LMS/BAR/S01113

Data Validation Package

November 2013
Water Sampling at the
L-Bar, New Mexico, Disposal Site

February 2014

U.S. DEPARTMENT OF ENERGY | Legacy Management

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Sampling Event Summary

Site: L-Bar, New Mexico, Disposal Site

Sampling Period: November 20, 2013

Groundwater samples were collected from ten monitoring wells at the L-Bar, New Mexico, Disposal Site, and the "Moquino New" community well to monitor groundwater contaminants as specified in the 2004 *Long-Term Surveillance Plan for the U.S. Department of Energy L-Bar, New Mexico, (UMTRCA Title II) Disposal Site, Seboyeta, New Mexico* (LTSP). The "Moquino Old" backup community well was not operating during this event and was not sampled.

The U.S. Nuclear Regulatory Commission (NRC) granted alternate concentration limits (ACLs) for uranium and selenium at the point-of-compliance wells. The New Mexico Environment Department approved alternate abatement standards (AASs) for chloride, sulfate, nitrate, and total dissolved solids in addition to uranium and selenium. The AASs are divided into two groups: those applicable in the source zone and those applicable in the affected area.

Sampling and analysis was conducted as specified in the *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites* (LMS/PRO/S04351, continually updated). The water level was measured at each sampled monitoring well. Concentrations of contaminants of concern compared to ACLs and AASs are provided in Table 1 for the wells sampled.

If an ACL or AAS is exceeded, the U.S. Department of Energy will inform the NRC of the exceedance and conduct confirmatory sampling. None of the results from this sampling event exceeded the applicable ACL or AAS, demonstrating compliance with the LTSP.

Time-concentration graphs do not indicate an upward trend for any of the constituents in any of the wells. In accordance with the LTSP, sampling will continue every 3 years, with the next event scheduled for 2016.

Table 1. 2013 Groundwater Monitoring Analytical Results and ACL/AAS Values (in mg/L) at the L-Bar Site

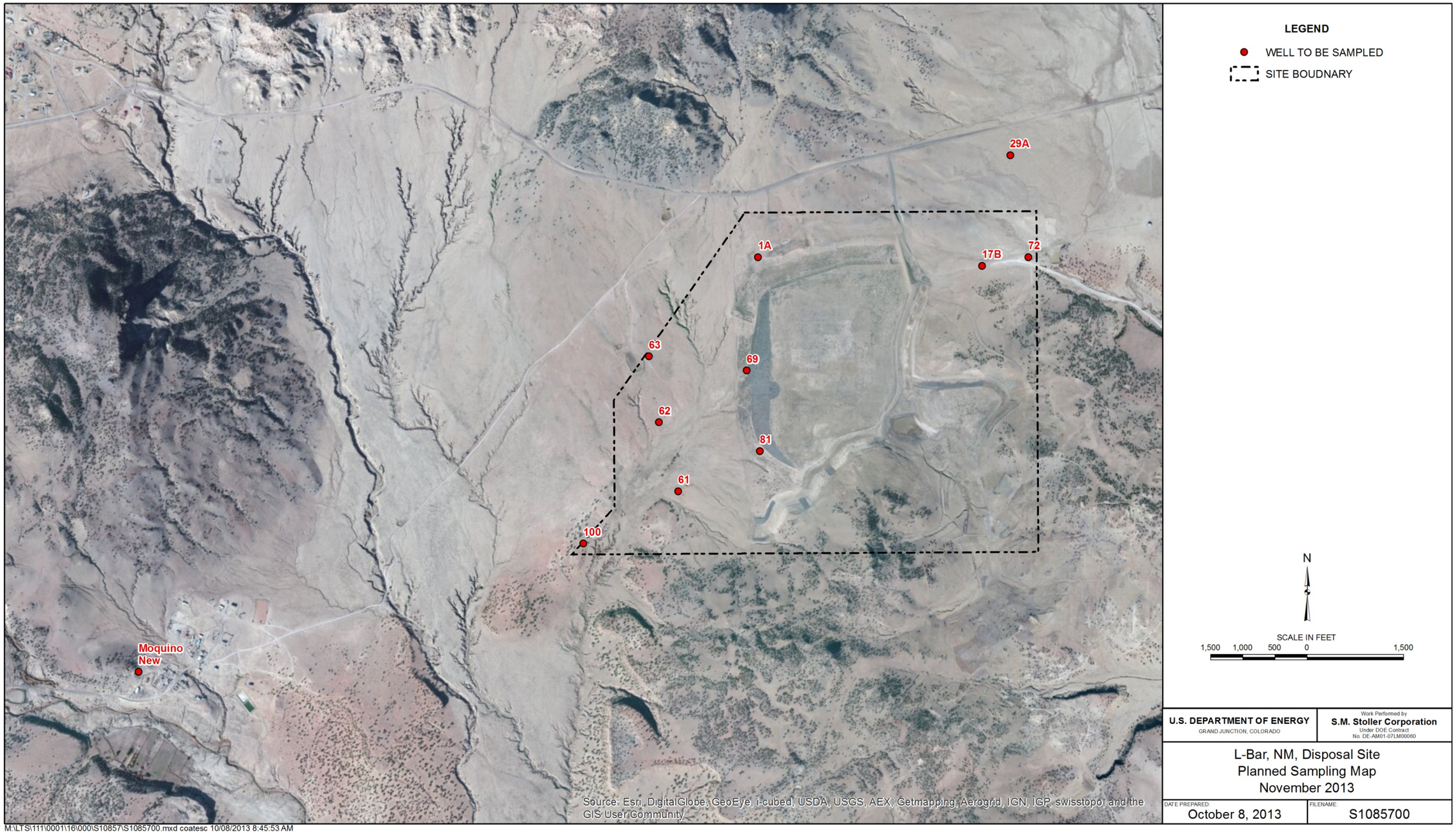
Standard/Well	Uranium	Selenium	Chloride	Sulfate	NO_3+NO_2 as N	TDS
ACL	13.0	2.0	NA	NA	NA	NA
AAS, Source Zone	13.0	2.0	1127	13,110	1180	20,165
AAS, Affected Area	NA	NA	NA	5185	NA	7846
MW-1A, POC, source zone	0.00769	ND	433	4640	0.0667	8050
MW-17B, POC, source zone	0.0316	0.3	423	4750	590	11,600
MW-29A, background	0.000122	ND	175	4380	ND	6990
MW-61, seepage indicator	0.000325	ND	102	2980	0.216	4990
MW-62, seepage indicator, affected area	0.000073	ND	44.8	541	ND	1470
MW-63, POE seepage indicator	0.000111	ND	40.6	513	ND	1420
MW-69, POC, source zone	1.85	ND	684	9930	ND	16,800
MW-72, POE	0.00805	0.00625	174	3900	4.31	6180
MW-81, POC, source zone	0.0226	0.0733	193	4730	15.8	7710
MW-100, POE	0.00179	ND	29	2430	1.17	3850
Moquino New [a]	0.000097	ND	6.42	91.9	0.132	459
Moquino Old [a]	---	---	---	---	---	---

[a] Public water supply well in the village of Moquino (approximately 1.5 miles southwest of the disposal cell). Samples could not be collected at Moquino Old for this event.

Key: AAS = alternate abatement standard; ACL = alternate concentration limit; mg/L = milligrams per liter; NO_3+NO_2 as N = nitrate + nitrite as nitrogen; NA = not applicable; ND = not detected; POC = point of compliance; POE = point of exposure; TDS = total dissolved solids

Richard K. Johnson
Site Lead, S.M. Stoller Corporation

2/10/14
Date



L-Bar, New Mexico, Disposal Site Sample Location Map

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Data Assessment Summary

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Water Sampling Field Activities Verification Checklist

Project	L-Bar, New Mexico, Disposal Site	**Date(s) of Water Sampling**	November 20, 2013
Date(s) of Verification	January 30, 2014	**Name of Verifier**	Gretchen Baer

	Response (Yes, No, NA)	Comments
1. Is the SAP the primary document directing field procedures?	Yes	
List any Program Directives or other documents, SOPs, instructions.		Work Order letter dated October 11, 2013.
2. Were the sampling locations specified in the planning documents sampled?	No	Location Moquino Old was not operational.
3. Were calibrations conducted as specified in the above-named documents?	Yes	There was a typo on a calibration sheet (for a pH mV value). All calibrations were performed correctly, and no data were adversely affected.
4. Was an operational check of the field equipment conducted daily?	Yes	
Did the operational checks meet criteria?	Yes	
5. Were the number and types (alkalinity, temperature, specific conductance, pH, turbidity, DO, ORP) of field measurements taken as specified?	Yes	
6. Were wells categorized correctly?	Yes	
7. Were the following conditions met when purging a Category I well:		
Was one pump/tubing volume purged prior to sampling?	Yes	
Did the water level stabilize prior to sampling?	Yes	
Did pH, specific conductance, and turbidity measurements meet criteria prior to sampling?	Yes	
Was the flow rate less than 500 mL/min?	Yes	

Water Sampling Field Activities Verification Checklist (continued)

	Response (Yes, No, NA)	Comments
8. Were the following conditions met when purging a Category II well:		
Was the flow rate less than 500 mL/min?	Yes	
Was one pump/tubing volume removed prior to sampling?	Yes	
9. Were duplicates taken at a frequency of one per 20 samples?	Yes	
10. Were equipment blanks taken at a frequency of one per 20 samples that were collected with non-dedicated equipment?	NA	
11. Were trip blanks prepared and included with each shipment of VOC samples?	NA	
12. Were the true identities of the QC samples documented?	Yes	
13. Were samples collected in the containers specified?	Yes	
14. Were samples filtered and preserved as specified?	Yes	
15. Were the number and types of samples collected as specified?	Yes	
16. Were chain of custody records completed and was sample custody maintained?	Yes	
17. Was all pertinent information documented on the field data sheets?	Yes	
18. Was the presence or absence of ice in the cooler documented at every sample location?	Yes	
19. Were water levels measured at the locations specified in the planning documents?	Yes	

Laboratory Performance Assessment

General Information

Report Number (RIN):	13115747
Sample Event:	November 20, 2013
Site(s):	L-Bar, New Mexico
Laboratory:	GEL Laboratories, Charleston, South Carolina
Work Order No.:	338114
Analysis:	Metals and Wet Chemistry
Validator:	Gretchen Baer
Review Date:	January 30, 2014

This validation was performed according to the *Environmental Procedures Catalog*, (LMS/POL/S04325, continually updated) "Standard Practice for Validation of Environmental Data." The procedure was applied at Level 3, Data Validation. See attached Data Validation Worksheets for supporting documentation on the data review and validation. All analyses were successfully completed. The samples were prepared and analyzed using accepted procedures based on methods specified by line item code, which are listed in Table 2.

Table 2. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
Chloride, Sulfate	MIS-A-045	EPA 300.0	EPA 300.0
Nitrate + Nitrite as N	WCH-A-022	EPA 353.2	EPA 353.2
Selenium, Uranium	LMM-02	SW-846 3005A	SW-846 6020A
Total Dissolved Solids	WCH-A-033	SM 2540C	SM 2540C

Data Qualifier Summary

None of the sample results required additional qualification.

