Data Validation Package

June 2010
Groundwater and Surface Water Sampling at the Monument Valley, Arizona, Processing Site

November 2010

U.S. DEPARTMENT OF ENERGY | Legacy Management

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Sampling Event Summary

Site: Monument Valley, Arizona, Processing Site

Sampling Period: June 14-16, 2010

Thirty-six groundwater samples and one surface water sample were collected at the Monument Valley, Arizona, Processing Site to monitor groundwater contaminants as specified in the 1999 *Final Site Observational Work Plan for the UMTRA Project Site at Monument Valley, Arizona*. Sampling and analysis were conducted as specified in the *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites* (LMS/PLN/S04351, continually updated). Water levels were measured at each sampled well. Duplicate samples were collected from locations 0618 and 0762.

Time-concentration plots for ammonia as nitrogen, chloride, nitrate + nitrite as nitrogen, sulfate, uranium, and vanadium are included with the results data. The data from this sampling event are consistent with values previously obtained.

- Widely fluctuating uranium concentrations in wells 0657 and 0662 have been previously noted and this trend continues with the data from this sampling event. Ongoing erosion of a former uranium mine located upgradient from the site may be affecting the uranium concentrations at these locations.
- Nitrate + nitrite as nitrogen concentrations in wells 0662, 0761, 0762, 0764, and 0771 had been increasing through 2008, which was consistent with downgradient movement of the contaminant plume. Results from this event, however, demonstrate that nitrate + nitrite as nitrogen concentrations are leveling off or decreasing in these wells.
- In well 0655, nitrate + nitrite as nitrogen continues to fluctuate seasonally and may show an upward trend.
- Nitrate + nitrite as nitrogen in well 0648 has been trending upward in 2009 and 2010.
- A de-nitrification treatment of well 0765 in September 2009 by the University of Arizona has decreased concentrations for most analytes at this location and in nearby well 0766, most notably nitrate + nitrite as nitrogen and sulfate.

Wells with analyte concentrations that exceeded U.S. Environmental Protection Agency (EPA) groundwater standards are listed in Table 1.

Table 1. Monument Valley Locations That Exceed Standards

Analyte	Standard[a] (mg/L)	Site Code	Location	Concentration (mg/L)
Nitrate + Nitrite as Nitrogen	10	MON01	0606	210
			0648	90
			0653	39
			0655	160
			0656	15
			0662	18
			0669	16
			0761	30
			0762	99
			0764	49
			0766	34
			0770	18
			0771	180
Uranium	0.044	MON01	0662	0.097

[a] Standards are listed in 40 CFR 192.02 Table 1 to Subpart A.

The Navajo Nation's proposed cleanup standard for sulfate is 250 milligrams per liter (mg/L). The ratios of sulfate:chloride concentrations vary depending on whether the source is related to past millsite activities or if it occurs naturally. Tailings fluids were enriched in nitrate and sulfate but had relatively low chloride concentrations. A sulfate:chloride ratio greater than 10 is a good indication of groundwater contamination resulting from milling activities. The proposed sulfate treatment goal for Monument Valley will incorporate both criteria. The treatment goal will be achieved when the sulfate concentration is less than 250 mg/L *or* the sulfate:chloride ratio is less than 10. Table 2 lists sulfate concentrations and sulfate:chloride ratios.

Table 2. Sulfate Results

Location	Sulfate Concentration (mg/L)	Sulfate : Chloride	Treatment Goal Achieved?
0402	19	1	Yes
0602	110	8	Yes
0603	110	8	Yes
0604	110	10	Yes
0605	140	7	Yes
0606	400	13	No
0618	29	8	Yes
0619	30	6	Yes
0648	990	38	No
0650	190	14	Yes
0651	110	9	Yes
0652	63	5	Yes
0653	980	41	No
0655	1200	60	No
0656	150	11	Yes
0657	32	5	Yes
0662	240	15	Yes
0669	110	13	Yes

Table 2 (continued). Sulfate Results

Location	Sulfate Concentration (mg/L)	Sulfate : Chloride	Treatment Goal Achieved?
0711	120	9	Yes
0715	67	7	Yes
0719	120	8	Yes
0727	89	8	Yes
0760	84	9	Yes
0761	450	35	No
0762	1500	23	No
0764	280	25	No
0765	21	2	Yes
0766	290	19	No
0767	30	6	Yes
0768	59	5	Yes
0770	180	14	Yes
0771	1300	72	No
0772	120	9	Yes
0774	34	6	Yes
0775	24	5	Yes
0776	30	6	Yes

D Miller

David Miller
Site Lead, S.M. Stoller Corporation

12/1/10

Date

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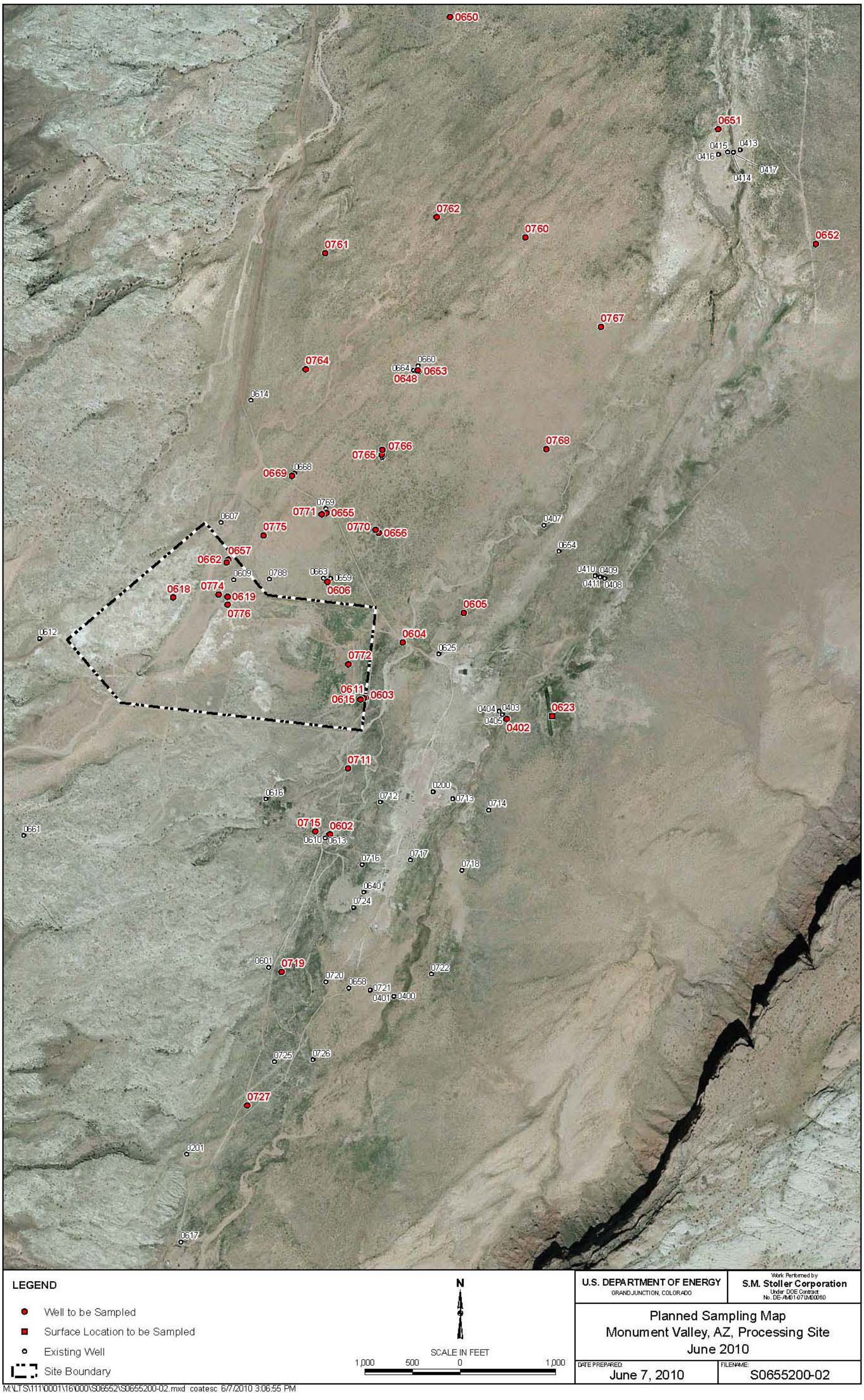

Monument Valley, Arizona, Processing Site Sample Locations

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Data Assessment Summary

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Water Sampling Field Activities Verification Checklist

Project	Monument Valley, Arizona	**Date(s) of Water Sampling**	June 14-16, 2010
Date(s) of Verification	August 26, 2010	**Name of Verifier**	Gretchen Baer

	Response (Yes, No, NA)	Comments
1. Is the SAP the primary document directing field procedures?	Yes	
List other documents, SOPs, instructions.		Work order letter dated May 12, 2010.
2. Were the sampling locations specified in the planning documents sampled?	Yes	(Locations 0611 and 0615 were deleted from the sampling list at the direction of the site lead).
3. Was a pre-trip calibration conducted as specified in the above-named documents?	Yes	
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. Was the category of the well documented?	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 stabilize prior to sampling?	No	Turbidity was >10 NTUs @ locations 0760, 0765, & 0766. Data are qualified as "Q."
Was the flow rate less than 500 mL/min?	Yes	
If a portable pump was used, was there a 4-hour delay between pump installation and sampling?	NA	

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	Duplicates were collected @ 0618 and 0762.
10. Were equipment blanks taken at a frequency of one per 20 samples that were collected with nondedicated equipment?	NA	
11. Were trip blanks prepared and included with each shipment of VOC samples?	NA	
12. Were QC samples assigned a fictitious site identification number?	Yes	QC samples are also listed in trip report.
Was the true identity of the samples recorded on the Quality Assurance Sample Log or in the Field Data Collection System (FDCS) report?	Yes	
13. Were samples collected in the containers specified?	Yes	
14. Were samples filtered and preserved as specified?	Yes	Samples with turbidity >10 were filtered.
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. Are field data sheets signed and dated by both team members (hardcopies) or are dates present for the “Date Signed” fields (FDCS)?	Yes	
18. Was all other pertinent information documented on the field data sheets?	Yes	
19. Was the presence or absence of ice in the cooler documented at every sample location?	Yes	
20. Were water levels measured at the locations specified in the planning documents?	NA	Water levels were measured at each sampled well.

Laboratory Performance Assessment

General Information

Report Number (RIN):	10063122
Sample Event:	June 14-16, 2010
Site(s):	Monument Valley, Arizona
Laboratory:	ALS Laboratory Group, Fort Collins, Colorado
Work Order No.:	1006208
Analysis:	Metals and Wet Chemistry
Validator:	Gretchen Baer
Review Date:	August 26, 2010

This validation was performed according to the *Environmental Procedures Catalog*, (LMS/PRO/S04325, continually updated) "Standard Practice for Validation of Laboratory Data." The procedure was applied at Level 3, Data 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 3.

Table 3. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
Ammonia as Nitrogen	WCH-A-005	MCAWW 350.1	MCAWW 350.1
Calcium, Iron, Magnesium, Manganese, Potassium, Sodium	LMM-01	SW-846 3005A	SW-846 6010B
Chloride	MIS-A-039	SW-856 9056	SW-856 9056
Nitrite + Nitrate as Nitrogen	WCH-A-022	MCAWW 353.2	MCAWW 353.2
Sulfate	MIS-A-044	SW-856 9056	SW-856 9056
Arsenic, Molybdenum, Uranium, Vanadium	LMM-02	SW-846 3005A	SW-846 6020A

Data Qualifier Summary

Analytical results were qualified as listed in Table 4. Refer to the sections below for an explanation of the data qualifiers applied.

Table 4. Data Qualifier Summary

Sample Number	Location	Analyte	Flag	Reason
1006208-1	0402	Vanadium	U	Less than 5 times the calibration blank
1006208-1	0402	Vanadium	J	Negative calibration blank
1006208-2	0602	Vanadium	J	Reporting limit verification failure
1006208-3	0603	Vanadium	J	Reporting limit verification failure
1006208-5	0605	Vanadium	U	Less than 5 times the calibration blank
1006208-6	0606	Vanadium	J	Reporting limit verification failure

Table 4 (continued). Data Qualifier Summary

Sample Number	Location	Analyte	Flag	Reason
1006208-7	0618	Manganese	J	Negative calibration blank
1006208-7	0618	Molybdenum	J	Field duplicate failure
1006208-9	0623	Vanadium	U	Less than 5 times the calibration blank
1006208-16	0656	Vanadium	U	Less than 5 times the calibration blank
1006208-20	0711	Vanadium	J	Reporting limit verification failure
1006208-21	0715	Vanadium	U	Less than 5 times the calibration blank
1006208-24	0760	Vanadium	U	Less than 5 times the calibration blank
1006208-28	0765	Vanadium	J	Reporting limit verification failure
1006208-30	0767	Vanadium	U	Less than 5 times the calibration blank
1006208-31	0768	Vanadium	U	Less than 5 times the calibration blank
1006208-32	0770	Vanadium	J	Reporting limit verification failure
1006208-36	0775	Vanadium	U	Less than 5 times the calibration blank
1006208-39	0618 Dup	Molybdenum	J	Field duplicate failure
All	All	Sodium	J	Serial dilution failure

Sample Shipping/Receiving

ALS Laboratory Group in Fort Collins, Colorado, received 39 water samples on June 18, 2010, accompanied by a Chain of Custody (COC) form. Copies of the three air bills were included in the receiving documentation. The COC form was checked to confirm that all the samples were listed with sample collection dates and times, and that signatures and dates were present indicating sample relinquishment and receipt. The COC form was complete with no errors or omissions. The laboratory noted that the bottles collected at location 0776 were mislabeled as 0766; the laboratory corrected the error and proceeded with analysis.

Preservation and Holding Times

The sample shipments were received intact with the temperatures inside the iced coolers at 4.4 and 5.2 °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.

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.

Method MCAWW 350.1, Ammonia as Nitrogen

Calibrations were performed using six calibration standards on June 21, 2010. The calibration curve correlation coefficient values were greater than 0.995 and the absolute values of the intercepts were less than 3 times the method detection limit (MDL). Calibration and laboratory spike standards were prepared from independent sources. Initial and continuing calibration verification checks were made at the required frequency resulting in 11 verification checks. All calibration checks met the acceptance criteria.

Method MCAWW 353.2, Nitrite + Nitrate as Nitrogen

Calibrations were performed using seven calibration standards on June 24, 2010. 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. Calibration and laboratory spike standards were prepared from independent sources. Initial and continuing calibration verification checks were made at the required frequency resulting in five verification checks. All calibration checks met the acceptance criteria.

Method SW-846 6010, Calcium, Iron, Magnesium, Manganese, Potassium, Sodium

Calibrations were performed on July 13, 2010, using three calibration standards. The correlation coefficient values were greater than 0.995. The absolute values of the intercepts were less than 3 times the MDL, with the exception of the intercepts for calcium, potassium, and sodium. These intercepts were less than 3 times the reporting limits and all results were near or above the reporting limits. Calibration and laboratory spike standards were prepared from independent sources. Initial and continuing calibration verification checks were made at the required frequency resulting in 11 verification checks. All calibration checks met the acceptance criteria. Reporting limit verification checks were made at the required frequency to verify the linearity of the calibration curve near the practical quantitation limit and all results were within the acceptance range.

Method SW-846 6020A, Arsenic, Molybdenum, Uranium, Vanadium

Calibrations were performed on July 13, 2010, using four standards. 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 with one exception. The absolute value of the intercept for the vanadium calibration was greater than 3 times the MDL. All associated detects less than 3 times the intercept have been previously qualified. Calibration and laboratory spike standards were prepared from independent sources. Initial and continuing calibration verification checks were made at the required frequency resulting in 13 verification checks. All calibration checks met the acceptance criteria. Reporting limit verification checks were made at the required frequency to verify the linearity of the calibration curve near the practical quantitation limit (PQL) and all results were within the acceptance range, with the following exception. A vanadium check result was above the acceptance range. The affected results that were less than 5 times the practical quantitation limit and above the detection limit are qualified with a “J” flag (estimated). 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 SW-846 9056, Chloride, Sulfate

Calibrations were performed using six calibration standards on June 10, 2010. 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. Calibration and laboratory spike standards were prepared from independent sources. Initial and continuing calibration verification checks were made at the required frequency resulting in 11 verification checks. All calibration checks met the acceptance criteria.

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 were below the PQLs 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. For some metals, some blanks were negative and the absolute values were greater than the MDL but less than the practical quantitation limit. The associated results less than 5 times the MDL are qualified with a "J" flag as estimated values.

Inductively Coupled Plasma (ICP) Interference Check Sample (ICS) Analysis

ICP interference check samples ICSA and ICSAB 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 and matrix spike duplicate (MS/MSD) samples are used to measure method performance in the sample matrix. The MS/MSD data are not evaluated when the concentration of the unspiked sample is greater than 4 times the spike concentration. The spikes met the recovery and precision 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 practical quantitation limit (PQL) should be less than 20 percent. For results that are less than 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 practical quantitation limit for method 6010 or greater than 100 times the practical quantitation limit for method 6020. The serial dilution results for sodium did not meet the acceptance criteria. All sodium results are qualified with a "J" flag as estimated values. All other evaluated serial dilution data were acceptable.

Detection Limits/Dilutions

Samples were diluted in a consistent and acceptable manner when required. The required detection limits were met for all analytes.

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 ion chromatography data. All peak integrations, including manual integrations, were satisfactory.

Electronic Data Deliverable (EDD) File

A revised EDD file arrived on October 5, 2010, that included corrections to the ammonia result for location 0770 and the nitrate + nitrite as N result for location 0761. The revised data were loaded into SEEPro on October 19, 2010. 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 that 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: 10063122 **Lab Code:** PAR **Validator:** Gretchen Baer **Validation Date:** 8/26/2010

Project: Monument Valley **Analysis Type:** ☑ Metals ☑ General Chem ☐ Rad ☐ Organics

# of Samples: 39 **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	The reported detection limits are equal to or below contract requirements.
☐ Field/Trip Blanks	
☑ Field Duplicates	There were 2 duplicates evaluated.

