Data Validation Package

December 2008 Groundwater and Surface Water Sampling at the Monument Valley, Arizona, Processing Site

March 2009

U.S. DEPARTMENT OF ENERGY | Legacy Management

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Sampling Event Summary

Site: Monument Valley, Arizona, Processing Site

Sampling Period: December 8-10, 2008

Thirty-two groundwater samples and one surface water sample were collected at the Monument Valley, Arizona, Processing Site to monitor groundwater contaminants as specified in the *Final Site Observational Work Plan for the UMTRA Project Site at Monument Valley, Arizona*. Sampling and analysis was conducted as specified in the *Sampling and Analysis Plan for U.S. Department of Energy Office of Legacy Management Sites*. Water levels were measured at each sampled well. Duplicate samples were collected from locations 0650 and 0772.

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 well 0662 have been previously noted and continue with the data from this sampling event. The uranium concentrations measured in well 0657 are also beginning to show wide fluctuations. Ongoing erosion of a former uranium mine located upgradient from the site may be affecting the uranium concentrations at these locations. The increasing nitrate + nitrite as nitrogen concentrations in wells 0662, 0761, 0762, 0764, and 0771, as indicated on the time-concentration graphs, are consistent with downgradient movement of the contaminant plume.

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	160
			0648	40
			0653	32
			0655	110
			0656	15
			0662	26
			0761	31
			0762	130
			0764	55
			0765	150
			0766	170
			0770	22
			0771	190
Uranium	0.044	MON01	0662	0.25

[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

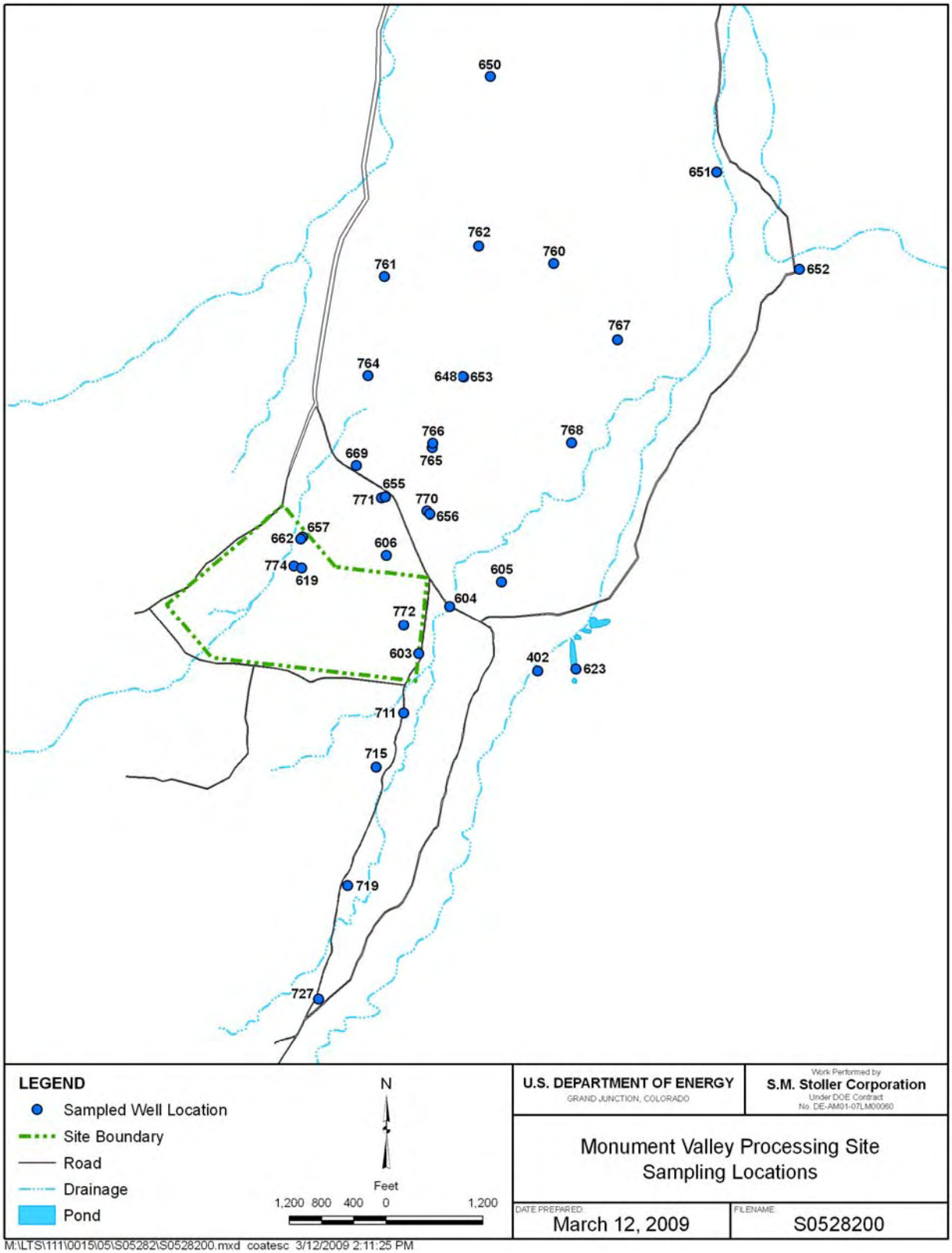
past millsite activities or if it occurs naturally. Tailings fluids were enriched in nitrate and sulfate but had relatively low chloride concentrations. A sulfate:chloride ratio greater than 10 is a good indication of groundwater contamination resulting from milling activities. The proposed sulfate treatment 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	17	1	Yes
0657	34	6	Yes
0619	36	8	Yes
0767	36	7	Yes
0774	39	9	Yes
0652	69	5	Yes
0715	72	8	Yes
0650	86	7	Yes
0760	90	9	Yes
0727	99	8	Yes
0603	110	8	Yes
0604	110	10	Yes
0669	110	12	Yes
0651	120	10	Yes
0772	120	9	Yes
0605	130	6	Yes
0711	130	9	Yes
0719	130	8	Yes
0768	140	6	Yes
0656	180	13	Yes
0770	220	16	Yes
0764	310	28	No
0662	330	25	No
0606	370	25	No
0761	470	36	No
0766	540	28	No
0765	610	34	No
0648	880	38	No
0653	1100	39	No
0655	1300	62	No
0762	1500	23	No
0771	1500	79	No