Sample Shipping/Receiving

GEL Laboratories in Charleston, South Carolina, received 12 water samples on November 22, 2013, accompanied by a Chain of Custody form. The air bill numbers were listed in the receiving documentation. The Chain of Custody form was checked to confirm that all of the samples were listed with sample collection dates and times, and that signatures and dates were present indicating sample relinquishment and receipt. The Chain of Custody form was complete with no errors or omissions.

Preservation and Holding Times

The sample shipment was received intact with the temperature inside the iced cooler at 2 °C, which complies with requirements. All samples were received in the correct container types and had been preserved correctly for the requested analyses. All samples were analyzed within the applicable holding times.

Detection and Quantitation Limits

The method detection limit (MDL) was reported for all analytes as required. The MDL, as defined in 40 CFR 136, is the minimum concentration of an analyte that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero. The practical quantitation limit (PQL) for these analytes is the lowest concentration that can be reliably measured, and is defined as 5 times the MDL.

The reported MDLs for all analytes demonstrate compliance with contractual requirements. Some samples were diluted prior to analysis of selenium to reduce interferences, resulting in elevated detection limits.

Laboratory Instrument Calibration

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing acceptable qualitative and quantitative data for all analytes. Initial calibration demonstrates that the instrument is capable of acceptable performance in the beginning of the analytical run and of producing a linear curve. Compliance requirements for continuing calibration checks are established to ensure that the instrument continues to be capable of producing acceptable qualitative and quantitative data. All laboratory instrument calibrations were performed correctly in accordance with the cited methods. All calibration and laboratory spike standards were prepared from independent sources.

Method EPA 300.0
Calibrations for chloride and sulfate were performed using seven calibration standards on August 19, 2013. The calibration curve correlation coefficient values were greater than 0.995 and the absolute values of the intercepts were less than 3 times the MDL. Initial and continuing calibration verification checks were made at the required frequency. All calibration checks met the acceptance criteria.

Method EPA 353.2
Calibrations for nitrate + nitrite as N were performed using five calibration standards on December 17, 2013. The calibration curve correlation coefficient values were greater than 0.995 and the absolute values of the intercepts were less than 3 times the MDL. Initial and continuing calibration verification checks were made at the required frequency. All calibration check results were within the acceptance criteria.

Method SM 2540C
There are no initial or continuing calibration requirements associated with the total dissolved solids method. The laboratory noted that some total dissolved solids samples failed the weight check criterion of 0.0005 gram. These weights were within 4 percent, however, so no further qualification is necessary.

Method SW-846 6020A
Calibrations were performed for selenium and uranium on December 11 and 12, 2013, using four calibration standards. The calibration curve correlation coefficient values were greater than 0.995. The absolute values of the calibration curve intercepts were less than 3 times the MDL.

Initial and continuing calibration verification checks were made at the required frequency. All calibration checks associated with reported results met the acceptance criteria. Reporting limit verification checks were made at the required frequency to verify the linearity of the calibration curve near the PQL and all results were within the acceptance range. Mass calibration and resolution verifications were performed at the beginning of each analytical run in accordance with the analytical procedure. Internal standard recoveries associated with requested analytes were stable and within acceptable ranges.

Method and Calibration Blanks

Method blanks are analyzed to assess any contamination that may have occurred during sample preparation. Calibration blanks are analyzed to assess instrument contamination prior to and during sample analysis. All method blank and calibration blank results associated with the samples were below the PQL for all analytes. In cases where a blank concentration exceeds the MDL, the associated sample results are qualified with a "U" flag (not detected) when the sample result is greater than the MDL but less than 5 times the blank concentration.

Inductively Coupled Plasma Interference Check Sample Analysis

Interference check samples were analyzed at the required frequency to verify the instrumental interelement and background correction factors. All check sample results met the acceptance criteria.

Matrix Spike Analysis

Matrix spike (MS) samples are used to measure method performance in the sample matrix. The MS data are not evaluated when the concentration of the unspiked sample is greater than 4 times the spike. The spike recoveries met the acceptance criteria for all analytes evaluated.

Laboratory Replicate Analysis

Laboratory replicate analyses are used to determine laboratory precision for each sample matrix. The relative percent difference for replicate results that are greater than 5 times the PQL should be less than 20 percent. For results that are less than 5 times the PQL, the range should be no greater than the PQL. The replicate results met these criteria, demonstrating acceptable laboratory precision.

Laboratory Control Sample

Laboratory control samples were analyzed at the correct frequency to provide information on the accuracy of the analytical method and the overall laboratory performance, including sample preparation. All control sample results were acceptable.

Metals Serial Dilution

Serial dilutions were prepared and analyzed for the metals analyses to monitor chemical or physical interferences in the sample matrix. Serial dilution data are evaluated when the concentration of the undiluted sample is greater than 50 times the MDL. No serial dilution data required evaluation.

Completeness

Results were reported in the correct units for all analytes requested using contract-required laboratory qualifiers.

Chromatography Peak Integration

The integration of analyte peaks was reviewed for all chromatography data. All peak integrations were satisfactory.

Electronic Data Deliverable (EDD) File

The EDD file arrived on December 20, 2013. The Sample Management System EDD validation module was used to verify that the EDD file was complete and in compliance with requirements. The module compares the contents of the file to the requested analyses to ensure all and only the requested data are delivered. The contents of the EDD were manually examined to verify that the sample results accurately reflect the data contained in the sample data package.

SAMPLE MANAGEMENT SYSTEM
General Data Validation Report

RIN: 13115747 **Lab Code:** GEN **Validator:** Gretchen Baer **Validation Date:** 1/29/2014

Project: L-Bar **Analysis Type:** ☑ Metals ☑ General Chem ☐ Rad ☐ Organics

# of Samples: 12 **Matrix:** Water **Requested Analysis Completed:** Yes

Chain of Custody

Present: OK **Signed:** OK **Dated:** OK

Sample

Integrity: OK **Preservation:** OK **Temperature:** OK

Select Quality Parameters

☑ Holding Times	All analyses were completed within the applicable holding times.
☑ Detection Limits	There are 0 detection limit failures.
☐ Field/Trip Blanks	
☑ Field Duplicates	There was 1 duplicate evaluated.

SAMPLE MANAGEMENT SYSTEM

Metals Data Validation Worksheet

RIN: 13115747 **Lab Code:** GEN **Date Due:** 12/20/2013

Matrix: Water **Site Code:** BAR01 **Date Completed:** 12/30/2013

Analyte	Method Type	Date Analyzed	CALIBRATION				Method Blank	LCS %R	MS %R	MSD %R	Dup. RPD	ICSAB %R	Serial Dil. %R	CRI %R
			Int.	R^2	CCV	CCB								
Selenium	ICP/MS	12/12/2013	0.0000	1.0000	OK	OK	OK	103.0	95.6			93.0		102.0
Uranium	ICP/MS	12/12/2013	0.0000	1.0000	OK	OK	OK	105.0	107.0			101.0		100.0

SAMPLE MANAGEMENT SYSTEM

Wet Chemistry Data Validation Worksheet

RIN: 13115747 **Lab Code:** GEN **Date Due:** 12/20/2013

Matrix: Water **Site Code:** BAR01 **Date Completed:** 12/30/2013

Analyte	Date Analyzed	CALIBRATION				Method Blank	LCS %R	MS %R	MSD %R	DUP RPD	Serial Dil. %R
		Int.	R^2	CCV	CCB						
Chloride	09/18/2013	0.048	0.9995								
Chloride	12/10/2013			OK	OK	OK	96.40				
Chloride	12/11/2013							96.6		2.00	
Chloride	12/12/2013									0	
NO2+NO3 as N	12/17/2013	-0.011	0.9991	OK	OK	OK	101.00	99.8		1.00	
NO2+NO3 as N	12/17/2013							93.1		0	
Sulfate	09/18/2013	0.042	0.9998								
Sulfate	12/10/2013			OK	OK	OK	104.00				
Sulfate	12/11/2013							104.0		6.00	
Sulfate	12/12/2013									0	
Total Dissolved Solids	11/25/2013					OK	98.10			0	
Total Dissolved Solids	11/25/2013									3.00	
Total Dissolved Solids	11/25/2013									0	

Sampling Quality Control Assessment

The following information summarizes and assesses quality control for this sampling event.

Sampling Protocol

Sample results for monitoring wells were qualified with an "F" flag in the database, indicating the wells were purged and sampled using the low-flow sampling method and Category I criteria, with the following exceptions:

- Moquino New is a tap location (Category IV).
- Wells 100, 17B, 1A, 72, and 81 were classified as Category II. The sample results were qualified with a "Q" flag, indicating the data are qualitative because of the sampling technique.

Equipment Blank Assessment

No equipment blanks were collected. All samples were collected using dedicated equipment that did not require equipment blanks.

Field Duplicate Analysis

Field duplicate samples are collected and analyzed as an indication of overall precision of the measurement process. The precision observed includes both field and laboratory precision and has more variability than laboratory duplicates, which measure only laboratory performance. Duplicate samples were collected from location 62. The relative percent difference for duplicate results that are greater than 5 times the PQL should be less than 20 percent. For results that are less than 5 times the PQL, the range should be no greater than the PQL. The duplicate results met the criteria, demonstrating acceptable overall precision.

SAMPLE MANAGEMENT SYSTEM

Validation Report: Field Duplicates

RIN: 13115747 **Lab Code:** GEN **Project:** L-Bar **Validation Date:** 1/29/2014

Duplicate: 2274 **Sample:** 62

Analyte	Sample Result	Sample Flag	Sample Error	Sample Dilution	Duplicate Result	Duplicate Flag	Duplicate Error	Duplicate Dilution	RPD	RER	Units
Chloride	44.8			20.00	43.8			20.00	2.26		mg/L
NO2+NO3 as N	0.017	U		1.00	0.017	U		1.00			mg/L
Selenium	1.50	U		1.00	1.50	U		1.00			ug/L
Sulfate	541			50.00	542			50.00	0.18		mg/L
Total Dissolved Solids	1470			1.00	1460			1.00	0.68		mg/L
Uranium	0.073	B		1.00	0.067	B		1.00			ug/L

Certification

All laboratory analytical quality control criteria were met except as qualified in this report. The data qualifiers listed on the SEEPro database reports are defined on the last page of each report. All data in this package are considered validated and available for use.

Laboratory Coordinator: Stephen Donivan — Date: 2-10-2014

Data Validation Lead: Gretchen Baer — Date: 2-10-2014

Attachment 1
Assessment of Anomalous Data

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Potential Outliers Report

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Potential Outliers Report

Potential outliers are measurements that are extremely large or small relative to the rest of the data and, therefore, are suspected of misrepresenting the population from which they were collected. Potential outliers may result from transcription errors, data-coding errors, or measurement system problems. However, outliers may also represent true extreme values of a distribution and indicate more variability in the population than was expected.

Statistical outlier tests give probabilistic evidence that an extreme value does not "fit" with the distribution of the remainder of the data and is therefore a statistical outlier. These tests should only be used to identify data points that require further investigation. The tests alone cannot determine whether a statistical outlier should be discarded or corrected within a data set.