SAMPLE MANAGEMENT SYSTEM

Metals Data Validation Worksheet

RIN: 10063122 **Lab Code:** PAR **Date Due:** 7/16/2010

Matrix: Water **Site Code:** MON **Date Completed:** 7/20/2010

Analyte	Date Analyzed	CALIBRATION						Method Blank	LCS %R	MS %R	MSD %R	Dup. RPD	ICSAB %R	Serial Dil. %R	CRI %R
		Int.	R^2	ICV	CCV	ICB	CCB								
1Calcium	07/13/2010	99.9990	1.0000	OK	OK	OK	OK	OK	98.0	98.0	98.0	0.0	108.0	3.0	104.0
1Iron	07/13/2010	11.0000	1.0000	OK	OK	OK	OK	OK	98.0	99.0	98.0	0.0	112.0		106.0
1Magnesium	07/13/2010	34.0000	0.9999	OK	OK	OK	OK	OK	101.0	102.0	101.0	0.0	112.0	2.0	105.0
1Manganese	07/13/2010	-0.2000	1.0000	OK	OK	OK	OK	OK	96.0	96.0	95.0	0.0	93.0		102.0
1Potassium	07/13/2010	99.9990	1.0000	OK	OK	OK	OK	OK	95.0	99.0	98.0	1.0			84.0
1Sodium	07/13/2010	99.9990	1.0000	OK	OK	OK	OK	OK	96.0	96.0	95.0	1.0		15.0	97.0
Calcium	07/13/2010							OK	100.0	96.0	100.0	1.0	109.0	2.0	104.0
Iron	07/13/2010							OK	93.0	96.0	100.0	3.0	112.0		105.0
Magnesium	07/13/2010							OK	101.0	99.0	101.0	1.0	113.0	2.0	106.0
Manganese	07/13/2010							OK	91.0	85.0	87.0	2.0	93.0		102.0
Potassium	07/13/2010							OK	92.0	96.0	97.0	0.0			83.0
Sodium	07/13/2010							OK	98.0	97.0	97.0	0.0		14.0	97.0
yArsenic	07/13/2010	-0.0150	1.0000	OK	OK	OK	OK	OK	98.0	100.0	98.0	2.0	109.0	5.0	101.0
yMolybdenum	07/13/2010	-0.0060	1.0000	OK	OK	OK	OK	OK	97.0	99.0	97.0	2.0	102.0	2.0	103.0
yUranium	07/13/2010	-0.0020	1.0000	OK	OK	OK	OK	OK	93.0	90.0	89.0	1.0	111.0	3.0	120.0
yVanadium	07/13/2010	-0.5000	1.0000	OK	OK	OK	OK	OK	97.0	102.0	98.0	2.0	106.0	1.0	126.0
zArsenic	07/13/2010							OK	93.0	99.0	99.0	0.0		9.0	103.0

SAMPLE MANAGEMENT SYSTEM

Metals Data Validation Worksheet

RIN: 10063122 **Lab Code:** PAR **Date Due:** 7/16/2010

Matrix: Water **Site Code:** MON **Date Completed:** 7/20/2010

Analyte	Date Analyzed	CALIBRATION						Method Blank	LCS %R	MS %R	MSD %R	Dup. RPD	ICSAB %R	Serial Dil. %R	CRI %R
		Int.	R^2	ICV	CCV	ICB	CCB								
zArsenic	07/13/2010														94.0
zArsenic	07/13/2010														94.0
zMolybdenum	07/13/2010							OK	93.0	100.0	99.0	1.0		6.0	105.0
zMolybdenum	07/13/2010														108.0
zMolybdenum	07/13/2010														98.0
zUranium	07/13/2010							OK	95.0	89.0	88.0	1.0		2.0	75.0
zUranium	07/13/2010														90.0
zUranium	07/13/2010														80.0
zVanadium	07/13/2010							OK	92.0	102.0	100.0	1.0		2.0	110.0
zVanadium	07/13/2010														182.0
zVanadium	07/13/2010														123.0

SAMPLE MANAGEMENT SYSTEM

Wet Chemistry Data Validation Worksheet

RIN: 10063122 **Lab Code:** PAR **Date Due:** 7/16/2010

Matrix: Water **Site Code:** MON **Date Completed:** 7/20/2010

Analyte	Date Analyzed	CALIBRATION						Method Blank	LCS %R	MS %R	MSD %R	DUP RPD	Serial Dil. %R
		Int.	R^2	ICV	CCV	ICB	CCB						
AMMONIA AS N	06/21/2010	0.035	0.9997	OK	OK	OK	OK	OK	90.00	96.0	95.0	1.00	
AMMONIA AS N	06/21/2010							OK	92.00	92.0	91.0	1.00	
CHLORIDE	06/10/2010	0.002	1.0000	OK		OK							
CHLORIDE	06/21/2010				OK		OK	OK	95.00	98.0	95.0	2.00	
CHLORIDE	06/21/2010				OK		OK	OK	91.00	94.0	94.0	0	
CHLORIDE	06/21/2010									92.0			
CHLORIDE	06/22/2010									92.0			
Nitrate+Nitrite as N	06/24/2010	0.000	0.9997	OK	OK	OK	OK	OK	95.00	100.0	99.0	2.00	
Nitrate+Nitrite as N	06/24/2010	0.000	0.9999	OK	OK	OK	OK	OK	96.00	87.0	90.0	1.00	
SULFATE	06/10/2010	0.466	0.9999	OK		OK							
SULFATE	06/21/2010				OK		OK	OK	94.00	98.0	96.0	1.00	
SULFATE	06/21/2010				OK		OK	OK	92.00	99.0	100.0	0	
SULFATE	06/21/2010									92.0			
SULFATE	06/22/2010									97.0			

Sampling Quality Control Assessment

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

Sampling Protocol

Wells were sampled with a peristaltic pump and dedicated tubing, a disposable bailer, or a dedicated bladder pump. The surface water location was sampled by pumping directly from the pond with dedicated tubing. All 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. Wells 0402, 0618, and 0764 were qualified with a "Q" flag, indicating the data are qualitative because these wells were classified as Category II or III. Wells 0760, 0765, and 0766 were qualified with a "Q" flag because the turbidity criterion was not met during purging.

Equipment Blank Assessment

No equipment blanks were collected because all samples were obtained using dedicated equipment.

Field Duplicate Assessment

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. The relative percent difference (RPD) for duplicate results that are greater than 5 times the practical quantitation limit (PQL) should be less than 20 percent. For results that are less than the PQL, the range should be no greater than the PQL. Duplicate samples were collected from locations 0618 and 0762. With one exception, the duplicate results met the criteria, demonstrating acceptable overall precision. The RPD for molybdenum at well 0618 was slightly above the acceptance criterion at 22 percent; the molybdenum results for this location are qualified with a "J" flag as estimated values.

SAMPLE MANAGEMENT SYSTEM

Validation Report: Field Duplicates

RIN: 10063122 **Lab Code:** PAR **Project:** Monument Valley **Validation Date:** 8/26/2010

Duplicate: 2711 **Sample:** 0762

Analyte	Sample Result	Flag	Error	Dilution	Duplicate Result	Flag	Error	Dilution	RPD	RER	Units
AMMONIA AS N	0.1	U		1	0.1	U		1			MG/L
CHLORIDE	65			20	64			20	1.55		MG/L
Nitrate+Nitrite as N	99			100	100			100	1.01		MG/L
SULFATE	1500			20	1500			20	0		MG/L
Uranium	11			1	11			1	0		UG/L
Vanadium	8			1	7.7			1	3.82		UG/L

Duplicate: 2856 **Sample:** 0618

Analyte	Sample Result	Flag	Error	Dilution	Duplicate Result	Flag	Error	Dilution	RPD	RER	Units
AMMONIA AS N	0.1	U		1	0.1	U		1			MG/L
Arsenic	1.7			1	1.9			1	11.11		UG/L
Calcium	34000			1	35000			1	2.90		UG/L
CHLORIDE	3.8			1	3.7			2	2.67		MG/L
Iron	7.8	B		1	82	B		1			UG/L
Magnesium	20000			1	20000			1	0		UG/L
Manganese	0.11	U		1	1.7	B		1			UG/L
Molybdenum	3			1	2.4			1	22.22		UG/L
Nitrate+Nitrite as N	1.1			1	1.2			1	8.70		MG/L
Potassium	1400			1	1300			1	7.41		UG/L
Sodium	7300	E		1	7100	E		1	2.78		UG/L
SULFATE	29			1	27			2	7.14		MG/L
Uranium	8.6			1	9.3			1	7.82		UG/L
Vanadium	67			1	78			1	15.17		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: Steve Donivan — Date: 11-30-2010

Data Validation Lead: Gretchen Baer — Date: 11/30/10

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 SEEPro database. The application compares the new data set 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.

Three laboratory results were identified as potentially anomalous. The result for sodium at well 0603 was identified as a potential outlier because of the low variability of the historical data. The nitrate + nitrite as nitrogen result for location 0669 had a concentration higher than previously observed. Recent results for nitrate + nitrite as nitrogen indicate upward trending at this location. Multiple laboratory and field measurement results from location 0765 (including sulfate) were lower than previously observed as a result of the de-nitrification treatment of this well in September 2009.

The field measurement for oxidation reduction potential at location 0767 was higher than previously observed and the pH field measurements at wells 0762 and 0765 were lower than previously observed. The associated field data were further reviewed. There were no errors noted; the instrument calibration checks were acceptable and the oxidation reduction potential and pH measurements had stabilized during the purge.

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Data Validation Outliers Report - No Field Parameters
Comparison: All Historical Data
Laboratory: ALS Laboratory Group
RIN: 10063122
Report Date: 10/19/2010

					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	
MON01	0402	0001	06/15/2010	Uranium	0.00001	B	FQ	0.001	U	F	0.000021	B	UFQ	5	5	No
MON01	0603	N001	06/15/2010	Iron	0.0093	B	F	0.12		J	0.01	U	J	8	6	No
MON01	0603	N001	06/15/2010	Manganese	0.0018	B	F	0.09			0.0038			10	5	No
MON01	0603	N001	06/15/2010	Molybdenum	0.0028		F	0.17		J	0.0049	UN		11	8	No
MON01	0603	N001	06/15/2010	Nitrate + Nitrite as Nitrogen	0.34		F	1.1			0.36		F	5	0	No
MON01	0603	N001	06/15/2010	Potassium	2.7		F	2.6			1.9	*		11	0	No
MON01	0603	N001	06/15/2010	Sodium	85		JF	112			94		F	11	0	Yes
MON01	0606	N001	06/15/2010	Chloride	32		F	25			13		F	46	0	No
MON01	0623	N001	06/15/2010	Vanadium	0.00069		U	0.06			0.001			19	15	No
MON01	0650	N001	06/15/2010	Chloride	14		F	12		F	6		GF	20	0	No
MON01	0650	N001	06/15/2010	Nitrate + Nitrite as Nitrogen	2.3		F	1.7		F	0.53		F	5	0	No
MON01	0650	N001	06/15/2010	Sulfate	190		F	140		F	25.5		F	20	0	No
MON01	0650	N001	06/15/2010	Vanadium	0.0033		F	0.33		F	0.0038		F	15	7	No
MON01	0651	N001	06/16/2010	Nitrate + Nitrite as Nitrogen	0.11		F	1	U	FJ	0.12		F	5	1	No
MON01	0656	N001	06/15/2010	Ammonia Total as N	43		F	59		F	46		F	10	0	No
MON01	0656	N001	06/15/2010	Sulfate	150		F	845			160		F	26	0	No
MON01	0656	N001	06/15/2010	Uranium	0.0052		F	0.0117			0.0054		F	23	0	No
MON01	0657	N001	06/16/2010	Nitrate + Nitrite as Nitrogen	2.6		F	19		J	2.7		F	10	0	No
MON01	0669	N001	06/16/2010	Nitrate + Nitrite as Nitrogen	16		F	15		F	5.5		F	12	0	Yes
MON01	0761	N001	06/14/2010	Sulfate	450		F	530		F	460		F	20	0	No

Data Validation Outliers Report - No Field Parameters
Comparison: All Historical Data
Laboratory: ALS Laboratory Group
RIN: 10063122
Report Date: 10/19/2010

					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	
MON01	0764	N001	06/14/2010	Sulfate	280		FQ	430		L	290		FQ	19	0	No
MON01	0764	N001	06/14/2010	Vanadium	0.017		FQ	0.016		FQ	0.004	U		13	2	No
MON01	0765	0001	06/15/2010	Chloride	13		FQ	22.4			16		F	16	0	No
MON01	0765	0001	06/15/2010	Sulfate	21		FQ	986			390		FQ	20	0	Yes
MON01	0765	0001	06/15/2010	Uranium	0.00061		FQ	0.015			0.0035		FQ	14	0	No
MON01	0765	0001	06/15/2010	Vanadium	0.0011		JFQ	0.013	U		0.0014		FQ	13	2	No
MON01	0768	N001	06/16/2010	Sulfate	59		F	862			60		F	21	0	No
MON01	0770	N001	06/15/2010	Ammonia Total as N	29		F	40		F	31		F	10	0	No
MON01	0770	N001	06/15/2010	Sulfate	180		F	389			190		F	19	0	No
MON01	0770	N001	06/15/2010	Uranium	0.0052		F	0.0078			0.0053		F	14	0	No
MON01	0771	N001	06/16/2010	Ammonia Total as N	260		F	240		F	210		FQ	10	0	No
MON01	0771	N001	06/16/2010	Sulfate	1300		F	3710			1400		F	19	0	No
MON01	0772	N001	06/15/2010	Ammonia Total as N	2.6		F	7.9		F	3.1		F	11	0	No
MON01	0774	N001	06/15/2010	Uranium	0.028		F	0.0726			0.033		F	20	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.

Data Validation Outliers Report - Field Parameters Only
Comparison: All Historical Data
Laboratory: Field Measurements
RIN: 10063122
Report Date: 10/19/2010

Site Code	Location Code	Sample ID	Sample Date	Analyte	Current	Current Qualifiers		Historical Maximum	Historical Maximum Qualifiers		Historical Minimum	Historical Minimum Qualifiers		Number of Data Points		Statistical Outlier
					Result	*Lab*	*Data*	Result	*Lab*	*Data*	Result	*Lab*	*Data*	N	N Below Detect	
MON01	0603	N001	06/15/2010	Alkalinity, Total (As CaCO3)	246		F	212			168			14	0	Yes
MON01	0762	N001	06/15/2010	pH	6.65		F	7.85			7.12			19	0	Yes
MON01	0767	N001	06/16/2010	Oxidation Reduction Potential	83.5		F	25			-200			19	0	Yes

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.

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Attachment 2
Data Presentation

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Groundwater Quality Data

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Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0402 WELL Tribal Well No. 08-0643.

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/15/2010	0001	5.17	-	9.63	0.1	U	FQ	#	0.1	
Chloride	mg/L	06/15/2010	0001	5.17	-	9.63	13		FQ	#	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/15/2010	0001	5.17	-	9.63	0.01	U	FQ	#	0.01	
Oxidation Reduction Potential	mV	06/15/2010	N001	5.17	-	9.63	42.2		FQ	#		
pH	s.u.	06/15/2010	N001	5.17	-	9.63	8.26		FQ	#		
Specific Conductance	umhos /cm	06/15/2010	N001	5.17	-	9.63	618		FQ	#		
Sulfate	mg/L	06/15/2010	0001	5.17	-	9.63	19		FQ	#	1	
Temperature	C	06/15/2010	N001	5.17	-	9.63	22.44		FQ	#		
Turbidity	NTU	06/15/2010	N001	5.17	-	9.63	46.8		FQ	#		
Uranium	mg/L	06/15/2010	0001	5.17	-	9.63	0.00001	B	FQ	#	0.0000029	
Vanadium	mg/L	06/15/2010	0001	5.17	-	9.63	0.000068	B	UJFQ	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0602 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/15/2010	N001	19.5	-	29.5	0.1	U	F	#	0.1	
Chloride	mg/L	06/15/2010	N001	19.5	-	29.5	13		F	#	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/15/2010	N001	19.5	-	29.5	0.73		F	#	0.01	
Oxidation Reduction Potential	mV	06/15/2010	N001	19.5	-	29.5	126.8		F	#		
pH	s.u.	06/15/2010	N001	19.5	-	29.5	7.85		F	#		
Specific Conductance	umhos /cm	06/15/2010	N001	19.5	-	29.5	678		F	#		
Sulfate	mg/L	06/15/2010	N001	19.5	-	29.5	110		F	#	1	
Temperature	C	06/15/2010	N001	19.5	-	29.5	15.72		F	#		
Turbidity	NTU	06/15/2010	N001	19.5	-	29.5	2.26		F	#		
Uranium	mg/L	06/15/2010	N001	19.5	-	29.5	0.0037		F	#	0.0000029	
Vanadium	mg/L	06/15/2010	N001	19.5	-	29.5	0.00078		JF	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0603 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	06/15/2010	N001	43	-	53	246		F	#		
Ammonia Total as N	mg/L	06/15/2010	N001	43	-	53	0.23		F	#	0.1	
Arsenic	mg/L	06/15/2010	N001	43	-	53	0.0033		F	#	0.000015	
Calcium	mg/L	06/15/2010	N001	43	-	53	18		F	#	0.012	
Chloride	mg/L	06/15/2010	N001	43	-	53	13		F	#	0.2	
Iron	mg/L	06/15/2010	N001	43	-	53	0.0093	B	F	#	0.0049	
Magnesium	mg/L	06/15/2010	N001	43	-	53	14		F	#	0.013	
Manganese	mg/L	06/15/2010	N001	43	-	53	0.0018	B	F	#	0.00011	
Molybdenum	mg/L	06/15/2010	N001	43	-	53	0.0028		F	#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	06/15/2010	N001	43	-	53	0.34		F	#	0.01	
Oxidation Reduction Potential	mV	06/15/2010	N001	43	-	53	45.7		F	#		
pH	s.u.	06/15/2010	N001	43	-	53	7.87		F	#		
Potassium	mg/L	06/15/2010	N001	43	-	53	2.7		F	#	0.11	
Sodium	mg/L	06/15/2010	N001	43	-	53	85		JF	#	0.0066	
Specific Conductance	umhos /cm	06/15/2010	N001	43	-	53	652		F	#		
Sulfate	mg/L	06/15/2010	N001	43	-	53	110		F	#	1	
Temperature	C	06/15/2010	N001	43	-	53	17.35		F	#		
Turbidity	NTU	06/15/2010	N001	43	-	53	2.56		F	#		
Uranium	mg/L	06/15/2010	N001	43	-	53	0.0029		F	#	0.0000029	
Vanadium	mg/L	06/15/2010	N001	43	-	53	0.00064		JF	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0604 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/15/2010	N001	13	-	28	0.1	U	F	#	0.1	
Chloride	mg/L	06/15/2010	N001	13	-	28	11		F	#	0.2	
Nitrate + Nitrite as Nitrogen	mg/L	06/15/2010	N001	13	-	28	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	06/15/2010	N001	13	-	28	52.6		F	#		
pH	s.u.	06/15/2010	N001	13	-	28	8.16		F	#		
Specific Conductance	umhos /cm	06/15/2010	N001	13	-	28	628		F	#		
Sulfate	mg/L	06/15/2010	N001	13	-	28	110		F	#	1	
Temperature	C	06/15/2010	N001	13	-	28	17.1		F	#		
Turbidity	NTU	06/15/2010	N001	13	-	28	5.02		F	#		
Uranium	mg/L	06/15/2010	N001	13	-	28	0.0023		F	#	0.0000029	
Vanadium	mg/L	06/15/2010	N001	13	-	28	0.0022		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0605 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/16/2010	N001	14	-	29	0.38		F	#	0.1	
Chloride	mg/L	06/16/2010	N001	14	-	29	21		F	#	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/16/2010	N001	14	-	29	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	06/16/2010	N001	14	-	29	-36.8		F	#		
pH	s.u.	06/16/2010	N001	14	-	29	7.75		F	#		
Specific Conductance	umhos /cm	06/16/2010	N001	14	-	29	669		F	#		
Sulfate	mg/L	06/16/2010	N001	14	-	29	140		F	#	1	
Temperature	C	06/16/2010	N001	14	-	29	17.79		F	#		
Turbidity	NTU	06/16/2010	N001	14	-	29	1.21		F	#		
Uranium	mg/L	06/16/2010	N001	14	-	29	0.00014		F	#	0.0000029	
Vanadium	mg/L	06/16/2010	N001	14	-	29	0.0003		UF	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0606 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/15/2010	N001	32	-	42	120		F	#	10	
Chloride	mg/L	06/15/2010	N001	32	-	42	32		F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	06/15/2010	N001	32	-	42	210		F	#	2	
Oxidation Reduction Potential	mV	06/15/2010	N001	32	-	42	143.6		F	#		
pH	s.u.	06/15/2010	N001	32	-	42	7.09		F	#		
Specific Conductance	umhos /cm	06/15/2010	N001	32	-	42	3189		F	#		
Sulfate	mg/L	06/15/2010	N001	32	-	42	400		F	#	10	
Temperature	C	06/15/2010	N001	32	-	42	17.92		F	#		
Turbidity	NTU	06/15/2010	N001	32	-	42	1.87		F	#		
Uranium	mg/L	06/15/2010	N001	32	-	42	0.0087		F	#	0.0000029	
Vanadium	mg/L	06/15/2010	N001	32	-	42	0.00052		JF	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0618 WELL 12" DIA Steel CSG. Old Mill Well??

