CT in UHSU groundwater. CT concentrations in UHSU groundwater are above the surface water standard (23.3 percent), MCL (19.8 percent), and 100 times the MCL (6.0 percent). CT occurrences above these standards are primarily found south of Building 771 (Carbon Tetrachloride Plume, IHSS 118.1), in the East Trenches area, the 903 Pad and Ryan's Pit area, and IHSS 119.1 (OU1).

Figure 9 shows the extent of CF in UHSU groundwater. CF concentrations in UHSU groundwater are above the surface water standard (17.5 percent), MCL (4.6 percent), and 100 times the MCL (0.2 percent). CF occurrences above these standards are primarily found at Building 771 (IHSS 118.1), the East Trenches area, the 903 Pad and Ryan's Pit area, Oil Burn Pit #2, and the Mound area.

Figure 10 shows the extent of CM in UHSU groundwater. CM concentrations in UHSU groundwater are above the surface water standard (0.4 percent) and MCL (0.4 percent), but less than 100 times the MCL. CM occurrences above these standards are primarily found near Building 771 (IHSS 118.1) and Building 559.

Figure 11 shows the extent of cis-1,2-DCE in UHSU groundwater. cis-1,2-DCE concentrations in UHSU groundwater are above the surface water standard (4.3 percent) and MCL (4.3 percent), but less than 100 times the MCL. cis-1,2-DCE occurrences above these standards are primarily found at Oil Burn Pit #1 near Building 335, the Building 551 Warehouse, the Mound area, and the 903 Pad.

Figure 12 shows the extent of MC in UHSU groundwater. MC concentrations in UHSU groundwater are above the surface water standard (2.5 percent), MCL (2.4 percent), and 100 times the MCL (0.3 percent). MC occurrences above these standards are primarily found near Building 771 (IHSS 118.1), Oil Burn Pit #2, and the Mound area.

Figure 13 shows the extent of PCE in UHSU groundwater. PCE is one of the most common and widespread VOC contaminants in groundwater at RFETS. PCE concentrations in UHSU groundwater are above the surface water standard (32.6 percent), MCL (24.2 percent), and 100 times the MCL (3.3 percent). PCE occurrences above these standards are primarily found in the

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East Trenches area, the 903 Pad and Ryan's Pit area, Buildings 443 and 444, IHSS 119.1 (OU1), Oil Burn Pit #2, the Mound area, near Building 771 (IHSS 118.1), the PU&D Yard, and the central Industrial Area (IA).

Figure 14 shows the extent of TTHM in UHSU groundwater. TTHM concentrations in UHSU groundwater are above the surface water standard (2.9 percent), MCL (2.9 percent), and 100 times the MCL (0.1 percent). TTHM occurrences above these standards are primarily found near Building 771 (IHSS 118.1), the 903 Pad, and Ryan's Pit.

Figure 15 shows the extent of TCE in UHSU groundwater. TCE is one of the most common and widespread VOC contaminants in groundwater at RFETS. TCE concentrations in UHSU groundwater are above the surface water standard (30.2 percent), MCL (26.7 percent), and 100 times the MCL (5.4 percent). TCE occurrences above these standards are primarily found in the East Trenches area, the 903 Pad and Ryan's Pit area, south of Building 440, IHSS 119.1 (OU1), Oil Burn Pit #2, the Mound area, east of Building 371, the PU&D Yard, the former SEP (Pond 207-C), and the central IA.

Figure 16 shows the extent of VC in UHSU groundwater. VC concentrations in UHSU groundwater are above the surface water standard (2.3 percent), MCL (2.1 percent), and 100 times the MCL (0.3 percent). VC occurrences above these standards are primarily found at Oil Burn Pit #1 near Building 335, the Mound area, the Present Landfill, the Building 551 Warehouse, and the PU&D Yard.

5.1.2 Metals

Total chromium and dissolved nickel were identified as AOIs in UHSU groundwater (Table 3). Figures 17 and 18 show the areal distribution of the metal AOIs in UHSU groundwater. Total constituent concentrations are determined using unfiltered sample and represent both aqueous and suspended particulate transport of constituents. Dissolved constituent concentrations are determined using a sample filtered through a 0.45-micron filter and represent aqueous transport of constituents.

Figure 17 shows the extent of total chromium in UHSU groundwater. Total chromium concentrations in UHSU groundwater are above the surface water standard (14.0 percent) and MCL (6.8 percent), but less than 100 times the MCL. Total chromium occurrences above these standards are primarily found near Building 771, the East Trenches area, south of the 903 Pad, and IHSS 119.1 (OU1).

Figure 18 shows the extent of dissolved nickel in UHSU groundwater. Dissolved nickel concentrations in UHSU groundwater are above the surface water standard (4.1 percent) and MCL (2.3 percent), but less than 100 times the MCL. Dissolved nickel occurrences above these standards are primarily found at Building 850, the Original Landfill, IHSS 119.1 (OU1), and the Ash Pits.

5.1.3 Radionuclides

Total uranium isotopes was the only radionuclide AOI identified in UHSU groundwater (Table 3). Figure 19 shows the extent of total uranium isotopes (that is, the sum of the uranium isotopes) in UHSU groundwater. Total uranium isotopes in UHSU groundwater occurs at

concentrations above the surface water standard (3.9 percent), MCL (3.9 percent), and 100 times the MCL (0.3 percent). Total uranium isotope occurrences above these standards are primarily found in the area of the former SEP and North Walnut Creek upstream of Pond A-1, the Original Landfill, and the Ash Pits.

5.1.4 Water Quality Parameters

Ammonia (as N), fluoride, and nitrate/nitrite (as N) were identified as water quality parameter AOIs in UHSU groundwater (Table 3). Figures 20 through 22 show the areal distribution of the water quality parameter AOIs in UHSU groundwater. All three of these AOIs have a greater than 5 percent frequency of detection above their respective surface water standard.

Figure 20 shows the extent of ammonia (as N) in UHSU groundwater. Ammonia (as N) in UHSU groundwater occurs at concentrations above the surface water standard (24.9 percent) and MCL (0.4 percent); however, none of the ammonia (as N) concentrations are above 100 times the MCL. The largest occurrence of ammonia (as N) concentrations above the surface water standard is at the Present Landfill, with lesser occurrences at the former SEP, the East Trenches, north of Building 371, and near Building 881.

Figure 21 shows the extent of fluoride in UHSU groundwater. Fluoride in UHSU groundwater occurs at concentrations above the surface water standard (7.8 percent) and MCL (1.7 percent); however, none of the fluoride concentrations are above 100 times the MCL. Fluoride occurrences above the standards are found in the area of the former SEP, IHSS 119.1 (OU1), south of Building 881, and east of the Present Landfill.

Figure 22 shows the extent of nitrate/nitrite (as N) in USHU groundwater. Nitrate/nitrite (as N) is the most common and widespread water quality parameter contaminant at RFETS. Nitrate/nitrite (as N) in UHSU groundwater occurs at concentrations above the surface water standard (14.8 percent), MCL (14.8 percent), and 100 times the MCL (1.8 percent). Nitrate/nitrite (as N) occurrences above these standards are found in the area of the former SEPs and North Walnut Creek above Pond A-1, the 903 Pad, and IHSS 119.1 (OU1).

5.2 Summary of UHSU AOIs

Eighteen AOIs were identified in the UHSU. These AOIs include 12 VOCs (benzene, CT, CF, CM, cis-1,2-DCE, 1,1-DCE, 1,2-DCA, MC, PCE, TCE, TTHM, and VC), 2 metals (total chromium and dissolved nickel), 1 radionuclide (total uranium isotopes), and 3 water quality parameters (ammonia, fluoride, and nitrate/nitrite). All of these AOIs occur above their respective surface water standard and form contiguous, mappable contaminant plumes. These AOIs will be further evaluated in Section 7.0, Fate and Transport, of the RI/FS Report. Table 5 lists the UHSU AOIs and the areas where they form contiguous, mappable contaminant plumes.

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Table 5
AOIs and Associated Plume Areas

Area	AOIs
Carbon Tetrachloride Plume (IHSS 118.1)	CT, CF, CM, MC, PCE, TTHM
East Trenches	CT, CF, PCE, TCE, Total Chromium
SEP	Nitrate/Nitrite (as N), Total Uranium Isotopes, Fluoride
700 Area Northeast Plume	CT, CF, PCE, TCE, Total Uranium Isotopes, Nitrate/Nitrite (as N)
Mound Site (IHSS 113)	CF, PCE, TCE, 1,2-DCA, VC, cis-1,2-DCE, 1,1-DCE
Oil Burn Pit #2	CF, PCE, TCE
903 Pad (IHSS 112)	CT, CF, PCE, TCE, TTHM, Nitrate/Nitrite (as N)
Ryan's Pit (IHSS 109)	CT, CF, PCE, TCE, Total Chromium
IHSS 119.1 (OU1)	PCE, TCE, CT, Fluoride, Nitrate/Nitrite (as N)
Central IA (IA Plume Sources)	PCE, TCE, 1,1-DCE, VC, cis-1,2-DCE
Oil Burn Pit #1	cis-1,2-DCE
Buildings 443/444	PCE
Building 771	CT, TCE, VC, 1,1-DCE, Total Chromium
Building 850	Dissolved Nickel
PU&D Yard	PCE, TCE
Present Landfill	Benzene, VC, Ammonia (as N)
Original Landfill	PCE

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6.0 REFERENCES

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Table 1 Summary of RFETS Well Installations and Sampling Frequencies

Calendar Year	Approximate Number of Wells Installed	Rationale for Area Investigated	Laboratory Analyses	Sampling Frequency	Approximate Cumulative Number of Wells to Date[a]
1960[b]-1985	56	Mainly SEP; also East Trenches, Woman Creek, B-ponds, and 903 Pad; since 1976 Present Landfill area; since 1982 West Spray Field	Radionuclides only (Pu/Am, U isotopes, and tritium) 1960 through 1984 (except for 1974 when fluoride, nitrate, TDS, and total alpha and beta were also analyzed); VOCs, phenols, trace metals, major cations and anions, TDS, TOC, and nitrate sampling began in 1985	Annually 1960-1973 Semiannually 1974-1979 three times/year 1980-1981 Quarterly 1982-1985	56
1986	69	Provide more detailed characterization of site hydrogeology and water quality	Metals (HSL and Cs, Mo, and Sr), major anions, VOCs (HSL), SVOCs (HSL), pesticides/PCBs, radionuclides (gross alpha and beta, U-isotopes, Pu/Am, and tritium)	Intended quarterly; only 1 set collected during 1986 because new well construction not completed until 4th quarter	125
1987	68	Characterize SWMUs and RCRA-regulated units	Same as 1986, except no SVOCs or pesticides/PCBs	Quarterly	193
1988	10	For water level measurements only; along utility lines	Same as 1986, except no SVOCs or pesticides/PCBs	Quarterly	203
1989	162	Characterize upgradient and site groundwater quality and flow; also SEP, Present Landfill, West Spray Field, OPWL, East Trenches, 881 Hillside, and 903 Pad	VOCs (TCL), metals (TAL), major anions, nitrate, radionuclides (gross alpha and beta, tritium, U-isotopes, Pu/Am, strontium, radium, and cesium), TDS, cyanide, DO, O&G	Quarterly	365
1990	18	North and south BZ (to site potential New Landfill); 881 Hillside investigation	Same as 1989, except no O&G	Quarterly	383
1991	87	Mainly Mound, East Trenches, and 881 Hillside; also east BZ	Same as 1989, except no O&G	Quarterly	470
1992	30	881 Hillside, Woman Creek, and Walnut Creek	Same as 1989, except no O&G	Quarterly	500
1993	152	SEP, Present Landfill, Woman Creek, and Walnut Creek	Same as 1989, except no O&G; DO discontinued during 1993	Quarterly	652
1994	85	West Spray Field, Present	Same as 1989, except no O&G or DO	Generally quarterly for most	737

Calendar Year	Approximate Number of Wells Installed	Rationale for Area Investigated	Laboratory Analyses	Sampling Frequency	Approximate Cumulative Number of Wells to Date[a]
		Landfill, Woman Creek IHSSs, and Indiana Street; also for water level measurements in dams and for Site gas station		Site areas; information is vague	
1995	180	Surface water seeps and SEP; many for general site potentiometric characterization	Same as 1989 except no O&G or DO	Generally quarterly for RCRA wells; semiannually for other wells	917
1996	15	IA Characterization, New Landfill	Same as 1989 except no O&G or DO	Generally Quarterly for RCRA wells; Semi-annually for other wells	932
1997-2004	320	Characterization for areas adjacent to Mound, East Trenches, and SEP groundwater treatment systems and source removal accelerated actions; PU&D Yard, IHSS 118.1, IA Plume, 903 Pad/Ryan's Pit Plume, Oil Burn Pits #1 and #2, Original Landfill, Ash Pits, D&D Monitoring, and Actinide Migration Evaluation	With the implementation of the IMP, sampling became much more focused and dynamic based on project needs; main analytes included VOCs, nitrate, Pu/Am, uranium isotopes, metals, and TDS, with special analyses if warranted based on process knowledge or special DQOs (for example, biodegradation indicators, major ions, SVOCs, cyanide, and special radionuclides)	Quarterly for RCRA wells; semiannually for most other IMP wells	1,252[c]

[a] Does not take into account wells that have been abandoned and is not indicative of the number of wells sampled each year.

[b] There may have been three wells installed in 1954 in the area downgradient of the SEP; the analytes and sampling frequency of these wells are unknown.

[c] The total number of wells installed at RFETS varies with the sources researched.

Table 2
UHSU Analyte of Interest (AOI) Screening

Analyte Group	Total or Dissolved	Analyte	Number of Samples	Maximum Detection	Maximum Result Qualifier	Reporting Unit	AOI Screen 1 Comparison With Background				AOI Screen 2	AOI Screen 4 Comparison With Lowest Surface Water Standard						AOI Screen 3 Comparison With MCL				AOI Screen 5	AOI Screen 6	Is Constituent an AOI?
							99/99 UTL	Number of Detections Above 99/99 UTL	Frequency of Detection (%) Above the 99/99 UTL	Is the Maximum Concentration Above the 99/99 UTL ?	Appropriate Surface Water Standard Method? (that is, Total or Dissolved)	Site-Specific PQL	Lowest Surface Water Standard	Greater of Lowest Surface Water Standard or Site-Specific PQL	Number of Detections Above Surface Water Standard	Frequency of Detection (%) Above Surface Water Standard	Is the Maximum Concentration Above Lowest Surface Water Standard?	MCL	Number of Detections Above the MCL	Frequency of Detections (%) Above the MCL	Is the Maximum Concentration Above the MCL?	Are There Contiguous Plumes?	Eliminated By Process Knowledge?	
DIOXIN	Total	2378-TCDD	71	0.012	U	UG/L	—	—	—	—	Yes	0.00001	0.000000005	0.00001	0	0.00	No	0.00003	0	0.00	No	No	—	No
FUNGICIDE	Total	Pentachlorobenzene	68	100	U	UG/L	—	—	—	—	Yes	10	1.4	10	0	0.00	No	—	—	—	—	No	—	No
HERB	Total	2,4,5-TP (Silvex)	88	0.51		UG/L	—	—	—	—	Yes	0.5	10	10	0	0.00	No	50	0	0.00	No	No	—	No
HERB	Total	2,4-D	88	3.6		UG/L	—	—	—	—	Yes	2.5	70	70	0	0.00	No	70	0	0.00	No	No	—	No
HERB	Total	Acrolein	15	500	U	UG/L	—	—	—	—	Yes	10	3.5	10	0	0.00	No	—	—	—	—	No	—	No
HERB	Total	Dalapon	6	17		UG/L	—	—	—	—	Yes	8	200	200	0	0.00	No	200	0	0.00	No	No	—	No
HERB	Total	Dinoseb	109	0.8		UG/L	—	—	—	—	Yes	1	7	7	0	0.00	No	7	0	0.00	No	No	—	No
METAL	Total	Boron	8	133	N	UG/L	—	—	—	—	Yes	30	750	750	0	0.00	No	—	—	—	—	No	—	No
METAL	Total	Chromium VI	6	11		UG/L	—	—	—	—	No	20	11	20	0	0.00	No	—	—	—	—	—	—	No
METAL	Dissolved	Cobalt	4724	764	*	UG/L	—	—	—	—	No	50	—	—	—	—	—	2190	0	0.00	No	—	—	No
METAL	Total	Cobalt	2091	2100	B	UG/L	—	—	—	—	Yes	50	—	—	—	—	—	2190	0	0.00	No	No	—	No
METAL	Dissolved	Tin	4689	327		UG/L	117.96	18	0.38	Yes	Yes	200	—	—	—	—	—	21900	0	0.00	No	No	—	No
METAL	Total	Tin	2068	642		UG/L	116.2	18	0.87	Yes	No	200	—	—	—	—	—	21900	0	0.00	No	—	—	No
ORG	Total	bis(1-Chloroisopropyl)ether	613	110	U	UG/L	—	—	—	—	Yes	10	280	280	0	0.00	No	10	0	0.00	No	No	—	No
ORG	Total	bis(2-Chloroethyl) ether	628	110	U	UG/L	—	—	—	—	Yes	10	0.03	10	0	0.00	No	10	0	0.00	No	No	—	No
ORG	Total	bis(2-Chloroisopropyl) ether	2	12.5	U	UG/L	—	—	—	—	Yes	10	280	280	0	0.00	No	10	0	0.00	No	No	—	No
PCB	Total	PCB-1016	495	0	I	UG/L	—	—	—	—	Yes	0.05	0.000064	0.05	0	0.00	No	0.5	0	0.00	No	No	—	No
PCB	Total	PCB-1221	495	0	I	UG/L	—	—	—	—	Yes	0.05	0.000064	0.05	0	0.00	No	0.5	0	0.00	No	No	—	No
PCB	Total	PCB-1248	500	0	I	UG/L	—	—	—	—	Yes	0.05	0.000064	0.05	0	0.00	No	0.5	0	0.00	No	No	—	No
PCB	Total	PCB-1260	500	10	U	UG/L	—	—	—	—	Yes	0.05	0.000064	0.05	0	0.00	No	0.5	0	0.00	No	No	—	No
PEST	Total	4,4'-DDD	466	0.033	JP	UG/L	—	—	—	—	Yes	0.11	0.00031	0.11	0	0.00	No	0.355	0	0.00	No	No	—	No
PEST	Total	4,4'-DDE	466	0.025	J	UG/L	—	—	—	—	Yes	0.04	0.00022	0.04	0	0.00	No	0.25	0	0.00	No	No	—	No
PEST	Total	Aldrin	466	0	I	UG/L	—	—	—	—	Yes	0.04	0.000049	0.04	0	0.00	No	0.04	0	0.00	No	No	—	No
PEST	Total	alpha-Chlordane	418	5.2	U	UG/L	—	—	—	—	Yes	1	0.0008	1	0	0.00	No	2	0	0.00	No	No	—	No
PEST	Total	beta-BHC	466	0.055	X	UG/L	—	—	—	—	Yes	0.06	0.0091	0.06	0	0.00	No	0.2	0	0.00	No	No	—	No
PEST	Total	beta-Chlordane	404	5	U	UG/L	—	—	—	—	Yes	1	0.0008	1	0	0.00	No	2	0	0.00	No	No	—	No
PEST	Total	Chlordane (NOS)	48	0.14	U	UG/L	—	—	—	—	Yes	1	0.0008	1	0	0.00	No	2	0	0.00	No	No	—	No
PEST	Total	Endosulfan I	465	0.52	U	UG/L	—	—	—	—	Yes	0.1	0.056	0.1	0	0.00	No	219	0	0.00	No	No	—	No
PEST	Total	Endosulfan II	466	1	U	UG/L	—	—	—	—	Yes	0.1	0.056	0.1	0	0.00	No	219	0	0.00	No	No	—	No
PEST	Total	Endosulfan sulfate	466	0	I	UG/L	—	—	—	—	Yes	0.55	0.056	0.55	0	0.00	No	219	0	0.00	No	No	—	No
PEST	Total	Endrin	466	1	U	UG/L	—	—	—	—	Yes	0.06	0.036	0.06	0	0.00	No	2	0	0.00	No	No	—	No
PEST	Total	gamma-BHC (Lindane)	465	0.04		UG/L	—	—	—	—	Yes	0.04	0.08	0.08	0	0.00	No	0.2	0	0.00	No	No	—	No
PEST	Total	gamma-Chlordane	14	5.2	U	UG/L	—	—	—	—	Yes	1	0.0008	1	0	0.00	No	2	0	0.00	No	No	—	No
PEST	Total	Heptachlor	466	0	I	UG/L	—	—	—	—	Yes	0.03	0.000078	0.03	0	0.00	No	0.4	0	0.00	No	No	—	No
PEST	Total	Methoxychlor	466	5.2	U	UG/L	—	—	—	—	Yes	1.8	0.03	1.8	0	0.00	No	40	0	0.00	No	No	—	No
PEST	Total	Parathion	70	40	U	UG/L	—	—	—	—	Yes	10	0.013	10	0	0.00	No	—	—	—	—	No	—	No
PEST	Total	Toxaphene	466	10	U	UG/L	—	—	—	—	Yes	25	0.0002	25	0	0.00	No	25	0	0.00	No	No	—	No
RAD	Dissolved	Cesium-137	462	7		PCI/L	2.14	8	1.73	Yes	No	10	—	—	—	—	—	10	0	0.00	No	—	—	No
RAD	Total	Cesium-137	677	4.499		PCI/L	1	15	2.22	Yes	Yes	10	—	—	—	—	—	10	0	0.00	No	No	—	No

Table 2
UHSU Analyte of Interest (AOI) Screening

Analyte Group	Total or Dissolved	Analyte	Number of Samples	Maximum Detection	Maximum Result Qualifier	Reporting Unit	AOI Screen 1 Comparison With Background				AOI Screen 2	AOI Screen 4 Comparison With Lowest Surface Water Standard						AOI Screen 3 Comparison With MCL				AOI Screen 5	AOI Screen 6	Is Constituent an AOI?
							99/99 UTL	Number of Detections Above 99/99 UTL	Frequency of Detection (%) Above the 99/99 UTL	Is the Maximum Concentration Above the 99/99 UTL ?	Appropriate Surface Water Standard Method? (that Is, Total or Dissolved)	Site-Specific PQL	Lowest Surface Water Standard	Greater of Lowest Surface Water Standard or Site-Specific PQL	Number of Detections Above Surface Water Standard	Frequency of Detection (%) Above Surface Water Standard	Is the Maximum Concentration Above Lowest Surface Water Standard?	MCL	Number of Detections Above the MCL	Frequency of Detections (%) Above the MCL	Is the Maximum Concentration Above the MCL?	Are There Contiguous Plumes?	Eliminated By Process Knowledge?	
RAD	Total	Strontium-89/90	419	5.332		PCI/L	1.15	25	5.97	Yes	Yes	1	8	8	0	0.00	No	1	28	6.68	Yes	No	—	No
RAD	Dissolved	Strontium-90	11	0.383	J	PCI/L	1.05	0	0.00	No	No	1	8	8	0	0.00	No	1	0	0.00	No	—	—	No
RAD	Total	Strontium-90	1	0.537	U	PCI/L	1.15	0	0.00	No	Yes	1	8	8	0	0.00	No	1	0	0.00	No	No	—	No
RAD	Dissolved	Tritium	1	-93.0575	U	PCI/L	578.79	0	0.00	No	No	400	500	500	0	0.00	No	20000	0	0.00	No	—	—	No
SVOC	Total	1,2,4,5-Tetrachlorobenzene	68	100	U	UG/L	—	—	—	—	Yes	10	0.97	10	0	0.00	No	—	—	—	—	No	—	No
SVOC	Total	2,4,5-Trichlorophenol	636	3	J	UG/L	—	—	—	—	Yes	10	700	700	0	0.00	No	50	0	0.00	No	No	—	No
SVOC	Total	2,4,6-Trichlorophenol	636	110	U	UG/L	—	—	—	—	Yes	10	1.4	10	0	0.00	No	10	0	0.00	No	No	—	No
SVOC	Total	2,4-Dichlorophenol	636	110	U	UG/L	—	—	—	—	Yes	50	21	50	0	0.00	No	110	0	0.00	No	No	—	No
SVOC	Total	2,4-Dimethylphenol	636	19		UG/L	—	—	—	—	Yes	50	140	140	0	0.00	No	730	0	0.00	No	No	—	No
SVOC	Total	2,4-Dinitrophenol	609	550	U	UG/L	—	—	—	—	Yes	50	14	50	0	0.00	No	73	0	0.00	No	No	—	No
SVOC	Total	2,4-Dinitrotoluene	641	110	U	UG/L	—	—	—	—	Yes	10	0.11	10	0	0.00	No	10	0	0.00	No	No	—	No
SVOC	Total	2,6-Dinitrotoluene	641	2	J	UG/L	—	—	—	—	Yes	10	230	230	0	0.00	No	10	0	0.00	No	No	—	No
SVOC	Total	2-Chloronaphthalene	641	5	J	UG/L	—	—	—	—	Yes	10	560	560	0	0.00	No	2920	0	0.00	No	No	—	No
SVOC	Total	2-Chlorophenol	636	110	U	UG/L	—	—	—	—	Yes	10	35	35	0	0.00	No	183	0	0.00	No	No	—	No
SVOC	Total	2-Methylnaphthalene	642	100		UG/L	—	—	—	—	Yes	10	—	—	—	—	—	1460	0	0.00	No	No	—	No
SVOC	Total	2-Methylphenol	623	14		UG/L	—	—	—	—	Yes	10	1830	1830	0	0.00	No	1830	0	0.00	No	No	—	No
SVOC	Total	2-Nitroaniline	641	550	U	UG/L	—	—	—	—	Yes	50	—	—	—	—	—	50	0	0.00	No	No	—	No
SVOC	Total	3,3'-Dichlorobenzidine	594	220	U	UG/L	—	—	—	—	Yes	20	0.021	20	0	0.00	No	20	0	0.00	No	No	—	No
SVOC	Total	4,6-Dinitro-2-methylphenol	636	550	U	UG/L	—	—	—	—	Yes	50	0.27	50	0	0.00	No	50	0	0.00	No	No	—	No
SVOC	Total	4-Chloro-3-methylphenol	636	110	U	UG/L	—	—	—	—	Yes	20	30	30	0	0.00	No	—	—	—	—	No	—	No
SVOC	Total	4-Chloroaniline	612	4	J	UG/L	—	—	—	—	Yes	20	—	—	—	—	—	146	0	0.00	No	No	—	No
SVOC	Total	Acenaphthene	642	24		UG/L	—	—	—	—	Yes	10	420	420	0	0.00	No	2190	0	0.00	No	No	—	No
SVOC	Total	Acenaphthylene	641	110	U	UG/L	—	—	—	—	Yes	10	0.0028	10	0	0.00	No	—	—	—	—	No	—	No
SVOC	Total	Anthracene	642	15	J	UG/L	—	—	—	—	Yes	10	2100	2100	0	0.00	No	11000	0	0.00	No	No	—	No
SVOC	Total	Benzoic Acid	381	2900	E	UG/L	—	—	—	—	Yes	50	—	—	—	—	—	146000	0	0.00	No	No	—	No
SVOC	Total	Benzyl Alcohol	456	110	U	UG/L	—	—	—	—	Yes	20	—	—	—	—	—	11000	0	0.00	No	No	—	No
SVOC	Total	Butylbenzylphthalate	641	4	J	UG/L	—	—	—	—	Yes	10	1400	1400	0	0.00	No	7300	0	0.00	No	No	—	No
SVOC	Total	Dibenz(a,h)anthracene	638	110	U	UG/L	—	—	—	—	Yes	10	0.0038	10	0	0.00	No	10	0	0.00	No	No	—	No
SVOC	Total	Dibenzofuran	641	15	J	UG/L	—	—	—	—	Yes	10	—	—	—	—	—	146	0	0.00	No	No	—	No
SVOC	Total	Diethylphthalate	642	310		UG/L	—	—	—	—	Yes	10	5600	5600	0	0.00	No	29200	0	0.00	No	No	—	No
SVOC	Total	Dimethylphthalate	641	2	J	UG/L	—	—	—	—	Yes	10	70000	70000	0	0.00	No	365000	0	0.00	No	No	—	No
SVOC	Total	Di-n-butylphthalate	641	4	J	UG/L	—	—	—	—	Yes	10	700	700	0	0.00	No	3650	0	0.00	No	No	—	No
SVOC	Total	Di-n-octylphthalate	639	86		UG/L	—	—	—	—	Yes	10	—	—	—	—	—	730	0	0.00	No	No	—	No
SVOC	Total	Endrin aldehyde	167	1	U	UG/L	—	—	—	—	Yes	0.23	0.29	0.29	0	0.00	No	—	—	—	—	No	—	No
SVOC	Total	Fluoranthene	641	53		UG/L	—	—	—	—	Yes	10	130	130	0	0.00	No	1460	0	0.00	No	No	—	No
SVOC	Total	Fluorene	642	15	J	UG/L	—	—	—	—	Yes	10	280	280	0	0.00	No	1460	0	0.00	No	No	—	No
SVOC	Total	Hexachlorobenzene	641	110	U	UG/L	—	—	—	—	Yes	10	0.00028	10	0	0.00	No	10	0	0.00	No	No	—	No
SVOC	Total	Hexachlorocyclopentadiene	635	110	U	UG/L	—	—	—	—	Yes	10	5	10	0	0.00	No	50	0	0.00	No	No	—	No
SVOC	Total	Indeno(1,2,3-cd)pyrene	638	10	J	UG/L	—	—	—	—	Yes	10	0.0038	10	0	0.00	No	10	0	0.00	No	No	—	No