There are three steps involved in identifying extreme values or outliers:

1. Identify extreme values that may be potential outliers by generating the Outliers Report using the Sample Management System from data in the environmental database. The application compares the new data set (in standard environmental database units) with historical data and lists the new data that fall outside the historical data range. A determination is also made if the data are normally distributed using the Shapiro-Wilk Test.
2. Apply the appropriate statistical test. Dixon's Extreme Value test is used to test for statistical outliers when the sample size is less than or equal to 25. This test considers both extreme values that are much smaller than the rest of the data (case 1) and extreme values that are much larger than the rest of the data (case 2). This test is valid only if the data without the suspected outlier are normally distributed. Rosner's Test is a parametric test that is used to detect outliers for sample sizes of 25 or more. This test also assumes that the data without the suspected outliers are normally distributed.
3. Scientifically review statistical outliers and decide on their disposition. The review should include an evaluation of any notable trends in the data that may indicate the outliers represent true extreme values.

The nitrate + nitrite as N result for location 61 was identified as anomalously high due to trending or low variability in the few available data points. The data for this RIN are acceptable as qualified.

Data Validation Outliers Report - No Field Parameters
Comparison: All Historical Data
Laboratory: GEL Laboratories
RIN: 13115747
Report Date: 1/30/2014

					Current			Historical Maximum			Historical Minimum			Number of Data Points		Statistical Outlier
						Qualifiers			Qualifiers			Qualifiers				
Site Code	Location Code	Sample ID	Sample Date	Analyte	Result	*Lab*	*Data*	Result	*Lab*	*Data*	Result	*Lab*	*Data*	N	N Below Detect	
BAR01	1A	N001	11/20/2013	Chloride	433		FQ	341		FQ	270		FQ	5	0	No
BAR01	1A	N001	11/20/2013	Sulfate	4640		FQ	3630		FQ	3000		FQ	5	0	No
BAR01	1A	N001	11/20/2013	Total Dissolved Solids	8050		FQ	7360		FQ	5400		FQ	5	0	No
BAR01	1A	N001	11/20/2013	Uranium	0.00769		FQ	0.00479		FQ	0.0013		FQ	5	0	No
BAR01	61	N001	11/20/2013	Nitrate + Nitrite as Nitrogen	0.216		F	0.0695	J	F	0.045		F	6	0	Yes
BAR01	61	N001	11/20/2013	Sulfate	2980		F	3300		F	3010		F	6	0	No
BAR01	61	N001	11/20/2013	Uranium	0.000325		F	0.000318		F	0.00025		UF	6	1	No
BAR01	63	N001	11/20/2013	Chloride	40.6		F	49		FQ	41		F	5	0	No

STATISTICAL TESTS:
The distribution of the data is tested for normality or lognormality using the Shapiro-Wilk Test
Outliers are identified using Dixon's Test when there are 25 or fewer data points.
Outliers are identified using Rosner's Test when there are 26 or more data points.
See Data Quality Assessment: Statistical Methods for Practitioners, EPA QC/G-9S, February 2006.

Attachment 2
Data Presentation

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Groundwater Quality Data

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General Water Quality Data by Location (USEE105) FOR SITE BAR01, L-Bar Disposal Site
REPORT DATE: 1/30/2014
Location: 100 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Chloride	mg/L	11/20/2013	0001	20	-	60	29		FQ	#	1.34	
Nitrate + Nitrite as Nitrogen	mg/L	11/20/2013	0001	20	-	60	1.17		FQ	#	0.017	
Oxidation Reduction Potential	mV	11/20/2013	N001	20	-	60	199.3		FQ	#		
pH	s.u.	11/20/2013	N001	20	-	60	6.9		FQ	#		
Selenium	mg/L	11/20/2013	0001	20	-	60	0.0015	U	FQ	#	0.0015	
Specific Conductance	umhos /cm	11/20/2013	N001	20	-	60	4387		FQ	#		
Sulfate	mg/L	11/20/2013	0001	20	-	60	2430		FQ	#	26.6	
Temperature	C	11/20/2013	N001	20	-	60	12.63		FQ	#		
Total Dissolved Solids	mg/L	11/20/2013	0001	20	-	60	3850		FQ	#	3.4	
Turbidity	NTU	11/20/2013	N001	20	-	60	13.5		FQ	#		
Uranium	mg/L	11/20/2013	0001	20	-	60	0.00179		FQ	#	0.000067	

General Water Quality Data by Location (USEE105) FOR SITE BAR01, L-Bar Disposal Site
REPORT DATE: 1/30/2014
Location: 17B WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Chloride	mg/L	11/20/2013	N001	37	-	60	423		FQ	#	33.5	
Nitrate + Nitrite as Nitrogen	mg/L	11/20/2013	N001	37	-	60	590		FQ	#	8.5	
Oxidation Reduction Potential	mV	11/20/2013	N001	37	-	60	92		FQ	#		
pH	s.u.	11/20/2013	N001	37	-	60	6.53		FQ	#		
Selenium	mg/L	11/20/2013	N001	37	-	60	0.3		FQ	#	0.015	
Specific Conductance	umhos /cm	11/20/2013	N001	37	-	60	12537		FQ	#		
Sulfate	mg/L	11/20/2013	N001	37	-	60	4750		FQ	#	66.5	
Temperature	C	11/20/2013	N001	37	-	60	14.25		FQ	#		
Total Dissolved Solids	mg/L	11/20/2013	N001	37	-	60	11600		FQ	#	3.4	
Turbidity	NTU	11/20/2013	N001	37	-	60	4.94		FQ	#		
Uranium	mg/L	11/20/2013	N001	37	-	60	0.0316		FQ	#	0.000067	

General Water Quality Data by Location (USEE105) FOR SITE BAR01, L-Bar Disposal Site
REPORT DATE: 1/30/2014
Location: 1A WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Chloride	mg/L	11/20/2013	N001	130	-	140	433		FQ	#	33.5	
Nitrate + Nitrite as Nitrogen	mg/L	11/20/2013	N001	130	-	140	0.0667		FQ	#	0.017	
Oxidation Reduction Potential	mV	11/20/2013	N001	130	-	140	156.2		FQ	#		
pH	s.u.	11/20/2013	N001	130	-	140	7.18		FQ	#		
Selenium	mg/L	11/20/2013	N001	130	-	140	0.003	U	FQ	#	0.003	
Specific Conductance	umhos /cm	11/20/2013	N001	130	-	140	9806		FQ	#		
Sulfate	mg/L	11/20/2013	N001	130	-	140	4640		FQ	#	66.5	
Temperature	C	11/20/2013	N001	130	-	140	15.42		FQ	#		
Total Dissolved Solids	mg/L	11/20/2013	N001	130	-	140	8050		FQ	#	3.4	
Turbidity	NTU	11/20/2013	N001	130	-	140	9.9		FQ	#		
Uranium	mg/L	11/20/2013	N001	130	-	140	0.00769		FQ	#	0.000067	

General Water Quality Data by Location (USEE105) FOR SITE BAR01, L-Bar Disposal Site
REPORT DATE: 1/30/2014
Location: 29A WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Chloride	mg/L	11/20/2013	0001	95	-	130	175		F	#	1.34	
Nitrate + Nitrite as Nitrogen	mg/L	11/20/2013	0001	95	-	130	0.017	U	F	#	0.017	
Oxidation Reduction Potential	mV	11/20/2013	N001	95	-	130	-42.1		F	#		
pH	s.u.	11/20/2013	N001	95	-	130	7.24		F	#		
Selenium	mg/L	11/20/2013	0001	95	-	130	0.003	U	F	#	0.003	
Specific Conductance	umhos /cm	11/20/2013	N001	95	-	130	8564		F	#		
Sulfate	mg/L	11/20/2013	0001	95	-	130	4380		F	#	66.5	
Temperature	C	11/20/2013	N001	95	-	130	13.7		F	#		
Total Dissolved Solids	mg/L	11/20/2013	0001	95	-	130	6990		F	#	3.4	
Turbidity	NTU	11/20/2013	N001	95	-	130	12.2		F	#		
Uranium	mg/L	11/20/2013	0001	95	-	130	0.000122	B	F	#	0.000067	

General Water Quality Data by Location (USEE105) FOR SITE BAR01, L-Bar Disposal Site
REPORT DATE: 1/30/2014
Location: 61 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Chloride	mg/L	11/20/2013	N001	33.1	-	52.9	102		F	#	1.34	
Nitrate + Nitrite as Nitrogen	mg/L	11/20/2013	N001	33.1	-	52.9	0.216		F	#	0.017	
Oxidation Reduction Potential	mV	11/20/2013	N001	33.1	-	52.9	85.9		F	#		
pH	s.u.	11/20/2013	N001	33.1	-	52.9	7.01		F	#		
Selenium	mg/L	11/20/2013	N001	33.1	-	52.9	0.0015	U	F	#	0.0015	
Specific Conductance	umhos /cm	11/20/2013	N001	33.1	-	52.9	5628		F	#		
Sulfate	mg/L	11/20/2013	N001	33.1	-	52.9	2980		F	#	66.5	
Temperature	C	11/20/2013	N001	33.1	-	52.9	12.97		F	#		
Total Dissolved Solids	mg/L	11/20/2013	N001	33.1	-	52.9	4990		F	#	3.4	
Turbidity	NTU	11/20/2013	N001	33.1	-	52.9	5.08		F	#		
Uranium	mg/L	11/20/2013	N001	33.1	-	52.9	0.000325		F	#	0.000067	

General Water Quality Data by Location (USEE105) FOR SITE BAR01, L-Bar Disposal Site
REPORT DATE: 1/30/2014
Location: 62 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Chloride	mg/L	11/20/2013	N001	34.8	-	74.5	44.8		F	#	1.34	
Chloride	mg/L	11/20/2013	N002	34.8	-	74.5	43.8		F	#	1.34	
Nitrate + Nitrite as Nitrogen	mg/L	11/20/2013	N001	34.8	-	74.5	0.017	U	F	#	0.017	
Nitrate + Nitrite as Nitrogen	mg/L	11/20/2013	N002	34.8	-	74.5	0.017	U	F	#	0.017	
Oxidation Reduction Potential	mV	11/20/2013	N001	34.8	-	74.5	-124.4		F	#		
pH	s.u.	11/20/2013	N001	34.8	-	74.5	8.06		F	#		
Selenium	mg/L	11/20/2013	N001	34.8	-	74.5	0.0015	U	F	#	0.0015	
Selenium	mg/L	11/20/2013	N002	34.8	-	74.5	0.0015	U	F	#	0.0015	
Specific Conductance	umhos /cm	11/20/2013	N001	34.8	-	74.5	2163		F	#		
Sulfate	mg/L	11/20/2013	N001	34.8	-	74.5	541		F	#	6.65	
Sulfate	mg/L	11/20/2013	N002	34.8	-	74.5	542		F	#	6.65	
Temperature	C	11/20/2013	N001	34.8	-	74.5	11.6		F	#		
Total Dissolved Solids	mg/L	11/20/2013	N001	34.8	-	74.5	1470		F	#	3.4	
Total Dissolved Solids	mg/L	11/20/2013	N002	34.8	-	74.5	1460		F	#	3.4	
Turbidity	NTU	11/20/2013	N001	34.8	-	74.5	0.95		F	#		
Uranium	mg/L	11/20/2013	N001	34.8	-	74.5	0.000073	B	F	#	0.000067	
Uranium	mg/L	11/20/2013	N002	34.8	-	74.5	0.000067	B	F	#	0.000067	