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	06/16/2010	N001	-	191		FQ	#		
Ammonia Total as N	mg/L	06/16/2010	N001	-	0.1	U	FQ	#	0.1	
Ammonia Total as N	mg/L	06/16/2010	N002	-	0.1	U	FQ	#	0.1	
Arsenic	mg/L	06/16/2010	N001	-	0.0017		FQ	#	0.000015	
Arsenic	mg/L	06/16/2010	N002	-	0.0019		FQ	#	0.000015	
Calcium	mg/L	06/16/2010	N001	-	34		FQ	#	0.012	
Calcium	mg/L	06/16/2010	N002	-	35		FQ	#	0.012	
Chloride	mg/L	06/16/2010	N001	-	3.8		FQ	#	0.2	
Chloride	mg/L	06/16/2010	N002	-	3.7		FQ	#	0.4	
Iron	mg/L	06/16/2010	N001	-	0.0078	B	FQ	#	0.0049	
Iron	mg/L	06/16/2010	N002	-	0.082	B	FQ	#	0.0049	
Magnesium	mg/L	06/16/2010	N001	-	20		FQ	#	0.013	
Magnesium	mg/L	06/16/2010	N002	-	20		FQ	#	0.013	
Manganese	mg/L	06/16/2010	N001	-	0.00011	U	JFQ	#	0.00011	
Manganese	mg/L	06/16/2010	N002	-	0.0017	B	FQ	#	0.00011	
Molybdenum	mg/L	06/16/2010	N001	-	0.003		JFQ	#	0.000032	
Molybdenum	mg/L	06/16/2010	N002	-	0.0024		JFQ	#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	06/16/2010	N001	-	1.1		FQ	#	0.01	
Nitrate + Nitrite as Nitrogen	mg/L	06/16/2010	N002	-	1.2		FQ	#	0.01	
Oxidation Reduction Potential	mV	06/16/2010	N001	-	148.2		FQ	#		

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0618 WELL 12" DIA Steel CSG. Old Mill Well??

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
pH	s.u.	06/16/2010	N001	-	7.48		FQ	#		
Potassium	mg/L	06/16/2010	N001	-	1.4		FQ	#	0.11	
Potassium	mg/L	06/16/2010	N002	-	1.3		FQ	#	0.11	
Sodium	mg/L	06/16/2010	N001	-	7.3	E	JFQ	#	0.0066	
Sodium	mg/L	06/16/2010	N002	-	7.1	E	JFQ	#	0.0066	
Specific Conductance	umhos /cm	06/16/2010	N001	-	432		FQ	#		
Sulfate	mg/L	06/16/2010	N001	-	29		FQ	#	0.5	
Sulfate	mg/L	06/16/2010	N002	-	27		FQ	#	1	
Temperature	C	06/16/2010	N001	-	17.66		FQ	#		
Turbidity	NTU	06/16/2010	N001	-	1.32		FQ	#		
Uranium	mg/L	06/16/2010	N001	-	0.0086		FQ	#	0.0000029	
Uranium	mg/L	06/16/2010	N002	-	0.0093		FQ	#	0.0000029	
Vanadium	mg/L	06/16/2010	N001	-	0.067		FQ	#	0.000015	
Vanadium	mg/L	06/16/2010	N002	-	0.078		FQ	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0619 WELL Water Use Permit No. 92-082.