Table 2
UHSU Analyte of Interest (AOI) Screening

Analyte Group	Total or Dissolved	Analyte	Number of Samples	Maximum Detection	Maximum Result Qualifier	Reporting Unit	AOI Screen 1 Comparison With Background				AOI Screen 2	AOI Screen 4 Comparison With Lowest Surface Water Standard						AOI Screen 3 Comparison With MCL				AOI Screen 5	AOI Screen 6	Is Constituent an AOI?
							99/99 UTL	Number of Detections Above 99/99 UTL	Frequency of Detection (%) Above the 99/99 UTL	Is the Maximum Concentration Above the 99/99 UTL ?	Appropriate Surface Water Standard Method? (that is, Total or Dissolved)	Site-Specific PQL	Lowest Surface Water Standard	Greater of Lowest Surface Water Standard or Site-Specific PQL	Number of Detections Above Surface Water Standard	Frequency of Detection (%) Above Surface Water Standard	Is the Maximum Concentration Above Lowest Surface Water Standard?	MCL	Number of Detections Above the MCL	Frequency of Detections (%) Above the MCL	Is the Maximum Concentration Above the MCL?	Are There Contiguous Plumes?	Eliminated By Process Knowledge?	
SVOC	Total	Isophorone	641	110	U	UG/L	—	—	—	—	Yes	10	36	36	0	0.00	No	89.6	0	0.00	No	No	—	No
SVOC	Total	Nitrobenzene	641	110	U	UG/L	—	—	—	—	Yes	10	3.5	10	0	0.00	No	18.3	0	0.00	No	No	—	No
SVOC	Total	N-Nitrosodiethylamine	68	100	U	UG/L	—	—	—	—	Yes	10	0.00023	10	0	0.00	No	—	—	—	—	No	—	No
SVOC	Total	N-Nitrosodimethylamine	59	100	U	UG/L	—	—	—	—	Yes	10	0.00069	10	0	0.00	No	—	—	—	—	No	—	No
SVOC	Total	N-Nitrosodi-n-butylamine	61	100	U	UG/L	—	—	—	—	Yes	10	0.0043	10	0	0.00	No	—	—	—	—	No	—	No
SVOC	Total	N-Nitrosodiphenylamine	639	200	U	UG/L	—	—	—	—	Yes	10	3.3	10	0	0.00	No	17.4	0	0.00	No	No	—	No
SVOC	Total	N-Nitrosopyrrolidine	68	500	U	UG/L	—	—	—	—	Yes	10	0.016	10	0	0.00	No	—	—	—	—	No	—	No
SVOC	Total	Phenol	637	130		UG/L	—	—	—	—	Yes	50	2100	2100	0	0.00	No	21900	0	0.00	No	No	—	No
SVOC	Total	Pyrene	642	51		UG/L	—	—	—	—	Yes	10	210	210	0	0.00	No	1100	0	0.00	No	No	—	No
VOC	Total	1,1-Dichloroethane	7996	780	E	UG/L	—	—	—	—	Yes	1	3650	3650	0	0.00	No	3650	0	0.00	No	No	—	No
VOC	Total	1,2-Dichlorobenzene	6552	8		UG/L	—	—	—	—	Yes	1	420	420	0	0.00	No	600	0	0.00	No	No	—	No
VOC	Total	1,3-Dichlorobenzene	6552	31	J	UG/L	—	—	—	—	Yes	1	94	94	0	0.00	No	600	0	0.00	No	No	—	No
VOC	Total	2-Butanone	2956	5860	D	UG/L	—	—	—	—	Yes	10	21900	21900	0	0.00	No	21900	0	0.00	No	No	—	No
VOC	Total	4-Methyl-2-pentanone	3771	1500	DJ	UG/L	—	—	—	—	Yes	10	2920	2920	0	0.00	No	2920	0	0.00	No	No	—	No
VOC	Total	Acetone	3548	3600	DJ	UG/L	—	—	—	—	Yes	10	3650	3650	0	0.00	No	3650	0	0.00	No	No	—	No
VOC	Total	Acrylonitrile	62	50000	U	UG/L	—	—	—	—	Yes	5	0.051	5	0	0.00	No	—	—	—	—	No	—	No
VOC	Total	Carbon Disulfide	3817	361		UG/L	—	—	—	—	Yes	1	3650	3650	0	0.00	No	3650	0	0.00	No	No	—	No
VOC	Total	Ethylbenzene	7994	430	E	UG/L	—	—	—	—	Yes	10	530	530	0	0.00	No	700	0	0.00	No	No	—	No
VOC	Total	m,p-Xylene	1765	140		UG/L	—	—	—	—	Yes	5	1400	1400	0	0.00	No	10000	0	0.00	No	No	—	No
VOC	Total	m-Xylene	128	0.2		UG/L	—	—	—	—	Yes	5	1400	1400	0	0.00	No	10000	0	0.00	No	No	—	No
VOC	Total	o-Xylene	1899	38	J	UG/L	—	—	—	—	Yes	5	1400	1400	0	0.00	No	10000	0	0.00	No	No	—	No
VOC	Total	p-Xylene	121	0.2		UG/L	—	—	—	—	Yes	5	1400	1400	0	0.00	No	10000	0	0.00	No	No	—	No
VOC	Total	Styrene	7978	14	J	UG/L	—	—	—	—	Yes	5	100	100	0	0.00	No	100	0	0.00	No	No	—	No
VOC	Total	Vinyl acetate	1692	2	J	UG/L	—	—	—	—	Yes	5	—	—	—	—	—	36500	0	0.00	No	No	—	No
VOC	Total	Xylene	6101	1000	E	UG/L	—	—	—	—	Yes	5	1400	1400	0	0.00	No	10000	0	0.00	No	No	—	No
WQP	Dissolved	Cyanide	2	5.6	U	UG/L	97.09	0	0.00	No	No	5	5	5	0	0.00	No	200	0	0.00	No	—	—	No
WQP	Dissolved	Fluoride	21	1200		UG/L	—	—	—	—	No	500	2000	2000	0	0.00	No	4000	0	0.00	No	—	—	No
METAL	Dissolved	Vanadium	4728	1140	*	UG/L	28.26	30	0.63	Yes	No	40	—	—	—	—	—	256	3	0.06	Yes	—	—	No
METAL	Dissolved	Molybdenum	4641	520		UG/L	98.73	16	0.34	Yes	No	30	—	—	—	—	—	183	4	0.09	Yes	—	—	No
METAL	Total	Strontium	2077	74100		UG/L	944.25	484	23.30	Yes	Yes	200	—	—	—	—	—	21900	5	0.24	Yes	No	—	No
METAL	Dissolved	Strontium	4663	32600		UG/L	1030.95	1097	23.53	Yes	No	200	—	—	—	—	—	21900	16	0.34	Yes	—	—	No
SVOC	Total	4-Methylphenol	585	2100	E	UG/L	—	—	—	—	Yes	10	—	—	—	—	—	183	3	0.51	Yes	No	—	No
METAL	Total	Molybdenum	2106	3660	B	UG/L	116.04	26	1.23	Yes	Yes	30	—	—	—	—	—	183	12	0.57	Yes	No	—	No
METAL	Total	Lithium	2084	6170	B	UG/L	147.37	208	9.98	Yes	Yes	100	—	—	—	—	—	730	24	1.15	Yes	No	—	No
METAL	Dissolved	Lithium	4873	4100		UG/L	160.47	438	8.99	Yes	No	100	—	—	—	—	—	730	75	1.54	Yes	—	—	No
METAL	Total	Vanadium	2109	4100		UG/L	46.64	322	15.27	Yes	Yes	40	—	—	—	—	—	256	60	2.84	Yes	No	—	No
VOC	Total	Toluene	8005	1200	E	UG/L	—	—	—	—	Yes	5	1000	1000	1	0.01	Yes	1000	1	0.01	Yes	No	—	No
VOC	Total	Dibromochloromethane	7986	113		UG/L	—	—	—	—	Yes	1	54	54	1	0.01	Yes	80	1	0.01	Yes	No	—	No
VOC	Total	Chlorobenzene	7994	3300		UG/L	—	—	—	—	Yes	5	100	100	2	0.03	Yes	100	2	0.03	Yes	No	—	No

Table 2
UHSU Analyte of Interest (AOI) Screening

Analyte Group	Total or Dissolved	Analyte	Number of Samples	Maximum Detection	Maximum Result Qualifier	Reporting Unit	AOI Screen 1 Comparison With Background				AOI Screen 2	AOI Screen 4 Comparison With Lowest Surface Water Standard						AOI Screen 3 Comparison With MCL				AOI Screen 5	AOI Screen 6	Is Constituent an AOI?
							99/99 UTL	Number of Detections Above 99/99 UTL	Frequency of Detection (%) Above the 99/99 UTL	Is the Maximum Concentration Above the 99/99 UTL ?	Appropriate Surface Water Standard Method? (that is, Total or Dissolved)	Site-Specific PQL	Lowest Surface Water Standard	Greater of Lowest Surface Water Standard or Site-Specific PQL	Number of Detections Above Surface Water Standard	Frequency of Detection (%) Above Surface Water Standard	Is the Maximum Concentration Above Lowest Surface Water Standard?	MCL	Number of Detections Above the MCL	Frequency of Detections (%) Above the MCL	Is the Maximum Concentration Above the MCL?	Are There Contiguous Plumes?	Eliminated By Process Knowledge?	
VOC	Total	trans-1,2-Dichloroethene	6010	140	J	UG/L	—	—	—	—	Yes	5	100	100	2	0.03	Yes	100	2	0.03	Yes	No	—	No
METAL	Dissolved	Beryllium	4707	12.2	N*	UG/L	—	—	—	—	Yes	5	4	5	2	0.04	Yes	5	2	0.04	Yes	No	—	No
VOC	Total	Hexachlorobutadiene	6549	520	J	UG/L	—	—	—	—	Yes	10	0.44	10	4	0.06	Yes	10	4	0.06	Yes	No	—	No
VOC	Total	Chloroethane	7941	83		UG/L	—	—	—	—	Yes	1	29.4	29.4	6	0.08	Yes	29.4	6	0.08	Yes	No	—	No
VOC	Total	trans-1,3-Dichloropropene	7727	8.1		UG/L	—	—	—	—	Yes	1	0.34	1	6	0.08	Yes	1	6	0.08	Yes	No	—	No
VOC	Total	Bromoform	7925	25	DF	UG/L	—	—	—	—	Yes	1	4.3	4.3	9	0.11	Yes	80	0	0.00	No	No	—	No
VOC	Total	cis-1,3-Dichloropropene	7726	1600		UG/L	—	—	—	—	Yes	1	0.34	1	9	0.12	Yes	1	9	0.12	Yes	No	—	No
VOC	Total	1,4-Dichlorobenzene	6551	240		UG/L	—	—	—	—	Yes	1	63	63	9	0.14	Yes	75	9	0.14	Yes	No	—	No
VOC	Total	Bromomethane	7815	110	J	UG/L	—	—	—	—	Yes	1	9.8	9.8	12	0.15	Yes	51.1	1	0.01	Yes	No	—	No
SVOC	Total	Benzo(a)anthracene	641	24		UG/L	—	—	—	—	Yes	10	0.0038	10	1	0.16	Yes	10	1	0.16	Yes	No	—	No
SVOC	Total	Chrysene	641	28		UG/L	—	—	—	—	Yes	10	0.0038	10	1	0.16	Yes	11.7	1	0.16	Yes	No	—	No
SVOC	Total	N-Nitroso-di-n-propylamine	641	200	D	UG/L	—	—	—	—	Yes	10	0.005	10	1	0.16	Yes	10	1	0.16	Yes	No	—	No
SVOC	Total	Benzo(a)pyrene	638	22		UG/L	—	—	—	—	Yes	10	0.0038	10	1	0.16	Yes	10	1	0.16	Yes	No	—	No
SVOC	Total	Benzo(b)fluoranthene	638	19		UG/L	—	—	—	—	Yes	10	0.0038	10	1	0.16	Yes	10	1	0.16	Yes	No	—	No
SVOC	Total	Benzo(g,h,i)perylene	638	12	J	UG/L	—	—	—	—	Yes	10	0.0038	10	1	0.16	Yes	—	—	—	—	No	—	No
SVOC	Total	Benzo(k)fluoranthene	638	13	J	UG/L	—	—	—	—	Yes	10	0.0038	10	1	0.16	Yes	10	1	0.16	Yes	No	—	No
SVOC	Total	Pentachlorophenol	636	62	DJ	UG/L	—	—	—	—	Yes	50	0.27	50	1	0.16	Yes	50	1	0.16	Yes	No	—	No
SVOC	Total	4-Nitrophenol	633	61	DJ	UG/L	—	—	—	—	Yes	50	56	56	1	0.16	Yes	292	0	0.00	No	No	—	No
VOC	Total	1,2-Dibromoethane	5945	25	DF	UG/L	—	—	—	—	Yes	1	0.00041	1	10	0.17	Yes	1	10	0.17	Yes	No	—	No
RAD	Dissolved	Strontium-89/90	2626	15.48		PCI/L	1.05	100	3.81	Yes	No	1	8	8	5	0.19	Yes	1	105	4.00	Yes	—	—	No
VOC	Total	1,1,2,2-Tetrachloroethane	7981	180		UG/L	—	—	—	—	Yes	1	0.17	1	17	0.21	Yes	1	17	0.21	Yes	No	—	No
METAL	Dissolved	Lead	4678	80.7		UG/L	12.57	5	0.11	Yes	Yes	10	3.7	10	10	0.21	Yes	15	3	0.06	Yes	No	—	No
PEST	Total	4,4'-DDT	466	1.8	I	UG/L	—	—	—	—	Yes	0.12	0.00022	0.12	1	0.21	Yes	0.25	1	0.21	Yes	No	—	No
PEST	Total	Heptachlor epoxide	466	0.13	X	UG/L	—	—	—	—	Yes	0.08	0.000039	0.08	1	0.21	Yes	0.2	0	0.00	No	No	—	No
VOC	Total	1,2,4-Trichlorobenzene	6544	80	E	UG/L	—	—	—	—	Yes	10	35	35	15	0.23	Yes	70	2	0.03	Yes	No	—	No
VOC	Total	1,2-Dibromo-3-chloropropane	3952	100	DF	UG/L	—	—	—	—	Yes	1	0.2	1	11	0.28	Yes	1	11	0.28	Yes	No	—	No
VOC	Total	Naphthalene	6464	980	E	UG/L	—	—	—	—	Yes	10	28	28	19	0.29	Yes	1460	0	0.00	No	No	—	No
SVOC	Total	Phenanthrene	642	71		UG/L	—	—	—	—	Yes	10	0.0028	10	2	0.31	Yes	—	—	—	—	No	—	No
PCB	Total	PCB-1242	500	11		UG/L	—	—	—	—	Yes	0.05	0.000064	0.05	2	0.40	Yes	0.5	2	0.40	Yes	No	—	No
VOC	Total	1,1,2-Trichloroethane	7986	72		UG/L	—	—	—	—	Yes	1	2.7	2.7	33	0.41	Yes	5	23	0.29	Yes	No	—	No
VOC	Total	Chloromethane	7925	18000	E	UG/L	—	—	—	—	Yes	1	5.6	5.6	34	0.43	Yes	6.55	31	0.39	Yes	Yes	—	Yes
METAL	Total	Thallium	2089	89.1		UG/L	5.77	38	1.82	Yes	No	12	0.5	12	9	0.43	Yes	12	9	0.43	Yes	—	—	No
VOC	Total	Bromodichloromethane	7973	540	J	UG/L	—	—	—	—	Yes	1	0.55	1	36	0.45	Yes	80	2	0.03	Yes	No	—	No
METAL	Dissolved	Mercury	4637	5.5		UG/L	—	—	—	—	Yes	1	0.01	1	23	0.50	Yes	2	5	0.11	Yes	No	—	No
VOC	Total	1,2-Dichloropropane	7989	200	E	UG/L	—	—	—	—	Yes	1	0.5	1	42	0.53	Yes	5	4	0.05	Yes	No	—	No
METAL	Dissolved	Chromium	4908	649		UG/L	13.69	144	2.93	Yes	No	2	50	50	26	0.53	Yes	100	15	0.31	Yes	—	—	No
RAD	Dissolved	Radium-226	1468	8.064		PCI/L	0.63	316	21.53	Yes	No	1	5	5	8	0.54	Yes	5	8	0.54	Yes	—	—	No
METAL	Dissolved	Thallium	4644	45.3		UG/L	5.44	139	2.99	Yes	Yes	12	0.5	12	27	0.58	Yes	12	27	0.58	Yes	No	—	No
METAL	Dissolved	Barium	4929	5830		UG/L	163.94	1414	28.69	Yes	Yes	100	1000	1000	29	0.59	Yes	2000	13	0.26	Yes	No	—	No

Table 2
UHSU Analyte of Interest (AOI) Screening

Analyte Group	Total or Dissolved	Analyte	Number of Samples	Maximum Detection	Maximum Result Qualifier	Reporting Unit	AOI Screen 1 Comparison With Background				AOI Screen 2	AOI Screen 4 Comparison With Lowest Surface Water Standard						AOI Screen 3 Comparison With MCL				AOI Screen 5	AOI Screen 6	Is Constituent an AOI?
							99/99 UTL	Number of Detections Above 99/99 UTL	Frequency of Detection (%) Above the 99/99 UTL	Is the Maximum Concentration Above the 99/99 UTL ?	Appropriate Surface Water Standard Method? (that is, Total or Dissolved)	Site-Specific PQL	Lowest Surface Water Standard	Greater of Lowest Surface Water Standard or Site-Specific PQL	Number of Detections Above Surface Water Standard	Frequency of Detection (%) Above Surface Water Standard	Is the Maximum Concentration Above Lowest Surface Water Standard?	MCL	Number of Detections Above the MCL	Frequency of Detections (%) Above the MCL	Is the Maximum Concentration Above the MCL?	Are There Contiguous Plumes?	Eliminated By Process Knowledge?	
PCB	Total	PCB-1232	495	11		UG/L	----	----	----	----	Yes	0.05	0.000064	0.05	3	0.61	Yes	0.5	3	0.61	Yes	No	----	No
PEST	Total	alpha-BHC	466	0.12		UG/L	----	----	----	----	Yes	0.03	0.0026	0.03	3	0.64	Yes	0.2	0	0.00	No	No	----	No
RAD	Dissolved	Uranium-235	4703	0.22835	U	PCI/L	1.88	231	4.91	No	No	1	10	10	31	0.66	No	1.01	444	9.44	No	----	----	No
VOC	Total	1,1,1-Trichloroethane	7987	22000	D	UG/L	----	----	----	----	Yes	5	200	200	58	0.73	Yes	200	58	0.73	Yes	No	----	No
METAL	Dissolved	Silver	4679	217		UG/L	7.79	19	0.41	Yes	Yes	5	0.59	5	37	0.79	Yes	183	1	0.02	Yes	No	----	No
RAD	Total	Uranium-235	1263	287.9		PCI/L	5.23	25	1.98	Yes	No	1	10	10	10	0.79	Yes	1.01	156	12.35	Yes	----	----	No
VOC	Total	Benzene	8000	950		UG/L	----	----	----	----	Yes	1	1.2	1.2	66	0.83	Yes	5	29	0.36	Yes	Yes	----	Yes
PEST	Total	Dieldrin	466	0.24	X	UG/L	----	----	----	----	Yes	0.02	0.000052	0.02	4	0.86	Yes	0.02	4	0.86	Yes	No	----	No
METAL	Dissolved	Cadmium	4720	98.2		UG/L	4.66	53	1.12	Yes	Yes	5	1.5	5	44	0.93	Yes	5	44	0.93	Yes	No	----	No
VOC	Total	1,2-Dichloroethane	7904	1100		UG/L	----	----	----	----	Yes	1	0.38	1	78	0.99	Yes	5	45	0.57	Yes	Yes	----	Yes
METAL	Dissolved	Zinc	4700	9850		UG/L	55.66	148	3.15	Yes	Yes	20	158.7	158.7	49	1.04	Yes	11000	0	0.00	No	No	----	No
PCB	Total	PCB-1254	495	17.3		UG/L	----	----	----	----	Yes	0.05	0.000064	0.05	6	1.21	Yes	0.5	5	1.01	Yes	No	----	No
RAD	Dissolved	Americium-241	476	21.31		PCI/L	2.11	2	0.42	Yes	No	0.03	0.15	0.15	6	1.26	Yes	0.145	7	1.47	Yes	----	----	No
DIOXIN	Total	Hexachlorodibenzo-p-dioxin	71	0.0011		UG/L	----	----	----	----	Yes		0.0000056	0.0000056	1	1.41	Yes	----	----	----	----	No	----	No
RAD	Dissolved	Plutonium-239/240	481	1.999		PCI/L	----	----	----	----	No	0.03	0.15	0.15	8	1.66	Yes	0.151	8	1.66	Yes	----	----	No
METAL	Total	Mercury	2114	24.2		UG/L	0.22	187	8.85	Yes	No	1	0.01	1	38	1.80	Yes	2	10	0.47	Yes	----	----	No
RAD	Dissolved	Uranium Isotopes	4687	1265		PCI/L	114.49	127	2.71	Yes	No	137.05	10	137.05	100	2.13	Yes	137.05	100	2.13	Yes	----	----	No
SVOC	Total	Hexachloroethane	653	1602	J	UG/L	----	----	----	----	Yes	10	0.4	10	15	2.30	Yes	10	15	2.30	Yes	No	----	No
VOC	Total	1,2-Dichloroethene	1998	420	E	UG/L	----	----	----	----	Yes	5	70	70	46	2.30	Yes	70	46	2.30	Yes	No	----	No
VOC	Total	Vinyl Chloride	7967	4190	D	UG/L	----	----	----	----	Yes	1	0.023	1	184	2.31	Yes	2	168	2.11	Yes	Yes	----	Yes
RAD	Dissolved	Gross Alpha (U-corrected)	3175	618.82		PCI/L	-20.63	3048	96.00	Yes	No	2	7	7	74	2.33	Yes	15	31	0.98	Yes	----	----	No
VOC	Total	Methylene Chloride	7938	43000	D	UG/L	----	----	----	----	Yes	1	4.6	4.6	198	2.49	Yes	5	188	2.37	Yes	Yes	----	Yes
METAL	Total	Silver	2097	3040		UG/L	----	----	----	----	No	5	0.59	5	56	2.67	Yes	183	7	0.33	Yes	----	----	No
VOC	Total	Total Trihalomethanes	7452	64000		UG/L	----	----	----	----	Yes		80	80	213	2.86	Yes	80	213	2.86	Yes	Yes	----	Yes
METAL	Total	Cadmium	2121	5000		UG/L	----	----	----	----	No	5	1.5	5	62	2.92	Yes	5	62	2.92	Yes	----	----	No
RAD	Total	Americium-241	3997	59.91		PCI/L	0.03	374	9.36	Yes	Yes	0.03	0.15	0.15	119	2.98	Yes	0.145	121	3.03	Yes	No	Yes[a]	No
WQP	Total	Nitrite	65	10200		UG/L	148.61	3	4.62	Yes	Yes	500	500	500	2	3.08	Yes	1000	1	1.54	Yes	No	----	No
METAL	Total	Barium	2101	11300		UG/L	208.14	795	37.84	Yes	No	100	1000	1000	80	3.81	Yes	2000	29	1.38	Yes	----	----	No
RAD	Total	Uranium Isotopes	1217	27952.9		PCI/L	114.49	61	5.01	Yes	Yes	137.05	10	137.05	47	3.86	Yes	137.05	47	3.86	Yes	Yes	----	Yes
RAD	Dissolved	Uranium	956	774.3551		PCI/L	114.49	43	4.50	Yes	No	137.05	10	137.05	38	3.97	Yes	137.05	38	3.97	Yes	----	----	No
METAL	Dissolved	Nickel	4928	5390		UG/L	23.73	411	8.34	Yes	Yes	20	70.4	70.4	203	4.12	Yes	140	115	2.33	Yes	Yes	----	Yes
METAL	Dissolved	Copper	4706	1210		UG/L	15.32	132	2.80	Yes	Yes	3	12.1	12.1	196	4.16	Yes	1300	0	0.00	No	No	----	No
METAL	Dissolved	Arsenic	4686	88		UG/L	----	----	----	----	Yes	5	0.018	5	199	4.25	Yes	50	6	0.13	Yes	No	----	No
VOC	Total	cis-1,2-Dichloroethene	5964	9730	D	UG/L	----	----	----	----	Yes	5	70	70	255	4.28	Yes	70	255	4.28	Yes	Yes	----	Yes
RAD	Total	Uranium	394	527.75		PCI/L	114.49	21	5.33	Yes	Yes	137.05	10	137.05	17	4.31	Yes	137.05	17	4.31	Yes	No	----	No
METAL	Total	Beryllium	2074	263		UG/L	----	----	----	----	No	5	4	5	104	5.01	Yes	5	104	5.01	Yes	----	----	No
SVOC	Total	bis(2-Ethylhexyl)phthalate	628	230		UG/L	----	----	----	----	Yes	10	1.2	10	34	5.41	Yes	10	34	5.41	Yes	No	----	No
METAL	Dissolved	Antimony	4683	419		UG/L	43.2	75	1.60	Yes	Yes	10	6	10	270	5.77	Yes	10	270	5.77	Yes	No	----	No
WQP	Total	Cyanide	2693	2950	B	UG/L	----	----	----	----	Yes	5	5	5	162	6.02	Yes	200	3	0.11	Yes	No	----	No

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Table 2
UHSU Analyte of Interest (AOI) Screening