David Miller
Site Lead, S.M. Stoller

4/29/09
Date



Monument Valley, Arizona, Processing Site Location Map

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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**	December 8-10, 2008
Date(s) of Verification	January 19, 2009	**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 November 6, 2008.
2. Were the sampling locations specified in the planning documents sampled?	No	Private location 0617 and monitor well 0777 were not sampled at direction of project manager.
3. Was a pre-trip calibration conducted as specified in the above-named documents?	No	Pre-trip calibrations performed on December 5, 2008. For 2 YSIs but not documented for the replacement YSI that was delivered later to the site. All daily checks met criteria.
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?	No	Did not stabilize at well 0669. Data are qualified as "Q."
Did pH, specific conductance, and turbidity measurements stabilize prior to sampling?	No	Stability not achieved @ locations 0651, 0719, 0760, 0762, and 0768. 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	Dups were collected @ 0650 and 0772.
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	The COC was not signed and dated upon sample relinquishment.
17. Are field data sheets signed and dated by both team members (hard copies) or are dates present for the "Date Signed" fields (FDCS)?	Yes	
18. Was all other pertinent information documented on the field data sheets?	No	"Measurement Equipment" was not filled out at many locations.
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	

Laboratory Performance Assessment

General Information

Report Number (RIN):	08111964
Sample Event:	December 8-10, 2008
Site(s):	Monument Valley, Arizona
Laboratory:	Paragon Analytics, Fort Collins, Colorado
Work Order No.:	0812136
Analysis:	Metals and Wet Chemistry
Validator:	Gretchen Baer
Review Date:	January 19, 2009

This validation was performed according to the *Environmental Procedures Catalog*, "Standard Practice for Validation of Laboratory Data," GT-9(P). The procedure was applied at Level 3, Data Validation. See attached Data Validation Worksheets for supporting documentation on the data review and validation. All analyses were successfully completed. The samples were prepared and analyzed using accepted procedures based on methods specified by line item code, which are listed in Table 3.

Table 3. Analytes and Methods

Analyte	Line Item Code	Prep Method	Analytical Method
Ammonia as N	WCH-A-005	MCAWW 350.1	MCAWW 350.1
Chloride	MIS-A-039	SW-856 9056	SW-856 9056
Nitrite + Nitrate as N	WCH-A-022	MCAWW 353.2	MCAWW 353.2
Sulfate	MIS-A-044	SW-856 9056	SW-856 9056
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
0812136-1	0402	Uranium	U	Less than 5 times the method blank
0812136-4	0605	Uranium	U	Less than 5 times the method blank

Sample Shipping/Receiving

Paragon Analytics in Fort Collins, Colorado, received 35 water samples on December 13, 2008, accompanied by a Chain of Custody (COC) form. Copies of the two air bills were included in the receiving documentation. The COC form was checked to confirm that all of the samples were

listed with sample collection dates and times, and that signatures and dates were present indicating sample relinquishment and receipt. The COC form was complete with no errors or omissions with the following exceptions. The COC was not signed and dated upon sample relinquishment. Some sample times differed from the times written on bottle labels by a few minutes.

Preservation and Holding Times

The sample shipments were received intact with the temperature inside the iced cooler at 0.6 °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 N

Calibrations were performed using six calibration standards on December 19, 2008. 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 eight verification checks. All calibration checks met the acceptance criteria.

Method MCAWW 353.2, Nitrite + Nitrate as N

Calibrations were performed using seven calibration standards on December 22, 2008. 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 ten verification checks. All calibration checks met the acceptance criteria with two exceptions. All associated samples were reanalyzed with acceptable calibration checks.

Method SW-846 6020A, Uranium and Vanadium

Calibrations were performed for uranium on December 18, 2008, using eight standards and for vanadium on December 17, 2008, using six 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. Calibration and laboratory spike standards were prepared from independent sources. Initial and continuing calibration verification checks were made at the required frequency resulting in 14 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 (PQLs) and all results were within the acceptance range. Mass calibration and resolution verifications were performed at the beginning of each analytical run in accordance with the analytical procedure. Internal standard recoveries associated with requested analytes were stable and within acceptable ranges.