General Water Quality Data by Location (USEE105) FOR SITE BAR01, L-Bar Disposal Site
REPORT DATE: 1/30/2014
Location: 63 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Chloride	mg/L	11/20/2013	N001	70.4	-	110.1	40.6		F	#	1.34	
Nitrate + Nitrite as Nitrogen	mg/L	11/20/2013	N001	70.4	-	110.1	0.017	U	F	#	0.017	
Oxidation Reduction Potential	mV	11/20/2013	N001	70.4	-	110.1	-72		F	#		
pH	s.u.	11/20/2013	N001	70.4	-	110.1	8.03		F	#		
Selenium	mg/L	11/20/2013	N001	70.4	-	110.1	0.0015	U	F	#	0.0015	
Specific Conductance	umhos /cm	11/20/2013	N001	70.4	-	110.1	2103		F	#		
Sulfate	mg/L	11/20/2013	N001	70.4	-	110.1	513		F	#	6.65	
Temperature	C	11/20/2013	N001	70.4	-	110.1	12.52		F	#		
Total Dissolved Solids	mg/L	11/20/2013	N001	70.4	-	110.1	1420		F	#	3.4	
Turbidity	NTU	11/20/2013	N001	70.4	-	110.1	8.51		F	#		
Uranium	mg/L	11/20/2013	N001	70.4	-	110.1	0.000111	B	F	#	0.000067	

General Water Quality Data by Location (USEE105) FOR SITE BAR01, L-Bar Disposal Site
REPORT DATE: 1/30/2014
Location: 69 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Chloride	mg/L	11/20/2013	N001	29.6	-	69.4	684		F	#	67	
Nitrate + Nitrite as Nitrogen	mg/L	11/20/2013	N001	29.6	-	69.4	0.017	U	F	#	0.017	
Oxidation Reduction Potential	mV	11/20/2013	N001	29.6	-	69.4	33.3		F	#		
pH	s.u.	11/20/2013	N001	29.6	-	69.4	6.72		F	#		
Selenium	mg/L	11/20/2013	N001	29.6	-	69.4	0.0075	U	F	#	0.0075	
Specific Conductance	umhos /cm	11/20/2013	N001	29.6	-	69.4	16578		F	#		
Sulfate	mg/L	11/20/2013	N001	29.6	-	69.4	9930		F	#	133	
Temperature	C	11/20/2013	N001	29.6	-	69.4	13.45		F	#		
Total Dissolved Solids	mg/L	11/20/2013	N001	29.6	-	69.4	16800		F	#	3.4	
Turbidity	NTU	11/20/2013	N001	29.6	-	69.4	3.04		F	#		
Uranium	mg/L	11/20/2013	N001	29.6	-	69.4	1.85		F	#	0.0067	

General Water Quality Data by Location (USEE105) FOR SITE BAR01, L-Bar Disposal Site
REPORT DATE: 1/30/2014
Location: 72 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Chloride	mg/L	11/20/2013	N001	24.5	-	64.3	174		FQ	#	1.34	
Nitrate + Nitrite as Nitrogen	mg/L	11/20/2013	N001	24.5	-	64.3	4.31		FQ	#	0.085	
Oxidation Reduction Potential	mV	11/20/2013	N001	24.5	-	64.3	96.7		FQ	#		
pH	s.u.	11/20/2013	N001	24.5	-	64.3	7.09		FQ	#		
Selenium	mg/L	11/20/2013	N001	24.5	-	64.3	0.00625		FQ	#	0.0015	
Specific Conductance	umhos /cm	11/20/2013	N001	24.5	-	64.3	7106		FQ	#		
Sulfate	mg/L	11/20/2013	N001	24.5	-	64.3	3900		FQ	#	66.5	
Temperature	C	11/20/2013	N001	24.5	-	64.3	13.22		FQ	#		
Total Dissolved Solids	mg/L	11/20/2013	N001	24.5	-	64.3	6180		FQ	#	3.4	
Turbidity	NTU	11/20/2013	N001	24.5	-	64.3	8.62		FQ	#		
Uranium	mg/L	11/20/2013	N001	24.5	-	64.3	0.00805		FQ	#	0.000067	

General Water Quality Data by Location (USEE105) FOR SITE BAR01, L-Bar Disposal Site
REPORT DATE: 1/30/2014
Location: 81 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Chloride	mg/L	11/20/2013	N001	19.6	-	59.6	193		FQ	#	1.34	
Nitrate + Nitrite as Nitrogen	mg/L	11/20/2013	N001	19.6	-	59.6	15.8		FQ	#	0.85	
Oxidation Reduction Potential	mV	11/20/2013	N001	19.6	-	59.6	51		FQ	#		
pH	s.u.	11/20/2013	N001	19.6	-	59.6	7.09		FQ	#		
Selenium	mg/L	11/20/2013	N001	19.6	-	59.6	0.0733		FQ	#	0.0015	
Specific Conductance	umhos /cm	11/20/2013	N001	19.6	-	59.6	7629		FQ	#		
Sulfate	mg/L	11/20/2013	N001	19.6	-	59.6	4730		FQ	#	66.5	
Temperature	C	11/20/2013	N001	19.6	-	59.6	13.81		FQ	#		
Total Dissolved Solids	mg/L	11/20/2013	N001	19.6	-	59.6	7710		FQ	#	3.4	
Turbidity	NTU	11/20/2013	N001	19.6	-	59.6	7.02		FQ	#		
Uranium	mg/L	11/20/2013	N001	19.6	-	59.6	0.0226		FQ	#	0.000067	

General Water Quality Data by Location (USEE105) FOR SITE BAR01, L-Bar Disposal Site
REPORT DATE: 1/30/2014
Location: Moquino New WELL Public water supply well

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Chloride	mg/L	11/20/2013	N001	-	6.42			#	1.34	
Nitrate + Nitrite as Nitrogen	mg/L	11/20/2013	N001	-	0.132			#	0.017	
Oxidation Reduction Potential	mV	11/20/2013	N001	-	200.3			#		
pH	s.u.	11/20/2013	N001	-	8.45			#		
Selenium	mg/L	11/20/2013	N001	-	0.0015	U		#	0.0015	
Specific Conductance	umhos /cm	11/20/2013	N001	-	773			#		
Sulfate	mg/L	11/20/2013	N001	-	91.9			#	2.66	
Temperature	C	11/20/2013	N001	-	10.93			#		
Total Dissolved Solids	mg/L	11/20/2013	N001	-	459			#	3.4	
Turbidity	NTU	11/20/2013	N001	-	0.62			#		
Uranium	mg/L	11/20/2013	N001	-	0.000097	B		#	0.000067	

SAMPLE ID CODES: 000X = Filtered sample (0.45 µm). N00X = Unfiltered sample. X = replicate number.

LAB QUALIFIERS:
- * Replicate analysis not within control limits.
- > Result above upper detection limit.
- A TIC is a suspected aldol-condensation product.
- B Inorganic: Result is between the IDL and CRDL. Organic: Analyte also found in method blank.
- C Pesticide result confirmed by GC-MS.
- D Analyte determined in diluted sample.
- E Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
- H Holding time expired, value suspect.
- I Increased detection limit due to required dilution.
- J Estimated
- N Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compound (TIC).
- P > 25% difference in detected pesticide or Aroclor concentrations between 2 columns.

U	Analytical result below detection limit.
W	Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
X,Y,Z	Laboratory defined qualifier, see case narrative.

DATA QUALIFIERS:

F	Low flow sampling method used.	G	Possible grout contamination, pH > 9.	J	Estimated value.
L	Less than 3 bore volumes purged prior to sampling.	Q	Qualitative result due to sampling technique.	R	Unusable result.
U	Parameter analyzed for but was not detected.	X	Location is undefined.		

QA QUALIFIER:

#	Validated according to quality assurance guidelines.

Static Water Level Data

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STATIC WATER LEVELS (USEE700) FOR SITE BAR01, L-Bar Disposal Site
REPORT DATE: 1/30/2014

Location Code	Flow Code	Top of Casing Elevation (Ft)	Measurement Date	Measurement Time	Depth From Top of Casing (Ft)	Water Elevation (Ft)	Water Level Flag
100			11/20/2013	09:45:59	54.99	NA	E
17B			11/20/2013	11:30:58	44.55	NA	E
1A			11/20/2013	10:10:13	94.35	NA	E
29A			11/20/2013	13:00:24	57.87	NA	E
61			11/20/2013	10:25:45	36.29	NA	E
62			11/20/2013	11:00:58	25.87	NA	E
63			11/20/2013	11:45:31	53.22	NA	E
69			11/20/2013	14:10:03	30.32	NA	E
72			11/20/2013	11:00:44	27.5	NA	E
81			11/20/2013	14:45:29	41.33	NA	E

FLOW CODES: B BACKGROUND C CROSS GRADIENT D DOWN GRADIENT F OFF SITE
N UNKNOWN O ON SITE U UPGRADIENT

WATER LEVEL FLAGS: D Dry F Flowing B Below top of pump
E TOP OF CASING ELEVATION DATA NOT AVAILABLE