Analyte Group	Total or Dissolved	Analyte	Number of Samples	Maximum Detection	Maximum Result Qualifier	Reporting Unit	AOI Screen 1 Comparison With Background				AOI Screen 2	AOI Screen 4 Comparison With Lowest Surface Water Standard						AOI Screen 3 Comparison With MCL				AOI Screen 5	AOI Screen 6	Is Constituent an AOI?
							99/99 UTL	Number of Detections Above 99/99 UTL	Frequency of Detection (%) Above the 99/99 UTL	Is the Maximum Concentration Above the 99/99 UTL ?	Appropriate Surface Water Standard Method? (that is, Total or Dissolved)	Site-Specific PQL	Lowest Surface Water Standard	Greater of Lowest Surface Water Standard or Site-Specific PQL	Number of Detections Above Surface Water Standard	Frequency of Detection (%) Above Surface Water Standard	Is the Maximum Concentration Above Lowest Surface Water Standard?	MCL	Number of Detections Above the MCL	Frequency of Detections (%) Above the MCL	Is the Maximum Concentration Above the MCL?	Are There Contiguous Plumes?	Eliminated By Process Knowledge?	
RAD	Total	Plutonium-239/240	4054	354.6	X	PCI/L	0.06	351	8.66	Yes	Yes	0.03	0.15	0.15	247	6.09	Yes	0.151	247	6.09	Yes	No	Yes[a]	No
METAL	Dissolved	Aluminum	4586	182000	*	UG/L	262.91	133	2.90	Yes	Yes	17	87	87	291	6.35	Yes	36500	1	0.02	Yes	No	—	No
RAD	Dissolved	Radium-228	525	25.57		PCI/L	5.94	31	5.90	Yes	No	1	5	5	34	6.48	Yes	5	34	6.48	Yes	—	—	No
VOC	Total	1,1-Dichloroethene	7998	18000		UG/L	—	—	—	—	Yes	1	7	7	572	7.15	Yes	7	572	7.15	Yes	Yes	—	Yes
RAD	Total	Radium-226	319	150		PCI/L	1.29	142	44.51	Yes	No	1	5	5	24	7.52	Yes	5	24	7.52	Yes	—	—	No
WQP	Total	Fluoride	3883	12550		UG/L	1710.92	400	10.30	Yes	Yes	500	2000	2000	302	7.78	Yes	4000	67	1.73	Yes	Yes	—	Yes
RAD	Dissolved	Ra226 + Ra228	497	30.349		PCI/L	6.293	35	7.04	Yes	No	1	5	5	40	8.05	Yes	5	40	8.05	Yes	—	—	No
RAD	Total	Tritium	4544	22648.61		PCI/L	13539.22	1	0.02	Yes	Yes	400	500	500	370	8.14	Yes	20000	1	0.02	Yes	No	—	No
METAL	Total	Antimony	2029	2060	E	UG/L	49.14	47	2.32	Yes	No	10	6	10	187	9.22	Yes	10	187	9.22	Yes	—	—	No
METAL	Dissolved	Iron	4655	434000	N*	UG/L	320.57	488	10.48	Yes	Yes	100	300	300	499	10.72	Yes	—	—	—	—	No	—	No
METAL	Total	Nickel	2109	6460		UG/L	32.68	456	21.62	Yes	No	20	70.4	70.4	239	11.33	Yes	140	128	6.07	Yes	—	—	No
METAL	Total	Zinc	2136	686000		UG/L	153.21	267	12.50	Yes	No	20	158.7	158.7	261	12.22	Yes	11000	6	0.28	Yes	—	—	No
METAL	Total	Selenium	2060	2200		UG/L	47.99	160	7.77	Yes	No	10	4.6	10	273	13.25	Yes	50	159	7.72	Yes	—	—	No
METAL	Total	Arsenic	2048	430		UG/L	5.93	237	11.57	Yes	No	5	0.018	5	279	13.62	Yes	50	20	0.98	Yes	—	—	No
METAL	Total	Chromium	2098	10200		UG/L	22.58	552	26.31	Yes	Yes	2	50	50	294	14.01	Yes	100	143	6.82	Yes	Yes	—	Yes
WQP	Total	Nitrate/Nitrite (as N)	5878	17600000		UG/L	5260.65	1674	28.48	Yes	Yes	50	10000	10000	869	14.78	Yes	10000	869	14.78	Yes	Yes	—	Yes
RAD	Dissolved	Uranium-238	4702	436		PCI/L	51.6	117	2.49	Yes	No	1	10	10	770	16.38	Yes	1	2967	63.10	Yes	—	—	No
VOC	Total	Chloroform	7981	64000	E	UG/L	—	—	—	—	Yes	1	3.4	3.4	1398	17.52	Yes	80	364	4.56	Yes	Yes	—	Yes
METAL	Dissolved	Selenium	4890	3600		UG/L	50.02	450	9.20	Yes	Yes	10	4.6	10	864	17.67	Yes	50	450	9.20	Yes	Yes	Yes[c]	No
RAD	Dissolved	Uranium-233,-234	4689	718		PCI/L	74.22	104	2.22	Yes	No	1	10	10	997	21.26	Yes	1.06	3344	71.32	Yes	—	—	No
RAD	Total	Uranium-238	1260	24790		PCI/L	114.17	15	1.19	Yes	No	1	10	10	287	22.78	Yes	1	952	75.56	Yes	—	—	No
METAL	Total	Lead	2122	3660		UG/L	11.75	439	20.69	Yes	No	10	3.7	10	488	23.00	Yes	15	366	17.25	Yes	—	—	No
RAD	Dissolved	Gross Beta	3534	525.42	C	PCI/L	37.25	118	3.34	Yes	No	4	8	8	814	23.03	Yes	20000	0	0.00	No	—	—	No
VOC	Total	Carbon Tetrachloride	8029	100000	D	UG/L	—	—	—	—	Yes	1	0.23	1	1868	23.27	Yes	5	1592	19.83	Yes	Yes	—	Yes
WQP	Total	Ammonia (as N)	1172	722000		UG/L	—	—	—	—	Yes	100	60	100	292	24.91	Yes	35400	5	0.43	Yes	Yes	—	Yes
RAD	Total	Uranium-233,-234	1069	3400	B	PCI/L	144.83	13	1.22	Yes	No	1	10	10	275	25.72	Yes	1.06	871	81.48	Yes	—	—	No
METAL	Total	Copper	2155	7140		UG/L	39.12	274	12.71	Yes	No	3	12.1	12.1	570	26.45	Yes	1300	9	0.42	Yes	—	—	No
METAL	Dissolved	Manganese	4674	191000	*E	UG/L	184.57	760	16.26	Yes	Yes	15	50	50	1247	26.68	Yes	1720	183	3.92	Yes	Yes	Yes[a]	No
RAD	Dissolved	Gross Alpha	3416	913.27	C	PCI/L	93.86	66	1.93	Yes	No	2	7	7	1025	30.01	Yes	15	575	16.83	Yes	—	—	No
VOC	Total	Trichloroethene	8047	220000	E	UG/L	—	—	—	—	Yes	1	2.5	2.5	2432	30.22	Yes	5	2146	26.67	Yes	Yes	—	Yes
VOC	Total	Tetrachloroethene	8052	84000		UG/L	—	—	—	—	Yes	1	0.69	1	2627	32.63	Yes	5	1949	24.21	Yes	Yes	—	Yes
RAD	Total	Gross Alpha (U-corrected)	486	1877.07		PCI/L	-20.63	473	97.33	Yes	No	2	7	7	260	53.50	Yes	15	174	35.80	Yes	—	—	No
VOC	Total	1,4-Dioxane	5	1800		UG/L	—	—	—	—	Yes	100	6.1	100	3	60.00	Yes	—	—	—	—	No	—	No
WQP	Total	Sulfide (as H_2S)	230	73000		UG/L	—	—	—	—	Yes	2	2	2	140	60.87	Yes	—	—	—	—	No	—	No
RAD	Total	Radium-228	50	150	B	PCI/L	—	—	—	—	No	1	5	5	32	64.00	Yes	5	32	64.00	Yes	—	—	No
METAL	Total	Manganese	2133	37100		UG/L	331.64	641	30.05	Yes	No	15	50	50	1393	65.31	Yes	1720	186	8.72	Yes	—	—	No
RAD	Total	Uranium-234	149	292.45		PCI/L	144.83	3	2.01	Yes	No	1	10	10	98	65.77	Yes	1.06	132	88.59	Yes	—	—	No
RAD	Total	Gross Beta	528	21290		PCI/L	221.31	32	6.06	Yes	Yes	4	8	8	390	73.86	Yes	20000	1	0.19	Yes	No	—	No
METAL	Total	Iron	2136	2020000		UG/L	14654.53	504	23.60	Yes	No	100	300	300	1614	75.56	Yes	—	—	—	—	—	—	No

Table 2
UHSU Analyte of Interest (AOI) Screening

Analyte Group	Total or Dissolved	Analyte	Number of Samples	Maximum Detection	Maximum Result Qualifier	Reporting Unit	AOI Screen 1 Comparison With Background				AOI Screen 2	AOI Screen 4 Comparison With Lowest Surface Water Standard						AOI Screen 3 Comparison With MCL				AOI Screen 5	AOI Screen 6	Is Constituent an AOI?
							99/99 UTL	Number of Detections Above 99/99 UTL	Frequency of Detection (%) Above the 99/99 UTL	Is the Maximum Concentration Above the 99/99 UTL ?	Appropriate Surface Water Standard Method? (that is, Total or Dissolved)	Site-Specific PQL	Lowest Surface Water Standard	Greater of Lowest Surface Water Standard or Site-Specific PQL	Number of Detections Above Surface Water Standard	Frequency of Detection (%) Above Surface Water Standard	Is the Maximum Concentration Above Lowest Surface Water Standard?	MCL	Number of Detections Above the MCL	Frequency of Detections (%) Above the MCL	Is the Maximum Concentration Above the MCL?	Are There Contiguous Plumes?	Eliminated By Process Knowledge?	
METAL	Total	Aluminum	2126	1460000		UG/L	12642.33	447	21.03	Yes	No	17	87	87	1624	76.39	Yes	36500	167	7.86	Yes	—	-----	No
RAD	Total	Gross Alpha	527	14940		PCI/L	390.58	16	3.04	Yes	Yes	2	7	7	403	76.47	Yes	15	280	53.13	Yes	No	-----	No
RAD	Total	Ra226 + Ra228	43	157.4		PCI/L	6.293	38	88.37	Yes	Yes	1	5	5	41	95.35	Yes	5	41	95.35	Yes	Yes	Yes[e]	No

-----	Not applicable
	For analytes without a surface water standard or whose surface water standard is greater than the MCL, the frequency of detection of the analyte concentration above the MCL is greater than 0 percent.
	The frequency of detection of the analyte concentration above the surface water standard is greater than 0 percent and less than 1 percent.
	The frequency of detection of the analyte concentration above the surface water standard is greater than or equal to 1 percent and less than 5 percent.
	The frequency of detection of the analyte concentration above the surface water standard is greater than 5 percent.

Footnotes:

[a] Americium-241 was eliminated as an AOI based on knowledge that Am-241 is not present as a dissolved constituent in groundwater at the site. Am-241 has historically been detected as a groundwater contaminant at RFETS as a result of contaminated surface soil introduced down boreholes during well construction, causing misleading sample results with respect to groundwater quality. To evaluate this condition, specially constructed "aseptic" wells were installed to minimize the amount of surface material introduced down the boreholes. The aseptic wells demonstrated low (femtocurie/liter) concentrations of americium in the groundwater, despite being paired with traditional wells with historic elevated concentrations of Am-241. Further discussion is presented in Appendix C of the Groundwater IM/IRA (DOE 2005).

[b] Similar to Am-241, plutonium-239/240 was also eliminated as an AOI based on knowledge that Pu-239/240 is not present as a dissolved constituent in groundwater at the site. Pu-239/240 has historically been detected as a groundwater contaminant at RFETS as a result of contaminated surface soil introduced down boreholes, causing misleading results with respect to groundwater quality. Aseptic wells indicate negligible (femtocurie) concentrations of Pu-239/240. Further discussion is presented in Appendix C of the Groundwater IM/IRA (DOE 2005).

[c] Selenium was eliminated as an AOI based on process knowledge that it was not identified or discussed in building process information (CDH 1992). Selenium has not been found associated with UBC sites. Selenium compounds appear to have been used as laboratory standards or analytical testing materials because they were used in very small quantities (CDH 1991b). Based on the estimated quantity of these chemicals used, selenium was not carried forward as a material of concern for the ChemRisk process in Appendix D of the Groundwater IM/IRA (DOE 2005).

[d] Manganese was eliminated as an AOI based on process knowledge that it was not identified or discussed in building process information (CDH 1992; DOE 2004d). Manganese has not been found associated with UBC sites (DOE 2004d). Only small quantities were identified to be in inventory with the exception of manganous sulfate which had an inventory in 1974 of 2,560 kilograms and then later in 1988 of 0.06 kilogram (the specific use was not clear in the ChemRisk reports). Based on results of different exposure scenarios, manganese was not carried forward as a material of concern for the ChemRisk process in Appendix D of the Groundwater IM/IRA (DOE 2005).

[e] Radium-226 + Radium-228 was eliminated as an AOI because it appears that almost all of the samples analyzed for Ra-226 + Ra-228 have activites above the standards regardless of whether they are located in the IA or the BZ. Widespread occurrence of Ra-226 + Ra-228 in groundwater at the site suggests that it may be of natural origin.

Table 3
UHSU Analytes of Interest (AOI)

Analyte Group	Total or Dissolved	Analyte	Number of Samples	Maximum Detection	Maximum Result Qualifier	Reporting Unit	AOI Screen 1 Comparison With Background				AOI Screen 2	AOI Screen 4 Comparison With Lowest Surface Water Standard						AOI Screen 3 Comparison With MCL				AOI Screen 5	AOI Screen 6	Is Constituent an AOI?
							99/99 UTL	Number of Detections Above 99/99 UTL	Frequency of Detection (%) Above the 99/99 UTL	Is the Maximum Concentration Above the 99/99 UTL ?	Appropriate Surface Water Standard Method? (that is, Total or Dissolved)	Site-Specific PQL	Lowest Surface Water Standard	Greater of Lowest Surface Water Standard or Site-Specific PQL	Number of Detections Above Surface Water Standard	Frequency of Detection (%) Above Surface Water Standard	Is the Maximum Concentration Above Lowest Surface Water Standard?	MCL	Number of Detections Above the MCL	Frequency of Detections (%) Above the MCL	Is the Maximum Concentration Above the MCL?	Are There Contiguous Plumes?	Eliminated By Process Knowledge?	
VOC	Total	Chloromethane	7925	18000	E	UG/L	—	—	—	—	Yes	1	5.6	5.6	34	0.43	Yes	6.55	31	0.39	Yes	Yes	No	Yes
VOC	Total	Benzene	8000	950		UG/L	—	—	—	—	Yes	1	1.2	1.2	66	0.83	Yes	5	29	0.36	Yes	Yes	No	Yes
VOC	Total	1,2-Dichloroethane	7904	1100		UG/L	—	—	—	—	Yes	1	0.38	1	78	0.99	Yes	5	45	0.57	Yes	Yes	No	Yes
VOC	Total	Vinyl Chloride	7967	4190	D	UG/L	—	—	—	—	Yes	1	0.023	1	184	2.31	Yes	2	168	2.11	Yes	Yes	No	Yes
VOC	Total	Methylene Chloride	7938	43000	D	UG/L	—	—	—	—	Yes	1	4.6	4.6	198	2.49	Yes	5	188	2.37	Yes	Yes	No	Yes
VOC	Total	Total Trihalomethanes	7452	64000		UG/L	—	—	—	—	Yes	—	80	80	213	2.86	Yes	80	213	2.86	Yes	Yes	No	Yes
RAD	Total	Uranium Isotopes	1217	27952.9		PCi/L	114.49	61	5.01	Yes	Yes	137.05	10	137.05	47	3.86	Yes	137.05	47	3.86	Yes	Yes	No	Yes
METAL	Dissolved	Nickel	4928	5390		UG/L	23.73	411	8.34	Yes	Yes	20	70.4	70.4	203	4.12	Yes	140	115	2.33	Yes	Yes	No	Yes
VOC	Total	cis-1,2-Dichloroethene	5964	9730	D	UG/L	—	—	—	—	Yes	5	70	70	255	4.28	Yes	70	255	4.28	Yes	Yes	No	Yes
VOC	Total	1,1-Dichloroethene	7998	18000		UG/L	—	—	—	—	Yes	1	7	7	572	7.15	Yes	7	572	7.15	Yes	Yes	No	Yes
WQP	Total	Fluoride	3883	12550		UG/L	1710.92	400	10.30	Yes	Yes	500	2000	2000	302	7.78	Yes	4000	67	1.73	Yes	Yes	No	Yes
METAL	Total	Chromium	2098	10200		UG/L	22.58	552	26.31	Yes	Yes	2	50	50	294	14.01	Yes	100	143	6.82	Yes	Yes	No	Yes
WQP	Total	Nitrate/Nitrite (as N)	5878	17600000		UG/L	5260.65	1674	28.48	Yes	Yes	50	10000	10000	869	14.78	Yes	10000	869	14.78	Yes	Yes	No	Yes
VOC	Total	Chloroform	7981	64000	E	UG/L	—	—	—	—	Yes	1	3.4	3.4	1398	17.52	Yes	80	364	4.56	Yes	Yes	No	Yes
VOC	Total	Carbon Tetrachloride	8029	100000	D	UG/L	—	—	—	—	Yes	1	0.23	1	1868	23.27	Yes	5	1592	19.83	Yes	Yes	No	Yes
WQP	Total	Ammonia (as N)	1172	722000		UG/L	—	—	—	—	Yes	100	60	100	292	24.91	Yes	35400	5	0.43	Yes	Yes	No	Yes
VOC	Total	Trichloroethene	8047	220000	E	UG/L	—	—	—	—	Yes	1	2.5	2.5	2432	30.22	Yes	5	2146	26.67	Yes	Yes	No	Yes
VOC	Total	Tetrachloroethene	8052	84000		UG/L	—	—	—	—	Yes	1	0.69	1	2627	32.63	Yes	5	1949	24.21	Yes	Yes	No	Yes

—	Not applicable
	The frequency of detection of the analyte concentration above the surface water standard is greater than 0 percent and less than 1 percent.
	The frequency of detection of the analyte concentration above the surface water standard is greater than or equal to 1 percent and less than 5 percent.
	The frequency of detection of the analyte concentration above the surface water standard is greater than 5 percent.

Table 4
LHSU Analytes of Interest (AOI) Screening

Analyte Group	Total or Dissolved	Analyte	Number of Samples	Maximum Detection	Maximum Result Qualifier	Reporting Unit	AOI Screen 1 Comparison With Background				AOI Screen 2	AOI Screen 4 Comparison With Lowest Surface Water Standard						AOI Screen 3 Comparison With MCL				AOI Screen 5	AOI Screen 6	Is Constituent an AOI?
							99/99 UTL	Number of Detections Above 99/99 UTL	Frequency of Detection (%) Above the 99/99 UTL	Is the Maximum Concentration Above the 99/99 UTL ?	Appropriate Surface Water Standard Method? (that is, Total or Dissolved)	Site-Specific PQL	Lowest Surface Water Standard	Greater of Lowest Surface Water Standard or Site-Specific PQL	Number of Detections Above Surface Water Standard	Frequency of Detection (%) Above Surface Water Standard	Is the Maximum Concentration Above Lowest Surface Water Standard?	MCL	Number of Detections Above the MCL	Frequency of Detections (%) Above the MCL	Is the Maximum Concentration Above the MCL?	Are There Contiguous Plumes?	Eliminated By Process Knowledge?	
DIOXIN	Total	2378-TCDD	13	0.01	U	UG/L	—	—	—	—	Yes	0.00001	0.000000005	0.00001	0	0.00	No	0.00003	0	0.00	No	No	—	No
FUNGICIDE	Total	Pentachlorobenzene	6	10	U	UG/L	—	—	—	—	Yes	10	1.4	10	0	0.00	No	—	0	0.00	No	No	—	No
HERB	Total	2,4,5-TP (Silvex)	11	1.8	U	UG/L	—	—	—	—	Yes	0.5	10	10	0	0.00	No	50	0	0.00	No	No	—	No
HERB	Total	2,4-D	11	12	U	UG/L	—	—	—	—	Yes	2.5	70	70	0	0.00	No	70	0	0.00	No	No	—	No
HERB	Total	Acrolein	6	500	U	UG/L	—	—	—	—	Yes	10	3.5	10	0	0.00	No	—	0	0.00	No	No	—	No
HERB	Total	Dinoseb	11	20	U	UG/L	—	—	—	—	Yes	1	7	7	0	0.00	No	7	0	0.00	No	No	—	No
METAL	Dissolved	Barium	439	516		UG/L	150.44	59	13.44	Yes	Yes	100	1000	1000	0	0.00	No	2000	0	0.00	No	No	—	No
METAL	Dissolved	Beryllium	427	0.92	J	UG/L	—	—	—	—	Yes	5	4	5	0	0.00	No	5	0	0.00	No	No	—	No
METAL	Dissolved	Cobalt	430	15.3		UG/L	—	—	—	—	No	50	—	—	0	0.00	No	2190	0	0.00	No	—	—	No
METAL	Total	Cobalt	210	1620		UG/L	—	—	—	—	Yes	50	—	—	0	0.00	No	2190	0	0.00	No	No	—	No
METAL	Dissolved	Lithium	434	221		UG/L	123.21	45	10.37	Yes	No	100	—	—	0	0.00	No	730	0	0.00	No	—	—	No
METAL	Total	Lithium	211	213		UG/L	137.26	16	7.58	Yes	Yes	100	—	—	0	0.00	No	730	0	0.00	No	No	—	No
METAL	Total	Mercury	211	0.74		UG/L	0.28	3	1.42	Yes	No	1	0.01	1	0	0.00	No	2	0	0.00	No	—	—	No
METAL	Dissolved	Molybdenum	425	435		UG/L	99	6	1.41	Yes	No	30	—	—	0	0.00	No	183	5	1.18	Yes	—	—	No
METAL	Total	Molybdenum	212	1600		UG/L	129.48	4	1.89	Yes	Yes	30	—	—	0	0.00	No	183	4	1.89	Yes	No	—	No
METAL	Dissolved	Strontium	424	3580		UG/L	1277.9	61	14.39	Yes	No	200	—	—	0	0.00	No	21900	0	0.00	No	—	—	No
METAL	Total	Strontium	210	3340		UG/L	1430.5	23	10.95	Yes	Yes	200	—	—	0	0.00	No	21900	0	0.00	No	No	—	No
METAL	Total	Thallium	211	6	BW	UG/L	6.36	0	0.00	No	No	12	0.5	12	0	0.00	No	12	0	0.00	No	—	—	No
METAL	Total	Tin	211	94.7	B	UG/L	130.28	0	0.00	No	No	200	—	—	0	0.00	No	21900	0	0.00	No	—	—	No
METAL	Dissolved	Tin	428	116	B	UG/L	100.01	2	0.47	Yes	Yes	200	—	—	0	0.00	No	21900	0	0.00	No	No	—	No
METAL	Dissolved	Vanadium	424	51.9		UG/L	29.81	1	0.24	Yes	No	40	—	—	0	0.00	No	256	0	0.00	No	—	—	No
METAL	Total	Vanadium	212	1670		UG/L	47.75	12	5.66	Yes	Yes	40	—	—	0	0.00	No	256	1	0.47	Yes	No	—	No
METAL	Dissolved	Zinc	428	80.9		UG/L	41.99	4	0.93	Yes	Yes	20	158.7	158.7	0	0.00	No	11000	0	0.00	No	No	—	No
ORG	Total	bis(1-Chloroisopropyl)ether	47	11	U	UG/L	—	—	—	—	Yes	10	280	280	0	0.00	No	10	0	0.00	No	No	—	No
ORG	Total	bis(2-Chloroethyl) ether	47	11	U	UG/L	—	—	—	—	Yes	10	0.03	10	0	0.00	No	10	0	0.00	No	No	—	No
PCB	Total	PCB-1016	22	1	U	UG/L	—	—	—	—	Yes	0.05	0.000064	0.05	0	0.00	No	0.5	0	0.00	No	No	—	No
PCB	Total	PCB-1221	22	2	U	UG/L	—	—	—	—	Yes	0.05	0.000064	0.05	0	0.00	No	0.5	0	0.00	No	No	—	No
PCB	Total	PCB-1232	22	1	U	UG/L	—	—	—	—	Yes	0.05	0.000064	0.05	0	0.00	No	0.5	0	0.00	No	No	—	No
PCB	Total	PCB-1242	24	1	U	UG/L	—	—	—	—	Yes	0.05	0.000064	0.05	0	0.00	No	0.5	0	0.00	No	No	—	No
PCB	Total	PCB-1248	24	1	U	UG/L	—	—	—	—	Yes	0.05	0.000064	0.05	0	0.00	No	0.5	0	0.00	No	No	—	No
PCB	Total	PCB-1254	22	1	U	UG/L	—	—	—	—	Yes	0.05	0.000064	0.05	0	0.00	No	0.5	0	0.00	No	No	—	No
PCB	Total	PCB-1260	24	1	U	UG/L	—	—	—	—	Yes	0.05	0.000064	0.05	0	0.00	No	0.5	0	0.00	No	No	—	No
PEST	Total	4,4'-DDD	24	0.11	U	UG/L	—	—	—	—	Yes	0.11	0.00031	0.11	0	0.00	No	0.355	0	0.00	No	No	—	No
PEST	Total	4,4'-DDE	24	0.1	U	UG/L	—	—	—	—	Yes	0.04	0.00022	0.04	0	0.00	No	0.25	0	0.00	No	No	—	No
PEST	Total	4,4'-DDT	24	0.12	U	UG/L	—	—	—	—	Yes	0.12	0.00022	0.12	0	0.00	No	0.25	0	0.00	No	No	—	No
PEST	Total	Aldrin	24	0.051	U	UG/L	—	—	—	—	Yes	0.04	0.000049	0.04	0	0.00	No	0.04	0	0.00	No	No	—	No
PEST	Total	alpha-BHC	24	0.051	U	UG/L	—	—	—	—	Yes	0.03	0.0026	0.03	0	0.00	No	0.2	0	0.00	No	No	—	No
PEST	Total	alpha-Chlordane	18	0.51	U	UG/L	—	—	—	—	Yes	1	0.0008	1	0	0.00	No	2	0	0.00	No	No	—	No
PEST	Total	beta-BHC	24	0.06	U	UG/L	—	—	—	—	Yes	0.06	0.0091	0.06	0	0.00	No	0.2	0	0.00	No	No	—	No
PEST	Total	beta-Chlordane	17	0.51	U	UG/L	—	—	—	—	Yes	1	0.0008	1	0	0.00	No	2	0	0.00	No	No	—	No