Method SW-846 9056, Chloride and Sulfate

Calibrations were performed using five calibration standards on December 17, 2008. 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 ten verification checks for sulfate and eight checks for chloride. 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 initial and continuing calibration blank results associated with the samples were below the PQLs with the following exceptions. A calibration blank for nitrate + nitrite as N was slightly above the PQL; all associated samples were reanalyzed with acceptable blanks. Some blanks for sulfate were slightly above the PQL. All samples had sulfate concentrations greater than 5 times the blanks, so no further qualification is necessary. In cases where a blank concentration exceeds the MDL, the associated sample results are qualified with a "U" flag (not detected) when the sample result is greater than the MDL but less than 5 times the blank concentration.

Inductively Coupled Plasma (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 sample results demonstrate acceptable laboratory precision. The relative percent difference values for the sample replicates and matrix spike replicates were less than 20 percent for results that are greater than 5 times the PQLs, indicating acceptable 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. ICP-MS serial dilution data are evaluated when the concentration of the undiluted sample is greater than 100 times the PQL. All evaluated serial dilution data were acceptable.

Detection Limits/Dilutions

Samples were diluted in a consistent and acceptable manner when required. The samples were diluted prior to analysis of uranium and vanadium to reduce interferences. 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. There were no manual integrations performed and all peak integrations were satisfactory.

Electronic Data Deliverable (EDD) File

The EDD file arrived on December 31, 2008. 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: 08111964 **Lab Code:** PAR **Validator:** Gretchen Baer **Validation Date:** 1/16/2009

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

# of Samples: 35 **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: 08111964 **Lab Code:** PAR **Date Due:** 1/10/2009

Matrix: Water **Site Code:** MON **Date Completed:** 1/2/2009

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								
URANIUM	12/18/2008	0.0010	1.0000	OK	OK	OK	OK	OK	100.0	101.0	101.0	0.0	104.0	5.0	100.0
URANIUM	12/18/2008							OK	98.0	99.0	99.0	1.0		4.0	
URANIUM	12/18/2008											0.0			
URANIUM	12/18/2008											1.0			
VANADIUM	12/17/2008	0.0170	1.0000	OK	OK	OK	OK	OK	97.0	102.0	100.0	2.0	104.0		79.0
VANADIUM	12/17/2008							OK	97.0	103.0	103.0	0.0			
VANADIUM	12/17/2008											1.0			
VANADIUM	12/17/2008											5.0			

SAMPLE MANAGEMENT SYSTEM

Wet Chemistry Data Validation Worksheet

RIN: 08111964 **Lab Code:** PAR **Date Due:** 1/10/2009

Matrix: Water **Site Code:** MON **Date Completed:** 1/2/2009

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	12/19/2008	-0.022	1.0000	OK	OK	OK	OK	OK	99.00	78.0	78.0	0	
AMMONIA AS N	12/19/2008							OK	94.00	83.0	83.0	1.00	
CHLORIDE	12/17/2008							OK	103.00	109.0			
CHLORIDE	12/17/2008	-0.043	1.0000	OK	OK	OK	OK	OK	107.00	107.0	108.0	1.00	
CHLORIDE	12/18/2008									104.0	101.0	2.00	
NITRATE/NITRITE AS N	12/22/2008	-0.005	0.9997	OK	OK	OK	OK	OK	101.00	108.0	109.0	1.00	
NITRATE/NITRITE AS N	12/22/2008							OK	101.00	110.0	114.0	1.00	
SULFATE	12/17/2008							OK	103.00	106.0			
SULFATE	12/17/2008	0.586	0.9999	OK	OK	OK	OK	OK	104.00	104.0	108.0	2.00	
SULFATE	12/18/2008									103.0	102.0	0	

Sampling Quality Control Assessment

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

Sampling Protocol

Monitor wells were sampled using either a peristaltic pump and dedicated tubing or a dedicated bladder pump. The surface water location was sampled by container immersion. Sample results for monitor wells were qualified with an "F" flag in the database, indicating the wells were purged and sampled using the low-flow sampling method. Additionally, wells 0402 and 0764 were qualified with a "Q" flag, indicating the data are qualitative because these wells were classified as Category II. Wells 0651, 0669, 0719, 0760, 0762, and 0768 were qualified with a "Q" flag because the turbidity, specific conductivity, or water level drawdown criteria were not met during purging.

Equipment Blank Assessment

No equipment blanks were taken because all samples were collected 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. Duplicate samples were collected from locations 0650 and 0772. The duplicate results were acceptable, meeting the EPA recommended laboratory duplicate criteria of less than 20 percent relative difference for results that are greater than 5 times the PQL.

SAMPLE MANAGEMENT SYSTEM

Validation Report: Field Duplicates

RIN: 08111964 **Lab Code:** PAR **Project:** Monument Valley **Validation Date:** 1/16/2009

Duplicate: 2711 **Sample:** 0772

Analyte	Sample Result	Flag	Error	Duplicate Result	Flag	Error	RPD	RER	Units
AMMONIA AS N	3.9			3.9			0		MG/L
CHLORIDE	14			14			0		MG/L
NITRATE/NITRITE AS N	1.2			1.2			0		MG/L
SULFATE	120			130			8.00		MG/L
URANIUM	6.8			6.8			0		UG/L
VANADIUM	14			15			6.90		UG/L

Duplicate: 2712 **Sample:** 0650

Analyte	Sample Result	Flag	Error	Duplicate Result	Flag	Error	RPD	RER	Units
AMMONIA AS N	0.1	U		0.1	U				MG/L
CHLORIDE	12			11			8.70		MG/L
NITRATE/NITRITE AS N	1.1			1.1			0		MG/L
SULFATE	86			81			5.99		MG/L
URANIUM	2.1			2.1			0		UG/L
VANADIUM	4.3			4.3			0		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: 4-3-2009

Data Validation Lead: Gretchen Baer — Date: 4/3/09

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.