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/15/2010	N001	103.9	-	153.9	0.1	U	F	#	0.1	
Chloride	mg/L	06/15/2010	N001	103.9	-	153.9	5.1		F	#	0.2	
Nitrate + Nitrite as Nitrogen	mg/L	06/15/2010	N001	103.9	-	153.9	0.85		F	#	0.01	
Oxidation Reduction Potential	mV	06/15/2010	N001	103.9	-	153.9	58.1		F	#		
pH	s.u.	06/15/2010	N001	103.9	-	153.9	7.87		F	#		
Specific Conductance	umhos /cm	06/15/2010	N001	103.9	-	153.9	402		F	#		
Sulfate	mg/L	06/15/2010	N001	103.9	-	153.9	30		F	#	0.5	
Temperature	C	06/15/2010	N001	103.9	-	153.9	19.23		F	#		
Turbidity	NTU	06/15/2010	N001	103.9	-	153.9	0.7		F	#		
Uranium	mg/L	06/15/2010	N001	103.9	-	153.9	0.0094		F	#	0.0000029	
Vanadium	mg/L	06/15/2010	N001	103.9	-	153.9	0.02		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0648 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/14/2010	N001	38.5	-	88.5	2.2		F	#	0.1	
Chloride	mg/L	06/14/2010	N001	38.5	-	88.5	26		F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	06/14/2010	N001	38.5	-	88.5	90		F	#	0.5	
Oxidation Reduction Potential	mV	06/14/2010	N001	38.5	-	88.5	127.3		F	#		
pH	s.u.	06/14/2010	N001	38.5	-	88.5	7.17		F	#		
Specific Conductance	umhos /cm	06/14/2010	N001	38.5	-	88.5	2669		F	#		
Sulfate	mg/L	06/14/2010	N001	38.5	-	88.5	990		F	#	10	
Temperature	C	06/14/2010	N001	38.5	-	88.5	17.65		F	#		
Turbidity	NTU	06/14/2010	N001	38.5	-	88.5	0.76		F	#		
Uranium	mg/L	06/14/2010	N001	38.5	-	88.5	0.01		F	#	0.0000029	
Vanadium	mg/L	06/14/2010	N001	38.5	-	88.5	0.011		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0650 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/15/2010	N001	77.5	-	97.5	0.1	U	F	#	0.1	
Chloride	mg/L	06/15/2010	N001	77.5	-	97.5	14		F	#	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/15/2010	N001	77.5	-	97.5	2.3		F	#	0.02	
Oxidation Reduction Potential	mV	06/15/2010	N001	77.5	-	97.5	-21.5		F	#		
pH	s.u.	06/15/2010	N001	77.5	-	97.5	6.98		F	#		
Specific Conductance	umhos /cm	06/15/2010	N001	77.5	-	97.5	826		F	#		
Sulfate	mg/L	06/15/2010	N001	77.5	-	97.5	190		F	#	1	
Temperature	C	06/15/2010	N001	77.5	-	97.5	17.84		F	#		
Turbidity	NTU	06/15/2010	N001	77.5	-	97.5	1.45		F	#		
Uranium	mg/L	06/15/2010	N001	77.5	-	97.5	0.002		F	#	0.0000029	
Vanadium	mg/L	06/15/2010	N001	77.5	-	97.5	0.0033		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0651 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/16/2010	N001	20	-	80	0.1	U	F	#	0.1	
Chloride	mg/L	06/16/2010	N001	20	-	80	12		F	#	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/16/2010	N001	20	-	80	0.11		F	#	0.01	
Oxidation Reduction Potential	mV	06/16/2010	N001	20	-	80	156.2		F	#		
pH	s.u.	06/16/2010	N001	20	-	80	7.96		F	#		
Specific Conductance	umhos /cm	06/16/2010	N001	20	-	80	657		F	#		
Sulfate	mg/L	06/16/2010	N001	20	-	80	110		F	#	1	
Temperature	C	06/16/2010	N001	20	-	80	16.57		F	#		
Turbidity	NTU	06/16/2010	N001	20	-	80	8.73		F	#		
Uranium	mg/L	06/16/2010	N001	20	-	80	0.0022		F	#	0.0000029	
Vanadium	mg/L	06/16/2010	N001	20	-	80	0.011		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0652 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/16/2010	N001	34	-	54	0.1	U	F	#	0.1	
Chloride	mg/L	06/16/2010	N001	34	-	54	14		F	#	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/16/2010	N001	34	-	54	4.1		F	#	0.05	
Oxidation Reduction Potential	mV	06/16/2010	N001	34	-	54	129.3		F	#		
pH	s.u.	06/16/2010	N001	34	-	54	7.89		F	#		
Specific Conductance	umhos /cm	06/16/2010	N001	34	-	54	584		F	#		
Sulfate	mg/L	06/16/2010	N001	34	-	54	63		F	#	1	
Temperature	C	06/16/2010	N001	34	-	54	17.5		F	#		
Turbidity	NTU	06/16/2010	N001	34	-	54	0.78		F	#		
Uranium	mg/L	06/16/2010	N001	34	-	54	0.0044		F	#	0.0000029	
Vanadium	mg/L	06/16/2010	N001	34	-	54	0.011		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0653 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/14/2010	N001	56	-	76	0.1	U	F	#	0.1	
Chloride	mg/L	06/14/2010	N001	56	-	76	24		F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	06/14/2010	N001	56	-	76	39		F	#	2	
Oxidation Reduction Potential	mV	06/14/2010	N001	56	-	76	112.3		F	#		
pH	s.u.	06/14/2010	N001	56	-	76	7.18		F	#		
Specific Conductance	umhos /cm	06/14/2010	N001	56	-	76	2466		F	#		
Sulfate	mg/L	06/14/2010	N001	56	-	76	980		F	#	10	
Temperature	C	06/14/2010	N001	56	-	76	17.35		F	#		
Turbidity	NTU	06/14/2010	N001	56	-	76	0.93		F	#		
Uranium	mg/L	06/14/2010	N001	56	-	76	0.0095		F	#	0.0000029	
Vanadium	mg/L	06/14/2010	N001	56	-	76	0.0085		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0655 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/16/2010	N001	38	-	58	120		F	#	10	
Chloride	mg/L	06/16/2010	N001	38	-	58	20		F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	06/16/2010	N001	38	-	58	160		F	#	1	
Oxidation Reduction Potential	mV	06/16/2010	N001	38	-	58	202.8		F	#		
pH	s.u.	06/16/2010	N001	38	-	58	6.85		F	#		
Specific Conductance	umhos /cm	06/16/2010	N001	38	-	58	3771		F	#		
Sulfate	mg/L	06/16/2010	N001	38	-	58	1200		F	#	10	
Temperature	C	06/16/2010	N001	38	-	58	20.6		F	#		
Turbidity	NTU	06/16/2010	N001	38	-	58	0.9		F	#		
Uranium	mg/L	06/16/2010	N001	38	-	58	0.011		F	#	0.0000029	
Vanadium	mg/L	06/16/2010	N001	38	-	58	0.0076		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0656 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/15/2010	N001	38	-	58	43		F	#	2	
Chloride	mg/L	06/15/2010	N001	38	-	58	14		F	#	2	
Nitrate + Nitrite as Nitrogen	mg/L	06/15/2010	N001	38	-	58	15		F	#	0.1	
Oxidation Reduction Potential	mV	06/15/2010	N001	38	-	58	202.7		F	#		
pH	s.u.	06/15/2010	N001	38	-	58	6.85		F	#		
Specific Conductance	umhos /cm	06/15/2010	N001	38	-	58	1029		F	#		
Sulfate	mg/L	06/15/2010	N001	38	-	58	150		F	#	5	
Temperature	C	06/15/2010	N001	38	-	58	17.43		F	#		
Turbidity	NTU	06/15/2010	N001	38	-	58	2.41		F	#		
Uranium	mg/L	06/15/2010	N001	38	-	58	0.0052		F	#	0.0000029	
Vanadium	mg/L	06/15/2010	N001	38	-	58	0.00068		UF	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0657 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/16/2010	N001	121	-	136	0.1	U	F	#	0.1	
Chloride	mg/L	06/16/2010	N001	121	-	136	6		F	#	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/16/2010	N001	121	-	136	2.6		F	#	0.02	
Oxidation Reduction Potential	mV	06/16/2010	N001	121	-	136	96.5		F	#		
pH	s.u.	06/16/2010	N001	121	-	136	7.79		F	#		
Specific Conductance	umhos /cm	06/16/2010	N001	121	-	136	413		F	#		
Sulfate	mg/L	06/16/2010	N001	121	-	136	32		F	#	1	
Temperature	C	06/16/2010	N001	121	-	136	18.64		F	#		
Turbidity	NTU	06/16/2010	N001	121	-	136	0.93		F	#		
Uranium	mg/L	06/16/2010	N001	121	-	136	0.0099		F	#	0.0000029	
Vanadium	mg/L	06/16/2010	N001	121	-	136	0.064		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0662 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/16/2010	N001	37.5	-	67.5	0.1	U	F	#	0.1	
Chloride	mg/L	06/16/2010	N001	37.5	-	67.5	16		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	06/16/2010	N001	37.5	-	67.5	18		F	#	0.1	
Oxidation Reduction Potential	mV	06/16/2010	N001	37.5	-	67.5	91.6		F	#		
pH	s.u.	06/16/2010	N001	37.5	-	67.5	7.38		F	#		
Specific Conductance	umhos /cm	06/16/2010	N001	37.5	-	67.5	1036		F	#		
Sulfate	mg/L	06/16/2010	N001	37.5	-	67.5	240		F	#	2.5	
Temperature	C	06/16/2010	N001	37.5	-	67.5	17.69		F	#		
Turbidity	NTU	06/16/2010	N001	37.5	-	67.5	1.36		F	#		
Uranium	mg/L	06/16/2010	N001	37.5	-	67.5	0.097		F	#	0.0000029	
Vanadium	mg/L	06/16/2010	N001	37.5	-	67.5	0.029		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0669 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/16/2010	N001	34	-	54	2.9		F	#	0.1	
Chloride	mg/L	06/16/2010	N001	34	-	54	8.5		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	06/16/2010	N001	34	-	54	16		F	#	0.1	
Oxidation Reduction Potential	mV	06/16/2010	N001	34	-	54	106.3		F	#		
pH	s.u.	06/16/2010	N001	34	-	54	7.58		F	#		
Specific Conductance	umhos /cm	06/16/2010	N001	34	-	54	783		F	#		
Sulfate	mg/L	06/16/2010	N001	34	-	54	110		F	#	2.5	
Temperature	C	06/16/2010	N001	34	-	54	19.39		F	#		
Turbidity	NTU	06/16/2010	N001	34	-	54	0.63		F	#		
Uranium	mg/L	06/16/2010	N001	34	-	54	0.0062		F	#	0.0000029	
Vanadium	mg/L	06/16/2010	N001	34	-	54	0.052		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0711 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/15/2010	N001	25.5	-	30.5	0.1	U	F	#	0.1	
Chloride	mg/L	06/15/2010	N001	25.5	-	30.5	14		F	#	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/15/2010	N001	25.5	-	30.5	0.48		F	#	0.01	
Oxidation Reduction Potential	mV	06/15/2010	N001	25.5	-	30.5	73.7		F	#		
pH	s.u.	06/15/2010	N001	25.5	-	30.5	7.84		F	#		
Specific Conductance	umhos /cm	06/15/2010	N001	25.5	-	30.5	716		F	#		
Sulfate	mg/L	06/15/2010	N001	25.5	-	30.5	120		F	#	1	
Temperature	C	06/15/2010	N001	25.5	-	30.5	17.46		F	#		
Turbidity	NTU	06/15/2010	N001	25.5	-	30.5	3.82		F	#		
Uranium	mg/L	06/15/2010	N001	25.5	-	30.5	0.0038		F	#	0.0000029	
Vanadium	mg/L	06/15/2010	N001	25.5	-	30.5	0.0013		JF	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0715 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/15/2010	N001	16	-	21	0.1	U	F	#	0.1	
Chloride	mg/L	06/15/2010	N001	16	-	21	9.2		F	#	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/15/2010	N001	16	-	21	0.67		F	#	0.01	
Oxidation Reduction Potential	mV	06/15/2010	N001	16	-	21	122.5		F	#		
pH	s.u.	06/15/2010	N001	16	-	21	7.91		F	#		
Specific Conductance	umhos /cm	06/15/2010	N001	16	-	21	548		F	#		
Sulfate	mg/L	06/15/2010	N001	16	-	21	67		F	#	1	
Temperature	C	06/15/2010	N001	16	-	21	15.4		F	#		
Turbidity	NTU	06/15/2010	N001	16	-	21	1.38		F	#		
Uranium	mg/L	06/15/2010	N001	16	-	21	0.0029		F	#	0.0000029	
Vanadium	mg/L	06/15/2010	N001	16	-	21	0.00078		UF	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0719 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/15/2010	N001	19.35	-	24.35	0.1	U	F	#	0.1	
Chloride	mg/L	06/15/2010	N001	19.35	-	24.35	15		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	06/15/2010	N001	19.35	-	24.35	0.8		F	#	0.01	
Oxidation Reduction Potential	mV	06/15/2010	N001	19.35	-	24.35	125.5		F	#		
pH	s.u.	06/15/2010	N001	19.35	-	24.35	7.79		F	#		
Specific Conductance	umhos /cm	06/15/2010	N001	19.35	-	24.35	750		F	#		
Sulfate	mg/L	06/15/2010	N001	19.35	-	24.35	120		F	#	2.5	
Temperature	C	06/15/2010	N001	19.35	-	24.35	16.14		F	#		
Turbidity	NTU	06/15/2010	N001	19.35	-	24.35	1.59		F	#		
Uranium	mg/L	06/15/2010	N001	19.35	-	24.35	0.0038		F	#	0.0000029	
Vanadium	mg/L	06/15/2010	N001	19.35	-	24.35	0.0043		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0727 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/15/2010	N001	23.73	-	28.78	0.1	U	F	#	0.1	
Chloride	mg/L	06/15/2010	N001	23.73	-	28.78	11		F	#	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/15/2010	N001	23.73	-	28.78	0.88		F	#	0.01	
Oxidation Reduction Potential	mV	06/15/2010	N001	23.73	-	28.78	136.3		F	#		
pH	s.u.	06/15/2010	N001	23.73	-	28.78	7.79		F	#		
Specific Conductance	umhos /cm	06/15/2010	N001	23.73	-	28.78	604		F	#		
Sulfate	mg/L	06/15/2010	N001	23.73	-	28.78	89		F	#	1	
Temperature	C	06/15/2010	N001	23.73	-	28.78	16.72		F	#		
Turbidity	NTU	06/15/2010	N001	23.73	-	28.78	9.96		F	#		
Uranium	mg/L	06/15/2010	N001	23.73	-	28.78	0.0019		F	#	0.0000029	
Vanadium	mg/L	06/15/2010	N001	23.73	-	28.78	0.0027		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0760 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/15/2010	0001	55	-	75	0.1	U	FQ	#	0.1	
Chloride	mg/L	06/15/2010	0001	55	-	75	9		FQ	#	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/15/2010	0001	55	-	75	0.017		FQ	#	0.01	
Oxidation Reduction Potential	mV	06/15/2010	N001	55	-	75	17.7		FQ	#		
pH	s.u.	06/15/2010	N001	55	-	75	7.25		FQ	#		
Specific Conductance	umhos /cm	06/15/2010	N001	55	-	75	542		FQ	#		
Sulfate	mg/L	06/15/2010	0001	55	-	75	84		FQ	#	1	
Temperature	C	06/15/2010	N001	55	-	75	19.78		FQ	#		
Turbidity	NTU	06/15/2010	N001	55	-	75	31		FQ	#		
Uranium	mg/L	06/15/2010	0001	55	-	75	0.00024		FQ	#	0.0000029	
Vanadium	mg/L	06/15/2010	0001	55	-	75	0.00016	B	UFQ	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0761 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/14/2010	N001	39	-	49	0.1	U	F	#	0.1	
Chloride	mg/L	06/14/2010	N001	39	-	49	13		F	#	2	
Nitrate + Nitrite as Nitrogen	mg/L	06/14/2010	N001	39	-	49	30		F	#	0.2	
Oxidation Reduction Potential	mV	06/14/2010	N001	39	-	49	126.8		F	#		
pH	s.u.	06/14/2010	N001	39	-	49	6.8		F	#		
Specific Conductance	umhos /cm	06/14/2010	N001	39	-	49	1467		F	#		
Sulfate	mg/L	06/14/2010	N001	39	-	49	450		F	#	5	
Temperature	C	06/14/2010	N001	39	-	49	17.32		F	#		
Turbidity	NTU	06/14/2010	N001	39	-	49	1.93		F	#		
Uranium	mg/L	06/14/2010	N001	39	-	49	0.027		F	#	0.0000029	
Vanadium	mg/L	06/14/2010	N001	39	-	49	0.0019		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0762 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/15/2010	N001	29	-	49	0.1	U	F	#	0.1	
Ammonia Total as N	mg/L	06/15/2010	N002	29	-	49	0.1	U	F	#	0.1	
Chloride	mg/L	06/15/2010	N001	29	-	49	65		F	#	4	
Chloride	mg/L	06/15/2010	N002	29	-	49	64		F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	06/15/2010	N001	29	-	49	99		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	06/15/2010	N002	29	-	49	100		F	#	1	
Oxidation Reduction Potential	mV	06/15/2010	N001	29	-	49	32.3		F	#		
pH	s.u.	06/15/2010	N001	29	-	49	6.65		F	#		
Specific Conductance	umhos /cm	06/15/2010	N001	29	-	49	3894		F	#		
Sulfate	mg/L	06/15/2010	N001	29	-	49	1500		F	#	10	
Sulfate	mg/L	06/15/2010	N002	29	-	49	1500		F	#	10	
Temperature	C	06/15/2010	N001	29	-	49	17.81		F	#		
Turbidity	NTU	06/15/2010	N001	29	-	49	4.76		F	#		
Uranium	mg/L	06/15/2010	N001	29	-	49	0.011		F	#	0.0000029	
Uranium	mg/L	06/15/2010	N002	29	-	49	0.011		F	#	0.0000029	
Vanadium	mg/L	06/15/2010	N001	29	-	49	0.008		F	#	0.000015	
Vanadium	mg/L	06/15/2010	N002	29	-	49	0.0077		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0764 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/14/2010	N001	47	-	52	0.1	U	FQ	#	0.1	
Chloride	mg/L	06/14/2010	N001	47	-	52	11		FQ	#	2	
Nitrate + Nitrite as Nitrogen	mg/L	06/14/2010	N001	47	-	52	49		FQ	#	0.5	
Oxidation Reduction Potential	mV	06/14/2010	N001	47	-	52	108.7		FQ	#		
pH	s.u.	06/14/2010	N001	47	-	52	7.38		FQ	#		
Specific Conductance	umhos /cm	06/14/2010	N001	47	-	52	1268		FQ	#		
Sulfate	mg/L	06/14/2010	N001	47	-	52	280		FQ	#	5	
Temperature	C	06/14/2010	N001	47	-	52	19.98		FQ	#		
Turbidity	NTU	06/14/2010	N001	47	-	52	2.96		FQ	#		
Uranium	mg/L	06/14/2010	N001	47	-	52	0.011		FQ	#	0.0000029	
Vanadium	mg/L	06/14/2010	N001	47	-	52	0.017		FQ	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0765 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/15/2010	0001	58.6	-	88.7	130		FQ	#	10	
Chloride	mg/L	06/15/2010	0001	58.6	-	88.7	13		FQ	#	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/15/2010	0001	58.6	-	88.7	0.43		FQ	#	0.01	
Oxidation Reduction Potential	mV	06/15/2010	N001	58.6	-	88.7	-132		FQ	#		
pH	s.u.	06/15/2010	N001	58.6	-	88.7	5.82		FQ	#		
Specific Conductance	umhos /cm	06/15/2010	N001	58.6	-	88.7	2126		FQ	#		
Sulfate	mg/L	06/15/2010	0001	58.6	-	88.7	21		FQ	#	1	
Temperature	C	06/15/2010	N001	58.6	-	88.7	19.34		FQ	#		
Turbidity	NTU	06/15/2010	N001	58.6	-	88.7	32.5		FQ	#		
Uranium	mg/L	06/15/2010	0001	58.6	-	88.7	0.00061		FQ	#	0.0000029	
Vanadium	mg/L	06/15/2010	0001	58.6	-	88.7	0.0011		JFQ	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0766 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/15/2010	0001	47.2	-	57.2	160		FQ	#	10	
Chloride	mg/L	06/15/2010	0001	47.2	-	57.2	15		FQ	#	2	
Nitrate + Nitrite as Nitrogen	mg/L	06/15/2010	0001	47.2	-	57.2	34		FQ	#	0.5	
Oxidation Reduction Potential	mV	06/15/2010	N001	47.2	-	57.2	-49.7		FQ	#		
pH	s.u.	06/15/2010	N001	47.2	-	57.2	6.72		FQ	#		
Specific Conductance	umhos /cm	06/15/2010	N001	47.2	-	57.2	3120		FQ	#		
Sulfate	mg/L	06/15/2010	0001	47.2	-	57.2	290		FQ	#	5	
Temperature	C	06/15/2010	N001	47.2	-	57.2	18.79		FQ	#		
Turbidity	NTU	06/15/2010	N001	47.2	-	57.2	26.3		FQ	#		
Uranium	mg/L	06/15/2010	0001	47.2	-	57.2	0.011		FQ	#	0.0000029	
Vanadium	mg/L	06/15/2010	0001	47.2	-	57.2	0.0028		FQ	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0767 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/16/2010	N001	43.5	-	63.5	0.12		F	#	0.1	
Chloride	mg/L	06/16/2010	N001	43.5	-	63.5	5.1		F	#	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/16/2010	N001	43.5	-	63.5	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	06/16/2010	N001	43.5	-	63.5	83.5		F	#		
pH	s.u.	06/16/2010	N001	43.5	-	63.5	7.62		F	#		
Specific Conductance	umhos /cm	06/16/2010	N001	43.5	-	63.5	418		F	#		
Sulfate	mg/L	06/16/2010	N001	43.5	-	63.5	30		F	#	1	
Temperature	C	06/16/2010	N001	43.5	-	63.5	18.42		F	#		
Turbidity	NTU	06/16/2010	N001	43.5	-	63.5	0.76		F	#		
Uranium	mg/L	06/16/2010	N001	43.5	-	63.5	0.00062		F	#	0.0000029	
Vanadium	mg/L	06/16/2010	N001	43.5	-	63.5	0.00027	B	UF	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0768 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/16/2010	N001	24.4	-	44.4	0.46		F	#	0.1	
Chloride	mg/L	06/16/2010	N001	24.4	-	44.4	11		F	#	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/16/2010	N001	24.4	-	44.4	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	06/16/2010	N001	24.4	-	44.4	-23.6		F	#		
pH	s.u.	06/16/2010	N001	24.4	-	44.4	7.87		F	#		
Specific Conductance	umhos /cm	06/16/2010	N001	24.4	-	44.4	491		F	#		
Sulfate	mg/L	06/16/2010	N001	24.4	-	44.4	59		F	#	1	
Temperature	C	06/16/2010	N001	24.4	-	44.4	18.56		F	#		
Turbidity	NTU	06/16/2010	N001	24.4	-	44.4	6.75		F	#		
Uranium	mg/L	06/16/2010	N001	24.4	-	44.4	0.000052		F	#	0.0000029	
Vanadium	mg/L	06/16/2010	N001	24.4	-	44.4	0.00038		UF	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0770 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/15/2010	N001	54.9	-	64.9	29		F	#	1	
Chloride	mg/L	06/15/2010	N001	54.9	-	64.9	13		F	#	2	
Nitrate + Nitrite as Nitrogen	mg/L	06/15/2010	N001	54.9	-	64.9	18		F	#	0.1	
Oxidation Reduction Potential	mV	06/15/2010	N001	54.9	-	64.9	148.6		F	#		
pH	s.u.	06/15/2010	N001	54.9	-	64.9	6.69		F	#		
Specific Conductance	umhos /cm	06/15/2010	N001	54.9	-	64.9	1065		F	#		
Sulfate	mg/L	06/15/2010	N001	54.9	-	64.9	180		F	#	5	
Temperature	C	06/15/2010	N001	54.9	-	64.9	17.65		F	#		
Turbidity	NTU	06/15/2010	N001	54.9	-	64.9	3.37		F	#		
Uranium	mg/L	06/15/2010	N001	54.9	-	64.9	0.0052		F	#	0.0000029	
Vanadium	mg/L	06/15/2010	N001	54.9	-	64.9	0.0008		JF	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0771 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/16/2010	N001	57.4	-	77.4	260		F	#	10	
Chloride	mg/L	06/16/2010	N001	57.4	-	77.4	18		F	#	2	
Nitrate + Nitrite as Nitrogen	mg/L	06/16/2010	N001	57.4	-	77.4	180		F	#	1	
Oxidation Reduction Potential	mV	06/16/2010	N001	57.4	-	77.4	191.8		F	#		
pH	s.u.	06/16/2010	N001	57.4	-	77.4	6.98		F	#		
Specific Conductance	umhos /cm	06/16/2010	N001	57.4	-	77.4	4496		F	#		
Sulfate	mg/L	06/16/2010	N001	57.4	-	77.4	1300		F	#	25	
Temperature	C	06/16/2010	N001	57.4	-	77.4	21.52		F	#		
Turbidity	NTU	06/16/2010	N001	57.4	-	77.4	0.89		F	#		
Uranium	mg/L	06/16/2010	N001	57.4	-	77.4	0.013		F	#	0.0000029	
Vanadium	mg/L	06/16/2010	N001	57.4	-	77.4	0.0081		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0772 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Alkalinity, Total (As CaCO3)	mg/L	06/15/2010	N001	7.4	-	27.4	278		F	#		
Ammonia Total as N	mg/L	06/15/2010	N001	7.4	-	27.4	2.6		F	#	0.1	
Arsenic	mg/L	06/15/2010	N001	7.4	-	27.4	0.0023		F	#	0.000015	
Calcium	mg/L	06/15/2010	N001	7.4	-	27.4	25		F	#	0.012	
Chloride	mg/L	06/15/2010	N001	7.4	-	27.4	14		F	#	1	
Iron	mg/L	06/15/2010	N001	7.4	-	27.4	0.0049	U	F	#	0.0049	
Magnesium	mg/L	06/15/2010	N001	7.4	-	27.4	16		F	#	0.013	
Manganese	mg/L	06/15/2010	N001	7.4	-	27.4	0.01		F	#	0.00011	
Molybdenum	mg/L	06/15/2010	N001	7.4	-	27.4	0.0027		F	#	0.000032	
Nitrate + Nitrite as Nitrogen	mg/L	06/15/2010	N001	7.4	-	27.4	1.1		F	#	0.01	
Oxidation Reduction Potential	mV	06/15/2010	N001	7.4	-	27.4	95.2		F	#		
pH	s.u.	06/15/2010	N001	7.4	-	27.4	7.61		F	#		
Potassium	mg/L	06/15/2010	N001	7.4	-	27.4	0.99	B	F	#	0.11	
Sodium	mg/L	06/15/2010	N001	7.4	-	27.4	94		JF	#	0.0066	
Specific Conductance	umhos /cm	06/15/2010	N001	7.4	-	27.4	775		F	#		
Sulfate	mg/L	06/15/2010	N001	7.4	-	27.4	120		F	#	2.5	
Temperature	C	06/15/2010	N001	7.4	-	27.4	16.4		F	#		
Turbidity	NTU	06/15/2010	N001	7.4	-	27.4	3.94		F	#		
Uranium	mg/L	06/15/2010	N001	7.4	-	27.4	0.007		F	#	0.0000029	
Vanadium	mg/L	06/15/2010	N001	7.4	-	27.4	0.017		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0774 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/15/2010	N001	45	-	55	0.1	U	F	#	0.1	
Chloride	mg/L	06/15/2010	N001	45	-	55	5.8		F	#	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/15/2010	N001	45	-	55	1.6		F	#	0.01	
Oxidation Reduction Potential	mV	06/15/2010	N001	45	-	55	69.7		F	#		
pH	s.u.	06/15/2010	N001	45	-	55	7.8		F	#		
Specific Conductance	umhos /cm	06/15/2010	N001	45	-	55	410		F	#		
Sulfate	mg/L	06/15/2010	N001	45	-	55	34		F	#	1	
Temperature	C	06/15/2010	N001	45	-	55	17.76		F	#		
Turbidity	NTU	06/15/2010	N001	45	-	55	2.39		F	#		
Uranium	mg/L	06/15/2010	N001	45	-	55	0.028		F	#	0.0000029	
Vanadium	mg/L	06/15/2010	N001	45	-	55	0.02		F	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0775 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/16/2010	N001	142	-	167	0.1	U	F	#	0.1	
Chloride	mg/L	06/16/2010	N001	142	-	167	5.2		F	#	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/16/2010	N001	142	-	167	0.59		F	#	0.01	
pH	s.u.	06/16/2010	N001	142	-	167	7.88		F	#		
Specific Conductance	umhos /cm	06/16/2010	N001	142	-	167	408		F	#		
Sulfate	mg/L	06/16/2010	N001	142	-	167	24		F	#	1	
Temperature	C	06/16/2010	N001	142	-	167	19.84		F	#		
Turbidity	NTU	06/16/2010	N001	142	-	167	0.89		F	#		
Uranium	mg/L	06/16/2010	N001	142	-	167	0.003		F	#	0.0000029	
Vanadium	mg/L	06/16/2010	N001	142	-	167	0.00083		UF	#	0.000015	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0776 WELL

Parameter	Units	Sample Date	Sample ID	Depth Range (Ft BLS)			Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/16/2010	N001	99.5	-	149.5	0.1	U	F	#	0.1	
Chloride	mg/L	06/16/2010	N001	99.5	-	149.5	5.3		F	#	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/16/2010	N001	99.5	-	149.5	0.82		F	#	0.01	
Oxidation Reduction Potential	mV	06/16/2010	N001	99.5	-	149.5	90.2		F	#		
pH	s.u.	06/16/2010	N001	99.5	-	149.5	7.9		F	#		
Specific Conductance	umhos /cm	06/16/2010	N001	99.5	-	149.5	414		F	#		
Sulfate	mg/L	06/16/2010	N001	99.5	-	149.5	30		F	#	1	
Temperature	C	06/16/2010	N001	99.5	-	149.5	18.7		F	#		
Turbidity	NTU	06/16/2010	N001	99.5	-	149.5	0.76		F	#		
Uranium	mg/L	06/16/2010	N001	99.5	-	149.5	0.0086		F	#	0.0000029	
Vanadium	mg/L	06/16/2010	N001	99.5	-	149.5	0.016		F	#	0.000015	

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.