Table 4
LHSU Analytes of Interest (AOI) Screening

Analyte Group	Total or Dissolved	Analyte	Number of Samples	Maximum Detection	Maximum Result Qualifier	Reporting Unit	AOI Screen 1 Comparison With Background				AOI Screen 2	AOI Screen 4 Comparison With Lowest Surface Water Standard						AOI Screen 3 Comparison With MCL				AOI Screen 5	AOI Screen 6	Is Constituent an AOI?
							99/99 UTL	Number of Detections Above 99/99 UTL	Frequency of Detection (%) Above the 99/99 UTL	Is the Maximum Concentration Above the 99/99 UTL ?	Appropriate Surface Water Standard Method? (that is, Total or Dissolved)	Site-Specific PQL	Lowest Surface Water Standard	Greater of Lowest Surface Water Standard or Site-Specific PQL	Number of Detections Above Surface Water Standard	Frequency of Detection (%) Above Surface Water Standard	Is the Maximum Concentration Above Lowest Surface Water Standard?	MCL	Number of Detections Above the MCL	Frequency of Detections (%) Above the MCL	Is the Maximum Concentration Above the MCL?	Are There Contiguous Plumes?	Eliminated By Process Knowledge?	
PEST	Total	Chlordane (NOS)	6	0.14	U	UG/L	—	—	—	—	Yes	1	0.0008	1	0	0.00	No	2	0	0.00	No	No	—	No
PEST	Total	Dieldrin	24	0.1	U	UG/L	—	—	—	—	Yes	0.02	0.000052	0.02	0	0.00	No	0.02	0	0.00	No	No	—	No
PEST	Total	Endosulfan I	24	0.14	U	UG/L	—	—	—	—	Yes	0.1	0.056	0.1	0	0.00	No	219	0	0.00	No	No	—	No
PEST	Total	Endosulfan II	24	0.1	U	UG/L	—	—	—	—	Yes	0.1	0.056	0.1	0	0.00	No	219	0	0.00	No	No	—	No
PEST	Total	Endosulfan sulfate	24	0.66	U	UG/L	—	—	—	—	Yes	0.55	0.056	0.55	0	0.00	No	219	0	0.00	No	No	—	No
PEST	Total	Endrin	24	0.1	U	UG/L	—	—	—	—	Yes	0.06	0.036	0.06	0	0.00	No	2	0	0.00	No	No	—	No
PEST	Total	gamma-BHC (Lindane)	24	0.051	U	UG/L	—	—	—	—	Yes	0.04	0.08	0.08	0	0.00	No	0.2	0	0.00	No	No	—	No
PEST	Total	gamma-Chlordane	1	0.48	U	UG/L	—	—	—	—	Yes	1	0.0008	1	0	0.00	No	2	0	0.00	No	No	—	No
PEST	Total	Heptachlor	24	0.051	U	UG/L	—	—	—	—	Yes	0.03	0.000078	0.03	0	0.00	No	0.4	0	0.00	No	No	—	No
PEST	Total	Heptachlor epoxide	24	0.83	U	UG/L	—	—	—	—	Yes	0.08	0.000039	0.08	0	0.00	No	0.2	0	0.00	No	No	—	No
PEST	Total	Methoxychlor	24	1.8	U	UG/L	—	—	—	—	Yes	1.8	0.03	1.8	0	0.00	No	40	0	0.00	No	No	—	No
PEST	Total	Parathion	12	10	U	UG/L	—	—	—	—	Yes	10	0.013	10	0	0.00	No	—	0	0.00	No	No	—	No
PEST	Total	Toxaphene	24	5	U	UG/L	—	—	—	—	Yes	25	0.0002	25	0	0.00	No	25	0	0.00	No	No	—	No
RAD	Dissolved	Americium-241	62	0.00973904		PCI/L	—	—	—	—	No	0.03	0.15	0.15	0	0.00	No	0.145	0	0.00	No	—	—	No
RAD	Dissolved	Cesium-137	44	0.9492	J	PCI/L	3.92	0	0.00	No	No	10	—	—	0	0.00	No	10	0	0.00	No	—	—	No
RAD	Total	Cesium-137	54	3.7	B	PCI/L	0.96	1	1.85	Yes	Yes	10	—	—	0	0.00	No	10	0	0.00	No	No	—	No
RAD	Dissolved	Plutonium-239/240	66	0.01036		PCI/L	—	—	—	—	No	0.03	0.15	0.15	0	0.00	No	0.151	0	0.00	No	—	—	No
RAD	Dissolved	Radium-226	118	3.1	B	PCI/L	331.75	0	0.00	No	No	1	5	5	0	0.00	No	5	0	0.00	No	—	—	No
RAD	Dissolved	Strontium-89/90	253	1.557		PCI/L	4.21	0	0.00	No	No	1	8	8	0	0.00	No	1	2	0.79	Yes	—	—	No
RAD	Dissolved	Uranium Isotopes	433	56.3		PCI/L	16.19	3	0.69	Yes	No	137.05	10	137.05	0	0.00	No	137.05	0	0.00	No	—	—	No
RAD	Total	Uranium Isotopes	59	15.82		PCI/L	16.19	0	0.00	No	No	137.05	10	137.05	0	0.00	No	137.05	0	0.00	No	—	—	No
RAD	Dissolved	Uranium	3	46.59836	U	PCI/L	16.19	0	0.00	No	Yes	137.05	10	137.05	0	0.00	No	137.05	0	0.00	No	No	—	No
RAD	Total	Uranium-233,-234	59	7.35494		PCI/L	7.79	0	0.00	No	No	1	10	10	0	0.00	No	1.06	43	72.88	Yes	—	—	No
RAD	Dissolved	Uranium-235	434	1.3		PCI/L	0.23	47	10.83	Yes	No	1	10	10	0	0.00	No	1.01	1	0.23	Yes	—	—	No
RAD	Total	Uranium-235	59	0.8291874		PCI/L	0.27	8	13.56	Yes	No	1	10	10	0	0.00	No	1.01	0	0.00	No	—	—	No
RAD	Total	Uranium-238	59	8.3	B	PCI/L	48.13	0	0.00	No	No	1	10	10	0	0.00	No	1	37	62.71	Yes	—	—	No
SVOC	Total	1,2,4,5-Tetrachlorobenzene	6	10	U	UG/L	—	—	—	—	Yes	10	0.97	10	0	0.00	No	—	0	0.00	No	No	—	No
SVOC	Total	2,4,5-Trichlorophenol	46	56	U	UG/L	—	—	—	—	Yes	10	700	700	0	0.00	No	50	0	0.00	No	No	—	No
SVOC	Total	2,4,6-Trichlorophenol	46	11	U	UG/L	—	—	—	—	Yes	10	1.4	10	0	0.00	No	10	0	0.00	No	No	—	No
SVOC	Total	2,4-Dichlorophenol	46	11	U	UG/L	—	—	—	—	Yes	50	21	50	0	0.00	No	110	0	0.00	No	No	—	No
SVOC	Total	2,4-Dimethylphenol	46	11	U	UG/L	—	—	—	—	Yes	50	140	140	0	0.00	No	730	0	0.00	No	No	—	No
SVOC	Total	2,4-Dinitrophenol	44	56	U	UG/L	—	—	—	—	Yes	50	14	50	0	0.00	No	73	0	0.00	No	No	—	No
SVOC	Total	2,4-Dinitrotoluene	47	11	U	UG/L	—	—	—	—	Yes	10	0.11	10	0	0.00	No	10	0	0.00	No	No	—	No
SVOC	Total	2,6-Dinitrotoluene	47	11	U	UG/L	—	—	—	—	Yes	10	230	230	0	0.00	No	10	0	0.00	No	No	—	No
SVOC	Total	2-Chloronaphthalene	47	11	U	UG/L	—	—	—	—	Yes	10	560	560	0	0.00	No	2920	0	0.00	No	No	—	No
SVOC	Total	2-Chlorophenol	46	11	U	UG/L	—	—	—	—	Yes	10	35	35	0	0.00	No	183	0	0.00	No	No	—	No
SVOC	Total	2-Methylnaphthalene	47	11	U	UG/L	—	—	—	—	Yes	10	—	—	0	0.00	No	1460	0	0.00	No	No	—	No
SVOC	Total	2-Methylphenol	46	11	U	UG/L	—	—	—	—	Yes	10	1830	1830	0	0.00	No	1830	0	0.00	No	No	—	No
SVOC	Total	2-Nitroaniline	47	56	U	UG/L	—	—	—	—	Yes	50	—	—	0	0.00	No	50	0	0.00	No	No	—	No
SVOC	Total	3,3'-Dichlorobenzidine	41	22	U	UG/L	—	—	—	—	Yes	20	0.021	20	0	0.00	No	20	0	0.00	No	No	—	No

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Table 4
LHSU Analytes of Interest (AOI) Screening

Analyte Group	Total or Dissolved	Analyte	Number of Samples	Maximum Detection	Maximum Result Qualifier	Reporting Unit	AOI Screen 1 Comparison With Background				AOI Screen 2	AOI Screen 4 Comparison With Lowest Surface Water Standard						AOI Screen 3 Comparison With MCL				AOI Screen 5	AOI Screen 6	Is Constituent an AOI?
							99/99 UTL	Number of Detections Above 99/99 UTL	Frequency of Detection (%) Above the 99/99 UTL	Is the Maximum Concentration Above the 99/99 UTL ?	Appropriate Surface Water Standard Method? (that is, Total or Dissolved)	Site-Specific PQL	Lowest Surface Water Standard	Greater of Lowest Surface Water Standard or Site-Specific PQL	Number of Detections Above Surface Water Standard	Frequency of Detection (%) Above Surface Water Standard	Is the Maximum Concentration Above Lowest Surface Water Standard?	MCL	Number of Detections Above the MCL	Frequency of Detections (%) Above the MCL	Is the Maximum Concentration Above the MCL?	Are There Contiguous Plumes?	Eliminated By Process Knowledge?	
SVOC	Total	4,6-Dinitro-2-methylphenol	45	56	U	UG/L	-----	----	----	----	Yes	50	0.27	50	0	0.00	No	50	0	0.00	No	No	----	No
SVOC	Total	4-Chloro-3-methylphenol	46	20	U	UG/L	-----	----	----	----	Yes	20	30	30	0	0.00	No	----	0	0.00	No	No	----	No
SVOC	Total	4-Chloroaniline	44	20	U	UG/L	-----	----	----	----	Yes	20	----	----	0	0.00	No	146	0	0.00	No	No	----	No
SVOC	Total	4-Methylphenol	40	11	U	UG/L	----	-----	-----	----	Yes	10	----	-----	0	0.00	No	183	0	0.00	No	No	----	No
SVOC	Total	4-Nitrophenol	46	56	U	UG/L	-----	-----	-----	----	Yes	50	56	56	0	0.00	No	292	0	0.00	No	No	----	No
SVOC	Total	Acenaphthene	47	11	U	UG/L	----	----	----	-----	Yes	10	420	420	0	0.00	No	2190	0	0.00	No	No	----	No
SVOC	Total	Acenaphthylene	47	11	U	UG/L	----	-----	-----	----	Yes	10	0.0028	10	0	0.00	No	----	0	0.00	No	No	----	No
SVOC	Total	Anthracene	47	11	U	UG/L	-----	-----	-----	----	Yes	10	2100	2100	0	0.00	No	11000	0	0.00	No	No	----	No
SVOC	Total	Benzo(a)anthracene	47	11	U	UG/L	----	----	-----	-----	Yes	10	0.0038	10	0	0.00	No	10	0	0.00	No	No	----	No
SVOC	Total	Benzo(a)pyrene	47	11	U	UG/L	-----	-----	-----	----	Yes	10	0.0038	10	0	0.00	No	10	0	0.00	No	No	----	No
SVOC	Total	Benzo(b)fluoranthene	47	11	U	UG/L	-----	----	----	----	Yes	10	0.0038	10	0	0.00	No	10	0	0.00	No	No	----	No
SVOC	Total	Benzo(g,h,i)perylene	47	11	U	UG/L	-----	----	----	-----	Yes	10	0.0038	10	0	0.00	No	-----	0	0.00	No	No	----	No
SVOC	Total	Benzo(k)fluoranthene	47	11	U	UG/L	-----	----	----	-----	Yes	10	0.0038	10	0	0.00	No	10	0	0.00	No	No	----	No
SVOC	Total	Benzoic Acid	24	56	U	UG/L	-----	-----	-----	----	Yes	50	-----	----	0	0.00	No	146000	0	0.00	No	No	----	No
SVOC	Total	Benzyl Alcohol	30	20	U	UG/L	-----	----	----	-----	Yes	20	-----	----	0	0.00	No	11000	0	0.00	No	No	----	No
SVOC	Total	Butylbenzylphthalate	47	1	J	UG/L	----	-----	-----	----	Yes	10	1400	1400	0	0.00	No	7300	0	0.00	No	No	----	No
SVOC	Total	Chrysene	47	11	U	UG/L	-----	----	----	-----	Yes	10	0.0038	10	0	0.00	No	11.7	0	0.00	No	No	----	No
SVOC	Total	Dibenz(a,h)anthracene	47	11	U	UG/L	----	-----	-----	----	Yes	10	0.0038	10	0	0.00	No	10	0	0.00	No	No	----	No
SVOC	Total	Dibenzofuran	47	11	U	UG/L	----	-----	----	-----	Yes	10	-----	----	0	0.00	No	146	0	0.00	No	No	----	No
SVOC	Total	Diethylphthalate	47	9	J	UG/L	----	-----	-----	----	Yes	10	5600	5600	0	0.00	No	29200	0	0.00	No	No	----	No
SVOC	Total	Dimethylphthalate	47	11	U	UG/L	----	-----	-----	----	Yes	10	70000	70000	0	0.00	No	365000	0	0.00	No	No	----	No
SVOC	Total	Di-n-butylphthalate	47	5	J	UG/L	-----	----	----	----	Yes	10	700	700	0	0.00	No	3650	0	0.00	No	No	----	No
SVOC	Total	Di-n-octylphthalate	47	11	U	UG/L	-----	-----	-----	-----	Yes	10	-----	----	0	0.00	No	730	0	0.00	No	No	----	No
SVOC	Total	Endrin aldehyde	18	0.23	U	UG/L	----	-----	-----	----	Yes	0.23	0.29	0.29	0	0.00	No	-----	0	0.00	No	No	----	No
SVOC	Total	Fluoranthene	47	11	U	UG/L	-----	----	----	-----	Yes	10	130	130	0	0.00	No	1460	0	0.00	No	No	----	No
SVOC	Total	Fluorene	47	11	U	UG/L	----	----	-----	----	Yes	10	280	280	0	0.00	No	1460	0	0.00	No	No	----	No
SVOC	Total	Hexachlorobenzene	47	11	U	UG/L	----	-----	-----	-----	Yes	10	0.00028	10	0	0.00	No	10	0	0.00	No	No	----	No
SVOC	Total	Hexachlorocyclopentadiene	46	11	U	UG/L	----	-----	-----	----	Yes	10	5	10	0	0.00	No	50	0	0.00	No	No	----	No
SVOC	Total	Hexachloroethane	47	11	U	UG/L	----	----	-----	----	Yes	10	0.4	10	0	0.00	No	10	0	0.00	No	No	----	No
SVOC	Total	Indeno(1,2,3-cd)pyrene	47	11	U	UG/L	----	----	-----	----	Yes	10	0.0038	10	0	0.00	No	10	0	0.00	No	No	----	No
SVOC	Total	Isophorone	47	11	U	UG/L	----	----	-----	----	Yes	10	36	36	0	0.00	No	89.6	0	0.00	No	No	----	No
SVOC	Total	Nitrobenzene	47	11	U	UG/L	-----	-----	-----	----	Yes	10	3.5	10	0	0.00	No	18.3	0	0.00	No	No	----	No
SVOC	Total	N-Nitrosodiethylamine	6	20	U	UG/L	----	----	----	-----	Yes	10	0.00023	10	0	0.00	No	-----	0	0.00	No	No	----	No
SVOC	Total	N-Nitrosodimethylamine	6	10	U	UG/L	----	-----	-----	----	Yes	10	0.00069	10	0	0.00	No	-----	0	0.00	No	No	----	No
SVOC	Total	N-Nitrosodi-n-butylamine	4	10	U	UG/L	----	----	----	-----	Yes	10	0.0043	10	0	0.00	No	----	0	0.00	No	No	----	No
SVOC	Total	N-Nitroso-di-n-propylamine	47	11	U	UG/L	----	-----	-----	----	Yes	10	0.005	10	0	0.00	No	10	0	0.00	No	No	----	No
SVOC	Total	N-Nitrosodiphenylamine	47	11	U	UG/L	----	-----	-----	----	Yes	10	3.3	10	0	0.00	No	17.4	0	0.00	No	No	----	No
SVOC	Total	N-Nitrosopyrrolidine	6	40	U	UG/L	----	-----	----	----	Yes	10	0.016	10	0	0.00	No	-----	0	0.00	No	No	----	No
SVOC	Total	Pentachlorophenol	46	56	U	UG/L	----	----	-----	-----	Yes	50	0.27	50	0	0.00	No	50	0	0.00	No	No	----	No
SVOC	Total	Phenanthrene	47	11	U	UG/L	----	-----	-----	----	Yes	10	0.0028	10	0	0.00	No	-----	0	0.00	No	No	----	No

Table 4
LHSU Analytes of Interest (AOI) Screening

Analyte Group	Total or Dissolved	Analyte	Number of Samples	Maximum Detection	Maximum Result Qualifier	Reporting Unit	AOI Screen 1 Comparison With Background				AOI Screen 2	AOI Screen 4 Comparison With Lowest Surface Water Standard						AOI Screen 3 Comparison With MCL				AOI Screen 5	AOI Screen 6	Is Constituent an AOI?
							99/99 UTL	Number of Detections Above 99/99 UTL	Frequency of Detection (%) Above the 99/99 UTL	Is the Maximum Concentration Above the 99/99 UTL ?	Appropriate Surface Water Standard Method? (that is, Total or Dissolved)	Site-Specific PQL	Lowest Surface Water Standard	Greater of Lowest Surface Water Standard or Site-Specific PQL	Number of Detections Above Surface Water Standard	Frequency of Detection (%) Above Surface Water Standard	Is the Maximum Concentration Above Lowest Surface Water Standard?	MCL	Number of Detections Above the MCL	Frequency of Detections (%) Above the MCL	Is the Maximum Concentration Above the MCL?	Are There Contiguous Plumes?	Eliminated By Process Knowledge?	
SVOC	Total	Phenol	46	11	U	UG/L	-----	-----	-----	-----	Yes	50	2100	2100	0	0.00	No	21900	0	0.00	No	No	-----	No
SVOC	Total	Pyrene	47	11	U	UG/L	-----	-----	-----	-----	Yes	10	210	210	0	0.00	No	1100	0	0.00	No	No	-----	No
VOC	Total	1,1,1-Trichloroethane	610	0.5		UG/L	-----	-----	-----	-----	Yes	5	200	200	0	0.00	No	200	0	0.00	No	No	-----	No
VOC	Total	1,1,2,2-Tetrachloroethane	610	10	U	UG/L	-----	-----	-----	-----	Yes	1	0.17	1	0	0.00	No	1	0	0.00	No	No	-----	No
VOC	Total	1,1,2-Trichloroethane	612	0.3	J	UG/L	-----	-----	-----	-----	Yes	1	2.7	2.7	0	0.00	No	5	0	0.00	No	No	-----	No
VOC	Total	1,1-Dichloroethane	612	0.2		UG/L	-----	-----	-----	-----	Yes	1	3650	3650	0	0.00	No	3650	0	0.00	No	No	-----	No
VOC	Total	1,1-Dichloroethene	610	2	J	UG/L	-----	-----	-----	-----	Yes	1	7	7	0	0.00	No	7	0	0.00	No	No	-----	No
VOC	Total	1,2,4-Trichlorobenzene	325	0.534		UG/L	-----	-----	-----	-----	Yes	10	35	35	0	0.00	No	70	0	0.00	No	No	-----	No
VOC	Total	1,2-Dibromo-3-chloropropane	99	100	U	UG/L	-----	-----	-----	-----	Yes	1	0.2	1	0	0.00	No	1	0	0.00	No	No	-----	No
VOC	Total	1,2-Dibromoethane	291	20	U	UG/L	-----	-----	-----	-----	Yes	1	0.00041	1	0	0.00	No	1	0	0.00	No	No	-----	No
VOC	Total	1,2-Dichlorobenzene	325	11	U	UG/L	-----	-----	-----	-----	Yes	1	420	420	0	0.00	No	600	0	0.00	No	No	-----	No
VOC	Total	1,2-Dichloroethane	609	0.877		UG/L	-----	-----	-----	-----	Yes	1	0.38	1	0	0.00	No	5	0	0.00	No	No	-----	No
VOC	Total	1,2-Dichloroethene	322	2	J	UG/L	-----	-----	-----	-----	Yes	5	70	70	0	0.00	No	70	0	0.00	No	No	-----	No
VOC	Total	1,2-Dichloropropane	612	10	U	UG/L	-----	-----	-----	-----	Yes	1	0.5	1	0	0.00	No	5	0	0.00	No	No	-----	No
VOC	Total	1,3-Dichlorobenzene	325	11	U	UG/L	-----	-----	-----	-----	Yes	1	94	94	0	0.00	No	600	0	0.00	No	No	-----	No
VOC	Total	1,4-Dichlorobenzene	325	11	U	UG/L	-----	-----	-----	-----	Yes	1	63	63	0	0.00	No	75	0	0.00	No	No	-----	No
VOC	Total	2-Butanone	195	100	U	UG/L	-----	-----	-----	-----	Yes	10	21900	21900	0	0.00	No	21900	0	0.00	No	No	-----	No
VOC	Total	4-Methyl-2-pentanone	326	4	J	UG/L	-----	-----	-----	-----	Yes	10	2920	2920	0	0.00	No	2920	0	0.00	No	No	-----	No
VOC	Total	Acetone	301	36		UG/L	-----	-----	-----	-----	Yes	10	3650	3650	0	0.00	No	3650	0	0.00	No	No	-----	No
VOC	Total	Acrylonitrile	15	100	U	UG/L	-----	-----	-----	-----	Yes	5	0.051	5	0	0.00	No	-----	0	0.00	No	No	-----	No
VOC	Total	Bromodichloromethane	610	10	U	UG/L	-----	-----	-----	-----	Yes	1	0.55	1	0	0.00	No	80	0	0.00	No	No	-----	No
VOC	Total	Bromoform	601	0.9	J	UG/L	-----	-----	-----	-----	Yes	1	4.3	4.3	0	0.00	No	80	0	0.00	No	No	-----	No
VOC	Total	Bromomethane	598	10	U	UG/L	-----	-----	-----	-----	Yes	1	9.8	9.8	0	0.00	No	51.1	0	0.00	No	No	-----	No
VOC	Total	Carbon Disulfide	334	5		UG/L	-----	-----	-----	-----	Yes	1	3650	3650	0	0.00	No	3650	0	0.00	No	No	-----	No
VOC	Total	Chlorobenzene	612	0.5	J	UG/L	-----	-----	-----	-----	Yes	5	100	100	0	0.00	No	100	0	0.00	No	No	-----	No
VOC	Total	Chloroethane	610	10	U	UG/L	-----	-----	-----	-----	Yes	1	29.4	29.4	0	0.00	No	29.4	0	0.00	No	No	-----	No
VOC	Total	Chloromethane	604	0.29	J	UG/L	-----	-----	-----	-----	Yes	1	5.6	5.6	0	0.00	No	6.55	0	0.00	No	No	-----	No
VOC	Total	cis-1,2-Dichloroethene	287	1.2		UG/L	-----	-----	-----	-----	Yes	5	70	70	0	0.00	No	70	0	0.00	No	No	-----	No
VOC	Total	cis-1,3-Dichloropropene	598	10	U	UG/L	-----	-----	-----	-----	Yes	1	0.34	1	0	0.00	No	1	0	0.00	No	No	-----	No
VOC	Total	Dibromochloromethane	612	10	U	UG/L	-----	-----	-----	-----	Yes	1	54	54	0	0.00	No	80	0	0.00	No	No	-----	No
VOC	Total	Ethylbenzene	611	1	J	UG/L	-----	-----	-----	-----	Yes	10	530	530	0	0.00	No	700	0	0.00	No	No	-----	No
VOC	Total	Hexachlorobutadiene	325	0.582		UG/L	-----	-----	-----	-----	Yes	10	0.44	10	0	0.00	No	10	0	0.00	No	No	-----	No
VOC	Total	m,p-Xylene	169	0.6	U	UG/L	-----	-----	-----	-----	Yes	5	1400	1400	0	0.00	No	10000	0	0.00	No	No	-----	No
VOC	Total	m-Xylene	1	0.2	U	UG/L	-----	-----	-----	-----	Yes	5	1400	1400	0	0.00	No	10000	0	0.00	No	No	-----	No
VOC	Total	Naphthalene	322	2	J	UG/L	-----	-----	-----	-----	Yes	10	28	28	0	0.00	No	1460	0	0.00	No	No	-----	No
VOC	Total	o-Xylene	170	0.5	U	UG/L	-----	-----	-----	-----	Yes	5	1400	1400	0	0.00	No	10000	0	0.00	No	No	-----	No
VOC	Total	p-Xylene	1	0.2	U	UG/L	-----	-----	-----	-----	Yes	5	1400	1400	0	0.00	No	10000	0	0.00	No	No	-----	No
VOC	Total	Styrene	611	2	J	UG/L	-----	-----	-----	-----	Yes	5	100	100	0	0.00	No	100	0	0.00	No	No	-----	No
VOC	Total	Toluene	612	24		UG/L	-----	-----	-----	-----	Yes	5	1000	1000	0	0.00	No	1000	0	0.00	No	No	-----	No
VOC	Total	trans-1,2-Dichloroethene	296	5	U	UG/L	-----	-----	-----	-----	Yes	5	100	100	0	0.00	No	100	0	0.00	No	No	-----	No