The chloride results for wells 0656 and 0761 were identified as potential outliers because of the low variability of the historical data. There were no errors identified with the chloride data, and the results from this sampling event are acceptable as qualified.

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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: 3/12/2009
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	12/10/2008	0001	5.17	-	9.63	0.1	U	FQ	#	0.1	
Chloride	mg/L	12/10/2008	0001	5.17	-	9.63	14		FQ	#	0.2	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2008	0001	5.17	-	9.63	0.27		FQ	#	0.01	
Oxidation Reduction Potential	mV	12/10/2008	N001	5.17	-	9.63	135		FQ	#		
pH	s.u.	12/10/2008	N001	5.17	-	9.63	8.43		FQ	#		
Specific Conductance	umhos /cm	12/10/2008	N001	5.17	-	9.63	555		FQ	#		
Sulfate	mg/L	12/10/2008	0001	5.17	-	9.63	17		FQ	#	0.5	
Temperature	C	12/10/2008	N001	5.17	-	9.63	13.35		FQ	#		
Turbidity	NTU	12/10/2008	N001	5.17	-	9.63	46.4		FQ	#		
Uranium	mg/L	12/10/2008	0001	5.17	-	9.63	0.000027	B	UFQ	#	0.0000036	
Vanadium	mg/L	12/10/2008	0001	5.17	-	9.63	0.000067	U	FQ	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 3/12/2009
Location: 0603 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	12/09/2008	N001	43	-	53	0.14		F	#	0.1	
Chloride	mg/L	12/09/2008	N001	43	-	53	13		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2008	N001	43	-	53	0.36		F	#	0.01	
Oxidation Reduction Potential	mV	12/09/2008	N001	43	-	53	58		F	#		
pH	s.u.	12/09/2008	N001	43	-	53	7.98		F	#		
Specific Conductance	umhos /cm	12/09/2008	N001	43	-	53	611		F	#		
Sulfate	mg/L	12/09/2008	N001	43	-	53	110		F	#	2.5	
Temperature	C	12/09/2008	N001	43	-	53	14.77		F	#		
Turbidity	NTU	12/09/2008	N001	43	-	53	3.04		F	#		
Uranium	mg/L	12/09/2008	N001	43	-	53	0.0024		F	#	0.0000036	
Vanadium	mg/L	12/09/2008	N001	43	-	53	0.00059		F	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 3/12/2009
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	12/09/2008	N001	13	-	28	0.1	U	F	#	0.1	
Chloride	mg/L	12/09/2008	N001	13	-	28	11		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2008	N001	13	-	28	0.021		F	#	0.01	
Oxidation Reduction Potential	mV	12/09/2008	N001	13	-	28	42		F	#		
pH	s.u.	12/09/2008	N001	13	-	28	8.26		F	#		
Specific Conductance	umhos /cm	12/09/2008	N001	13	-	28	591		F	#		
Sulfate	mg/L	12/09/2008	N001	13	-	28	110		F	#	2.5	
Temperature	C	12/09/2008	N001	13	-	28	14.68		F	#		
Turbidity	NTU	12/09/2008	N001	13	-	28	6.43		F	#		
Uranium	mg/L	12/09/2008	N001	13	-	28	0.002		F	#	0.0000036	
Vanadium	mg/L	12/09/2008	N001	13	-	28	0.0025		F	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 3/12/2009
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	12/10/2008	N001	14	-	29	0.33		F	#	0.1	
Chloride	mg/L	12/10/2008	N001	14	-	29	21		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2008	N001	14	-	29	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	12/10/2008	N001	14	-	29	-178.5		F	#		
pH	s.u.	12/10/2008	N001	14	-	29	8.42		F	#		
Specific Conductance	umhos /cm	12/10/2008	N001	14	-	29	628		F	#		
Sulfate	mg/L	12/10/2008	N001	14	-	29	130		F	#	2.5	
Temperature	C	12/10/2008	N001	14	-	29	16.42		F	#		
Turbidity	NTU	12/10/2008	N001	14	-	29	5.05		F	#		
Uranium	mg/L	12/10/2008	N001	14	-	29	0.0001		UF	#	0.0000036	
Vanadium	mg/L	12/10/2008	N001	14	-	29	0.0001	B	F	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 3/12/2009
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	12/10/2008	N001	32	-	42	120		F	#	10	
Chloride	mg/L	12/10/2008	N001	32	-	42	15		F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2008	N001	32	-	42	160		F	#	2	
Oxidation Reduction Potential	mV	12/10/2008	N001	32	-	42	181		F	#		
pH	s.u.	12/10/2008	N001	32	-	42	7.23		F	#		
Specific Conductance	umhos /cm	12/10/2008	N001	32	-	42	2672		F	#		
Sulfate	mg/L	12/10/2008	N001	32	-	42	370		F	#	10	
Temperature	C	12/10/2008	N001	32	-	42	15.59		F	#		
Turbidity	NTU	12/10/2008	N001	32	-	42	1.05		F	#		
Uranium	mg/L	12/10/2008	N001	32	-	42	0.0082		F	#	0.0000036	