Surface Water Quality Data

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Surface Water Quality Data by Location (USEE102) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 10/19/2010
Location: 0623 SURFACE LOCATION

Parameter	Units	Sample Date	Sample ID	Result	Qualifiers Lab	Qualifiers Data	Qualifiers QA	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	06/15/2010	N001	0.1	U		#	0.1	
Chloride	mg/L	06/15/2010	N001	9.5			#	0.4	
Nitrate + Nitrite as Nitrogen	mg/L	06/15/2010	N001	0.01	U		#	0.01	
Oxidation Reduction Potential	mV	06/15/2010	N001	88.5			#		
pH	s.u.	06/15/2010	N001	7.45			#		
Specific Conductance	umhos/cm	06/15/2010	N001	674			#		
Sulfate	mg/L	06/15/2010	N001	44			#	1	
Temperature	C	06/15/2010	N001	23.22			#		
Turbidity	NTU	06/15/2010	N001	3.88			#		
Uranium	mg/L	06/15/2010	N001	0.00077			#	0.0000029	
Vanadium	mg/L	06/15/2010	N001	0.00069		U	#	0.000015	

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 MON01, Monument Valley Processing Site
REPORT DATE: 8/26/2010

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
0402	U	4840.3	06/15/2010	15:35:56	4.99	4835.31	
0602	U	4864.43	06/15/2010	11:00:07	9.78	4854.65	
0603	U	4849.41	06/15/2010	13:50:08	11.64	4837.77	
0604	C	4840.42	06/15/2010	14:15:30	9.77	4830.65	
0605	C	4835.07	06/16/2010	12:05:49	11.21	4823.86	
0606	D	4864.73	06/15/2010	16:20:30	37.14	4827.59	
0618	O	4924.81	06/16/2010	09:15:35	96.78	4828.03	
0619	O	4888.63	06/15/2010	17:25:20	59.19	4829.44	
0648	N	4835.14	06/14/2010	17:50:18	34.93	4800.21	
0650	D	4794.28	06/15/2010	14:35:14	20.38	4773.9	
0651	C	4787.88	06/16/2010	10:20:53	8.97	4778.91	
0652	C	4808.93	06/16/2010	09:35:17	19.1	4789.83	
0653	D	4837.08	06/14/2010	17:40:45	36.75	4800.33	
0655	D	4862.06	06/16/2010	14:25:38	41	4821.06	
0656	D	4856.33	06/15/2010	18:00:46	38.55	4817.78	
0657	O	4878.99	06/16/2010	10:50:26	51.57	4827.42	
0662	D	4878.56	06/16/2010	10:10:12	50.96	4827.6	
0669	D	4867.19	06/16/2010	13:45:05	51.02	4816.17	
0711			06/15/2010	13:25:21	11.59		
0715			06/15/2010	10:25:41	11.05		
0719			06/15/2010	10:00:36	12.63		
0727			06/15/2010	09:30:35	14.63		
0728		4848.33	06/15/2010	10:05:10	37.1	4811.23	
0729		4848.22	06/15/2010	09:45:11	37.07	4811.15	
0730		4848	06/15/2010	09:20:02	37.05	4810.95	
0731		4847.85	06/15/2010	09:00:13	37.16	4810.69	
0760	D	4814.8	06/15/2010	15:55:48	26	4788.8	
0761	D	4835.02	06/14/2010	18:30:14	43.96	4791.06	
0762	D	4820.74	06/15/2010	15:20:32	32.99	4787.75	

STATIC WATER LEVELS (USEE700) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 8/26/2010

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
0764	D	4851.53	06/14/2010	17:00:44	50.74	4800.79	
0765	D	4848.45	06/15/2010	11:00:24	36.91	4811.54	
0766	D	4847.97	06/15/2010	13:35:46	37.44	4810.53	
0767	D	4808.25	06/16/2010	11:00:46	7.2	4801.05	
0768	D	4820.73	06/16/2010	11:30:22	14.09	4806.64	
0770	D	4857.26	06/15/2010	17:35:41	34.35	4822.91	
0771	D	4863.26	06/16/2010	13:45:58	42.95	4820.31	
0772	O	4847.6	06/15/2010	12:35:57	12.29	4835.31	
0774	O	4880.14	06/15/2010	18:00:29	50.71	4829.43	
0775	D	4879.68	06/16/2010	13:15:53	51.69	4827.99	
0776	O	4883.33	06/16/2010	11:35:35	54.77	4828.56	
0779	N	4846.11	06/15/2010	12:25:17	35	4811.11	

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

Time-Concentration Graphs

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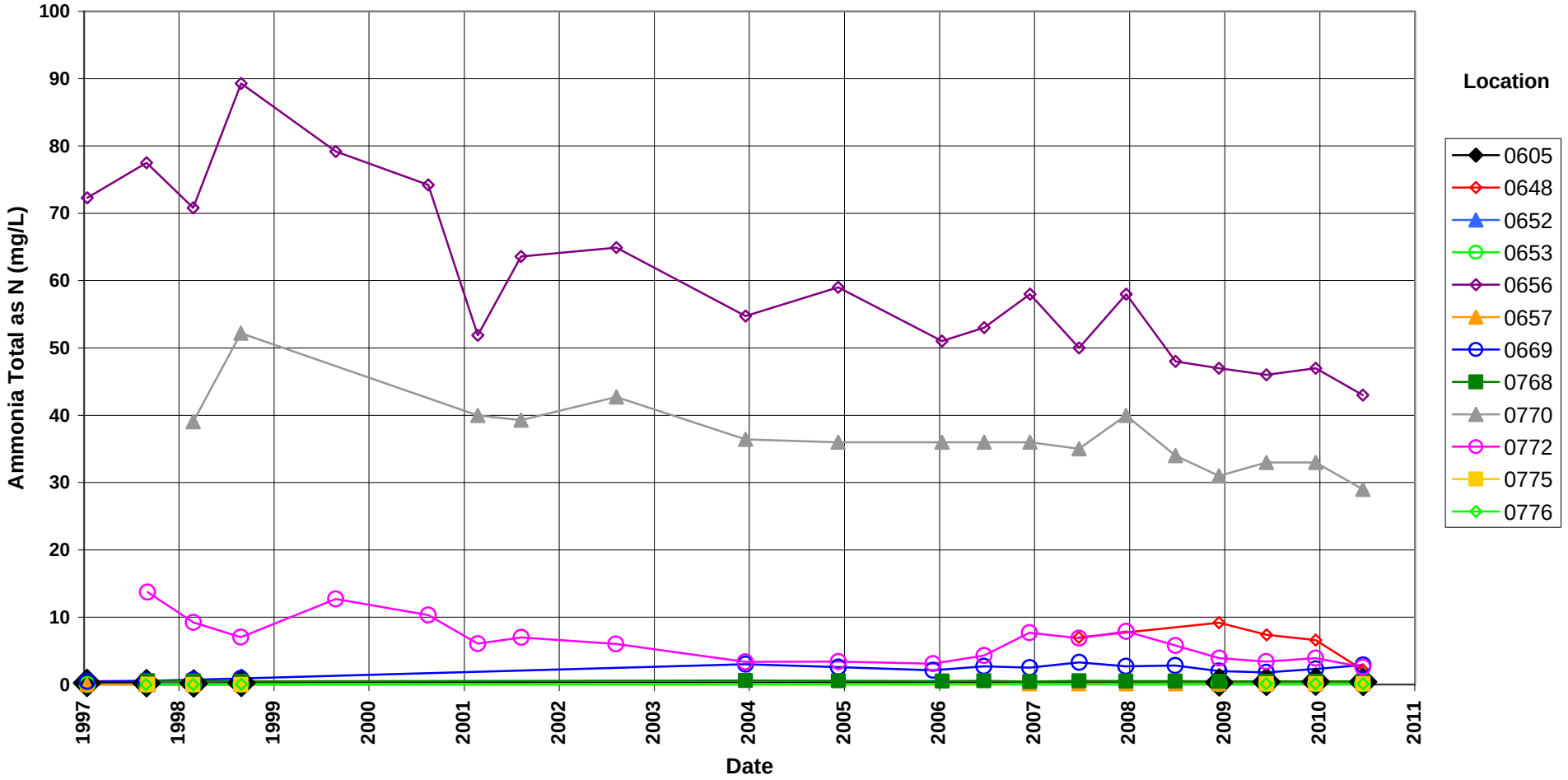
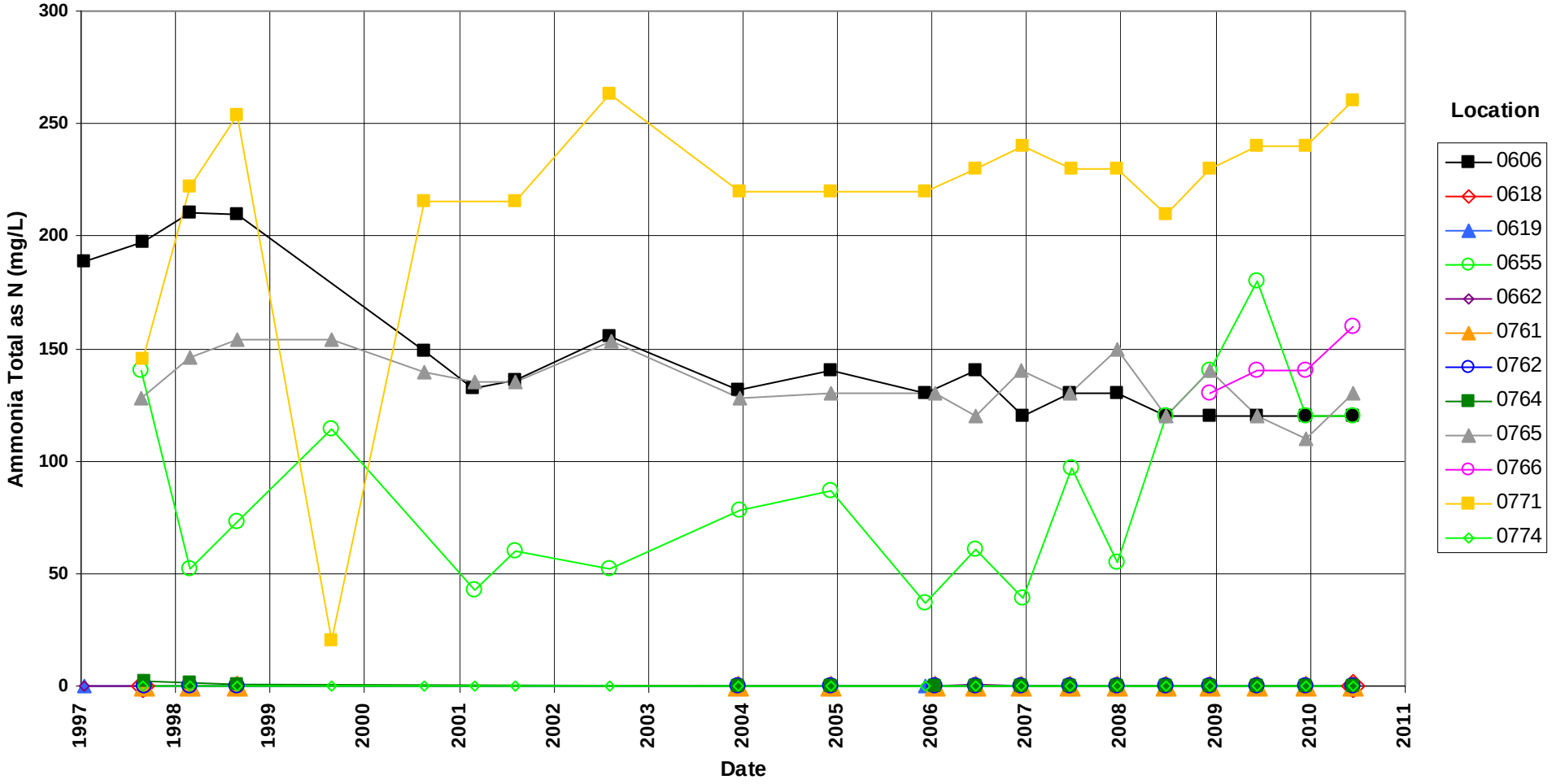
Monument Valley Processing Site
Ammonia Total as N Concentration

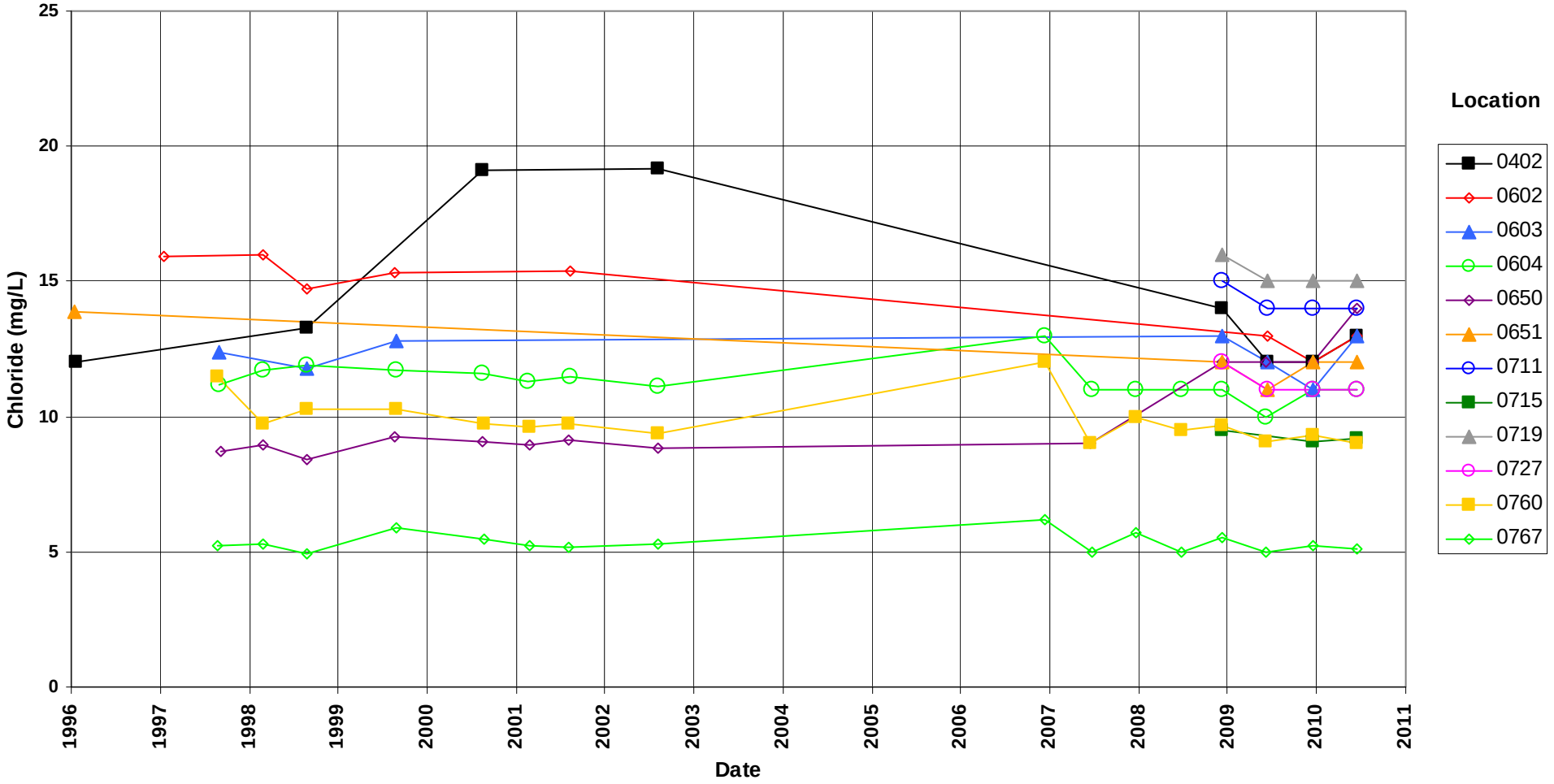
Monument Valley Processing Site
Ammonia Total as N Concentration



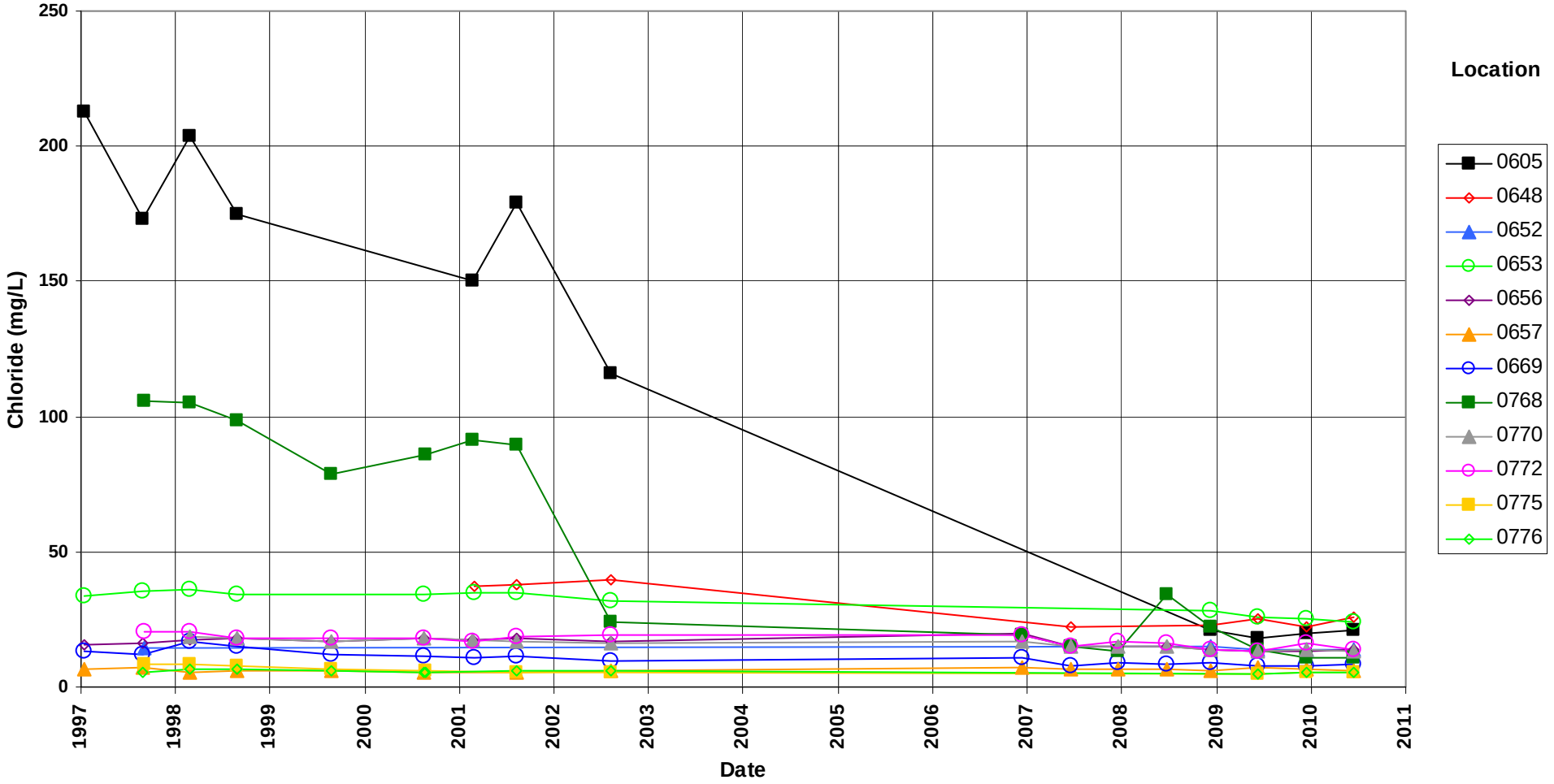
Monument Valley Processing Site
Ammonia Total as N Concentration



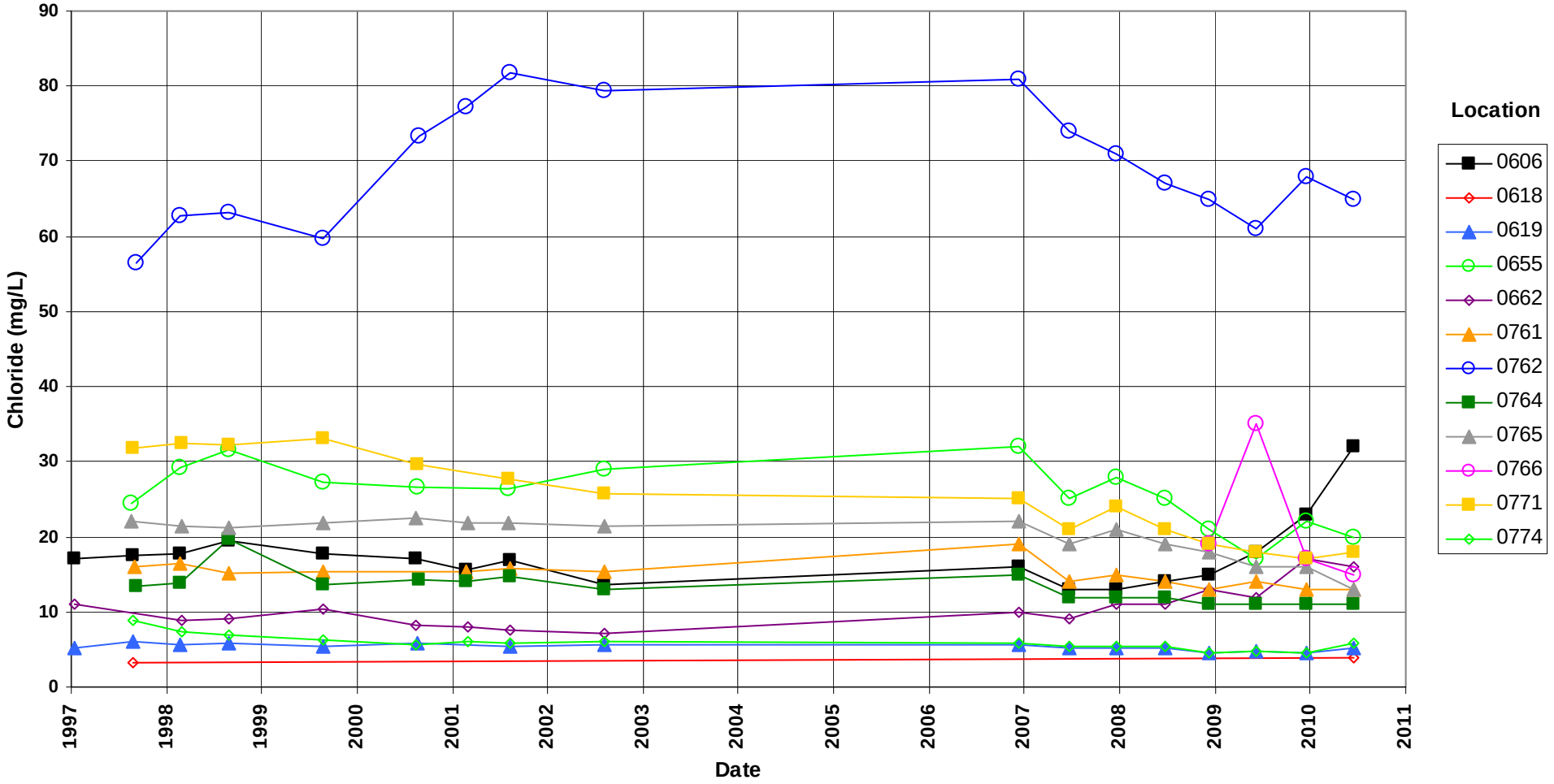
Monument Valley Processing Site
Chloride Concentration