Table 4
LHSU Analytes of Interest (AOI) Screening

Analyte Group	Total or Dissolved	Analyte	Number of Samples	Maximum Detection	Maximum Result Qualifier	Reporting Unit	AOI Screen 1 Comparison With Background				AOI Screen 2	AOI Screen 4 Comparison With Lowest Surface Water Standard						AOI Screen 3 Comparison With MCL				AOI Screen 5	AOI Screen 6	Is Constituent an AOI?
							99/99 UTL	Number of Detections Above 99/99 UTL	Frequency of Detection (%) Above the 99/99 UTL	Is the Maximum Concentration Above the 99/99 UTL ?	Appropriate Surface Water Standard Method? (that is, Total or Dissolved)	Site-Specific PQL	Lowest Surface Water Standard	Greater of Lowest Surface Water Standard or Site-Specific PQL	Number of Detections Above Surface Water Standard	Frequency of Detection (%) Above Surface Water Standard	Is the Maximum Concentration Above Lowest Surface Water Standard?	MCL	Number of Detections Above the MCL	Frequency of Detections (%) Above the MCL	Is the Maximum Concentration Above the MCL?	Are There Contiguous Plumes?	Eliminated By Process Knowledge?	
VOC	Total	trans-1,3-Dichloropropene	598	10	U	UG/L	-----	-----	-----	-----	Yes	1	0.34	1	0	0.00	No	1	0	0.00	No	No	—	No
VOC	Total	Total Trihalomethanes	587	18		UG/L	—	—	—	—	Yes	—	80	80	0	0.00	No	80	0	0.00	No	No	-----	No
VOC	Total	Vinyl Acetate	286	50	U	UG/L	-----	-----	-----	-----	Yes	5	-----	—	0	0.00	No	36500	0	0.00	No	No	—	No
VOC	Total	Xylene	441	23		UG/L	-----	-----	-----	-----	Yes	5	1400	1400	0	0.00	No	10000	0	0.00	No	No	—	No
WQP	Total	Fluoride	551	1900		UG/L	2033.58	0	0.00	No	Yes	500	2000	2000	0	0.00	No	4000	0	0.00	No	No	-----	No
WQP	Total	Nitrate	13	2060		UG/L	3737.87	0	0.00	No	Yes	500	10000	10000	0	0.00	No	10000	0	0.00	No	No	—	No
WQP	Total	Nitrite	7	299		UG/L	1407.78	0	0.00	No	Yes	500	500	500	0	0.00	No	1000	0	0.00	No	No	-----	No
VOC	Total	Vinyl Chloride	611	28		UG/L	-----	-----	-----	-----	Yes	1	0.023	1	1	0.16	Yes	2	1	0.16	Yes	No	—	No
WQP	Total	Nitrate/Nitrite (as N)	523	230000		UG/L	3737.87	32	6.12	Yes	Yes	50	10000	10000	1	0.19	Yes	10000	1	0.19	Yes	No	—	No
METAL	Dissolved	Chromium	439	157		UG/L	13.55	9	2.05	Yes	No	2	50	50	1	0.23	Yes	100	1	0.23	Yes	-----	-----	No
METAL	Dissolved	Mercury	429	1.2		UG/L	—	—	—	—	Yes	1	0.01	1	1	0.23	Yes	2	0	0.00	No	No	-----	No
METAL	Dissolved	Thallium	428	13.2		UG/L	7.62	4	0.93	Yes	Yes	12	0.5	12	1	0.23	Yes	12	1	0.23	Yes	No	—	No
RAD	Total	Americium-241	317	0.47		PCI/L	0.07	7	2.21	Yes	Yes	0.03	0.15	0.15	1	0.32	Yes	0.145	1	0.32	Yes	No	—	No
VOC	Total	Benzene	610	5		UG/L	—	—	—	—	Yes	1	1.2	1.2	2	0.33	Yes	5	0	0.00	No	No	—	No
METAL	Dissolved	Silver	429	8.6	B	UG/L	9.03	0	0.00	No	Yes	5	0.59	5	2	0.47	Yes	183	0	0.00	No	No	—	No
METAL	Dissolved	Lead	427	123		UG/L	17.83	1	0.23	Yes	Yes	10	3.7	10	2	0.47	Yes	15	1	0.23	Yes	No	—	No
VOC	Total	Chloroform	607	18		UG/L	—	—	—	—	Yes	1	3.4	3.4	4	0.66	Yes	80	0	0.00	No	No	-----	No
RAD	Dissolved	Uranium-238	434	29		PCI/L	5.58	3	0.69	Yes	No	1	10	10	3	0.69	Yes	1	134	30.88	Yes	-----	-----	No
RAD	Dissolved	Uranium-233,-234	433	26		PCI/L	10.63	3	0.69	Yes	No	1	10	10	3	0.69	Yes	1.06	291	67.21	Yes	—	—	No
METAL	Dissolved	Cadmium	430	8.9		UG/L	5.8	3	0.70	Yes	Yes	5	1.5	5	3	0.70	Yes	5	3	0.70	Yes	No	—	No
VOC	Total	Methylene Chloride	607	23		UG/L	—	—	—	—	Yes	1	4.6	4.6	5	0.82	Yes	5	5	0.82	Yes	No	—	No
METAL	Dissolved	Nickel	440	240		UG/L	24.86	10	2.27	Yes	Yes	20	70.4	70.4	4	0.91	Yes	140	2	0.45	Yes	No	—	No
METAL	Total	Barium	211	1810		UG/L	286.27	30	14.22	Yes	No	100	1000	1000	2	0.95	Yes	2000	0	0.00	No	-----	-----	No
RAD	Total	Tritium	508	2973		PCI/L	1577.1	1	0.20	Yes	Yes	400	500	500	5	0.98	Yes	20000	0	0.00	No	No	—	No
VOC	Total	Carbon Tetrachloride	609	91		UG/L	-----	-----	-----	-----	Yes	1	0.23	1	7	1.15	Yes	5	6	0.99	Yes	No	-----	No
METAL	Total	Beryllium	210	160		UG/L	—	—	—	—	No	5	4	5	3	1.43	Yes	5	3	1.43	Yes	—	—	No
METAL	Total	Selenium	207	13.4	S	UG/L	3.27	12	5.80	Yes	No	10	4.6	10	3	1.45	Yes	50	0	0.00	No	—	—	No
METAL	Dissolved	Copper	425	34.6		UG/L	15.82	3	0.71	Yes	Yes	3	12.1	12.1	8	1.88	Yes	1300	0	0.00	No	No	-----	No
VOC	Total	Tetrachloroethene	611	17		UG/L	-----	-----	-----	-----	Yes	1	0.69	1	12	1.96	Yes	5	4	0.65	Yes	No	—	No
RAD	Dissolved	Gross Alpha (U-corrected)	407	20.65074812		PCI/L	6.62	8	1.97	Yes	No	2	7	7	8	1.97	Yes	15	1	0.25	Yes	-----	-----	No
SVOC	Total	bis(2-Ethylhexyl)phthalate	47	24		UG/L	—	—	—	—	Yes	10	1.2	10	1	2.13	Yes	10	1	2.13	Yes	No	—	No
RAD	Total	Plutonium-239/240	320	10.32		PCI/L	0.02	28	8.75	Yes	Yes	0.03	0.15	0.15	7	2.19	Yes	0.151	7	2.19	Yes	No	-----	No
METAL	Total	Cadmium	211	1720		UG/L	—	—	—	—	No	5	1.5	5	5	2.37	Yes	5	5	2.37	Yes	—	—	No
RAD	Total	Strontium-89/90	42	32	B	PCI/L	3.34	2	4.76	Yes	Yes	1	8	8	1	2.38	Yes	1	2	4.76	Yes	No	—	No
METAL	Total	Silver	209	300		UG/L	-----	-----	-----	-----	No	5	0.59	5	5	2.39	Yes	183	1	0.48	Yes	-----	-----	No
WQP	Total	Cyanide	327	51		UG/L	-----	-----	-----	-----	Yes	5	5	5	8	2.45	Yes	200	0	0.00	No	No	—	No
METAL	Dissolved	Selenium	437	36.1		UG/L	4.78	29	6.64	Yes	Yes	10	4.6	10	12	2.75	Yes	50	0	0.00	No	No	—	No
RAD	Dissolved	Radium-228	27	7.2		PCI/L	-----	-----	-----	-----	No	1	5	5	1	3.70	Yes	5	1	3.70	Yes	-----	—	No
VOC	Total	Trichloroethene	611	78	E	UG/L	-----	-----	-----	-----	Yes	1	2.5	2.5	23	3.76	Yes	5	18	2.95	Yes	No	—	No
RAD	Dissolved	Ra-226 + Ra-228	26	7.53		PCI/L	—	—	—	—	No	1	5	5	1	3.85	Yes	5	1	3.85	Yes	—	—	No

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Table 4
LHSU Analytes of Interest (AOI) Screening

Analyte Group	Total or Dissolved	Analyte	Number of Samples	Maximum Detection	Maximum Result Qualifier	Reporting Unit	AOI Screen 1 Comparison With Background: 99/99 UTL	Number of Detections Above 99/99 UTL	Frequency of Detection (%) Above the 99/99 UTL	Is the Maximum Concentration Above the 99/99 UTL ?	AOI Screen 2: Appropriate Surface Water Standard Method? (that is, Total or Dissolved)	AOI Screen 4 Comparison With Lowest Surface Water Standard: Site-Specific PQL	Lowest Surface Water Standard	Greater of Lowest Surface Water Standard or Site-Specific PQL	Number of Detections Above Surface Water Standard	Frequency of Detection (%) Above Surface Water Standard	Is the Maximum Concentration Above Lowest Surface Water Standard?	AOI Screen 3 Comparison With MCL: MCL	Number of Detections Above the MCL	Frequency of Detections (%) Above the MCL	Is the Maximum Concentration Above the MCL?	AOI Screen 5: Are There Contiguous Plumes?	AOI Screen 6: Eliminated By Process Knowledge?	Is Constituent an AOI?
METAL	Dissolved	Aluminum	418	4510		UG/L	182.67	8	1.91	Yes	Yes	17	87	87	17	4.07	Yes	36500	0	0.00	No	No	—	No
METAL	Dissolved	Iron	423	38200		UG/L	141.06	32	7.57	Yes	Yes	100	300	300	19	4.49	Yes	—	0	0.00	No	No	—	No
RAD	Total	Radium-226	36	7.8	B	PCI/L	11.3	0	0.00	No	No	1	5	5	2	5.56	Yes	5	2	5.56	Yes	—	—	No
METAL	Total	Zinc	211	1800		UG/L	222.56	6	2.84	Yes	No	20	158.7	158.7	13	6.16	Yes	11000	0	0.00	No	—	—	No
METAL	Dissolved	Antimony	427	97		UG/L	43.37	10	2.34	Yes	Yes	10	6	10	27	6.32	Yes	10	27	6.32	Yes	No	—	No
METAL	Total	Antimony	204	1610		UG/L	50.28	6	2.94	Yes	No	10	6	10	14	6.86	Yes	10	14	6.86	Yes	—	—	No
DIOXIN	Total	Hexachlorodibenzo-p-Dioxin	13	0.0014		UG/L	—	—	—	—	Yes	—	0.0000056	0.0000056	1	7.69	Yes	—	0	0.00	No	No	—	No
METAL	Total	Nickel	212	1660		UG/L	32.89	49	23.11	Yes	No	20	70.4	70.4	17	8.02	Yes	140	4	1.89	Yes	—	—	No
RAD	Dissolved	Gross Alpha	438	24.4031038	C	PCI/L	22.81	1	0.23	Yes	No	2	7	7	43	9.82	Yes	15	5	1.14	Yes	—	—	No
METAL	Dissolved	Arsenic	426	39.8		UG/L	7.77	36	8.45	Yes	Yes	5	0.018	5	49	11.50	Yes	50	0	0.00	No	No	—	No
METAL	Total	Arsenic	208	36.4	N	UG/L	9.51	12	5.77	Yes	No	5	0.018	5	27	12.98	Yes	50	0	0.00	No	—	—	No
RAD	Dissolved	Gross Beta	445	108.733304		PCI/L	12.19	20	4.49	Yes	No	4	8	8	59	13.26	Yes	20000	0	0.00	No	—	—	No
METAL	Total	Chromium	211	1590		UG/L	20.54	75	35.55	Yes	Yes	2	50	50	38	18.01	Yes	100	16	7.58	Yes	Yes	Yes[a]	No
METAL	Dissolved	Manganese	424	759		UG/L	31.31	132	31.13	Yes	Yes	15	50	50	93	21.93	Yes	1720	0	0.00	No	No	—	No
METAL	Total	Lead	211	115		UG/L	18.06	20	9.48	Yes	No	10	3.7	10	54	25.59	Yes	15	23	10.90	Yes	—	—	No
METAL	Total	Copper	213	1750		UG/L	84.34	7	3.29	Yes	No	3	12.1	12.1	72	33.80	Yes	1300	1	0.47	Yes	—	—	No
WQP	Total	Ammonia (as N)	160	284000		UG/L	—	—	—	—	Yes	100	60	100	78	48.75	Yes	35400	1	0.63	Yes	Yes	Yes[b]	No
RAD	Total	Radium-228	6	96	B	PCI/L	—	—	—	—	No	1	5	5	3	50.00	Yes	5	3	50.00	Yes	—	—	No
WQP	Total	Sulfide (as S)	25	72300		UG/L	—	—	—	—	Yes	2	2	2	15	60.00	Yes	—	0	0.00	No	No	—	No
RAD	Total	Gross Alpha (U-corrected)	48	364.18		PCI/L	6.62	30	62.50	Yes	No	2	7	7	29	60.42	Yes	15	19	39.58	Yes	—	—	No
METAL	Total	Manganese	211	1830		UG/L	474.75	12	5.69	Yes	No	15	50	50	141	66.82	Yes	1720	1	0.47	Yes	—	—	No
RAD	Total	Gross Alpha	49	380		PCI/L	133.08	3	6.12	Yes	Yes	2	7	7	35	71.43	Yes	15	26	53.06	Yes	No	—	No
RAD	Total	Gross Beta	49	180		PCI/L	110.67	1	2.04	Yes	Yes	4	8	8	35	71.43	Yes	20000	0	0.00	No	No	—	No
RAD	Total	Ra-226 + Ra-228	6	103.8		PCI/L	—	—	—	—	Yes	1	5	5	5	83.33	Yes	5	5	83.33	Yes	No	—	No
METAL	Total	Iron	211	85000		UG/L	14432.11	22	10.43	Yes	No	100	300	300	180	85.31	Yes	—	0	0.00	No	—	—	No
METAL	Total	Aluminum	211	79800	N*	UG/L	10937.17	30	14.22	Yes	No	17	87	87	190	90.05	Yes	36500	5	2.37	Yes	—	—	No

—	Not applicable
	For analytes without a surface water standard or whose surface water standard is greater than the MCL, the frequency of detection of the analyte concentration above the MCL is greater than 0 percent.
	The frequency of detection of the analyte concentration above the surface water standard is greater than 0 percent and less than 1 percent.
	The frequency of detection of the analyte concentration above the surface water standard is greater than or equal to 1 percent and less than 5 percent.
	The frequency of detection of the analyte concentration above the surface water standard is greater than 5 percent.

[a] Total chromium was eliminated as an AOI based on knowledge that all of the wells, except 0986, with total chromium above the standard were stainless-steel wells.

[b] Ammonia (as N) was eliminated as an AOI based on knowledge that the highest concentrations occurred in background wells.

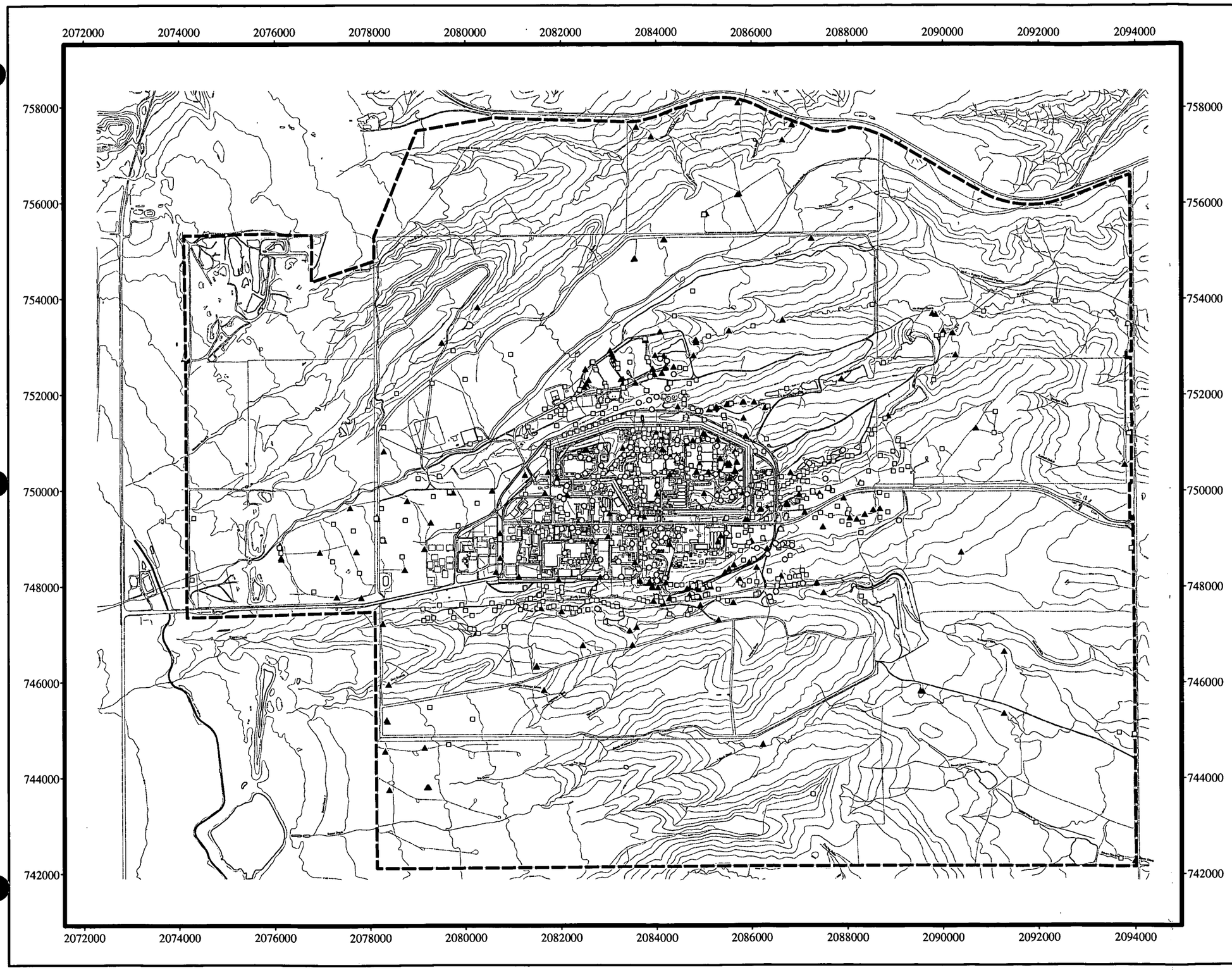

Figure 1
UHSU Monitoring Well Locations

Legend

- ○ Well installed since January 1, 2000
- □ Well installed between January 1, 1990 and December 31, 1999
- ▲ Well installed prior to January 1, 1990

Standard Map Features

- Existing or demolished building or structure
- Lake or pond
- Stream, ditch, or other drainage feature
- Paved road
- Dirt road
- Trail
- Fence
- Site boundary
- Topographic contour (20-foot)

DRAFT

N
W E
S

1000 0 1000 2000 3000

Scale in Feet

Scale = 1 : 24,000
1 inch represents 2,000 feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: Date: June 7, 2005

URS

Prepared for:

KAISER•HILL

NT_Svr W:\Projects\FY2005\05-0008\RIFS\LHSU & UHSU RIFS GW Well maps.mxd

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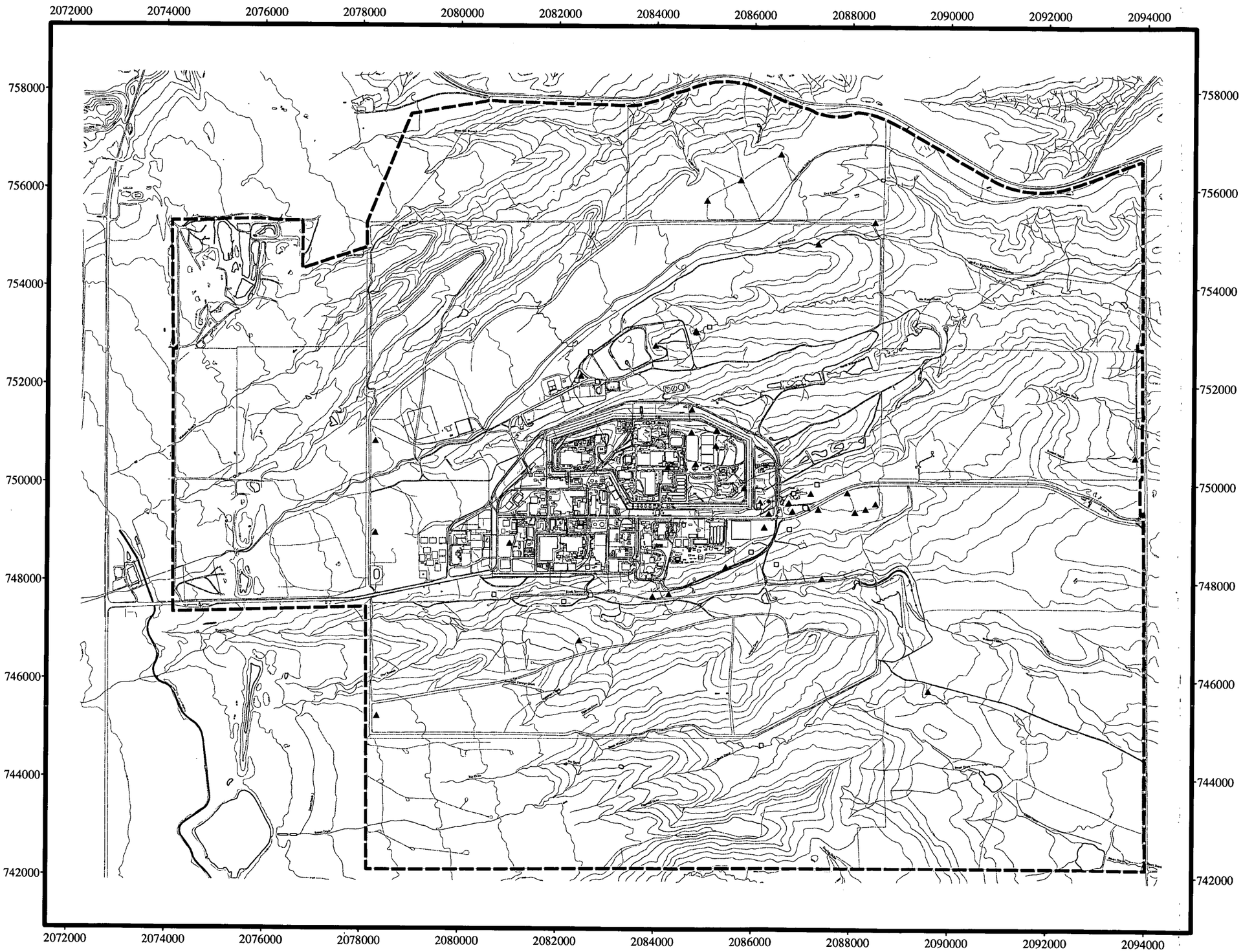

Figure 2
LHSU Monitoring Well Locations

Legend

- ○ Well installed since January 1, 2000
- □ Well installed between January 1, 1990 and December 31, 1999
- ▲ Well installed prior to January 1, 1990

Standard Map Features

- Existing or demolished building or structure
- Lake or pond
- Stream, ditch, or other drainage feature
- Paved road
- Dirt road
- Trail
- Fence
- Site boundary
- Topographic contour (20-foot)

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1000 0 1000 2000 3000

Scale in Feet

Scale = 1 : 24,000
1 inch represents 2,000 feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
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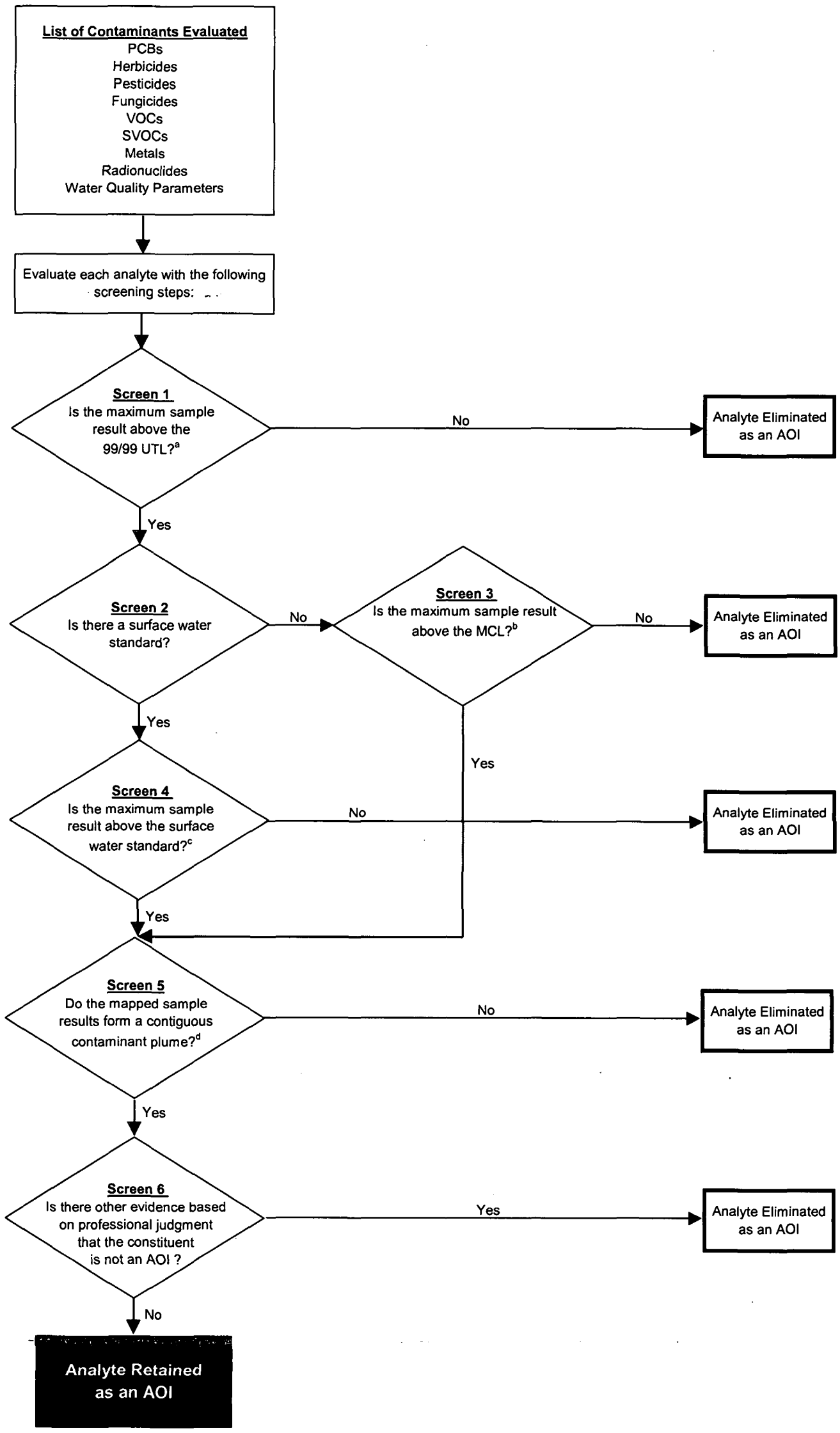
Figure 3
Groundwater AOI Identification Process



[a] Background level is the 99/99 UTL reported in the Background Geochemical Characterization Report (DOE 1993).

[b] For analytes without a surface water standard, Screen 3 is performed using the MCL. MCLs have been established by EPA for many chemical contaminants and represent the maximum permissible level of a contaminant in drinking water. MCLs are listed at 40 CFR 141. Where an MCL for a particular contaminant is lacking, the residential groundwater ingestion-based PRG will apply. If the PQL is higher than the surface water standard, MCL, or PRG, the PQL is used as the comparison value. For simplicity, MCLs, PRGs, and PQLs are hereinafter referred to as MCLs.

[c] Surface water standards are not available for some analytes. For these analytes Screen 3 is performed using MCLs.

[d] Data shown on the maps represent the most recent sample result available at each well. A contiguous plume is defined as three or more adjacent wells with concentrations or activities above either the surface water standard or MCL, whichever is applicable.