Vanadium	mg/L	12/10/2008	N001	32	-	42	0.00034		F	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 3/12/2009
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	12/08/2008	N001	103.9 - 153.9	0.1	U	F	#	0.1	
Chloride	mg/L	12/08/2008	N001	103.9 - 153.9	4.5		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/08/2008	N001	103.9 - 153.9	1.4		F	#	0.01	
Oxidation Reduction Potential	mV	12/08/2008	N001	103.9 - 153.9	108		F	#		
pH	s.u.	12/08/2008	N001	103.9 - 153.9	7.83		F	#		
Specific Conductance	umhos /cm	12/08/2008	N001	103.9 - 153.9	376		F	#		
Sulfate	mg/L	12/08/2008	N001	103.9 - 153.9	36		F	#	2.5	
Temperature	C	12/08/2008	N001	103.9 - 153.9	14.93		F	#		
Turbidity	NTU	12/08/2008	N001	103.9 - 153.9	0.61		F	#		
Uranium	mg/L	12/08/2008	N001	103.9 - 153.9	0.016		F	#	0.0000036	
Vanadium	mg/L	12/08/2008	N001	103.9 - 153.9	0.022		F	#	0.00011	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 3/12/2009
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	12/09/2008	N001	38.5	-	88.5	9.2		F	#	2	
Chloride	mg/L	12/09/2008	N001	38.5	-	88.5	23		F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2008	N001	38.5	-	88.5	40		F	#	0.5	
Oxidation Reduction Potential	mV	12/09/2008	N001	38.5	-	88.5	155.8		F	#		
pH	s.u.	12/09/2008	N001	38.5	-	88.5	7.56		F	#		
Specific Conductance	umhos /cm	12/09/2008	N001	38.5	-	88.5	2117		F	#		
Sulfate	mg/L	12/09/2008	N001	38.5	-	88.5	880		F	#	10	
Temperature	C	12/09/2008	N001	38.5	-	88.5	15.41		F	#		
Turbidity	NTU	12/09/2008	N001	38.5	-	88.5	1.27		F	#		
Uranium	mg/L	12/09/2008	N001	38.5	-	88.5	0.0097		F	#	0.0000036	
Vanadium	mg/L	12/09/2008	N001	38.5	-	88.5	0.012		F	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 3/12/2009
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	12/10/2008	N001	77.5	-	97.5	0.1	U	F	#	0.1	
Ammonia Total as N	mg/L	12/10/2008	N002	77.5	-	97.5	0.1	U	F	#	0.1	
Chloride	mg/L	12/10/2008	N001	77.5	-	97.5	12		F	#	1	
Chloride	mg/L	12/10/2008	N002	77.5	-	97.5	11		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2008	N001	77.5	-	97.5	1.1		F	#	0.01	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2008	N002	77.5	-	97.5	1.1		F	#	0.01	
Oxidation Reduction Potential	mV	12/10/2008	N001	77.5	-	97.5	128.4		F	#		
pH	s.u.	12/10/2008	N001	77.5	-	97.5	8.37		F	#		
Specific Conductance	umhos /cm	12/10/2008	N001	77.5	-	97.5	597		F	#		
Sulfate	mg/L	12/10/2008	N001	77.5	-	97.5	86		F	#	2.5	
Sulfate	mg/L	12/10/2008	N002	77.5	-	97.5	81		F	#	2.5	
Temperature	C	12/10/2008	N001	77.5	-	97.5	16.11		F	#		
Turbidity	NTU	12/10/2008	N001	77.5	-	97.5	2.45		F	#		
Uranium	mg/L	12/10/2008	N001	77.5	-	97.5	0.0021		F	#	0.0000036	
Uranium	mg/L	12/10/2008	N002	77.5	-	97.5	0.0021		F	#	0.0000036	
Vanadium	mg/L	12/10/2008	N001	77.5	-	97.5	0.0043		F	#	0.000067	
Vanadium	mg/L	12/10/2008	N002	77.5	-	97.5	0.0043		F	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 3/12/2009
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	12/10/2008	0001	20	-	80	0.1	U	FQ	#	0.1	
Chloride	mg/L	12/10/2008	0001	20	-	80	12		FQ	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2008	0001	20	-	80	0.12		FQ	#	0.01	
Oxidation Reduction Potential	mV	12/10/2008	N001	20	-	80	-8.4		FQ	#		
pH	s.u.	12/10/2008	N001	20	-	80	8.38		FQ	#		
Specific Conductance	umhos /cm	12/10/2008	N001	20	-	80	624		FQ	#		
Sulfate	mg/L	12/10/2008	0001	20	-	80	120		FQ	#	2.5	
Temperature	C	12/10/2008	N001	20	-	80	15.4		FQ	#		
Turbidity	NTU	12/10/2008	N001	20	-	80	18.7		FQ	#		
Uranium	mg/L	12/10/2008	0001	20	-	80	0.002		FQ	#	0.0000036	
Vanadium	mg/L	12/10/2008	0001	20	-	80	0.011		FQ	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 3/12/2009
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	12/10/2008	N001	34	-	54	0.1	U	F	#	0.1	
Chloride	mg/L	12/10/2008	N001	34	-	54	15		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2008	N001	34	-	54	4.4		F	#	0.05	
Oxidation Reduction Potential	mV	12/10/2008	N001	34	-	54	25.1		F	#		
pH	s.u.	12/10/2008	N001	34	-	54	8.1		F	#		