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Time-Concentration Graphs

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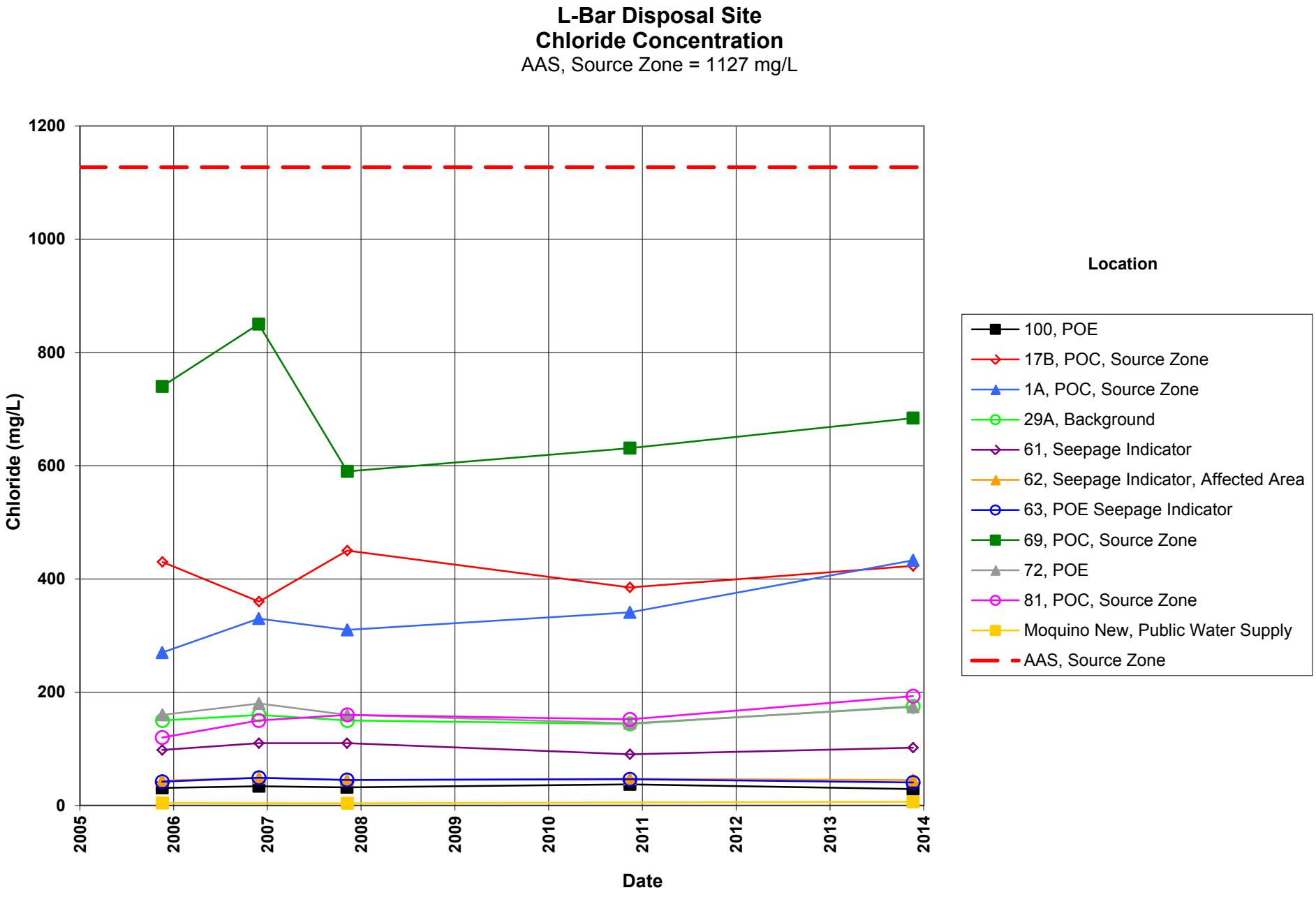