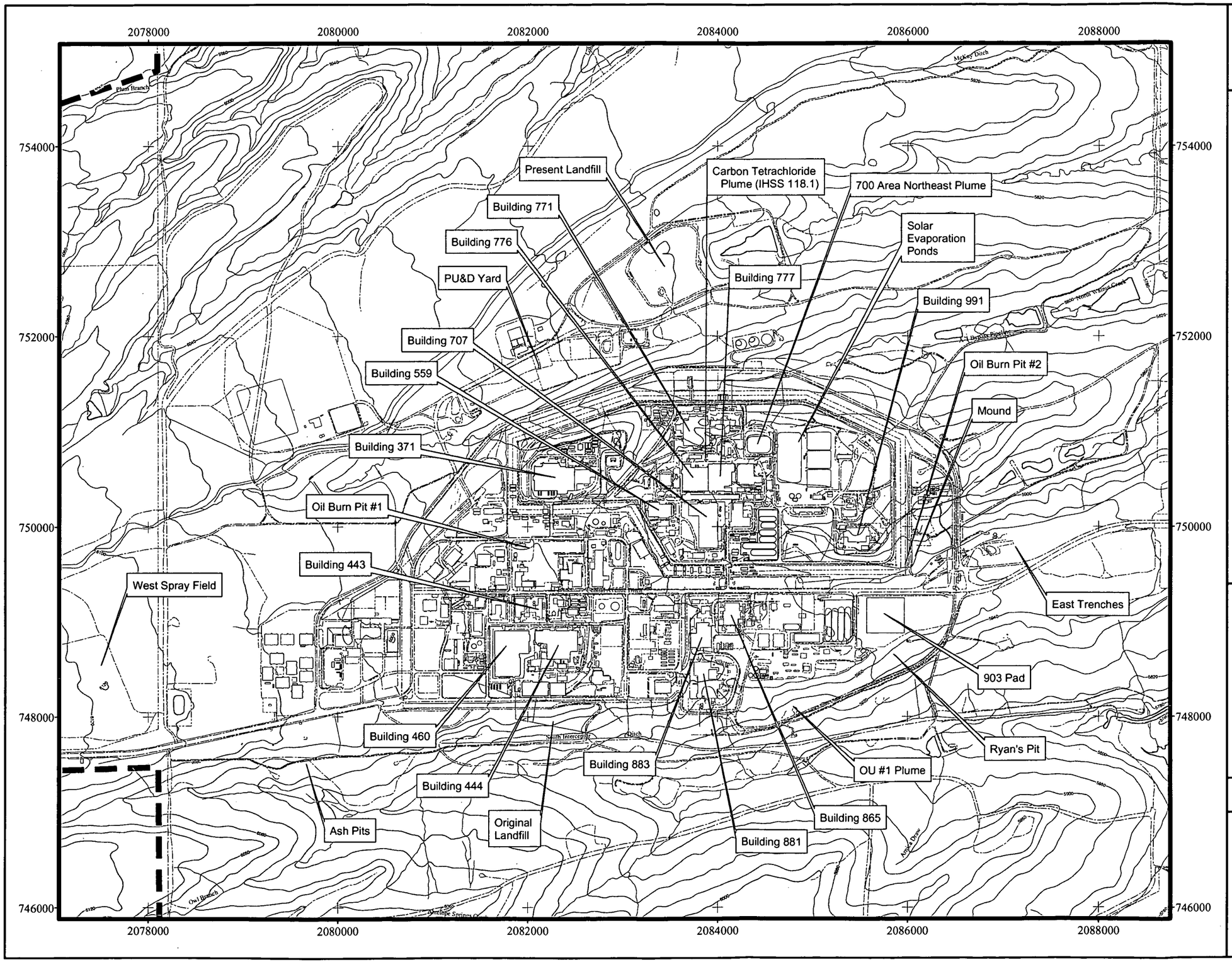


Figure 4

Location of Site Features

Standard Map Features

- Existing or demolished building or structure
- Lake or pond
- Stream, ditch, or other drainage feature
- Paved road
- Dirt road
- Trail
- Fence
- Site boundary
- Topographic contour (20-foot)

DRAFT

N
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1000 0 1000
Scale in Feet

Scale = 1 : 12,000
1 inch represents 1,000 feet
State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

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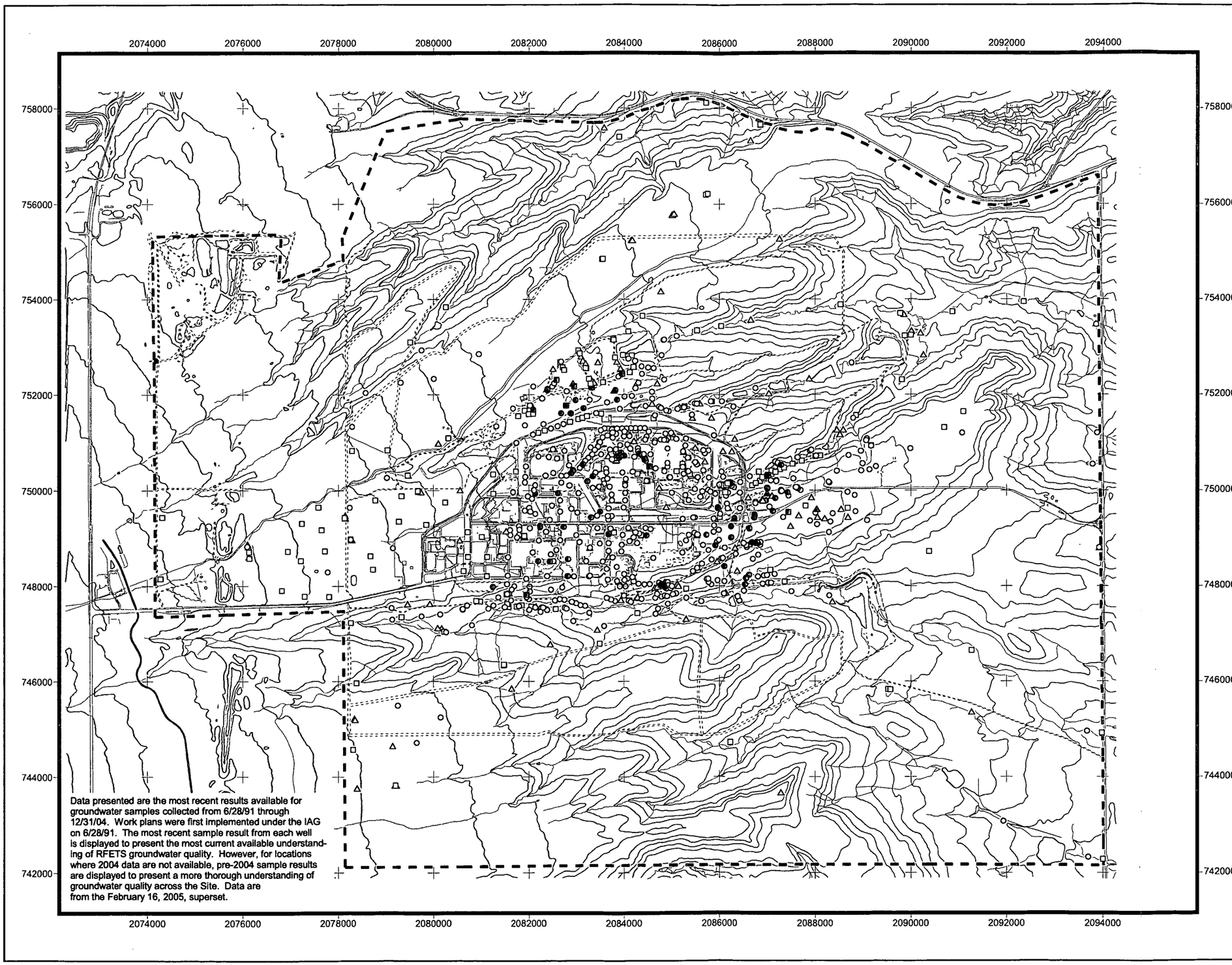

Data presented are the most recent results available for groundwater samples collected from 6/28/91 through 12/31/04. Work plans were first implemented under the IAG on 6/28/91. The most recent sample result from each well is displayed to present the most current available understanding of RFETS groundwater quality. However, for locations where 2004 data are not available, pre-2004 sample results are displayed to present a more thorough understanding of groundwater quality across the Site. Data are from the February 16, 2005, superset.

Figure 5

UHSU Groundwater Results for 1,1-Dichloroethene

Legend

- Sample collected since January 1, 2000
- Sample collected between January 1, 1995 and December 31, 1999
- Sample collected between June 28, 1991 and December 31, 1994
- > 100x MCL
- > MCL and <= 100x MCL
- > Surface Water Standard and <= MCL
- Detected and <= Surface Water Standard
- Not applicable
- Not detected

Standard Map Features

- Existing or demolished building or structure
- Stream
- Pond
- Paved road
- Unpaved road
- Site boundary
- Topographic contour (20-foot)

DRAFT

N W E S

1000 0 1000 2000 Feet

Scale = 1 : 24,000

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

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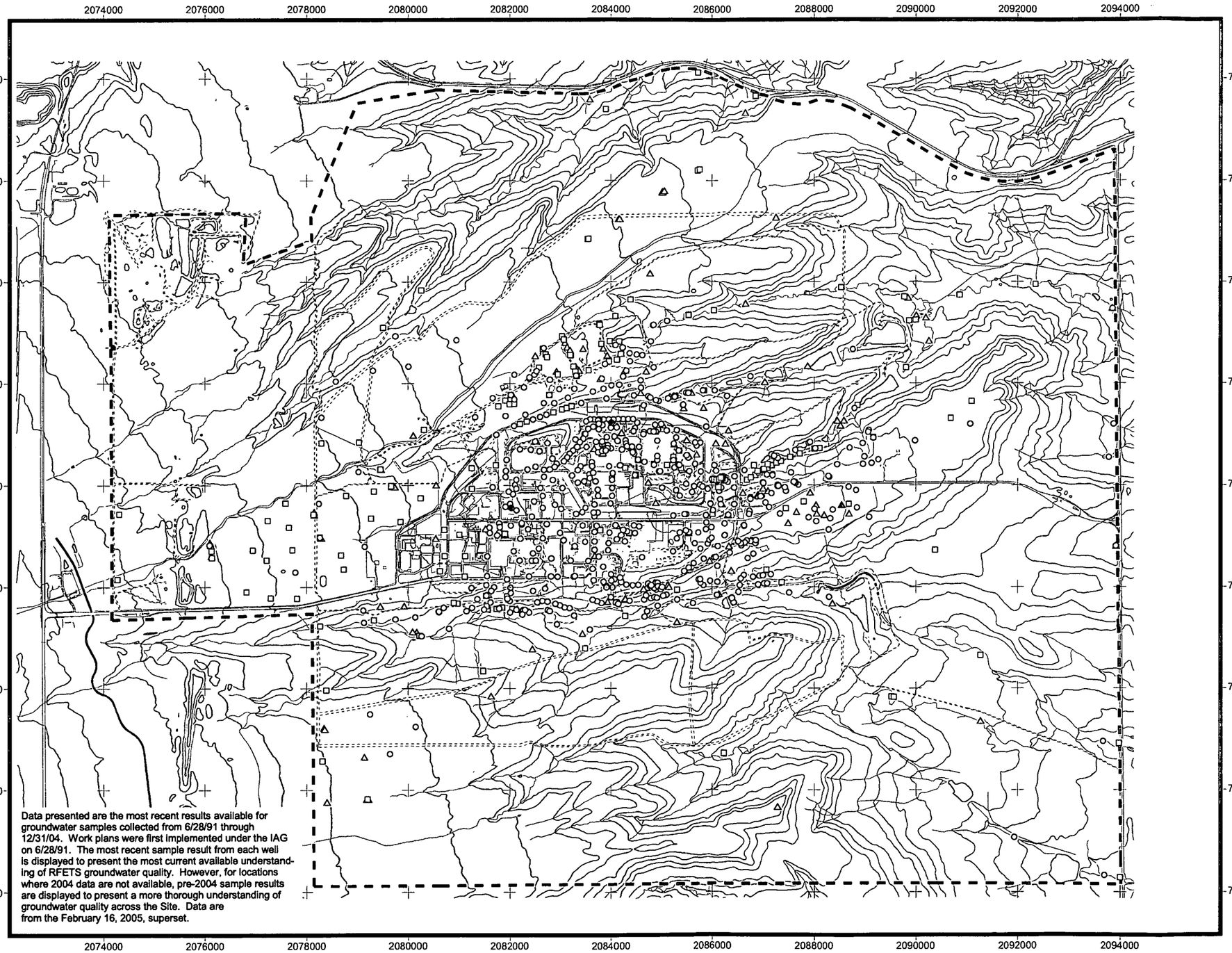

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Figure 6

UHSU Groundwater Results for 1,2-Dichloroethane

Legend

- Sample collected since January 1, 2000
- Sample collected between January 1, 1995 and December 31, 1999
- Sample collected between June 28, 1991 and December 31, 1994
- > 100x MCL
- > MCL and <= 100x MCL
- > Surface Water Standard and <= MCL
- Detected and <= Surface Water Standard
- Not applicable
- Not detected

Standard Map Features

- Existing or demolished building or structure
- Stream
- Pond
- Paved road
- Unpaved road
- Site boundary
- Topographic contour (20-foot)

DRAFT

N W E S

1000 0 1000 2000 Feet

Scale = 1 : 24,000

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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Rocky Flats Environmental Technology Site

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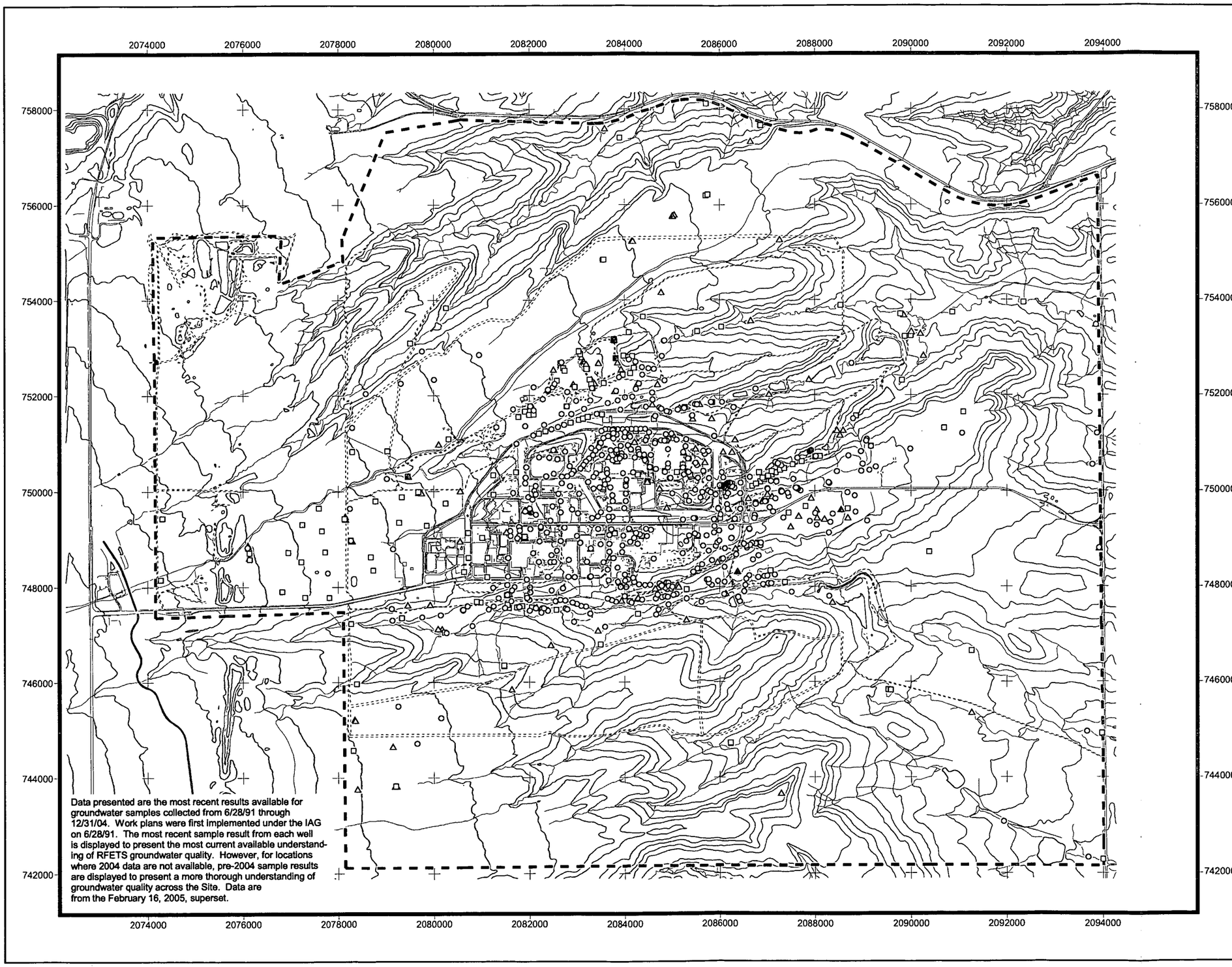

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Figure 7

UHSU Groundwater Results for Benzene

Legend

- Sample collected since January 1, 2000
- Sample collected between January 1, 1995 and December 31, 1999
- Sample collected between June 28, 1991 and December 31, 1994

- > 100x MCL
- > MCL and <= 100x MCL
- > Surface Water Standard and <= MCL
- Detected and <= Surface Water Standard
- Not applicable
- Not detected

Standard Map Features

- Existing or demolished building or structure
- Stream
- Pond
- Paved road
- Unpaved road
- Site boundary
- Topographic contour (20-foot)

DRAFT

N W E S

1000 0 1000 2000 Feet

Scale = 1 : 24,000

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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Rocky Flats Environmental Technology Site

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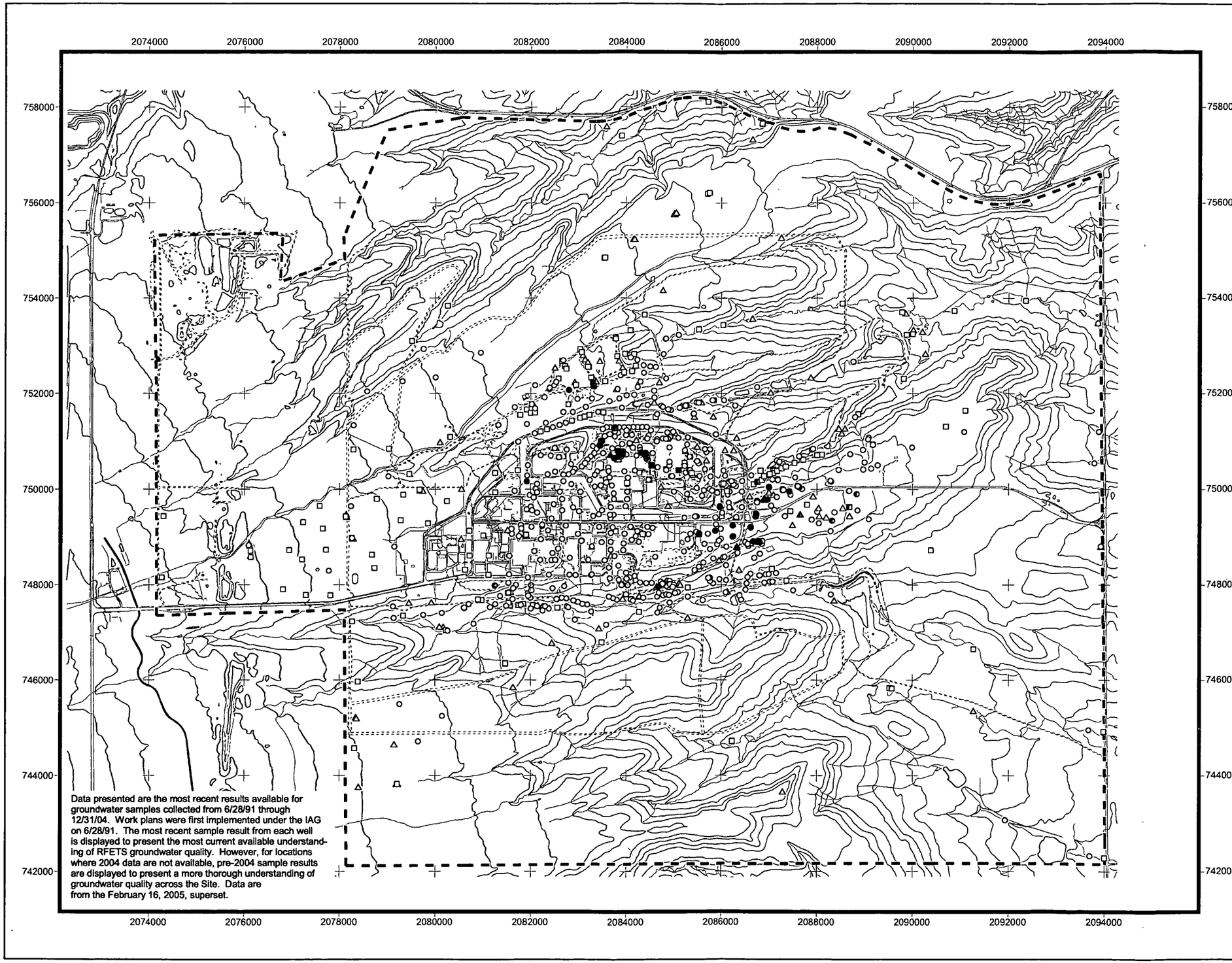

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Figure 8

UHSU Groundwater Results for Carbon Tetrachloride

Legend

- Sample collected since January 1, 2000
- Sample collected between January 1, 1995 and December 31, 1999
- Sample collected between June 28, 1991 and December 31, 1994
- > 100x MCL
- > MCL and <= 100x MCL
- > Surface Water Standard and <= MCL
- Detected and <= Surface Water Standard
- Not applicable
- Not detected

Standard Map Features

- Existing or demolished building or structure
- Stream
- Pond
- Paved road
- Unpaved road
- Site boundary
- Topographic contour (20-foot)

DRAFT

N W E S

1000 0 1000 2000 Feet

Scale = 1 : 24,000

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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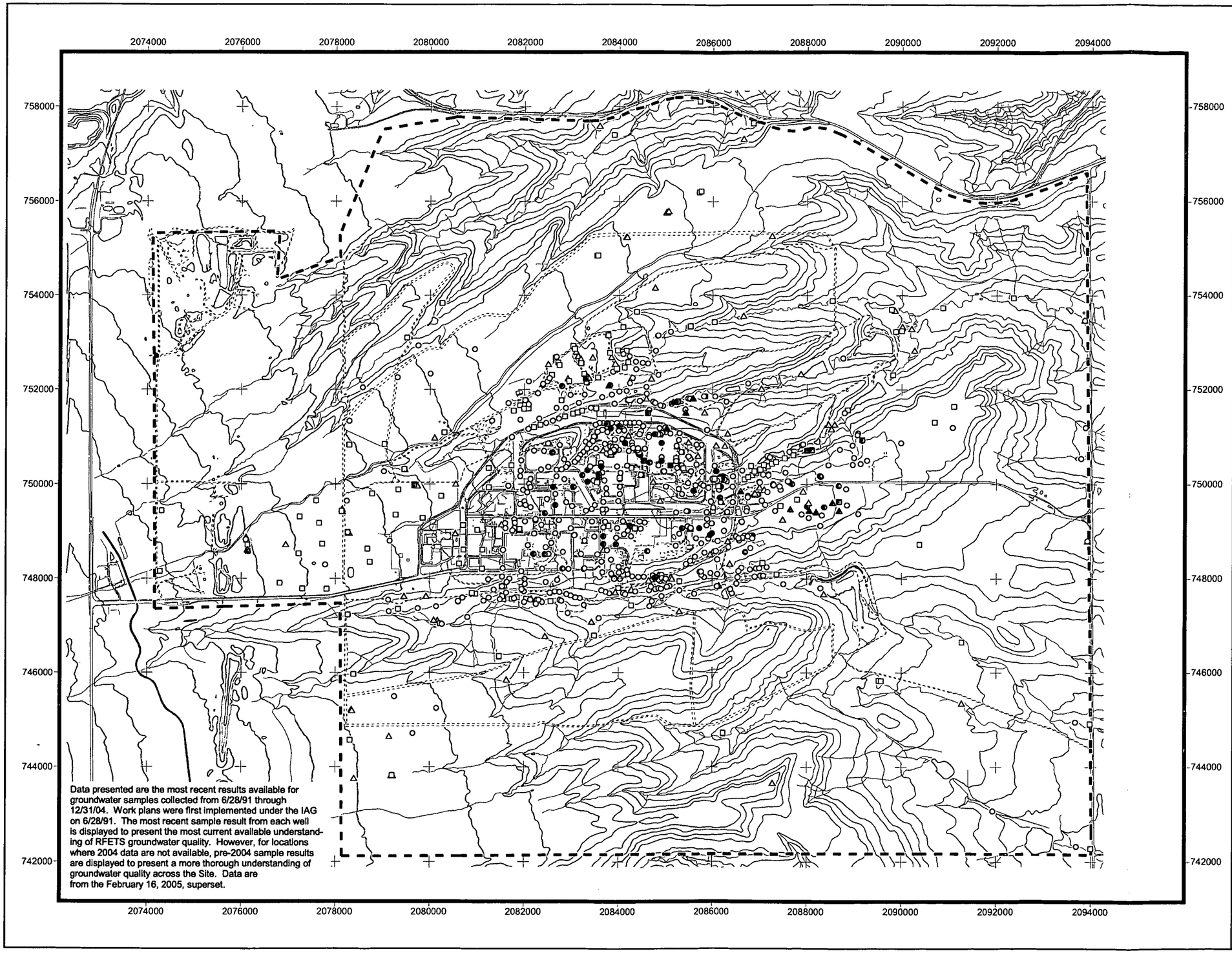

Data presented are the most recent results available for groundwater samples collected from 6/28/91 through 12/31/04. Work plans were first implemented under the IAG on 6/28/91. The most recent sample result from each well is displayed to present the most current available understanding of RFETS groundwater quality. However, for locations where 2004 data are not available, pre-2004 sample results are displayed to present a more thorough understanding of groundwater quality across the Site. Data are from the February 16, 2005, superset.