Specific Conductance	umhos /cm	12/10/2008	N001	34	-	54	555		F	#		
Sulfate	mg/L	12/10/2008	N001	34	-	54	69		F	#	2.5	
Temperature	C	12/10/2008	N001	34	-	54	15.62		F	#		
Turbidity	NTU	12/10/2008	N001	34	-	54	1.99		F	#		
Uranium	mg/L	12/10/2008	N001	34	-	54	0.004		F	#	0.0000036	
Vanadium	mg/L	12/10/2008	N001	34	-	54	0.01		F	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 3/12/2009
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	12/09/2008	N001	56	-	76	0.1	U	F	#	0.1	
Chloride	mg/L	12/09/2008	N001	56	-	76	28		F	#	2	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2008	N001	56	-	76	32		F	#	0.5	
Oxidation Reduction Potential	mV	12/09/2008	N001	56	-	76	130.5		F	#		
pH	s.u.	12/09/2008	N001	56	-	76	7.54		F	#		
Specific Conductance	umhos /cm	12/09/2008	N001	56	-	76	2452		F	#		
Sulfate	mg/L	12/09/2008	N001	56	-	76	1100		F	#	10	
Temperature	C	12/09/2008	N001	56	-	76	15.41		F	#		
Turbidity	NTU	12/09/2008	N001	56	-	76	1.08		F	#		
Uranium	mg/L	12/09/2008	N001	56	-	76	0.0096		F	#	0.0000036	
Vanadium	mg/L	12/09/2008	N001	56	-	76	0.0084		F	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 3/12/2009
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	12/09/2008	N001	38	-	58	140		F	#	10	
Chloride	mg/L	12/09/2008	N001	38	-	58	21		F	#	2	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2008	N001	38	-	58	110		F	#	1	
Oxidation Reduction Potential	mV	12/09/2008	N001	38	-	58	205		F	#		
pH	s.u.	12/09/2008	N001	38	-	58	7.3		F	#		
Specific Conductance	umhos /cm	12/09/2008	N001	38	-	58	3810		F	#		
Sulfate	mg/L	12/09/2008	N001	38	-	58	1300		F	#	10	
Temperature	C	12/09/2008	N001	38	-	58	14.05		F	#		
Turbidity	NTU	12/09/2008	N001	38	-	58	2.68		F	#		
Uranium	mg/L	12/09/2008	N001	38	-	58	0.012		F	#	0.0000036	
Vanadium	mg/L	12/09/2008	N001	38	-	58	0.008		F	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 3/12/2009
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	12/09/2008	N001	38	-	58	47		F	#	2	
Chloride	mg/L	12/09/2008	N001	38	-	58	14		F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2008	N001	38	-	58	15		F	#	0.1	
Oxidation Reduction Potential	mV	12/09/2008	N001	38	-	58	181.7		F	#		
pH	s.u.	12/09/2008	N001	38	-	58	7.8		F	#		
Specific Conductance	umhos /cm	12/09/2008	N001	38	-	58	1020		F	#		
Sulfate	mg/L	12/09/2008	N001	38	-	58	180		F	#	10	
Temperature	C	12/09/2008	N001	38	-	58	14.89		F	#		
Turbidity	NTU	12/09/2008	N001	38	-	58	0.88		F	#		
Uranium	mg/L	12/09/2008	N001	38	-	58	0.0054		F	#	0.0000036	
Vanadium	mg/L	12/09/2008	N001	38	-	58	0.00043		F	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 3/12/2009
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	12/08/2008	N001	121	-	136	0.1	U	F	#	0.1	
Chloride	mg/L	12/08/2008	N001	121	-	136	6		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/08/2008	N001	121	-	136	3		F	#	0.05	
Oxidation Reduction Potential	mV	12/08/2008	N001	121	-	136	102		F	#		
pH	s.u.	12/08/2008	N001	121	-	136	7.8		F	#		
Specific Conductance	umhos /cm	12/08/2008	N001	121	-	136	379		F	#		
Sulfate	mg/L	12/08/2008	N001	121	-	136	34		F	#	2.5	
Temperature	C	12/08/2008	N001	121	-	136	15.55		F	#		
Turbidity	NTU	12/08/2008	N001	121	-	136	0.72		F	#		
Uranium	mg/L	12/08/2008	N001	121	-	136	0.0096		F	#	0.0000036	
Vanadium	mg/L	12/08/2008	N001	121	-	136	0.064		F	#	0.00022	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 3/12/2009
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	12/08/2008	N001	37.5	-	67.5	0.1	U	F	#	0.1	
Chloride	mg/L	12/08/2008	N001	37.5	-	67.5	13		F	#	2	
Nitrate + Nitrite as Nitrogen	mg/L	12/08/2008	N001	37.5	-	67.5	26		F	#	0.2	
Oxidation Reduction Potential	mV	12/08/2008	N001	37.5	-	67.5	110		F	#		
pH	s.u.	12/08/2008	N001	37.5	-	67.5	7.39		F	#		
Specific Conductance	umhos /cm	12/08/2008	N001	37.5	-	67.5	1064		F	#		
Sulfate	mg/L	12/08/2008	N001	37.5	-	67.5	330		F	#	5	
Temperature	C	12/08/2008	N001	37.5	-	67.5	14.49		F	#		
Turbidity	NTU	12/08/2008	N001	37.5	-	67.5	2.15		F	#		
Uranium	mg/L	12/08/2008	N001	37.5	-	67.5	0.25		F	#	0.000036	