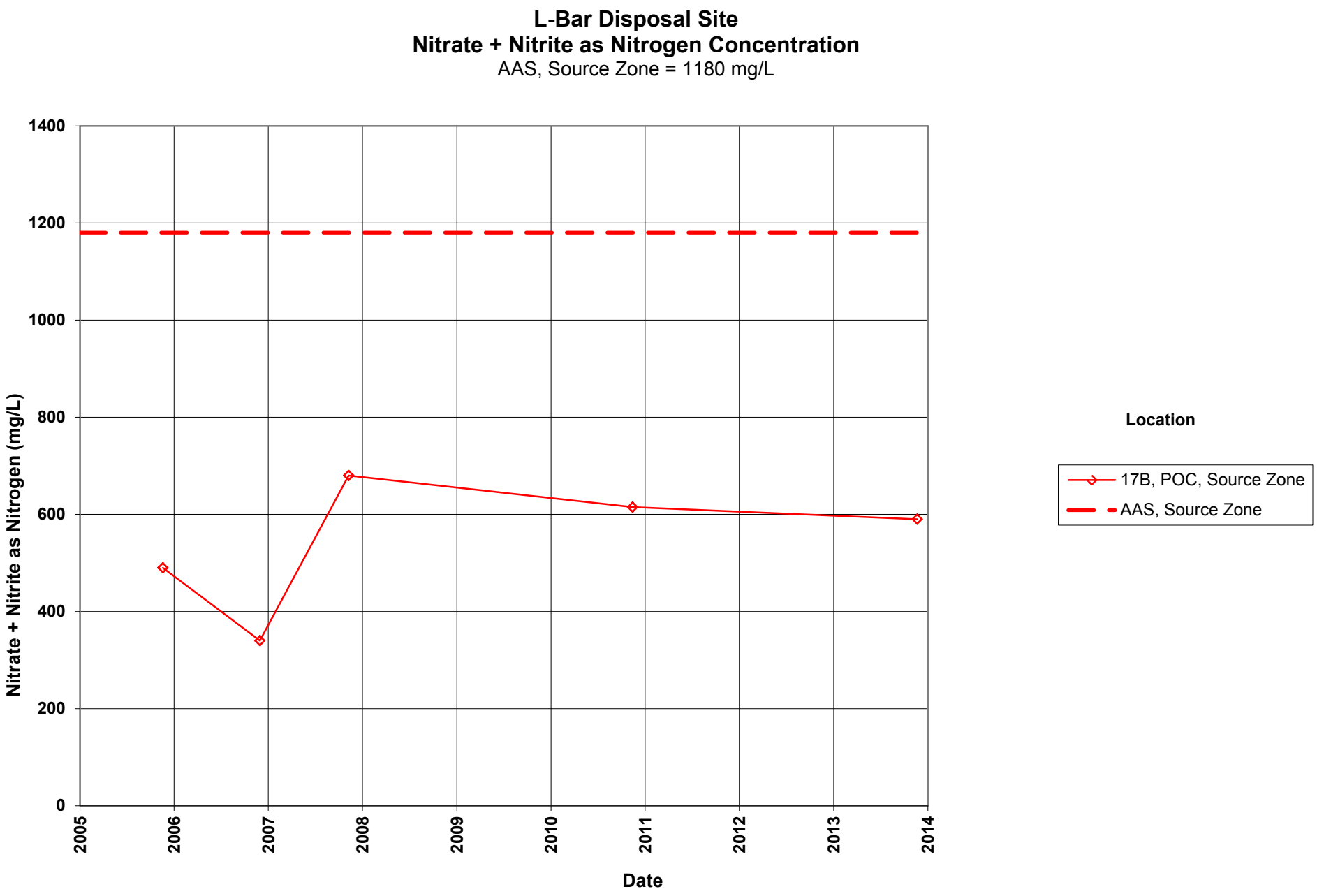
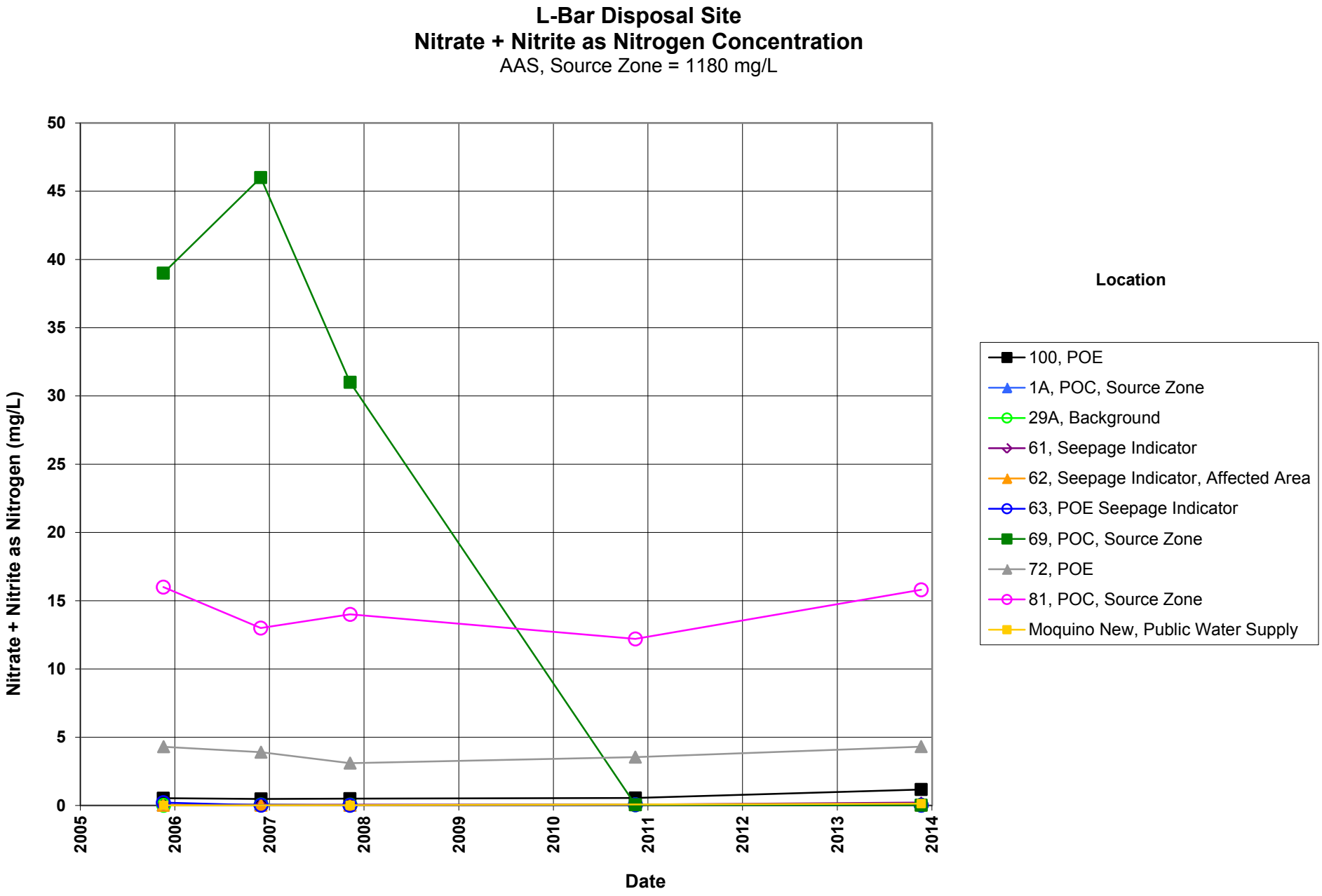
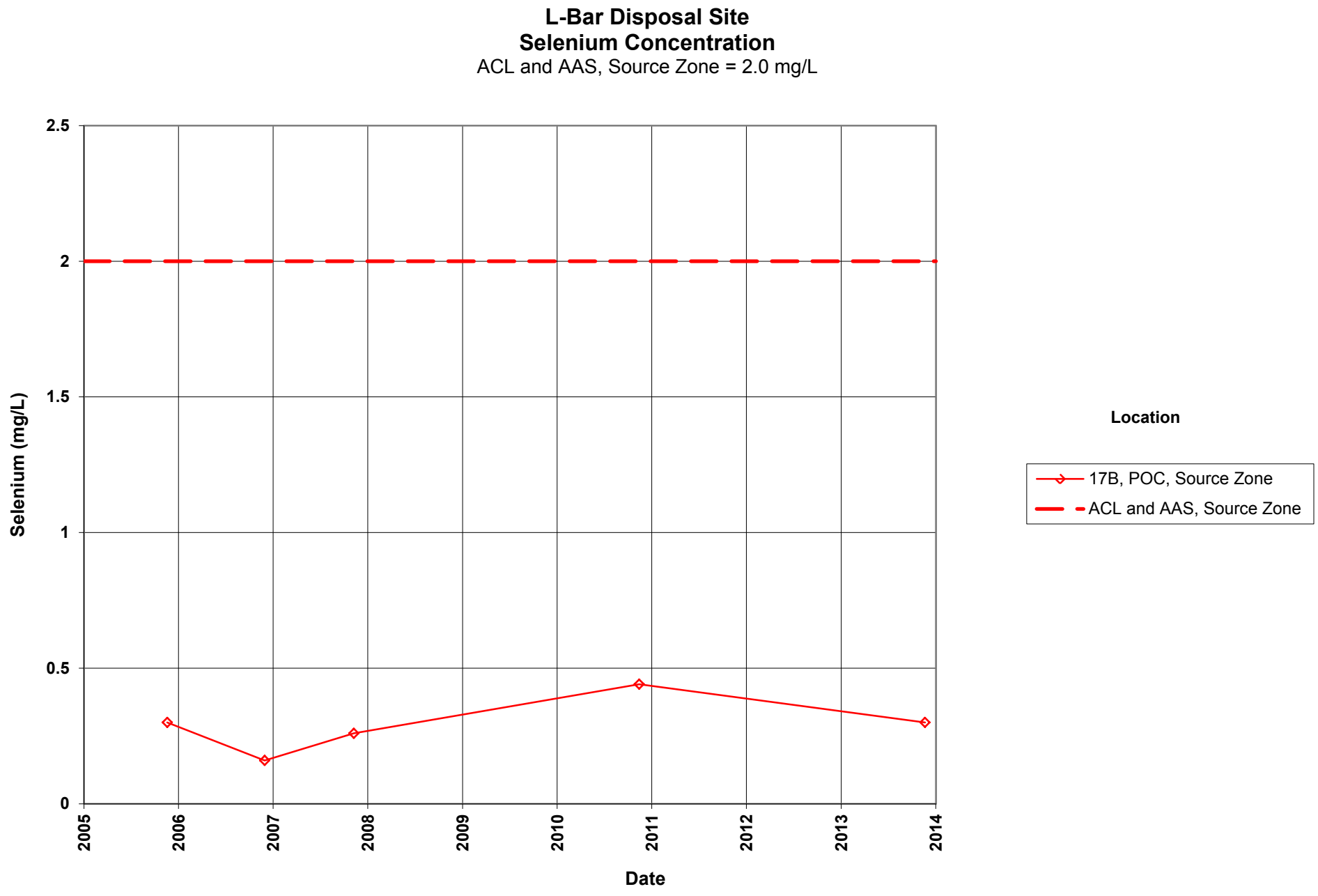
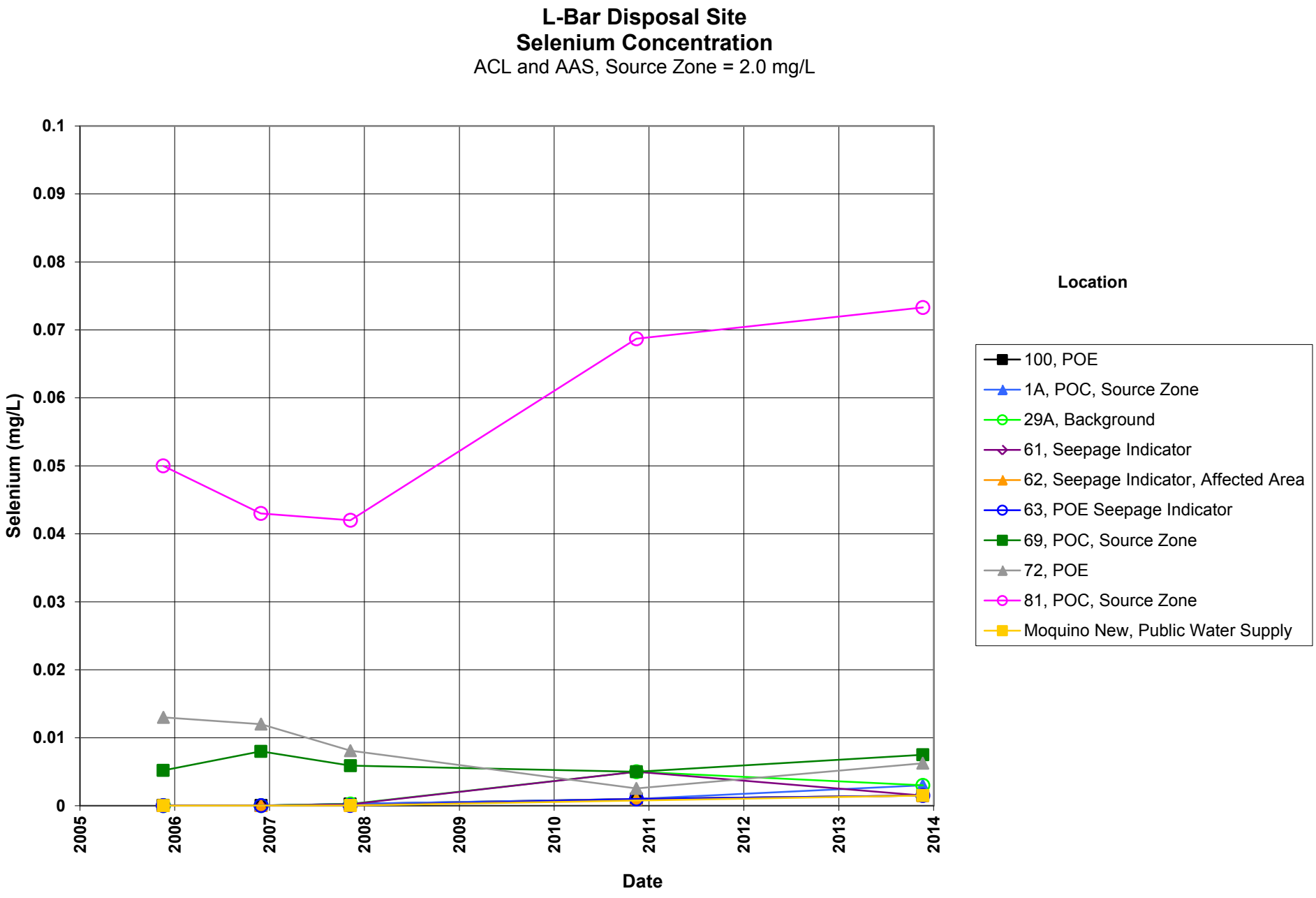
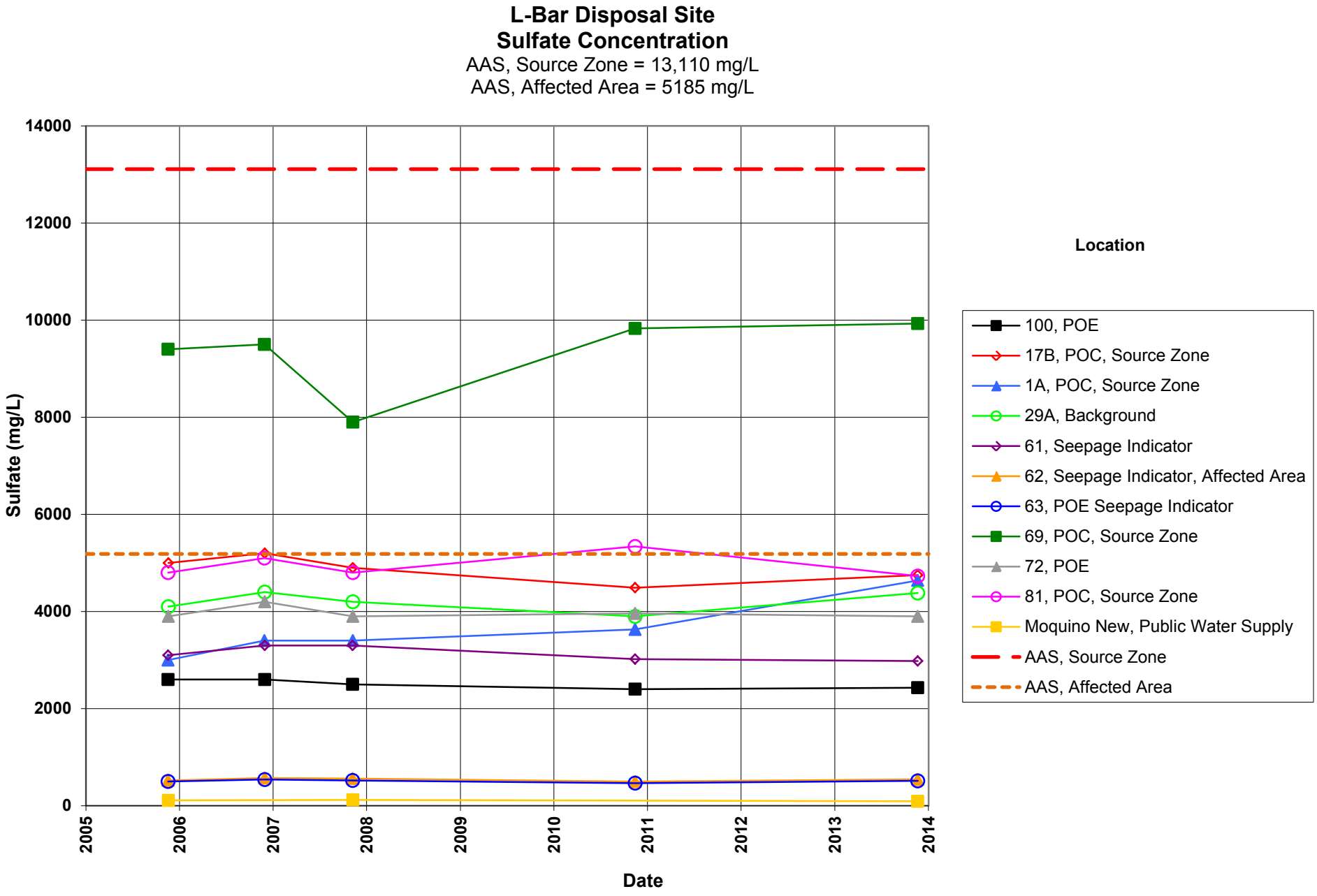