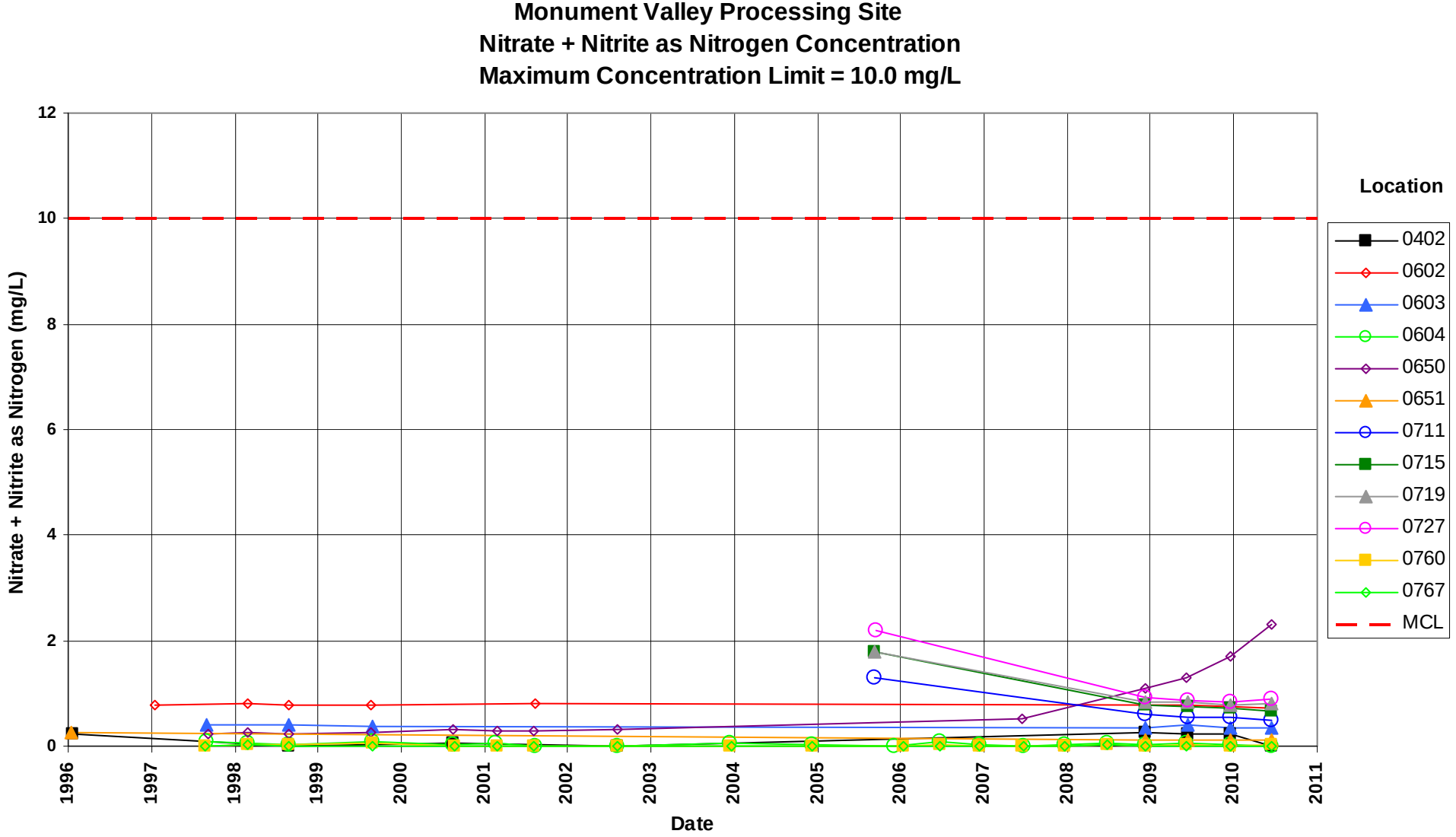


Monument Valley Processing Site
Chloride Concentration

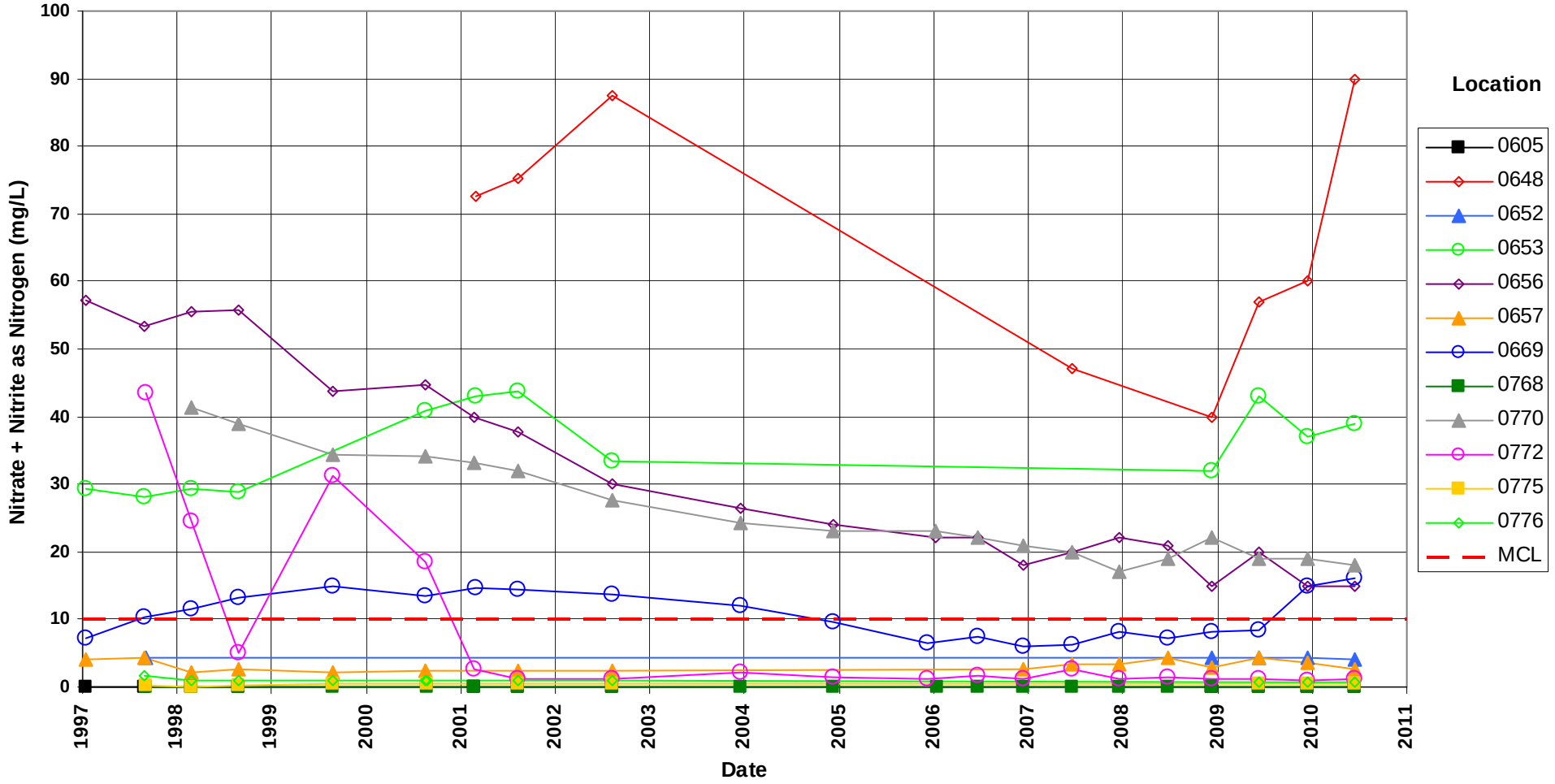


Monument Valley Processing Site
Chloride Concentration

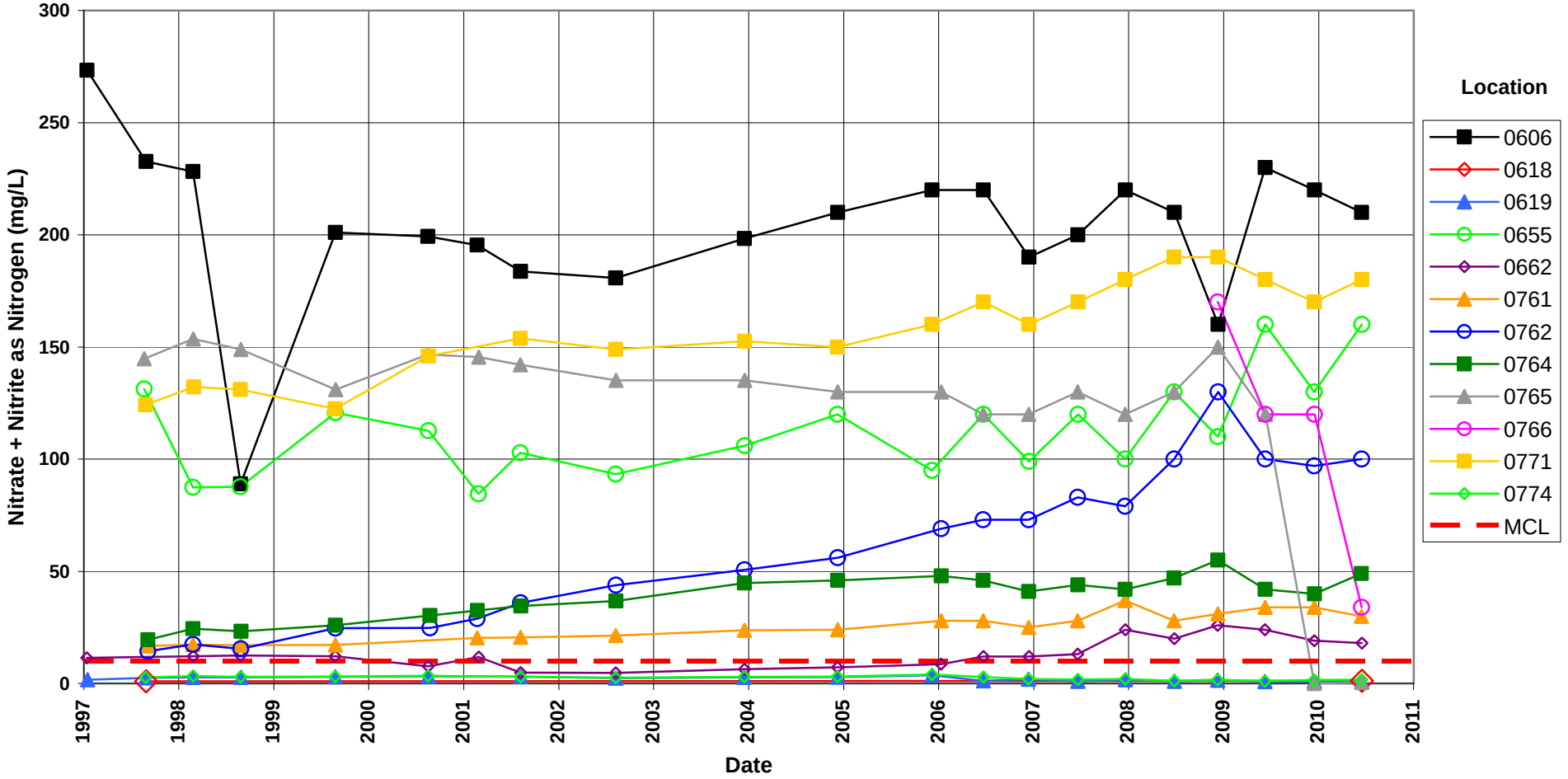


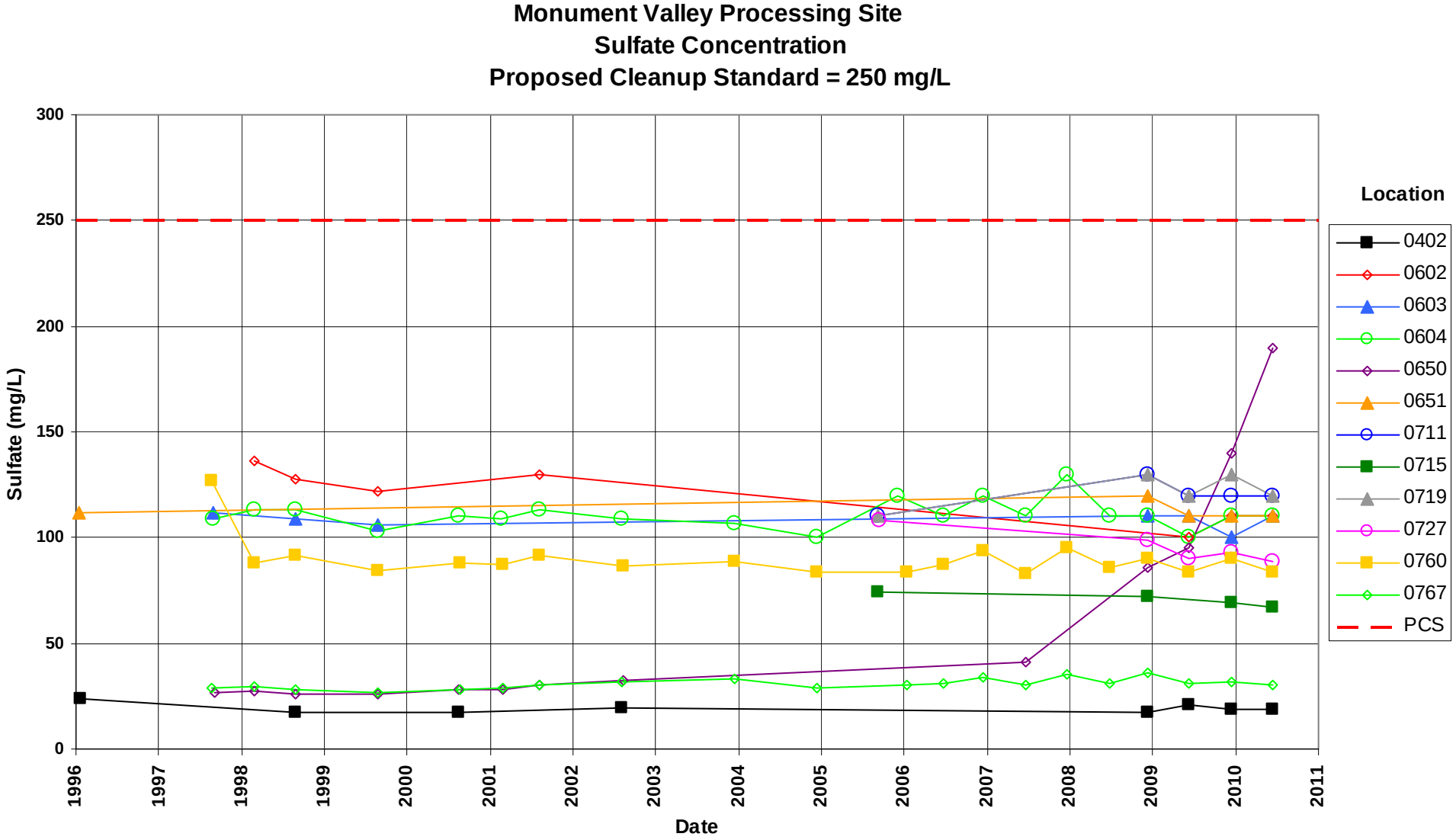

Monument Valley Processing Site
Nitrate + Nitrite as Nitrogen Concentration
Maximum Concentration Limit = 10.0 mg/L
Nitrate + Nitrite as Nitrogen (mg/L)
12
10
8
6
4
2
0
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Date
Location
0402
0602
0603
0604
0650
0651
0711
0715
0719
0727
0760
0767
MCL