Vanadium	mg/L	12/08/2008	N001	37.5	-	67.5	0.026		F	#	0.00011	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 3/12/2009
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	12/09/2008	N001	34	-	54	2		FQ	#	0.1	
Chloride	mg/L	12/09/2008	N001	34	-	54	8.9		FQ	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2008	N001	34	-	54	8.2		FQ	#	0.05	
Oxidation Reduction Potential	mV	12/09/2008	N001	34	-	54	123.4		FQ	#		
pH	s.u.	12/09/2008	N001	34	-	54	7.64		FQ	#		
Specific Conductance	umhos /cm	12/09/2008	N001	34	-	54	634		FQ	#		
Sulfate	mg/L	12/09/2008	N001	34	-	54	110		FQ	#	2.5	
Temperature	C	12/09/2008	N001	34	-	54	15.34		FQ	#		
Turbidity	NTU	12/09/2008	N001	34	-	54	0.65		FQ	#		
Uranium	mg/L	12/09/2008	N001	34	-	54	0.006		FQ	#	0.0000036	
Vanadium	mg/L	12/09/2008	N001	34	-	54	0.053		FQ	#	0.00022	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 3/12/2009
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	12/10/2008	N001	25.5	-	30.5	0.1	U	F	#	0.1	
Chloride	mg/L	12/10/2008	N001	25.5	-	30.5	15		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2008	N001	25.5	-	30.5	0.6		F	#	0.01	
Oxidation Reduction Potential	mV	12/10/2008	N001	25.5	-	30.5	122		F	#		
pH	s.u.	12/10/2008	N001	25.5	-	30.5	7.93		F	#		
Specific Conductance	umhos /cm	12/10/2008	N001	25.5	-	30.5	681		F	#		
Sulfate	mg/L	12/10/2008	N001	25.5	-	30.5	130		F	#	2.5	
Temperature	C	12/10/2008	N001	25.5	-	30.5	14.88		F	#		
Turbidity	NTU	12/10/2008	N001	25.5	-	30.5	4.2		F	#		
Uranium	mg/L	12/10/2008	N001	25.5	-	30.5	0.0038		F	#	0.0000036	
Vanadium	mg/L	12/10/2008	N001	25.5	-	30.5	0.0011		F	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 3/12/2009
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	12/10/2008	N001	16	-	21	0.1	U	F	#	0.1	
Chloride	mg/L	12/10/2008	N001	16	-	21	9.5		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2008	N001	16	-	21	0.77		F	#	0.01	
Oxidation Reduction Potential	mV	12/10/2008	N001	16	-	21	115		F	#		
pH	s.u.	12/10/2008	N001	16	-	21	7.97		F	#		
Specific Conductance	umhos /cm	12/10/2008	N001	16	-	21	522		F	#		
Sulfate	mg/L	12/10/2008	N001	16	-	21	72		F	#	2.5	
Temperature	C	12/10/2008	N001	16	-	21	14.79		F	#		
Turbidity	NTU	12/10/2008	N001	16	-	21	3.96		F	#		
Uranium	mg/L	12/10/2008	N001	16	-	21	0.0027		F	#	0.0000036	
Vanadium	mg/L	12/10/2008	N001	16	-	21	0.00079		F	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 3/12/2009
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	12/10/2008	0001	19.35	-	24.35	0.1	U	FQ	#	0.1	
Chloride	mg/L	12/10/2008	0001	19.35	-	24.35	16		FQ	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2008	0001	19.35	-	24.35	0.84		FQ	#	0.01	
Oxidation Reduction Potential	mV	12/10/2008	N001	19.35	-	24.35	105		FQ	#		
pH	s.u.	12/10/2008	N001	19.35	-	24.35	7.87		FQ	#		
Specific Conductance	umhos /cm	12/10/2008	N001	19.35	-	24.35	720		FQ	#		
Sulfate	mg/L	12/10/2008	0001	19.35	-	24.35	130		FQ	#	2.5	
Temperature	C	12/10/2008	N001	19.35	-	24.35	15.91		FQ	#		
Turbidity	NTU	12/10/2008	N001	19.35	-	24.35	36.6		FQ	#		
Uranium	mg/L	12/10/2008	0001	19.35	-	24.35	0.0036		FQ	#	0.0000036	
Vanadium	mg/L	12/10/2008	0001	19.35	-	24.35	0.0044		FQ	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 3/12/2009
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	12/10/2008	N001	23.73	-	28.78	0.1	U	F	#	0.1	
Chloride	mg/L	12/10/2008	N001	23.73	-	28.78	12		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2008	N001	23.73	-	28.78	0.91		F	#	0.01	
Oxidation Reduction Potential	mV	12/10/2008	N001	23.73	-	28.78	103		F	#		
pH	s.u.	12/10/2008	N001	23.73	-	28.78	7.89		F	#		
Specific Conductance	umhos /cm	12/10/2008	N001	23.73	-	28.78	581		F	#		
Sulfate	mg/L	12/10/2008	N001	23.73	-	28.78	99		F	#	2.5	
Temperature	C	12/10/2008	N001	23.73	-	28.78	15.84		F	#		
Turbidity	NTU	12/10/2008	N001	23.73	-	28.78	9.7		F	#		
Uranium	mg/L	12/10/2008	N001	23.73	-	28.78	0.0018		F	#	0.0000036	
Vanadium	mg/L	12/10/2008	N001	23.73	-	28.78	0.0031		F	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 3/12/2009