L-Bar Disposal Site
Chloride Concentration
AAS, Source Zone = 1127 mg/L
Chloride (mg/L)
1200
1000
800
600
400
200
0
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
Date
Location
100, POE
17B, POC, Source Zone
1A, POC, Source Zone
29A, Background
61, Seepage Indicator
62, Seepage Indicator, Affected Area
63, POE Seepage Indicator
69, POC, Source Zone
72, POE
81, POC, Source Zone
Moquino New, Public Water Supply
AAS, Source Zone

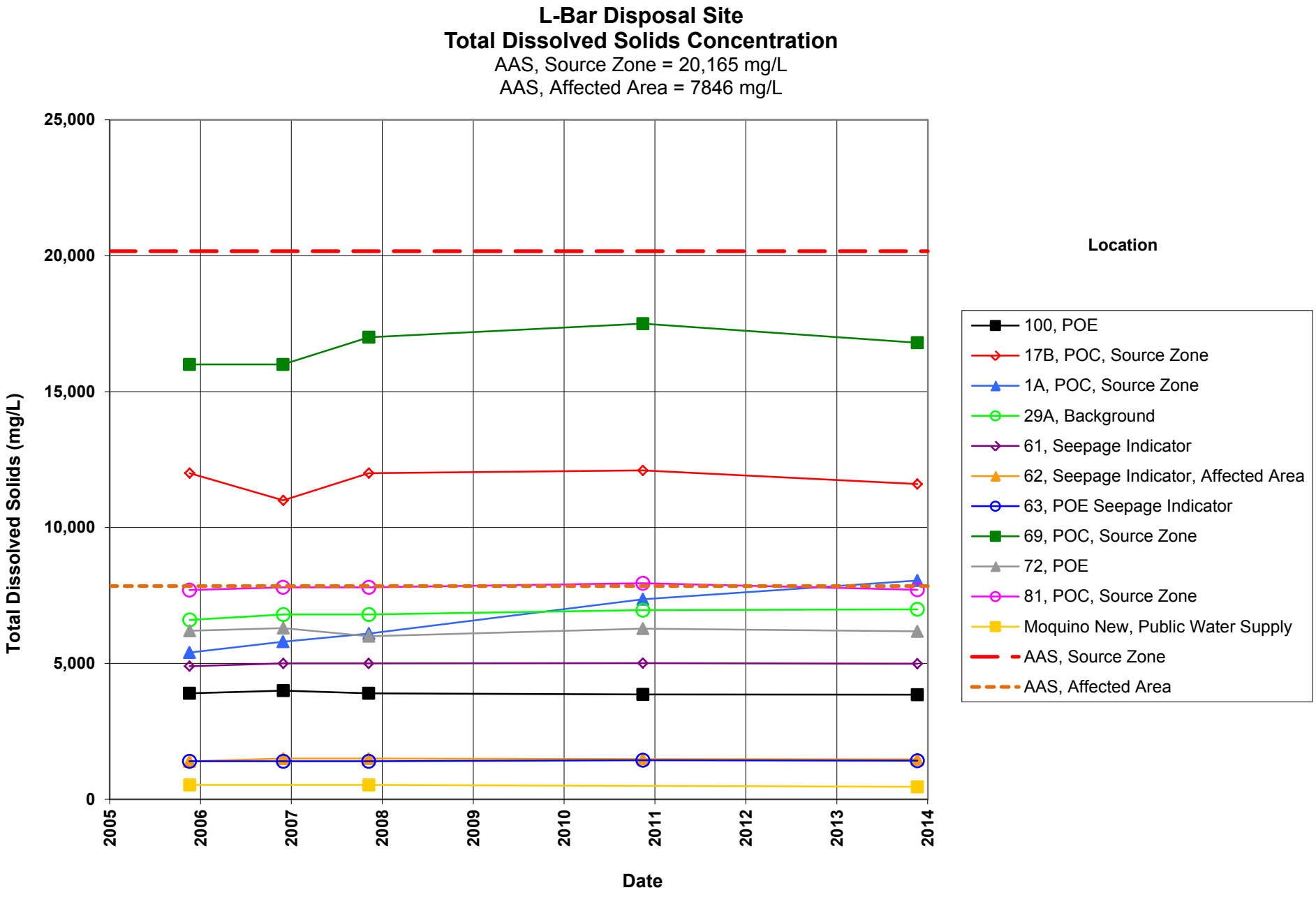

L-Bar Disposal Site
Nitrate + Nitrite as Nitrogen Concentration
AAS, Source Zone = 1180 mg/L
Nitrate + Nitrite as Nitrogen (mg/L)
1400
1200
1000
800
600
400
200
0
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
Date
Location
17B, POC, Source Zone
AAS, Source Zone

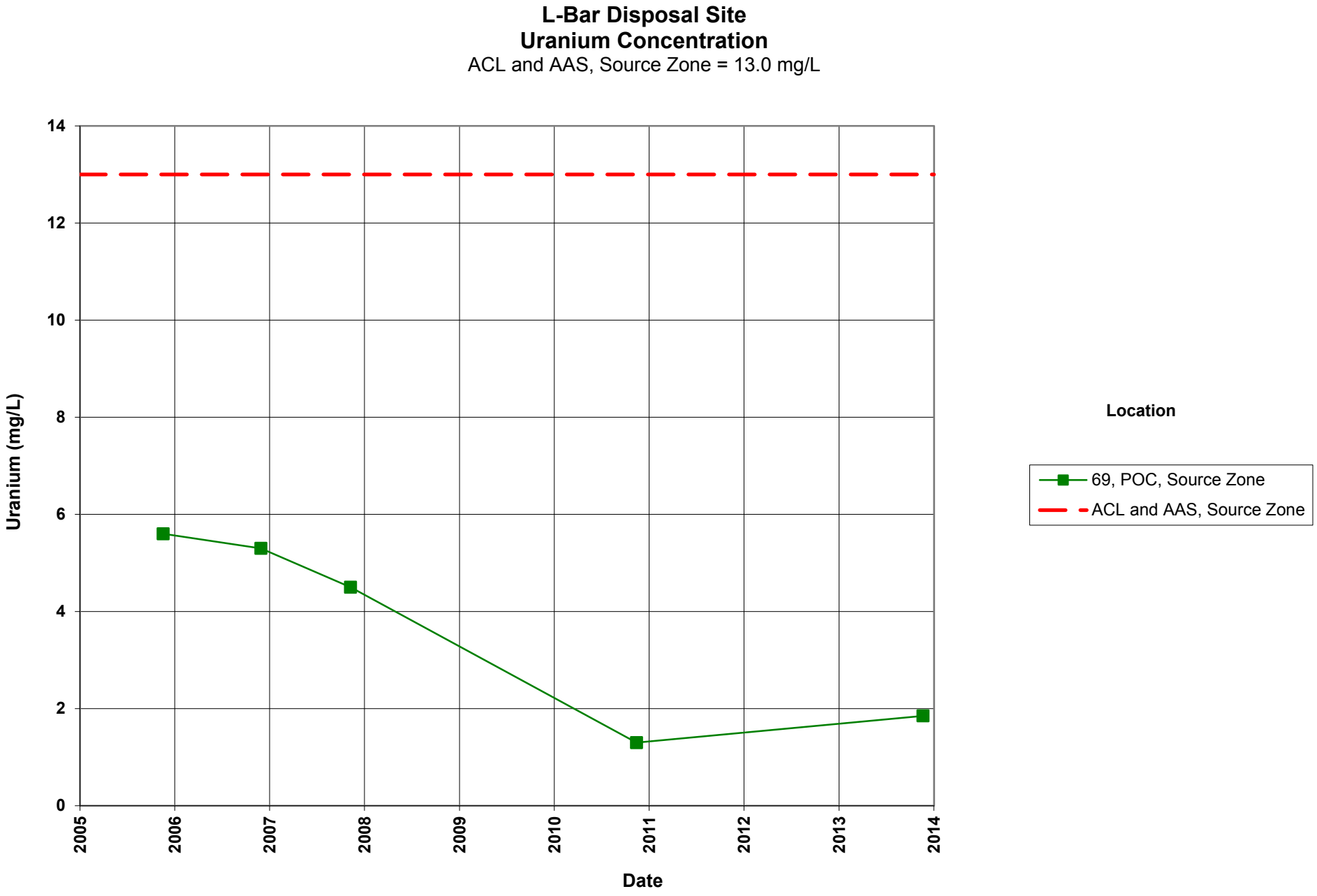

L-Bar Disposal Site
Nitrate + Nitrite as Nitrogen Concentration
AAS, Source Zone = 1180 mg/L
Nitrate + Nitrite as Nitrogen (mg/L)
50
45
40
35
30
25
20
15
10
5
0
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
Date
Location
100, POE
1A, POC, Source Zone
29A, Background
61, Seepage Indicator
62, Seepage Indicator, Affected Area
63, POE Seepage Indicator
69, POC, Source Zone
72, POE
81, POC, Source Zone
Moquino New, Public Water Supply

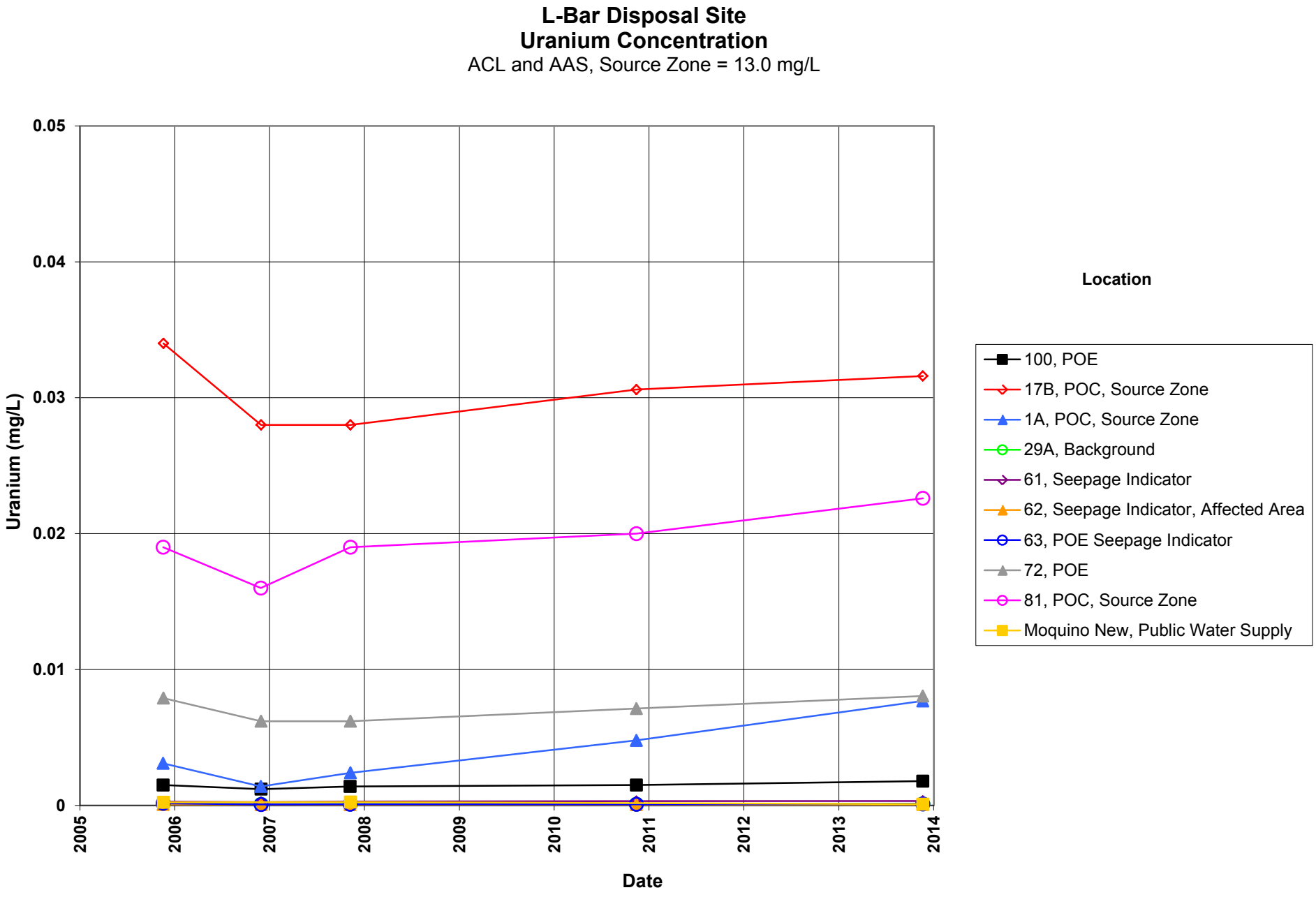

L-Bar Disposal Site
Selenium Concentration
ACL and AAS, Source Zone = 2.0 mg/L
Selenium (mg/L)
2.5
2
1.5
1
0.5
0
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
Date
Location
17B, POC, Source Zone
ACL and AAS, Source Zone