Figure 9

UHSU Groundwater Results for Chloroform

Legend

- Sample collected since January 1, 2000
- Sample collected between January 1, 1995 and December 31, 1999
- Sample collected between June 28, 1991 and December 31, 1994

- > 100x MCL
- > MCL and <= 100x MCL
- > Surface Water Standard and <= MCL
- Detected and <= Surface Water Standard
- Not applicable
- Not detected

Standard Map Features

- Existing or demolished building or structure
- Stream
- Pond
- Paved road
- Unpaved road
- Site boundary
- Topographic contour (20-foot)

DRAFT

N W E S

1000 0 1000 2000 Feet

Scale = 1 : 24,000

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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Rocky Flats Environmental Technology Site

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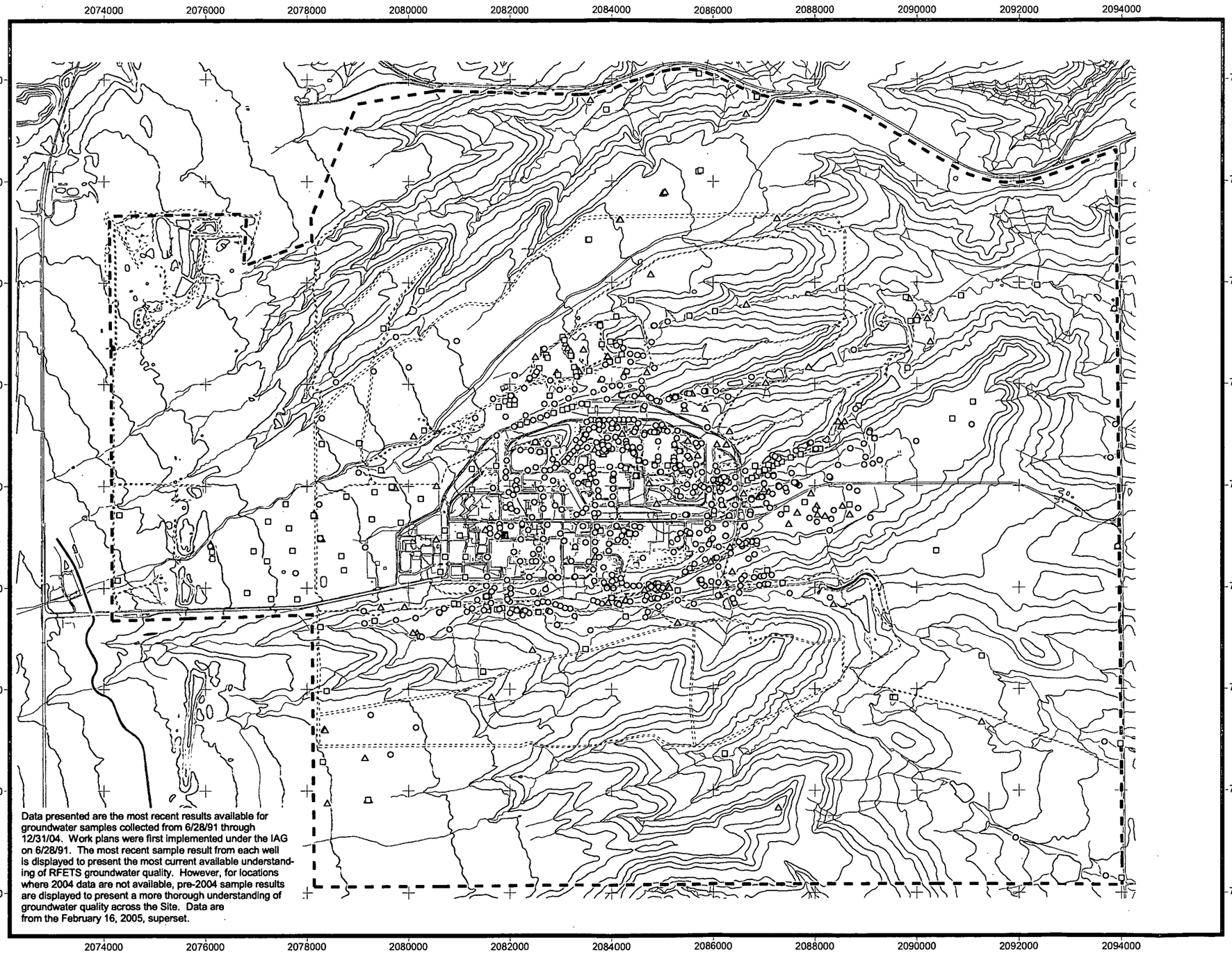

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Figure 10

UHSU Groundwater Results for Chloromethane

Legend

- ○ Sample collected since January 1, 2000
- □ Sample collected between January 1, 1995 and December 31, 1999
- △ Sample collected between June 28, 1991 and December 31, 1994
- ● > 100x MCL
- ○ > MCL and <= 100x MCL
- ○ > Surface Water Standard and <= MCL
- ● Detected and <= Surface Water Standard
- ○ Not applicable
- ○ Not detected

Standard Map Features

- Existing or demolished building or structure
- Stream
- Pond
- Paved road
- Unpaved road
- Site boundary
- Topographic contour (20-foot)

DRAFT

N W E S

1000 0 1000 2000 Feet

Scale = 1 : 24,000

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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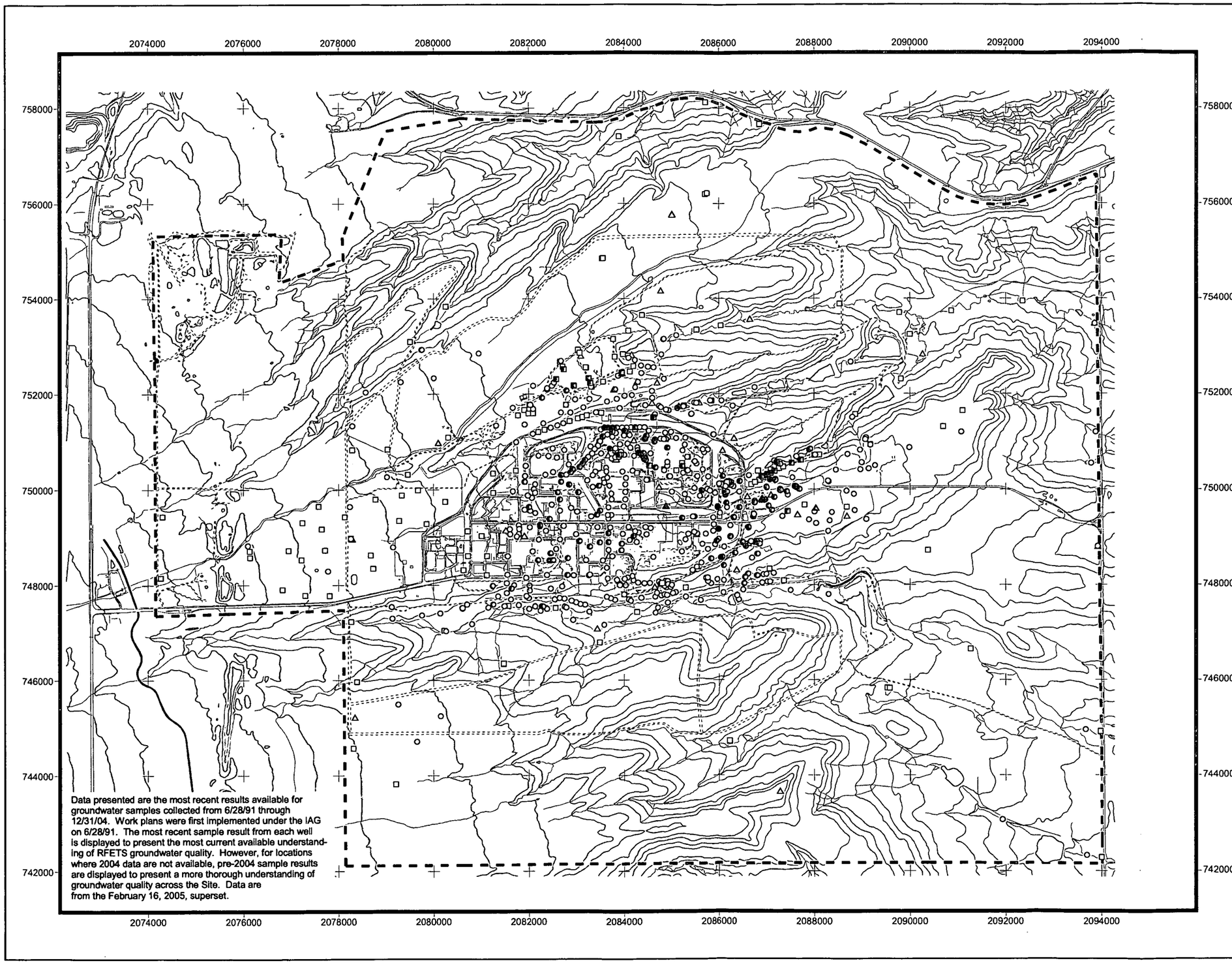

Data presented are the most recent results available for groundwater samples collected from 6/28/91 through 12/31/04. Work plans were first implemented under the IAG on 6/28/91. The most recent sample result from each well is displayed to present the most current available understanding of RFETS groundwater quality. However, for locations where 2004 data are not available, pre-2004 sample results are displayed to present a more thorough understanding of groundwater quality across the Site. Data are from the February 16, 2005, superset.

Figure 11

UHSU Groundwater Results for cis-1,2-Dichloroethene

Legend

- Sample collected since January 1, 2000
- Sample collected between January 1, 1995 and December 31, 1999
- Sample collected between June 28, 1991 and December 31, 1994

- > 100x MCL
- > MCL and <= 100x MCL
- > Surface Water Standard and <= MCL
- Detected and <= Surface Water Standard
- Not applicable
- Not detected

Standard Map Features

- Existing or demolished building or structure
- Stream
- Pond
- Paved road
- Unpaved road
- Site boundary
- Topographic contour (20-foot)

DRAFT

N W E S

1000 0 1000 2000 Feet

Scale = 1 : 24,000

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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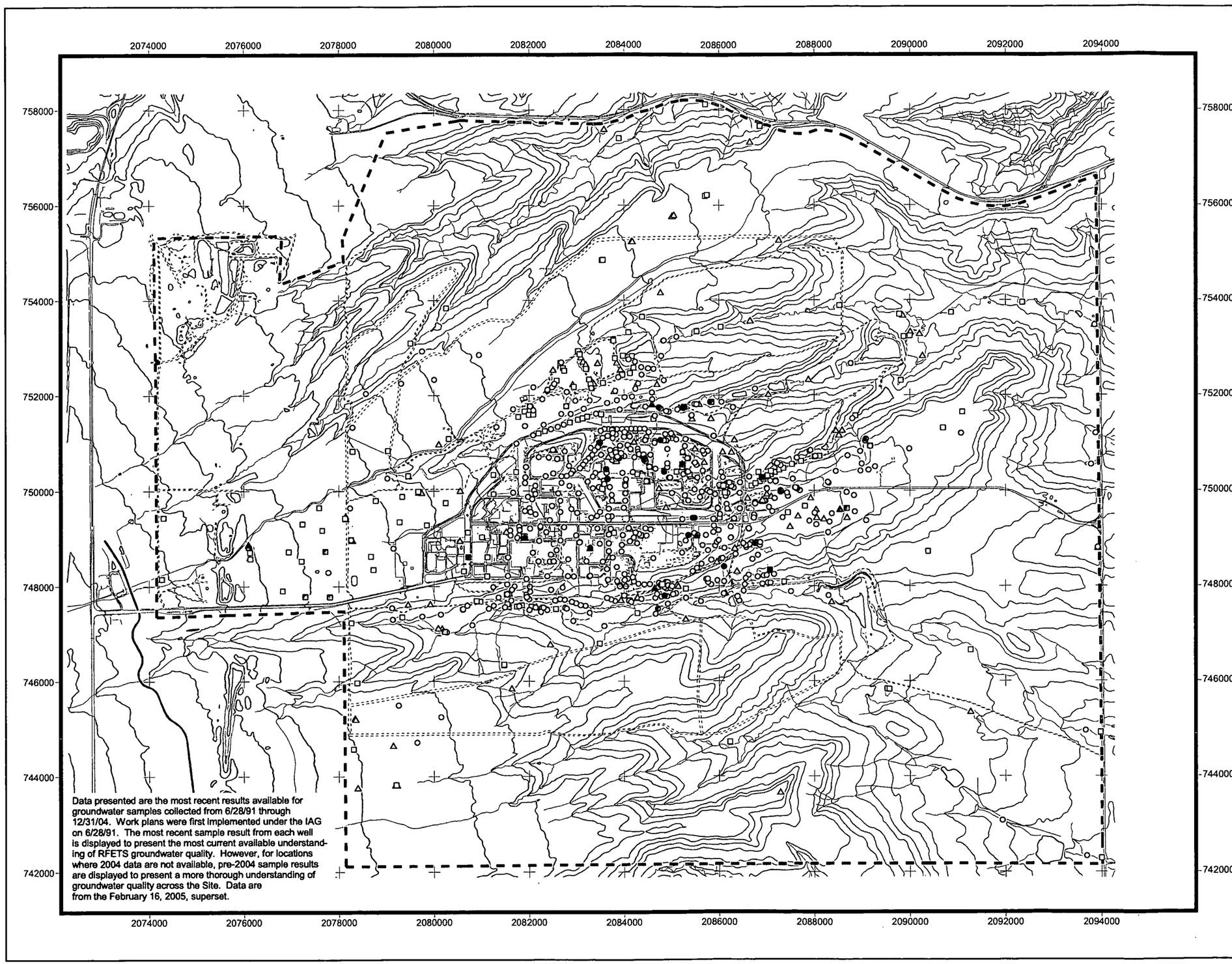

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Figure 12

UHSU Groundwater Results for Methylene Chloride

Legend

- Sample collected since January 1, 2000
- Sample collected between January 1, 1995 and December 31, 1999
- Sample collected between June 28, 1991 and December 31, 1994

- > 100x MCL
- > MCL and <= 100x MCL
- > Surface Water Standard and <= MCL
- Detected and <= Surface Water Standard
- Not applicable
- Not detected

Standard Map Features

- Existing or demolished building or structure
- Stream
- Pond
- Paved road
- Unpaved road
- Site boundary
- Topographic contour (20-foot)

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1000 0 1000 2000 Feet

Scale = 1 : 24,000

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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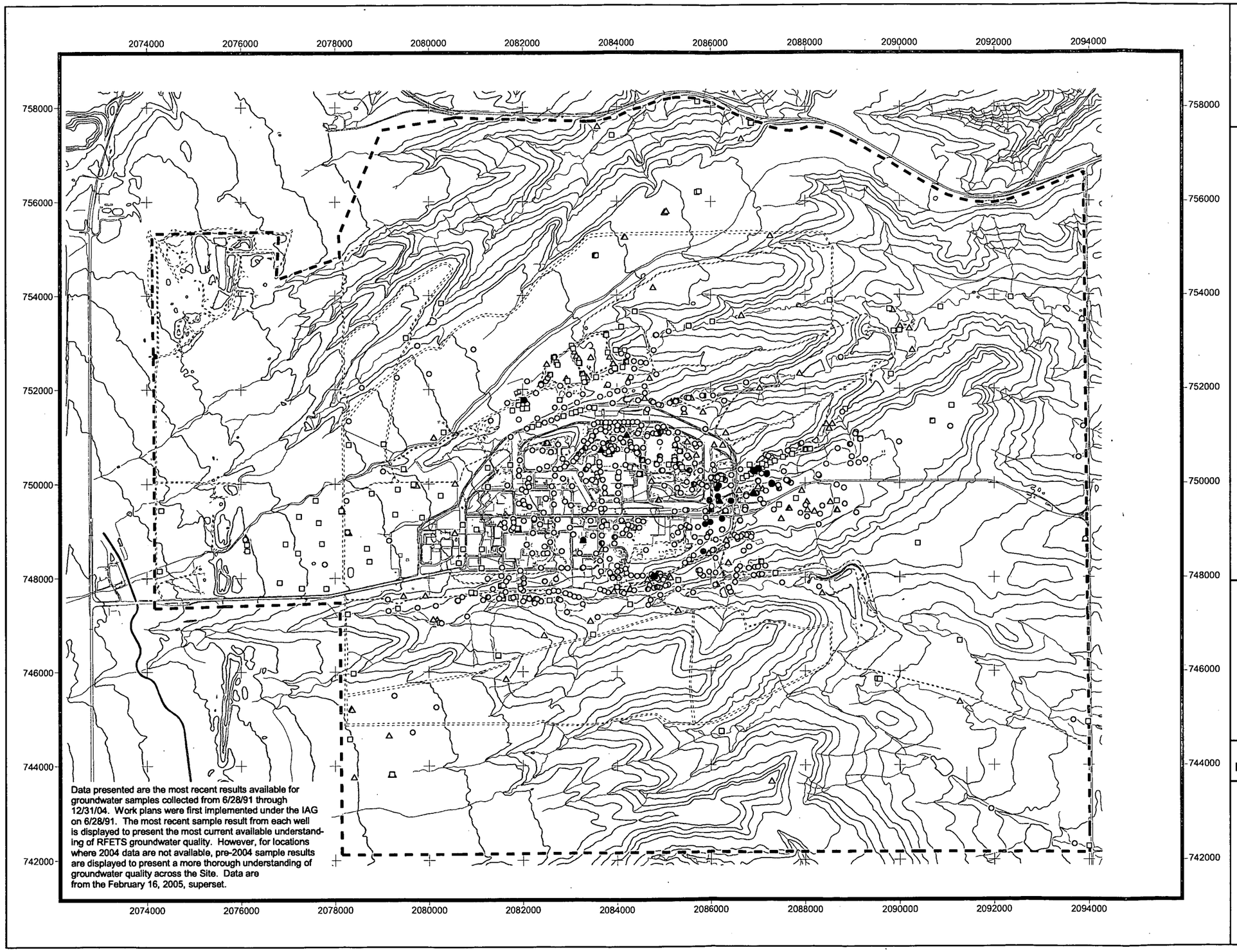

Data presented are the most recent results available for groundwater samples collected from 6/28/91 through 12/31/04. Work plans were first implemented under the IAG on 6/28/91. The most recent sample result from each well is displayed to present the most current available understanding of RFETS groundwater quality. However, for locations where 2004 data are not available, pre-2004 sample results are displayed to present a more thorough understanding of groundwater quality across the Site. Data are from the February 16, 2005, superset.

Figure 13

UHSU Groundwater Results for Tetrachloroethene

Legend

- Sample collected since January 1, 2000
- Sample collected between January 1, 1995 and December 31, 1999
- Sample collected between June 28, 1991 and December 31, 1994
- > 100x MCL
- > MCL and <= 100x MCL
- > Surface Water Standard and <= MCL
- Detected and <= Surface Water Standard
- Not applicable
- Not detected

Standard Map Features

- Existing or demolished building or structure
- Stream
- Pond
- Paved road
- Unpaved road
- Site boundary
- Topographic contour (20-foot)

DRAFT

N W E S

1000 0 1000 2000 Feet

Scale = 1 : 24,000

State Plane Coordinate Projection
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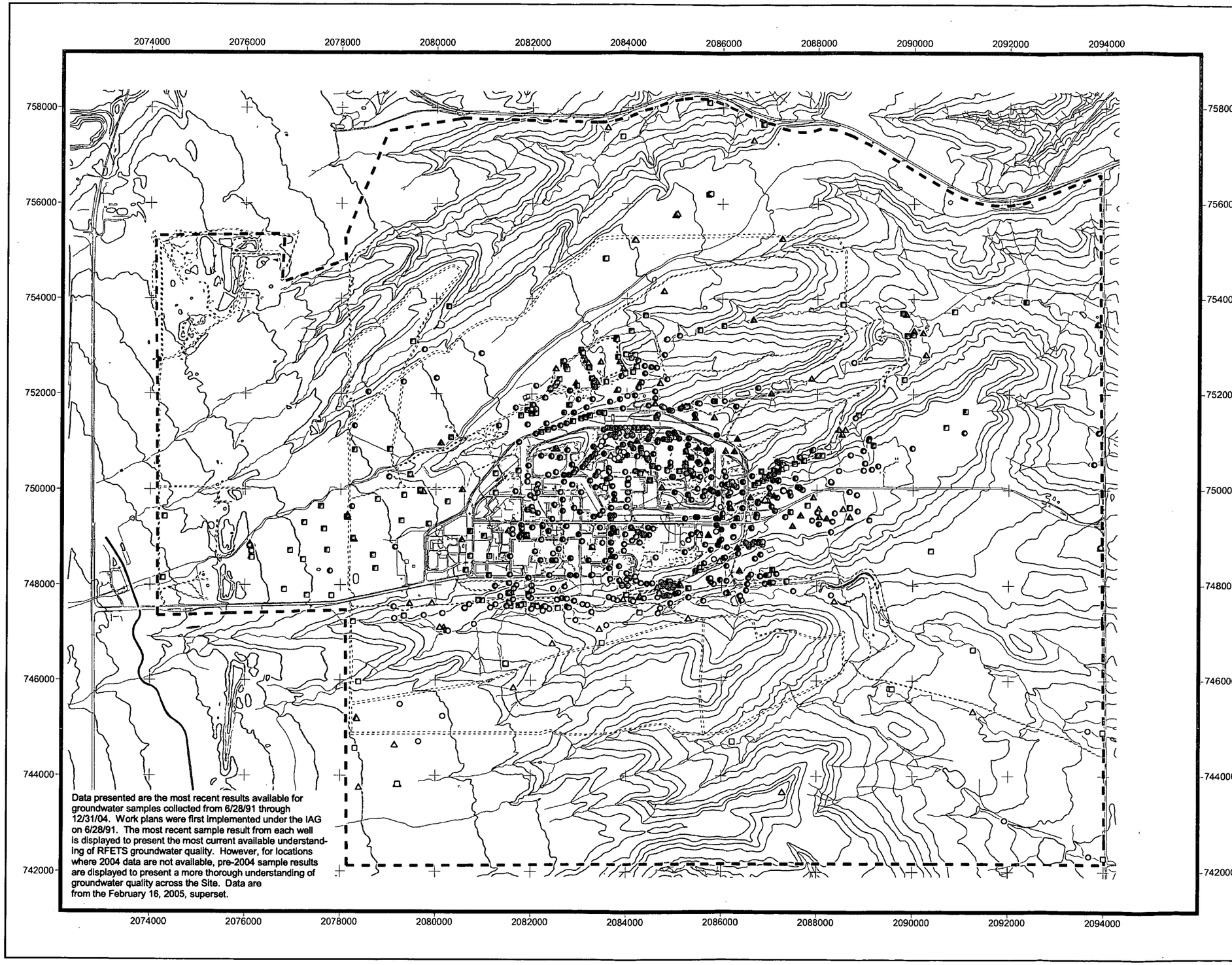

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Figure 14

UHSU Groundwater Results for Total Trihalomethanes

Legend

- Sample collected since January 1, 2000
- Sample collected between January 1, 1995 and December 31, 1999
- Sample collected between June 28, 1991 and December 31, 1994

- > 100x MCL
- > MCL and <= 100x MCL
- > Surface Water Standard and <= MCL
- Detected and <= Surface Water Standard
- Not applicable
- Not detected

Standard Map Features

- Existing or demolished building or structure
- Stream
- Pond
- Paved road
- Unpaved road
- Site boundary
- Topographic contour (20-foot)

DRAFT

N W E S

1000 0 1000 2000 Feet

Scale = 1 : 24,000

State Plane Coordinate Projection
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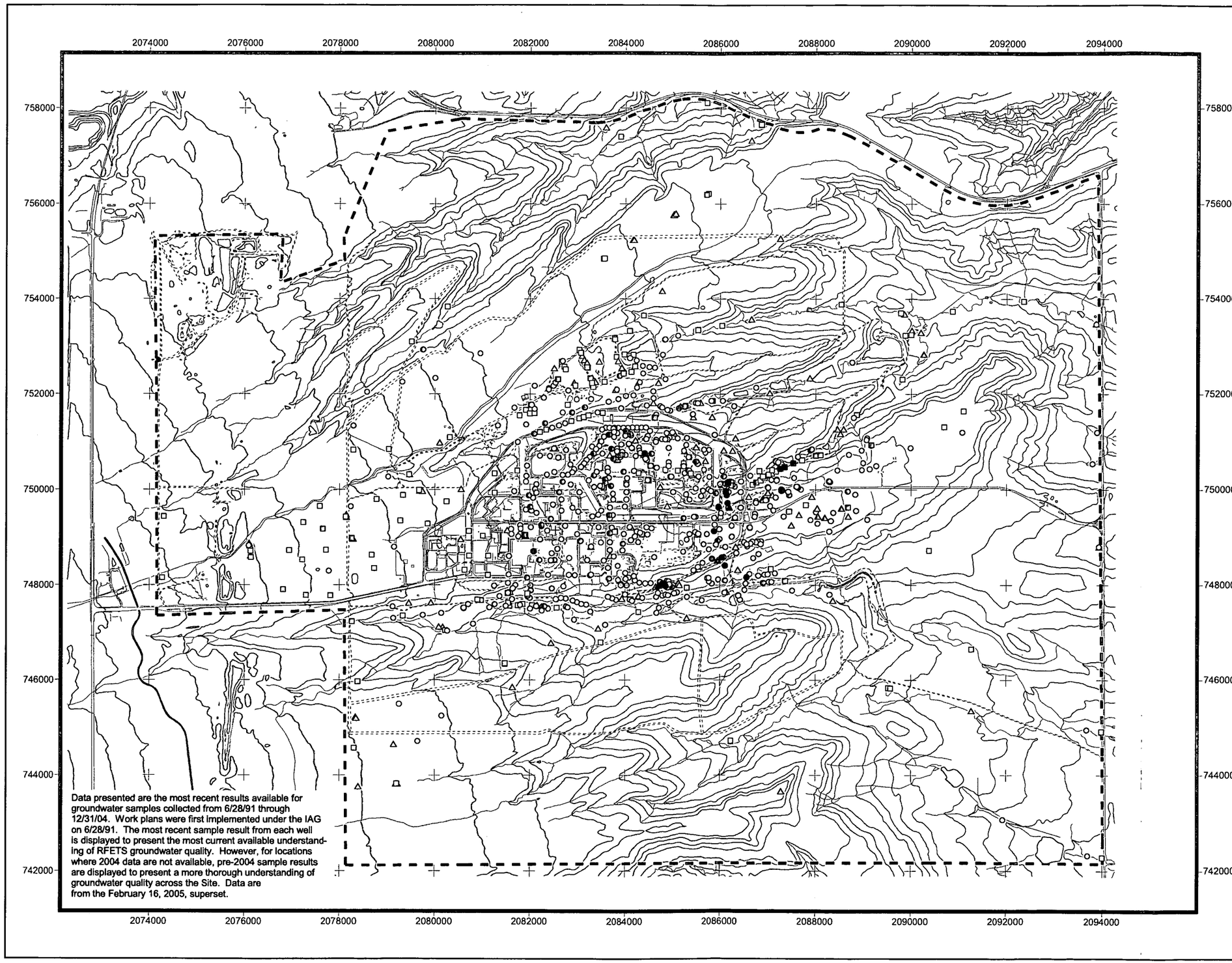

Data presented are the most recent results available for groundwater samples collected from 6/28/91 through 12/31/04. Work plans were first implemented under the IAG on 6/28/91. The most recent sample result from each well is displayed to present the most current available understanding of RFETS groundwater quality. However, for locations where 2004 data are not available, pre-2004 sample results are displayed to present a more thorough understanding of groundwater quality across the Site. Data are from the February 16, 2005, superset.