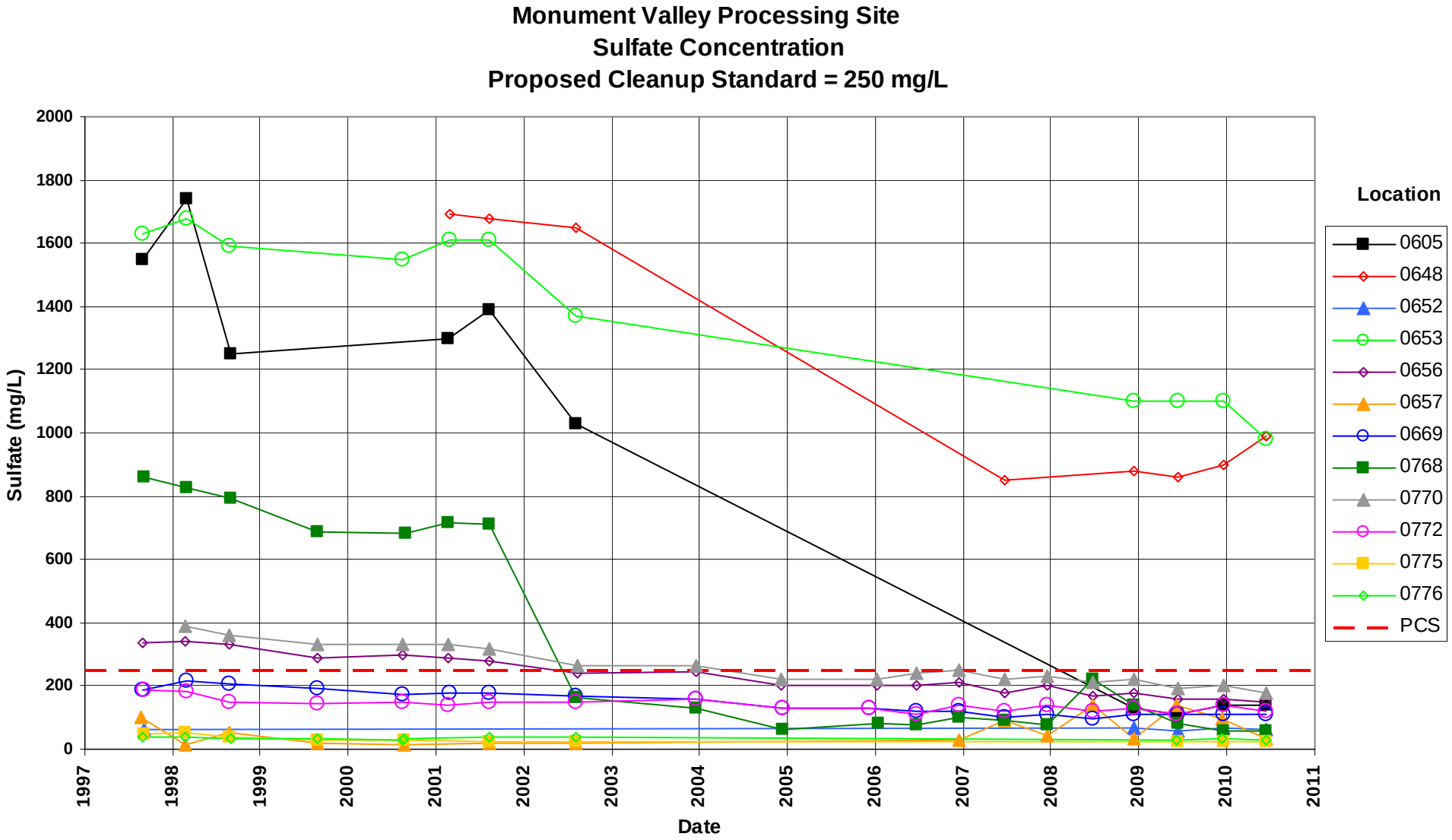
Monument Valley Processing Site
Nitrate + Nitrite as Nitrogen Concentration
Maximum Concentration Limit = 10.0 mg/L

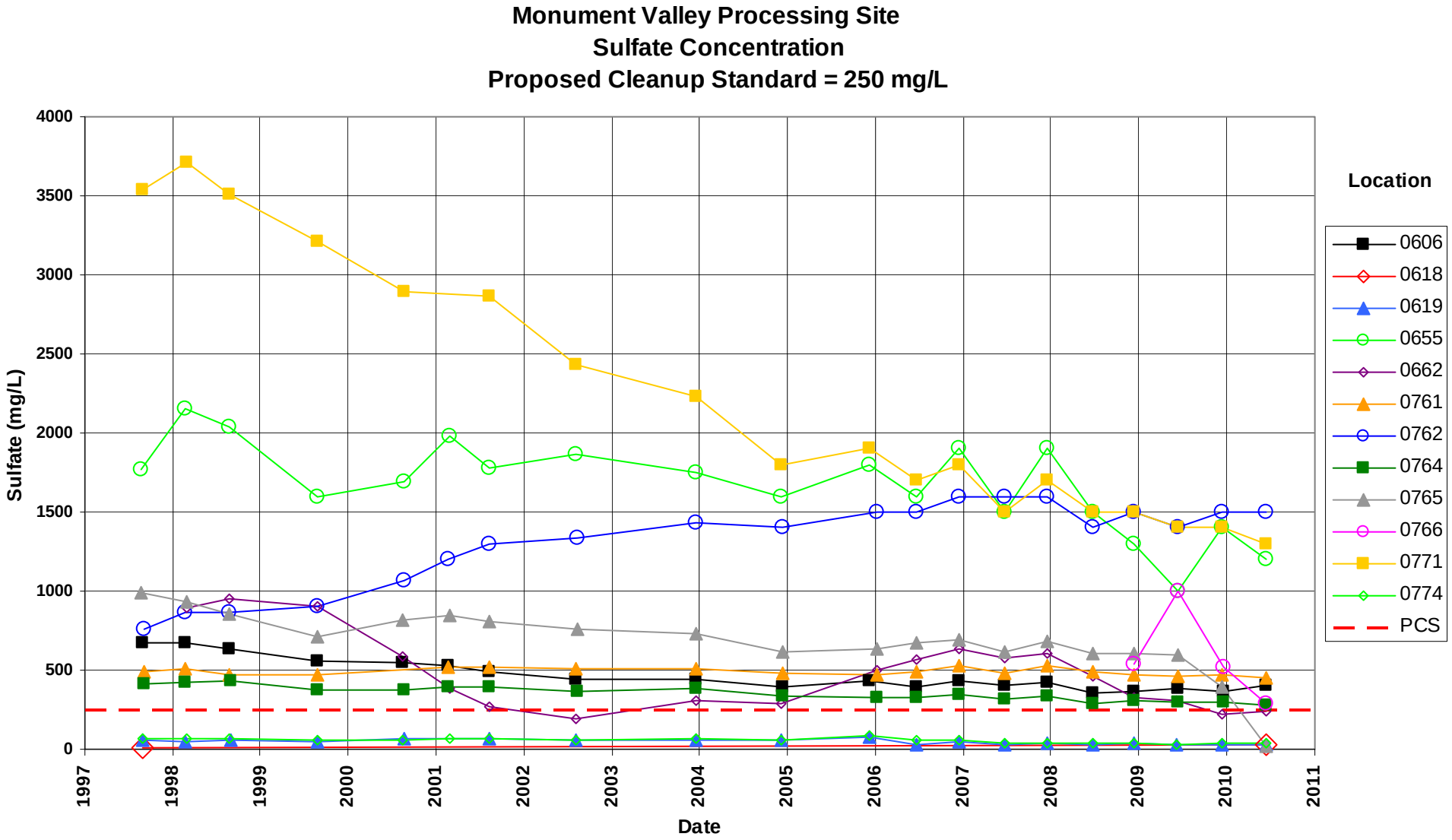


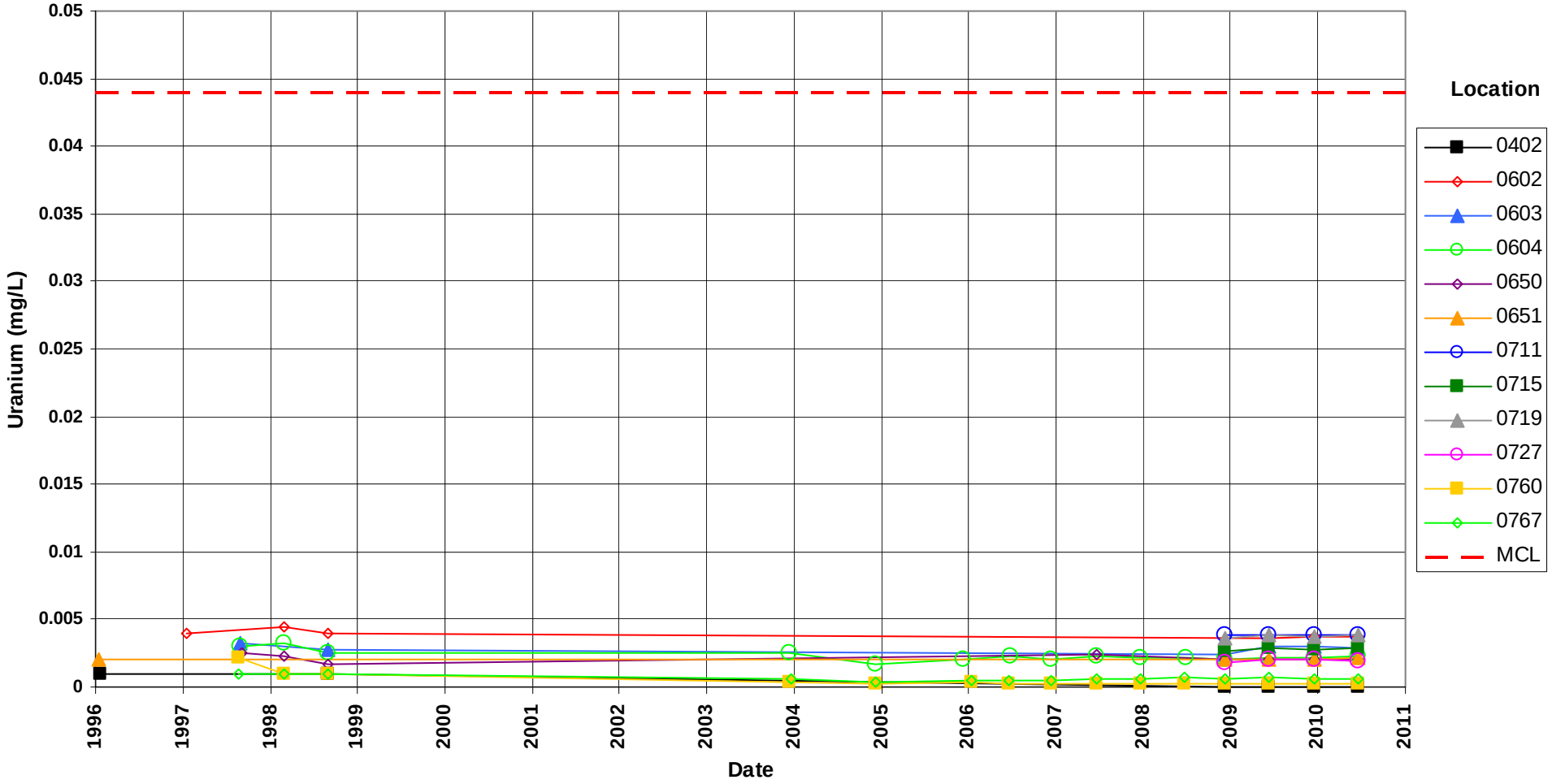
Monument Valley Processing Site
Nitrate + Nitrite as Nitrogen Concentration
Maximum Concentration Limit = 10.0 mg/L

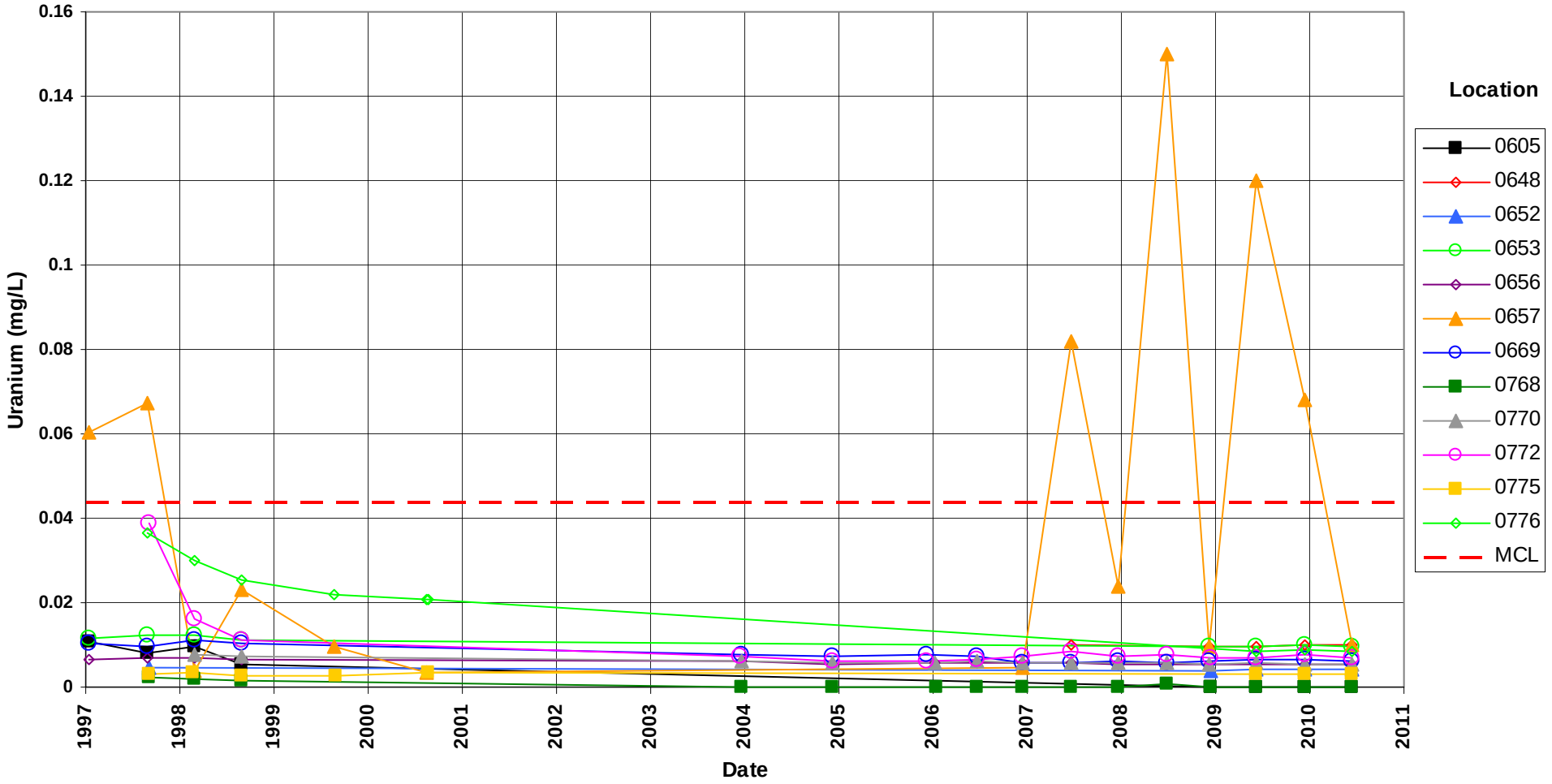


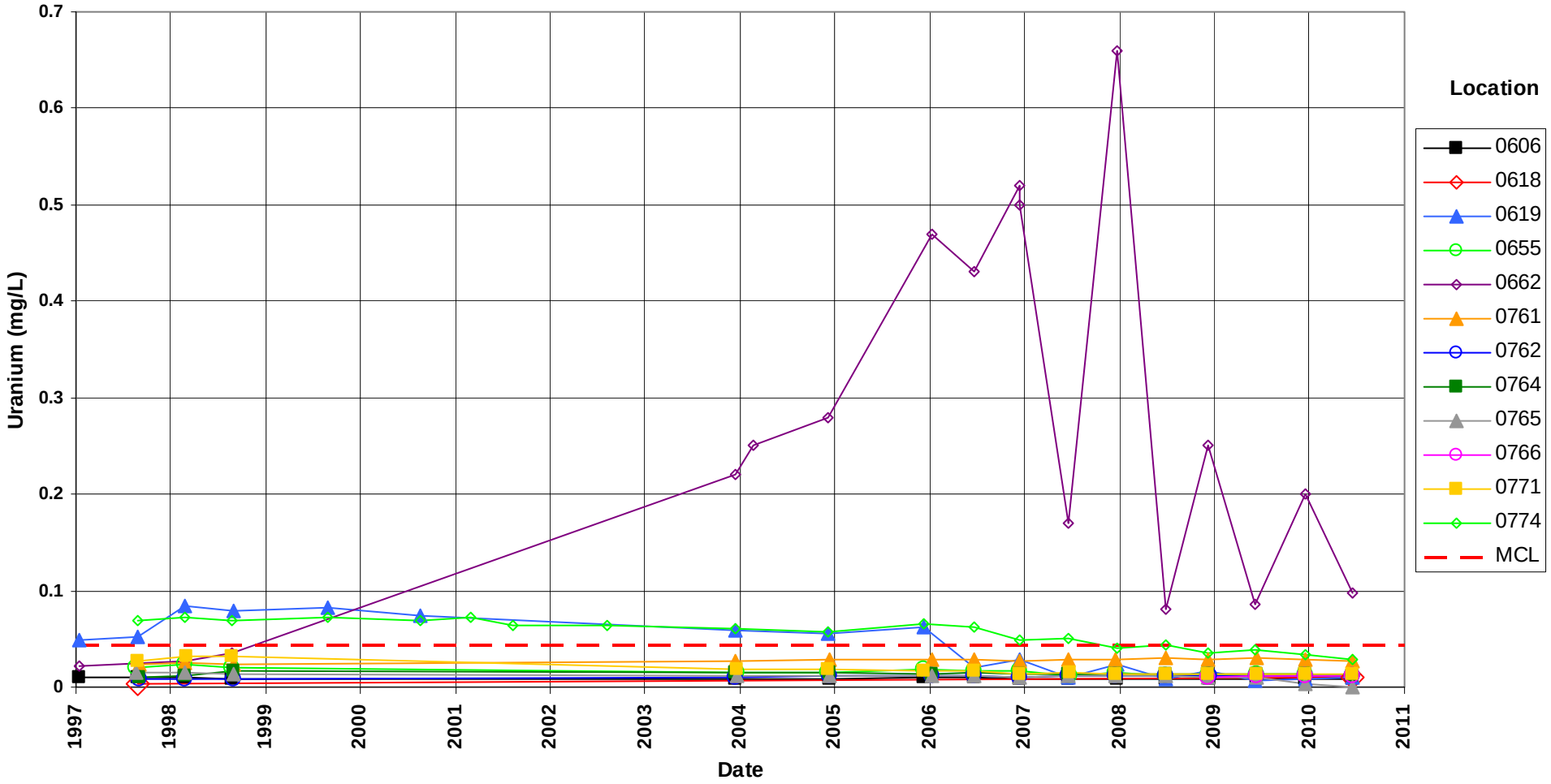

Monument Valley Processing Site
Sulfate Concentration
Proposed Cleanup Standard = 250 mg/L
Sulfate (mg/L)
300
250
200
150
100
50
0
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Date
Location
0402
0602
0603
0604
0650
0651
0711
0715
0719
0727
0760
0767
PCS


Monument Valley Processing Site
Sulfate Concentration
Proposed Cleanup Standard = 250 mg/L
Sulfate (mg/L)
2000
1800
1600
1400
1200
1000
800
600
400
200
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Date
Location
0605
0648
0652
0653
0656
0657
0669
0768
0770
0772
0775
0776
PCS