L-Bar Disposal Site
Selenium Concentration
ACL and AAS, Source Zone = 2.0 mg/L
Selenium (mg/L)
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
Date
Location
100, POE
1A, POC, Source Zone
29A, Background
61, Seepage Indicator
62, Seepage Indicator, Affected Area
63, POE Seepage Indicator
69, POC, Source Zone
72, POE
81, POC, Source Zone
Moquino New, Public Water Supply


L-Bar Disposal Site
Sulfate Concentration
AAS, Source Zone = 13,110 mg/L
AAS, Affected Area = 5185 mg/L
Sulfate (mg/L)
14000
12000
10000
8000
6000
4000
2000
0
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
Date
Location
100, POE
17B, POC, Source Zone
1A, POC, Source Zone
29A, Background
61, Seepage Indicator
62, Seepage Indicator, Affected Area
63, POE Seepage Indicator
69, POC, Source Zone
72, POE
81, POC, Source Zone
Moquino New, Public Water Supply
AAS, Source Zone
AAS, Affected Area


L-Bar Disposal Site
Total Dissolved Solids Concentration
AAS, Source Zone = 20,165 mg/L
AAS, Affected Area = 7846 mg/L
Total Dissolved Solids (mg/L)
25,000
20,000
15,000
10,000
5,000
0
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
Date
Location
100, POE
17B, POC, Source Zone
1A, POC, Source Zone
29A, Background
61, Seepage Indicator
62, Seepage Indicator, Affected Area
63, POE Seepage Indicator
69, POC, Source Zone
72, POE
81, POC, Source Zone
Moquino New, Public Water Supply
AAS, Source Zone
AAS, Affected Area


L-Bar Disposal Site
Uranium Concentration
ACL and AAS, Source Zone = 13.0 mg/L
Uranium (mg/L)
14
12
10
8
6
4
2
0
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
Date
Location
69, POC, Source Zone
ACL and AAS, Source Zone


L-Bar Disposal Site
Uranium Concentration
ACL and AAS, Source Zone = 13.0 mg/L
Uranium (mg/L)
0.05
0.04
0.03
0.02
0.01
0
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
Date
Location
100, POE
17B, POC, Source Zone
1A, POC, Source Zone
29A, Background
61, Seepage Indicator
62, Seepage Indicator, Affected Area
63, POE Seepage Indicator
72, POE
81, POC, Source Zone
Moquino New, Public Water Supply

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Attachment 3
Sampling and Analysis Work Order

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Stoller

established 1959

Task Order LM-501
Control Number 14-0036

October 11, 2013

U.S. Department of Energy
Office of Legacy Management
ATTN: Deborah Barr
Site Manager
2597 Legacy Way
Grand Junction, CO 81503

SUBJECT: Contract No. DE-AM01-07LM00060, S.M. Stoller Corporation (Stoller) November 2013 Environmental Sampling at the Ambrosia Lake, New Mexico, Disposal Site

REFERENCE: Task Order LM-501-02-101-402, Ambrosia Lake, New Mexico, Disposal Site

Dear Ms. Barr:

The purpose of this letter is to inform you of the upcoming sampling event at Ambrosia Lake, New Mexico. Enclosed are the map and tables specifying sample locations and analytes for monitoring at the Ambrosia Lake disposal site. Water quality data will be collected from this site as part of the routine environmental sampling currently scheduled to begin the week of November 11, 2013.

The following list shows the monitoring wells (with zone of completion) scheduled to be sampled during this event.

Monitoring Wells*

409 Al	675 Km	678 Tb

*NOTE: Al = alluvium; Km = Mancos shale; Tb = Tres Hermanos–B sandstone

All samples will be collected as directed in the *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites*. Access agreements are being reviewed and are expected to be complete by the beginning of fieldwork.

Please contact me at (970) 248-6022 if you have any questions.

Sincerely,

Richard K. Johnson
Site Lead

The S.M. Stoller Corporation 2597 Legacy Way Grand Junction, CO 81503 (970) 248-6000 Fax (970) 248-6040

Please contact me at (970) 248-6022 if you have any questions.

Sincerely,

Richard K. Johnson
Site Lead

RKJ/lcg/lb

Enclosures (3)

cc: (electronic)
Christina Pennal, DOE
Steve Donivan, Stoller
Bev Gallagher, Stoller
Lauren Goodknight, Stoller
Richard Johnson, Stoller
EDD Delivery
rc-grand.junction
File: BAR 410.02(A)

The S.M. Stoller Corporation 2597 Legacy Way Grand Junction, CO 81503 (970) 248-6000 Fax (970) 248-6040

Constituent Sampling Breakdown

Site	L-Bar				
Analyte	Groundwater	Surface Water	Required Detection Limit (mg/L)	Analytical Method	Line Item Code
Approx. No. Samples/yr.	12	0			
Field Measurements					
Alkalinity					
Dissolved Oxygen					
Redox Potential	X				
pH	X				
Specific Conductance	X				
Turbidity	X				
Temperature	X				
Laboratory Measurements					
Aluminum					
Ammonia as N (NH3-N)					
Calcium					
Chloride	X		0.5	SW-846 9056	MIS-A-039
Chromium					
Magnesium					
Manganese					
Molybdenum					
Nitrate + Nitrite as N (NO3+NO2)-N	X		0.05	EPA 353.1	WCH-A-022
Potassium					
Radium-226					
Radium-228					
Selenium	X		0.0001	SW-846 6020	LMM-02
Silica					
Sodium					
Sulfate	X		0.5	SW-846 9056	MIS-A-044
Sulfide					
Total Dissolved Solids	X		10	SM2540 C	WCH-A-033
Total Organic Carbon					
Uranium	X		0.0001	SW-846 6020	LMM-02
Vanadium					
Zinc					
Total No. of Analytes	6	0			

Note: All analyte samples are considered unfiltered unless stated otherwise. All private well samples are to be unfiltered.

The total number of analytes does not include field parameters.

Sampling Frequencies for Locations at L-BAR, New Mexico

Location ID	Quarterly	Semiannually	Annually	Triennially	Not Sampled	Notes
Monitoring Wells						
1A				X		Next sampling November 2013
17B				X		Next sampling November 2013
29A				X		Next sampling November 2013
61				X		Next sampling November 2013
62				X		Next sampling November 2013
63				X		Next sampling November 2013
69				X		Next sampling November 2013
72				X		Next sampling November 2013
81				X		Next sampling November 2013
100				X		Next sampling November 2013
Moquino - Old				X		Next sampling November 2013; Water users backup well.*
Moquino - New				X		Next sampling November 2013; Water users supply well.*

Sampling conducted in November

*Obtain a sample if the well is in operation and access is granted; otherwise, do not sample and document accordingly.

Attachment 4
Trip Report

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Stoller
Grand Junction Office
established 1959

Memorandum

DATE: December 10, 2013

TO: Dick Johnson

FROM: Alison Kuhlman

SUBJECT: Trip Report for sampling and maintenance

Site: L-Bar, NM.

Date of Sampling Event: November 20, 2013

Team Members: Jeff Price, José Trevino, Dan Sellers, David Atkinson, Gretchen Baer, and Alison Kuhlman

Number of Locations Sampled: Samples were collected from 11 of the 12 locations identified on the sampling notification letter.

Locations Not Sampled/Reason: Moquino Old was not sampled. William Hocker identified the Moquino Old location; however, he stated that it was not currently in operation and could not be sampled. He said that when it is in operation it is used solely for irrigation purposes. The pump is inside a little shed with a solar panel on top of it.

Location Specific Information:

TICKET NUMBER	LOCATION	DESCRIPTION	COMMENTS
LMS 346	69	CAT I	Borderline CAT I / CAT II Incorrectly marked on the map. It is just west of the site fence as opposed to next to the tailings pile as it shows on the map.
LMS 347	72	CAT I	Slowed flow rate down to approximately 100 mL/min. Water level was still dropping sampled as cat II
LMS 351	Moquino New	CAT IV	Sampled from tap in the shed, samples were pre-treatment. Willam Hocker escorted us. Several liters were purged from the line before the samples were collected.

Quality Control Sample Cross Reference: The following is the false identification assigned to the quality control sample:

FALSE ID	TRUE ID	SAMPLE TYPE	ASSOCIATED MATRIX	TICKET NUMBER
2274	62	Duplicate	Groundwater	LMS 350

RIN Number Assigned: All samples were assigned to RIN 13115747.

Sample Shipment: Samples were shipped overnight via FedEx to GEL labs in Charleston, SC, from Grants, NM, on November 21, 2013.

Water Level Measurements: Water levels were measured in all sampled wells. See *Water Sampling Field Data* logs for measurements.

Well Inspection Summary: Well inspections were conducted on all sampled wells. The air fitting on well 69 was leaking.

Sampling Method: Samples were collected according to the *Sampling and Analysis Plan for the U.S. Department of Energy Office of Legacy Management Sites* (LMS/PRO/S04351, continually updated).

Field Variance:

LOCATION ID	COMMENTS
29A	Turbidity requirements could not be met. The turbidity leveled out above 10 NTUs. These samples were filtered.

Equipment: All equipment functioned properly. All monitoring well locations were sampled using the low-flow procedure with a dedicated bladder pumps. The Moquino New location was sampled from the tap.

Institutional Controls: N/A

Fences, Gates, Locks: All were in good condition. The hinge bolts on all metal perimeter gates were arc-welded to prevent theft.
Signs: No missing or vandalized signs were observed.
Trespassing/Site Disturbances: N/A

Site Issues:

Disposal Cell/Drainage Structure Integrity: NA
Vegetation/Noxious Weed Concerns: NA
Maintenance Requirements: NA
Safety Issues: None
Access Issues: The road leading to well 69 is becoming eroded by water runoff, but is still passable. A signed letter was received from William Hocker, the secretary of Cebolleta Land Grant Board of Trustees granting access permission to be carried while on the property. Copies of this letter were provided to the site lead and Real Property. The original will be given to Records.

Corrective Action Taken: NA

cc: (electronic)
Deborah Barr, DOE
Linda Berry, Stoller
Steve Donivan, Stoller
Dick Johnson, Stoller
EDD Delivery