Figure 15

UHSU Groundwater Results for Trichloroethene

Legend

- Sample collected since January 1, 2000
- Sample collected between January 1, 1995 and December 31, 1999
- Sample collected between June 28, 1991 and December 31, 1994

- > 100x MCL
- > MCL and <= 100x MCL
- > Surface Water Standard and <= MCL
- Detected and <= Surface Water Standard
- Not applicable
- Not detected

Standard Map Features

- Existing or demolished building or structure
- Stream
- Pond
- Paved road
- Unpaved road
- Site boundary
- Topographic contour (20-foot)

DRAFT

N W E S

1000 0 1000 2000 Feet

Scale = 1 : 24,000

State Plane Coordinate Projection
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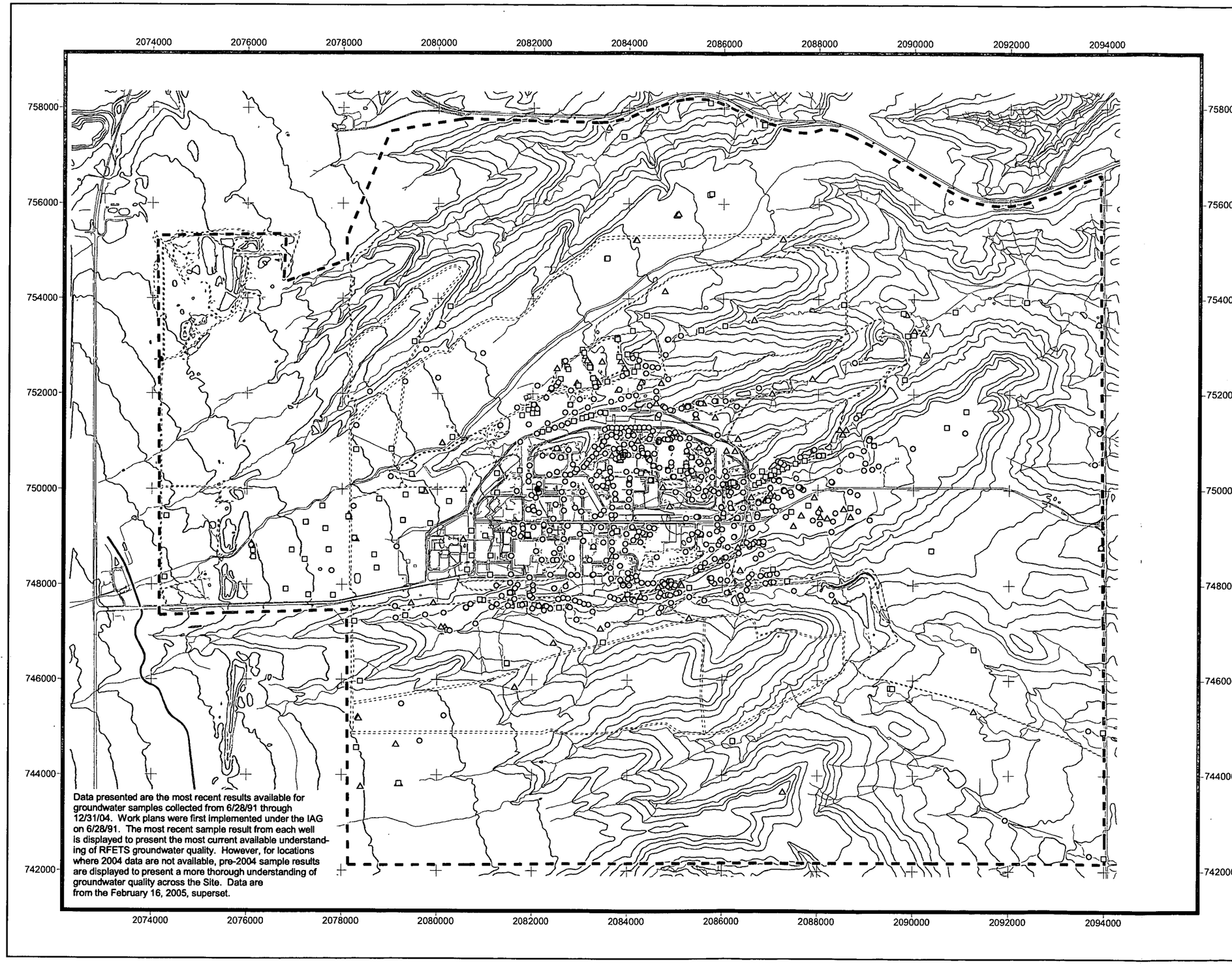

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Figure 16

UHSU Groundwater Results for Vinyl Chloride

Legend

- Sample collected since January 1, 2000
- Sample collected between January 1, 1995 and December 31, 1999
- Sample collected between June 28, 1991 and December 31, 1994

- > 100x MCL
- > MCL and <= 100x MCL
- > Surface Water Standard and <= MCL
- Detected and <= Surface Water Standard
- Not applicable
- Not detected

Standard Map Features

- Existing or demolished building or structure
- Stream
- Pond
- Paved road
- Unpaved road
- Site boundary
- Topographic contour (20-foot)

DRAFT

N W E S

1000 0 1000 2000 Feet

Scale = 1 : 24,000

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: Date: June 8, 2005

Prepared for:

KAISER•HILL COMPANY

File: W:\Projects\FY2005\Groundwater-Reports\groundwater-figs_4-25-2005.apr

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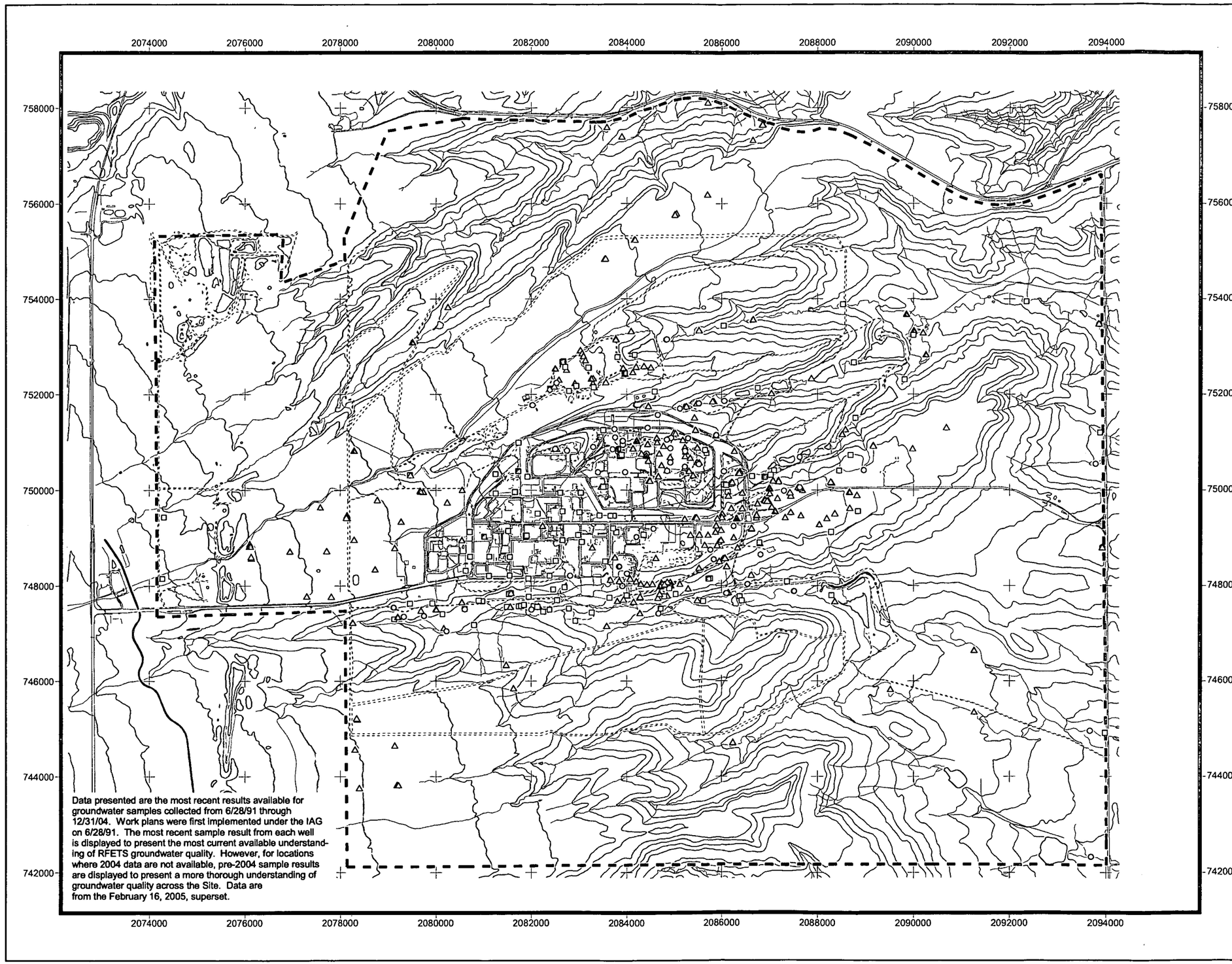

Data presented are the most recent results available for groundwater samples collected from 6/28/91 through 12/31/04. Work plans were first implemented under the IAG on 6/28/91. The most recent sample result from each well is displayed to present the most current available understanding of RFETS groundwater quality. However, for locations where 2004 data are not available, pre-2004 sample results are displayed to present a more thorough understanding of groundwater quality across the Site. Data are from the February 16, 2005, superset.

Figure 17

UHSU Groundwater Results for Total Chromium

Legend

- Sample collected since January 1, 2000
- Sample collected between January 1, 1995 and December 31, 1999
- Sample collected between June 28, 1991 and December 31, 1994
- > 100x MCL
- > MCL and <= 100x MCL
- > Surface Water Standard and <= MCL
- Detected and <= Surface Water Standard
- Detected and <= 99/99 UTL
- Not detected

Standard Map Features

- Existing or demolished building or structure
- Stream
- Pond
- Paved road
- Unpaved road
- Site boundary
- Topographic contour (20-foot)

DRAFT

N W E S

1000 0 1000 2000 Feet

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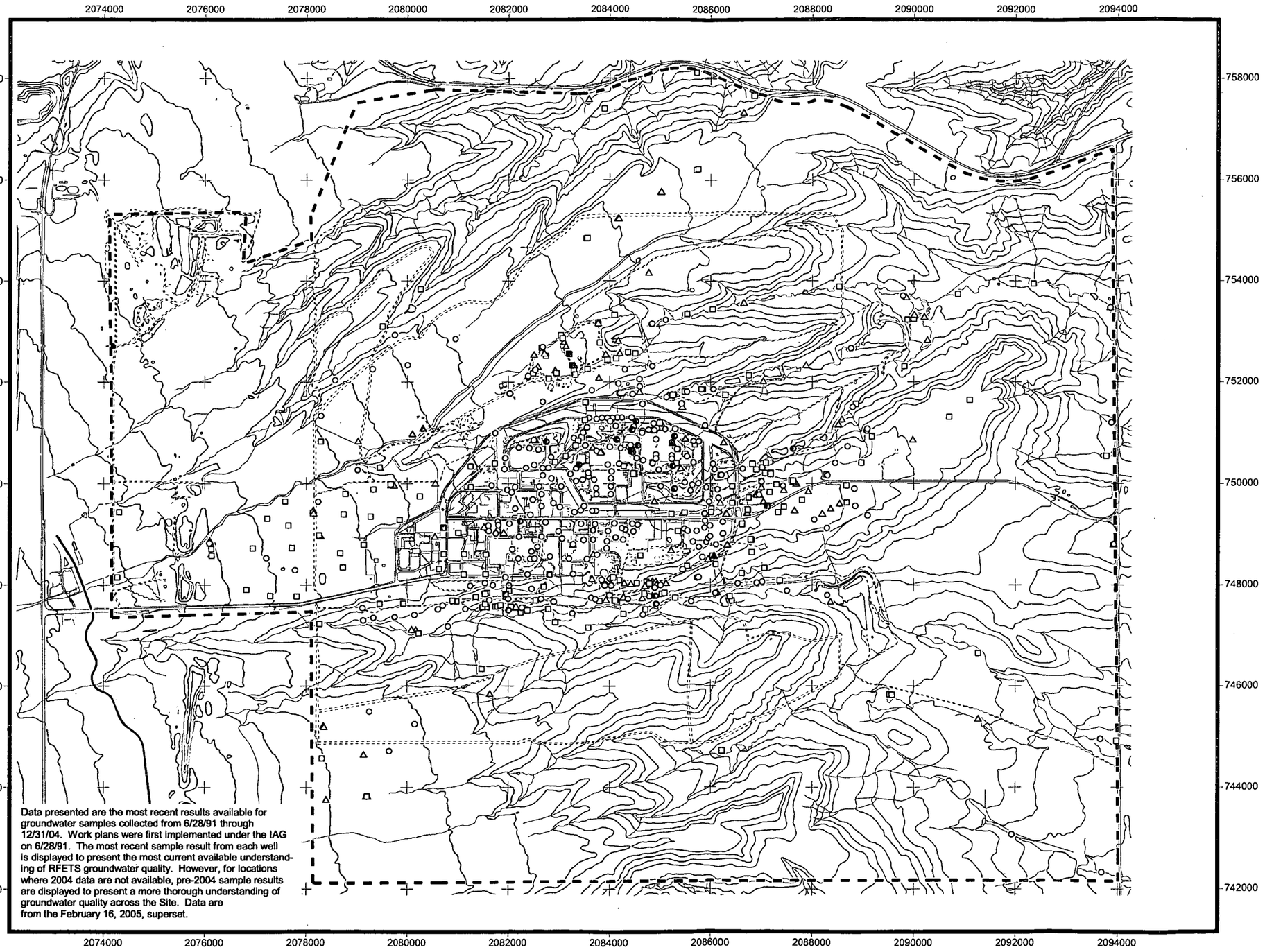

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Figure 18

UHSU Groundwater Results for Dissolved Nickel

Legend

- Sample collected since January 1, 2000
- Sample collected between January 1, 1995 and December 31, 1999
- Sample collected between June 28, 1991 and December 31, 1994
- > 100x MCL
- > MCL and <= 100x MCL
- > Surface Water Standard and <= MCL
- Detected and <= Surface Water Standard
- Detected and <= 99/99 UTL
- Not detected

Standard Map Features

- Existing or demolished building or structure
- Stream
- Pond
- Paved road
- Unpaved road
- Site boundary
- Topographic contour (20-foot)

DRAFT

N W E S

1000 0 1000 2000 Feet

Scale = 1 : 24,000

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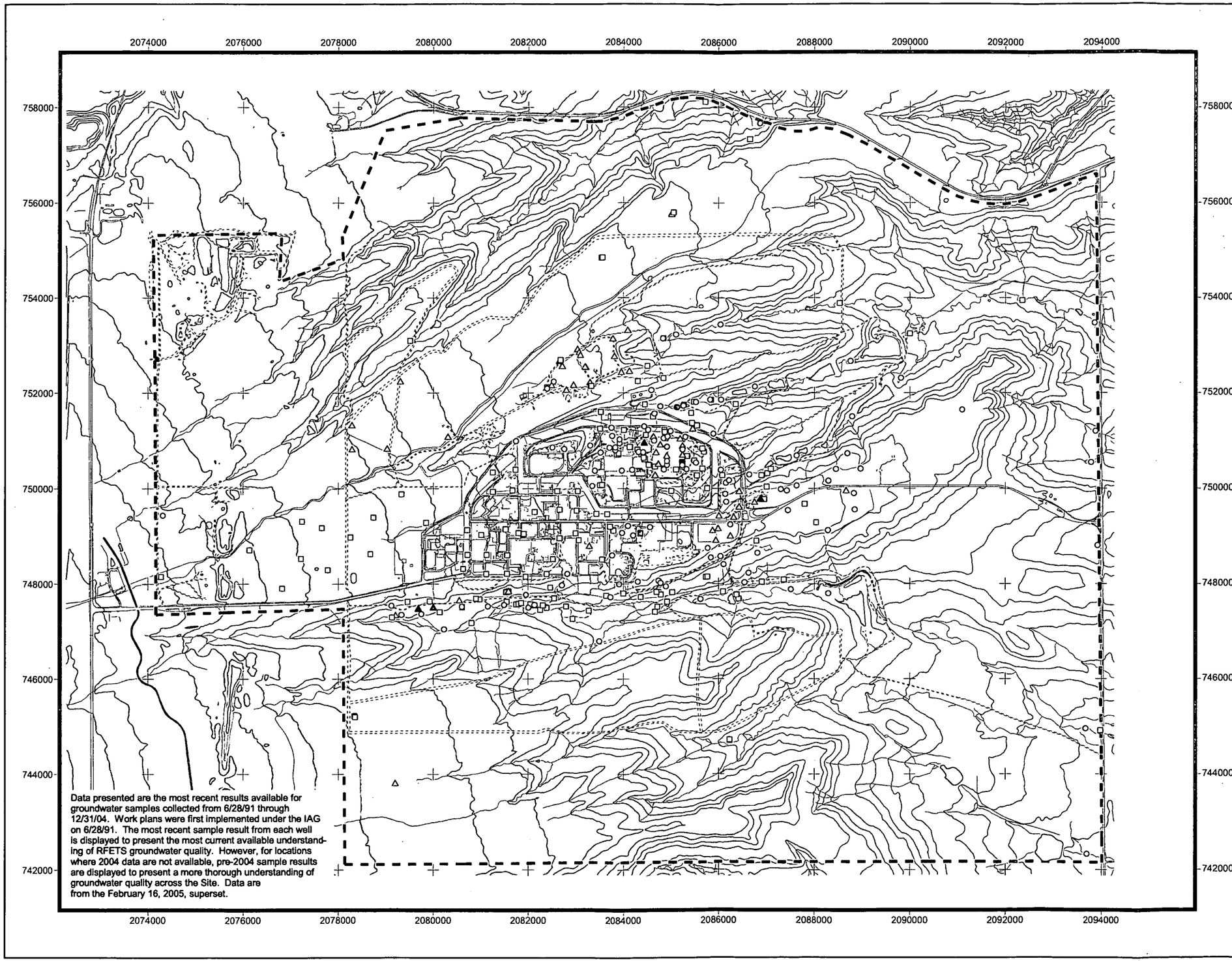

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Figure 19

UHSU Groundwater Results for Total Uranium Isotopes

Legend

- Sample collected since January 1, 2000
- Sample collected between January 1, 1995 and December 31, 1999
- Sample collected between June 28, 1991 and December 31, 1994
- > 100x MCL
- > MCL and <= 100x MCL
- > Surface Water Standard and <= MCL
- Detected and <= Surface Water Standard
- Detected and <= 99/99 UTL
- Not detected

Standard Map Features

- Existing or demolished building or structure
- Stream
- Pond
- Paved road
- Unpaved road
- Site boundary
- Topographic contour (20-foot)

DRAFT

N W E S

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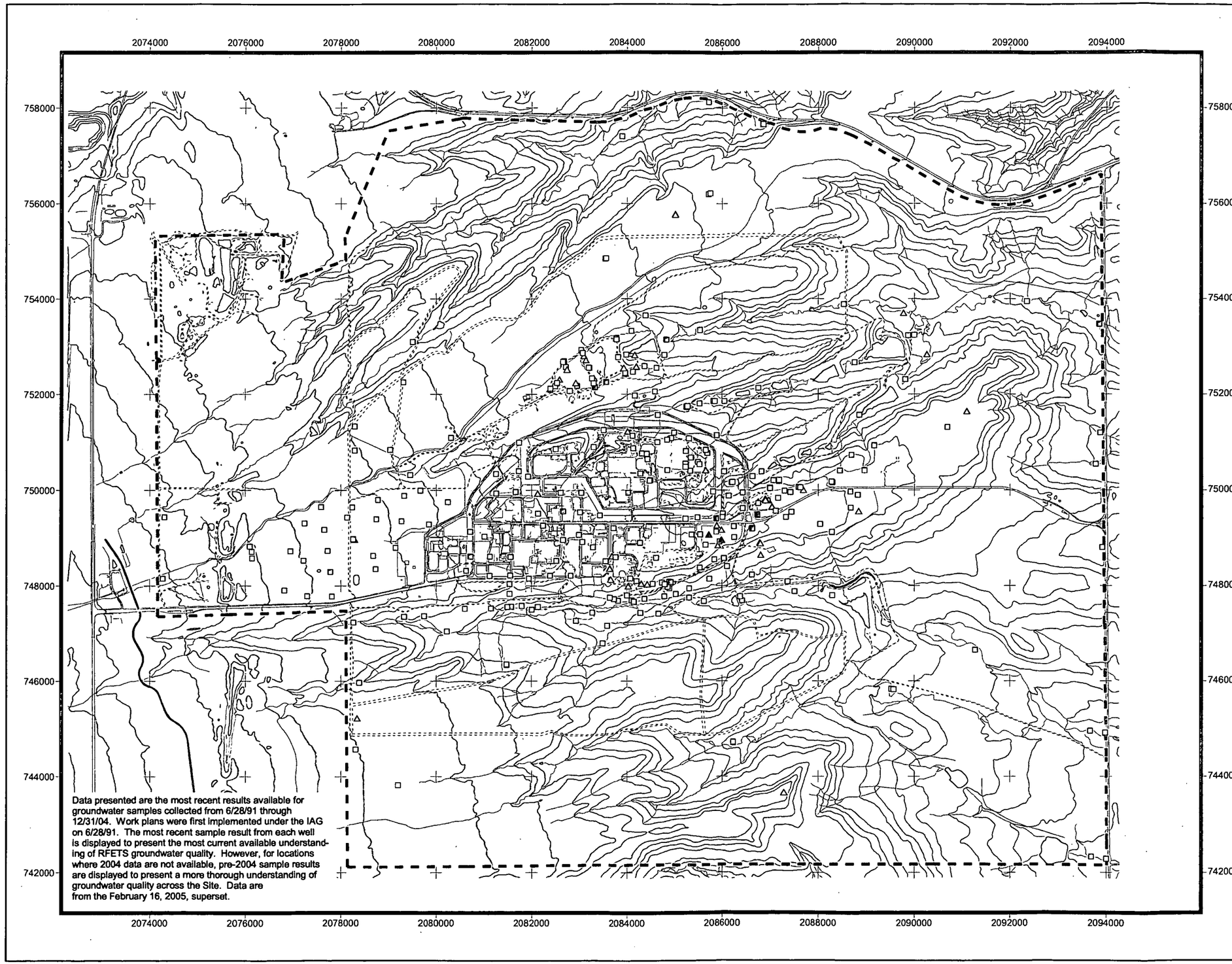

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Figure 20

UHSU Groundwater Results for Ammonia (as N)

Legend

- Sample collected since January 1, 2000
- Sample collected between January 1, 1995 and December 31, 1999
- Sample collected between June 28, 1991 and December 31, 1994

- > 100x MCL
- > MCL and <= 100x MCL
- > Surface Water Standard and <= MCL
- Detected and <= Surface Water Standard
- Not applicable
- Not detected

Standard Map Features

- Existing or demolished building or structure
- Stream
- Pond
- Paved road
- Unpaved road
- Site boundary
- Topographic contour (20-foot)

DRAFT

N W E S

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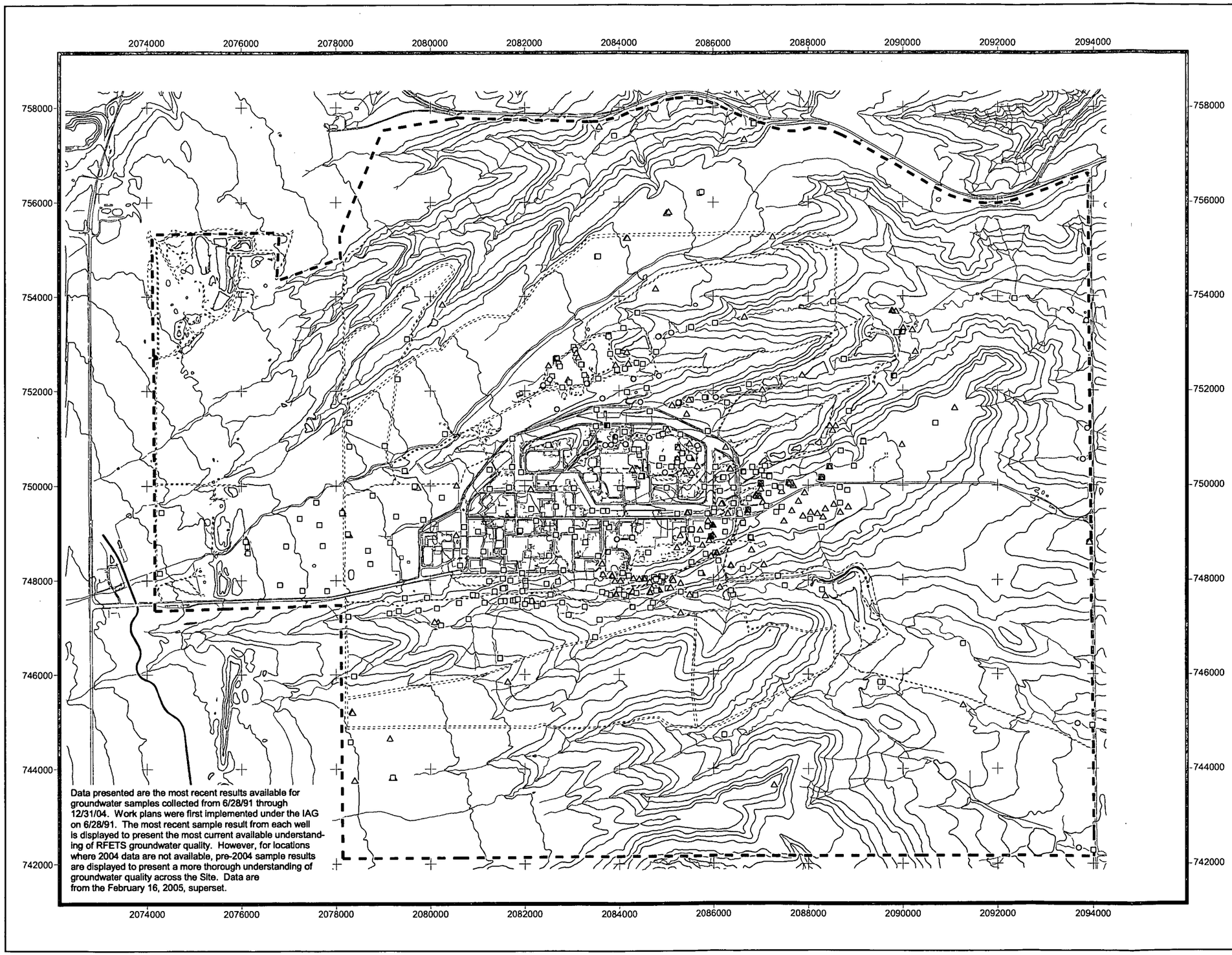

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Figure 21

UHSU Groundwater Results for Fluoride

Legend

- Sample collected since January 1, 2000
- Sample collected between January 1, 1995 and December 31, 1999
- Sample collected between June 28, 1991 and December 31, 1994

- > 100x MCL
- > MCL and <= 100x MCL
- > Surface Water Standard and <= MCL
- Detected and <= Surface Water Standard
- Detected and <= 99/99 UTL
- Not detected

Standard Map Features

- Existing or demolished building or structure
- Stream
- Pond
- Paved road
- Unpaved road
- Site boundary
- Topographic contour (20-foot)

DRAFT

N W E S

1000 0 1000 2000 Feet

Scale = 1 : 24,000

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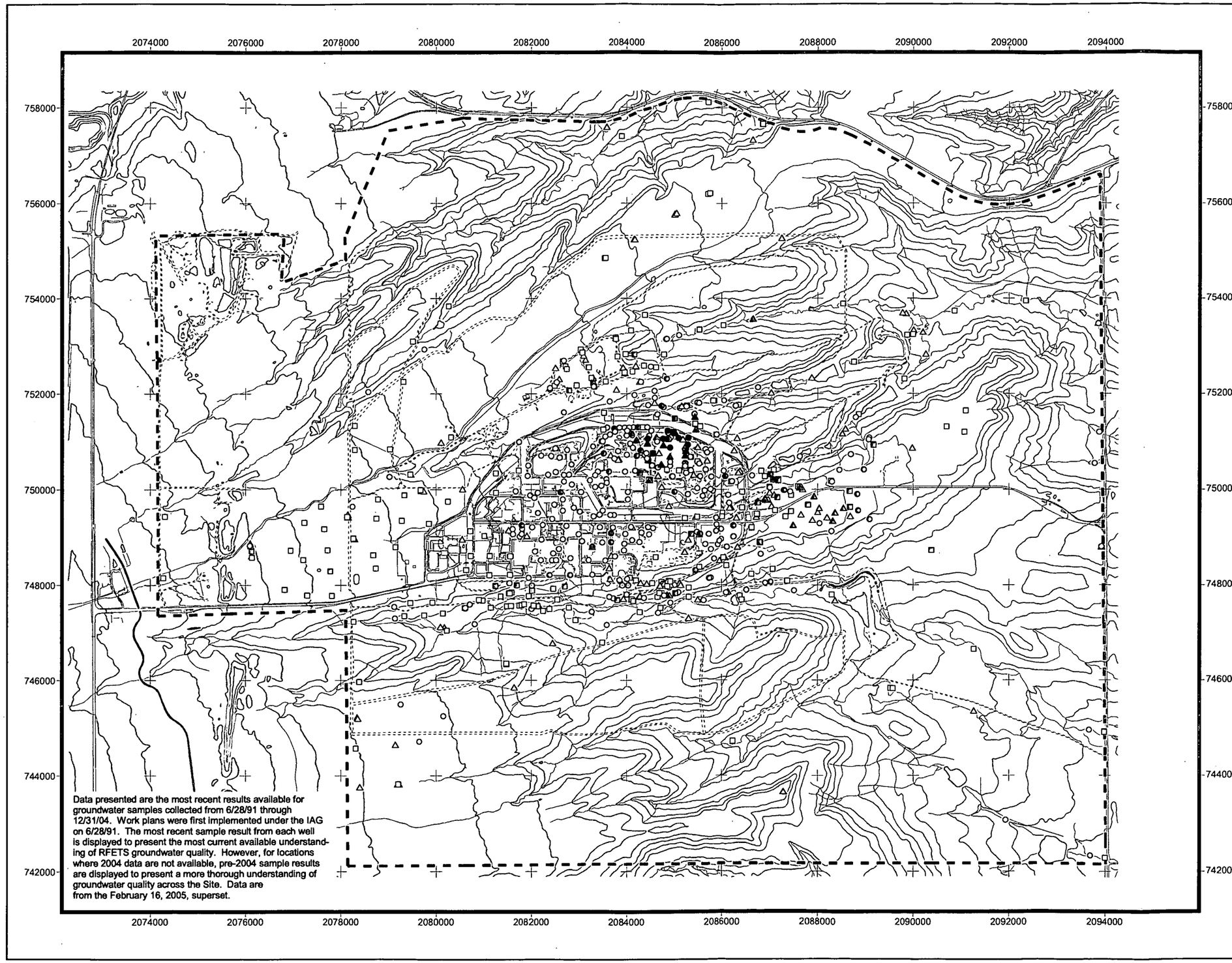

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Figure 22

UHSU Groundwater Results for Nitrate/Nitrite (as N)

Legend

- Sample collected since January 1, 2000
- Sample collected between January 1, 1995 and December 31, 1999
- Sample collected between June 28, 1991 and December 31, 1994

- > 100x MCL
- > MCL and <= 100x MCL
- > Surface Water Standard and <= MCL
- Detected and <= Surface Water Standard
- Detected and <= 99/99 UTL
- Not detected

Standard Map Features

- Existing or demolished building or structure
- Stream
- Pond
- Paved road
- Unpaved road
- Site boundary
- Topographic contour (20-foot)

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