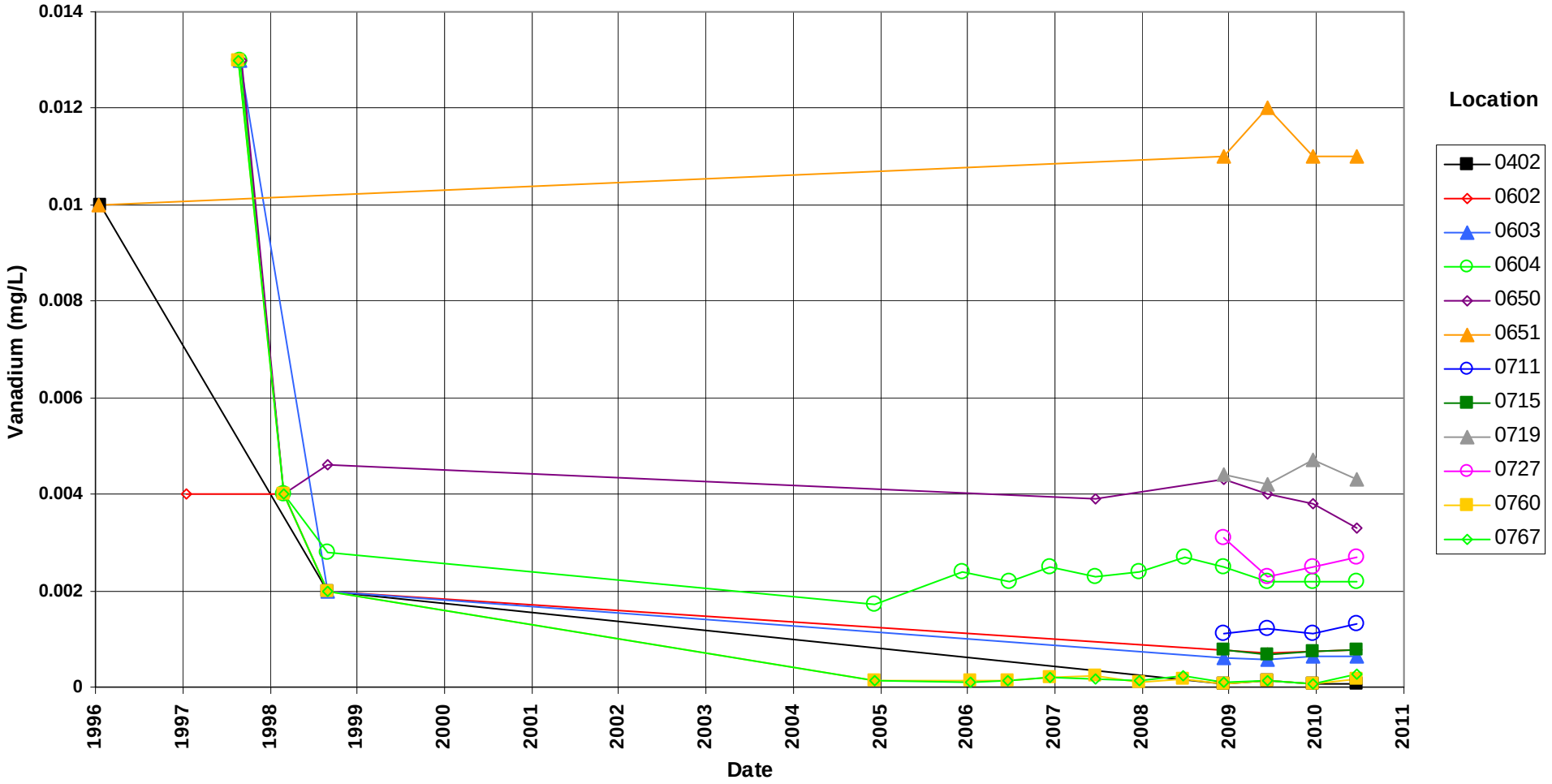

Monument Valley Processing Site
Sulfate Concentration
Proposed Cleanup Standard = 250 mg/L
Sulfate (mg/L)
4000
3500
3000
2500
2000
1500
1000
500
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Date
Location
0606
0618
0619
0655
0662
0761
0762
0764
0765
0766
0771
0774
PCS


Monument Valley Processing Site
Uranium Concentration
Maximum Concentration Limit = 0.044 mg/L
Uranium (mg/L)
0.05
0.045
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Date
Location
0402
0602
0603
0604
0650
0651
0711
0715
0719
0727
0760
0767
MCL

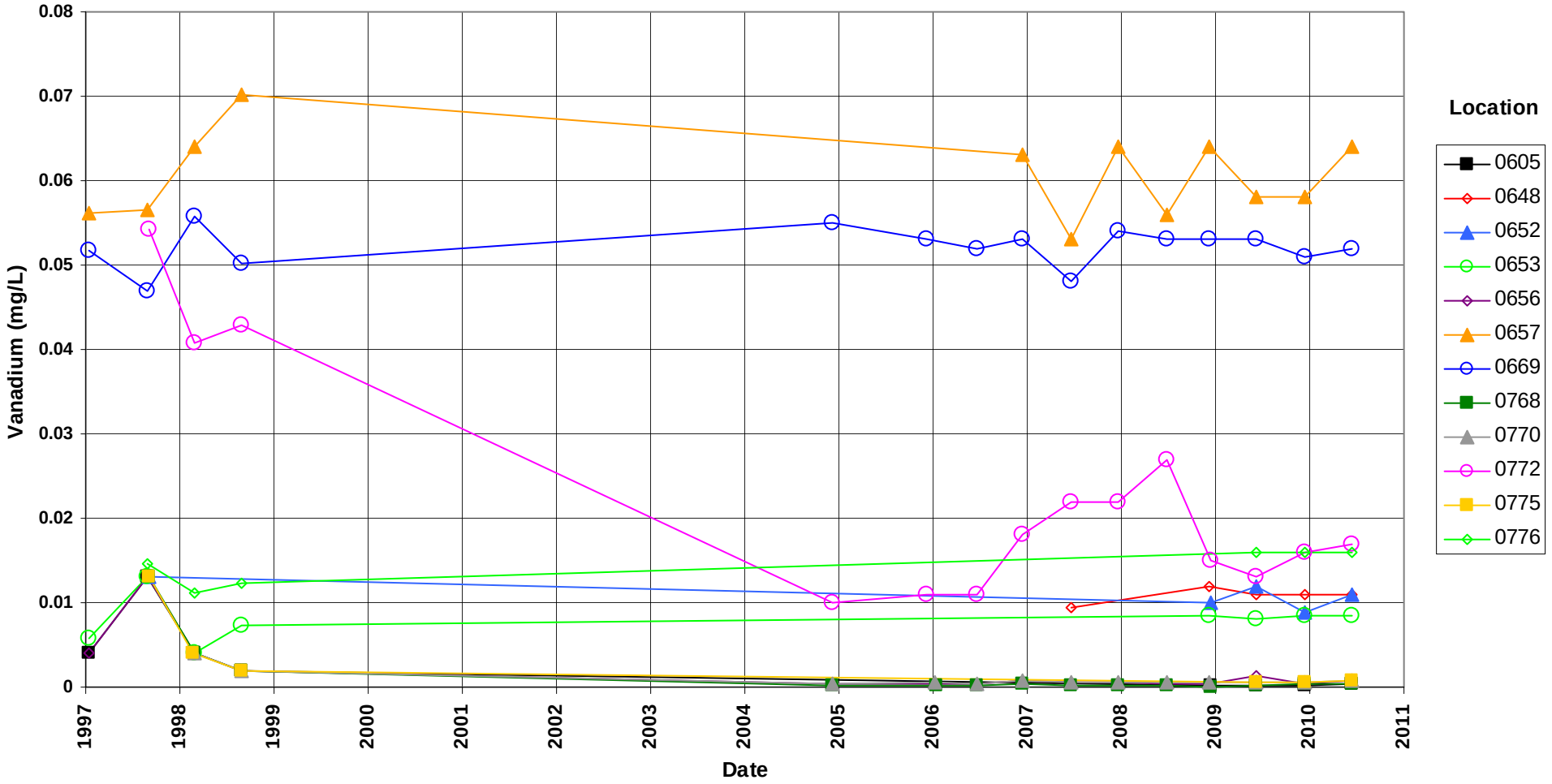

Monument Valley Processing Site
Uranium Concentration
Maximum Concentration Limit = 0.044 mg/L
Uranium (mg/L)
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Date
Location
0605
0648
0652
0653
0656
0657
0669
0768
0770
0772
0775
0776
MCL


Monument Valley Processing Site
Uranium Concentration
Maximum Concentration Limit = 0.044 mg/L
Uranium (mg/L)
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
Date
Location
0606
0618
0619
0655
0662
0761
0762
0764
0765
0766
0771
0774
MCL

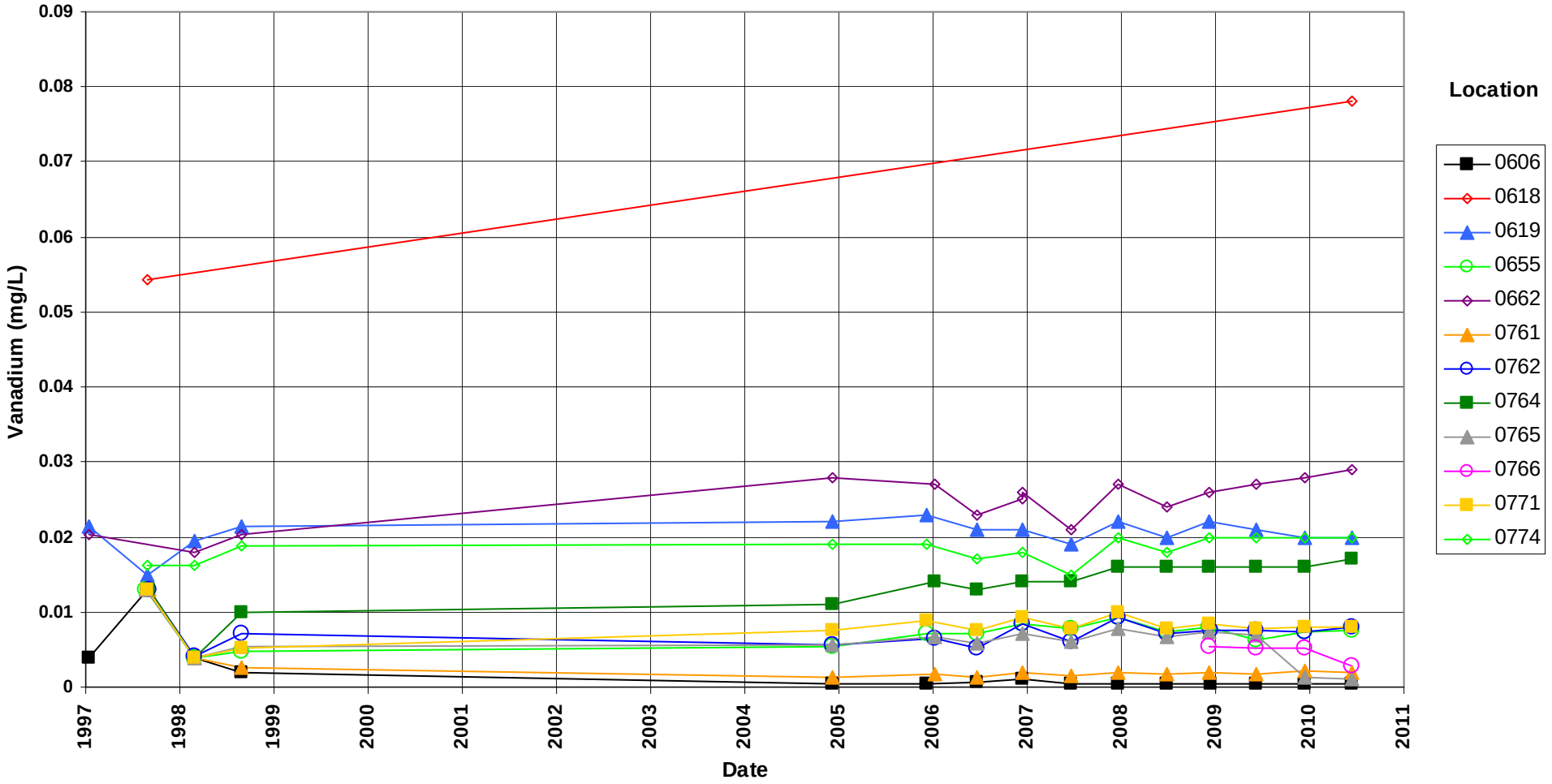
Monument Valley Processing Site
Vanadium Concentration



Monument Valley Processing Site
Vanadium Concentration



Monument Valley Processing Site
Vanadium Concentration



Attachment 3
Sampling and Analysis Work Order

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Stoller established 1959

Task Order LM00-501
Control Number 10-0609

May 12, 2010

U.S. Department of Energy
Office of Legacy Management
ATTN: Richard P. Bush
Site Manager
2597 B ¾ Road
Grand Junction, CO 81503

SUBJECT: Contract No. DE-AM01-07LM00060, Stoller
June 2010 Environmental Sampling at Monument Valley, Arizona

REFERENCE: Task Order LM-501-02-114-402, Monument Valley, AZ, Processing Site

Dear Mr. Bush:

The purpose of this letter is to inform you of the upcoming sampling event at Monument Valley, Arizona. Enclosed are the map and tables specifying sample locations and analytes for monitoring at the Monument Valley processing site. Water quality data will be collected at this site as part of the routine environmental sampling currently scheduled to begin the week of June 14, 2010.

The following lists show the monitoring wells (with zone of completion) and surface location scheduled to be sampled during this event.

Monitoring Wells*

402 Al	618 Al	652 Al	662 Al	727 Nr	765 Al	771 Al
602 Al	619 Dc	653 Al	669 Al	760 Al	766 Al	772 Al
603 Al	648 Al	655 Al	711 Nr	761 Al	767 Al	774 Al
604 Al	650 Al	656 Al	715 Nr	762 Al	768 Al	775 Dc
605 Al	651 Al	657 Dc	719 Nr	764 Al	770 Al	776 Dc
606 Al						

*NOTE: Al = Alluvium; Dc = Dechelley Member of the Cutler Formation; Nr = no recovery of data for classifying

Surface Location
623

The S.M. Stoller Corporation 2597 B ¾ Road Grand Junction, CO 81503 (970) 248-6000 Fax: (970) 248-6040

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 covered under the cooperative agreement.

Please contact me at (970) 248-6652 if you have any questions or concerns.

Sincerely,

David Miller
Site Lead

DM/lcg/lb

Enclosures (3)

cc: (electronic)
Steve Donivan, Stoller
Lauren Goodknight, Stoller
Dave Miller, Stoller
EDD Delivery
rc-grand.junction

The S.M. Stoller Corporation 2597 B ¾ Road Grand Junction, CO 81503 (970) 248-6000 Fax: (970) 248-6040

Constituent Sampling Breakdown

Site	Monument Valley				
Analyte	Groundwater	Surface Water	Required Detection Limit (mg/L)	Analytical Method	Line Item Code
Approx. No. Samples/yr	68	1			
Field Measurements					
Alkalinity	0603, 0611, 0615, 0618, and 0772 only				
Dissolved Oxygen					
Redox Potential	X				
pH	X				
Specific Conductance	X				
Turbidity	X				
Temperature	X				
Laboratory Measurements					
Aluminum					
Ammonia as N (NH3-N)	X		0.1	EPA 350.1	WCH-A-005
Arsenic	0603, 0611, 0615, 0618, and 0772 only				
Calcium	0603, 0611, 0615, 0618, and 0772 only				
Chloride	X		0.5	SW-846 9056	MIS-A_039
Chromium					
Iron	0603, 0611, 0615, 0618, and 0772 only				
Lead					
Magnesium	0603, 0611, 0615, 0618, and 0772 only				
Manganese	0603, 0611, 0615, 0618, and 0772 only				
Molybdenum	0603, 0611, 0615, 0618, and 0772 only				
Nickel					
Nitrate + Nitrite as N (NO3+NO2)-N	X		0.05	EPA 353.1	WCH-A-022
Potassium	0603, 0611, 0615, 0618, and 0772 only				
Selenium					
Silica					
Sodium	0603, 0611, 0615, 0618, and 0772 only				
Strontium					
Sulfate	X		0.5	SW-846 9056	MIS-A-044
Sulfide					
Uranium	X		0.0001	SW-846 6020	LMM-02
Vanadium	X		0.0003	SW-846 6020	IMM-02
Zinc					
Total No. of Analytes	14	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.

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Attachment 4
Trip Report

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Stoller
Grand Junction Office
established 1959

Memorandum

DATE: June 28, 2010

TO: David Miller

FROM: Gretchen Baer

SUBJECT: Trip Report

Site: Monument Valley, Arizona, Processing Site.

Dates of Sampling Event: June 14-16, 2010

Team Members: Gretchen Baer, Joe Trevino, Kent Moe, Nick Malczyk, and Anthony Martinez (radiation safety).

Number of Locations Sampled: Water samples for metals, anions, nitrate + nitrite as nitrogen, and ammonia as nitrogen, were collected from 36 monitoring wells and one surface location for a total of 37 locations. Samples also were collected from 5 additional wells in support of the University of Arizona (U of A) project.

Locations Not Sampled/Reason: None.

Location Specific Information:

Location IDs	Comments
0402	Category II
0618	No pump is installed; sampled with bailer.
0648	Total depth needs to be corrected in SEEPro.
0651	Black specks are visible in the sample. Turbidity was <10 NTU.
0728 0729 0730 0731 0779	Samples (500 mL, field-filtered, preserved on ice) collected ONLY for U of A. Sampled by low flow: One pump/tubing vol was purged then 3 stable measurements were attained then well was sampled. All met Cat I requirements; turbidity criteria not met at some wells.
0760 0765 0766	Turbidity requirement could not be met at these Cat I wells.
0764	Category III (initial WL was within screen). WL dropped below top of pump during purge (after ~1L had purged). Measured all field parameters. Collected all sample aliquots. Well pad is severely undermined.
0765 0766	Additional volume (500 mL, field-filtered, preserved on ice) collected for U of A.
0766	Well pad is severely undermined.
0772	Well was located in an RWP area. A. Martinez was present for rad safety support during access and sampling.

Quality Control Sample Cross Reference: The following are the false identifications assigned to the quality control samples.

False ID	Ticket Number	True ID	Sample Type	Associated Matrix
2711	IHV 226	0762	Duplicate	Groundwater
2856	IHV 231	0618	Duplicate	Groundwater

RIN Number Assigned: All samples were assigned to RIN 10063122.

Sample Shipment: Samples were shipped overnight via FedEx to ALS Laboratory Group, Fort Collins, CO, from Grand Junction, CO, on June 17, 2010.

Water Level Measurements: Water levels were measured at all sampled wells.

Well Inspection Summary: Wind has removed sand from beneath the well pads at several locations, most notably at 0764 and 0766.

Field Variance: All times are Mountain Daylight Time.

Equipment: Wells were sampled with a peristaltic pump and dedicated tubing, a disposable bailer, or a dedicated bladder pump. The surface water location was sampled using a peristaltic pump and dedicated tubing. Because all equipment was dedicated or disposable, equipment blanks were not required.

Institutional Controls

Fences, Gates, Locks: All were in good condition.
Signs: Not applicable
Trespassing/Site Disturbances: None observed.

Site Issues:

Disposal Cell/Drainage Structure Integrity: Not applicable.
Vegetation/Noxious Weed Concerns: Brush has grown close to wells 0656 and 0770 and needs to be cut back to improve access.
Maintenance Requirements: Well pads mentioned above.
Access Issues: None.
Safety Issues: None.

Corrective Action Taken: None.

GRB/lcg

cc: (electronic)
Rich Bush, DOE
Steve Donivan, Stoller
EDD Delivery