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	12/10/2008	0001	55	-	75	0.1	U	FQ	#	0.1	
Chloride	mg/L	12/10/2008	0001	55	-	75	9.7		FQ	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2008	0001	55	-	75	0.01	U	FQ	#	0.01	
Oxidation Reduction Potential	mV	12/10/2008	N001	55	-	75	-159.6		FQ	#		
pH	s.u.	12/10/2008	N001	55	-	75	8.32		FQ	#		
Specific Conductance	umhos /cm	12/10/2008	N001	55	-	75	527		FQ	#		
Sulfate	mg/L	12/10/2008	0001	55	-	75	90		FQ	#	2.5	
Temperature	C	12/10/2008	N001	55	-	75	15.82		FQ	#		
Turbidity	NTU	12/10/2008	N001	55	-	75	15.6		FQ	#		
Uranium	mg/L	12/10/2008	0001	55	-	75	0.00025		FQ	#	0.0000036	
Vanadium	mg/L	12/10/2008	0001	55	-	75	0.000067	U	FQ	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 3/12/2009
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	12/09/2008	N001	39	-	49	0.1	U	F	#	0.1	
Chloride	mg/L	12/09/2008	N001	39	-	49	13		F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2008	N001	39	-	49	31		F	#	0.2	
Oxidation Reduction Potential	mV	12/09/2008	N001	39	-	49	182.4		F	#		
pH	s.u.	12/09/2008	N001	39	-	49	7.53		F	#		
Specific Conductance	umhos /cm	12/09/2008	N001	39	-	49	1361		F	#		
Sulfate	mg/L	12/09/2008	N001	39	-	49	470		F	#	10	
Temperature	C	12/09/2008	N001	39	-	49	15.35		F	#		
Turbidity	NTU	12/09/2008	N001	39	-	49	9.87		F	#		
Uranium	mg/L	12/09/2008	N001	39	-	49	0.028		F	#	0.0000036	
Vanadium	mg/L	12/09/2008	N001	39	-	49	0.0019		F	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 3/12/2009
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	12/10/2008	0001	29	-	49	0.1	U	FQ	#	0.1	
Chloride	mg/L	12/10/2008	0001	29	-	49	65		FQ	#	10	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2008	0001	29	-	49	130		FQ	#	1	
Oxidation Reduction Potential	mV	12/10/2008	N001	29	-	49	179		FQ	#		
pH	s.u.	12/10/2008	N001	29	-	49	7.63		FQ	#		
Specific Conductance	umhos /cm	12/10/2008	N001	29	-	49	3569		FQ	#		
Sulfate	mg/L	12/10/2008	0001	29	-	49	1500		FQ	#	25	
Temperature	C	12/10/2008	N001	29	-	49	16.04		FQ	#		
Turbidity	NTU	12/10/2008	N001	29	-	49	161		FQ	#		
Uranium	mg/L	12/10/2008	0001	29	-	49	0.011		FQ	#	0.0000036	
Vanadium	mg/L	12/10/2008	0001	29	-	49	0.0075		FQ	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 3/12/2009
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	12/09/2008	N001	47	-	52	0.1	U	FQ	#	0.1	
Chloride	mg/L	12/09/2008	N001	47	-	52	11		FQ	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2008	N001	47	-	52	55		FQ	#	0.5	
Oxidation Reduction Potential	mV	12/09/2008	N001	47	-	52	108.2		FQ	#		
pH	s.u.	12/09/2008	N001	47	-	52	7.69		FQ	#		
Specific Conductance	umhos /cm	12/09/2008	N001	47	-	52	1204		FQ	#		
Sulfate	mg/L	12/09/2008	N001	47	-	52	310		FQ	#	5	
Temperature	C	12/09/2008	N001	47	-	52	14.26		FQ	#		
Turbidity	NTU	12/09/2008	N001	47	-	52	2.77		FQ	#		
Uranium	mg/L	12/09/2008	N001	47	-	52	0.013		FQ	#	0.0000036	
Vanadium	mg/L	12/09/2008	N001	47	-	52	0.016		FQ	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 3/12/2009
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	12/09/2008	N001	58.6	-	88.7	140		F	#	10	
Chloride	mg/L	12/09/2008	N001	58.6	-	88.7	18		F	#	2	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2008	N001	58.6	-	88.7	150		F	#	1	
Oxidation Reduction Potential	mV	12/09/2008	N001	58.6	-	88.7	195.3		F	#		
pH	s.u.	12/09/2008	N001	58.6	-	88.7	7.45		F	#		
Specific Conductance	umhos /cm	12/09/2008	N001	58.6	-	88.7	2548		F	#		
Sulfate	mg/L	12/09/2008	N001	58.6	-	88.7	610		F	#	10	
Temperature	C	12/09/2008	N001	58.6	-	88.7	15.12		F	#		
Turbidity	NTU	12/09/2008	N001	58.6	-	88.7	0.61		F	#		
Uranium	mg/L	12/09/2008	N001	58.6	-	88.7	0.01		F	#	0.0000036	
Vanadium	mg/L	12/09/2008	N001	58.6	-	88.7	0.0073		F	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 3/12/2009
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	12/09/2008	N001	47.2	-	57.2	130		F	#	10	
Chloride	mg/L	12/09/2008	N001	47.2	-	57.2	19		F	#	2	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2008	N001	47.2	-	57.2	170		F	#	1	
Oxidation Reduction Potential	mV	12/09/2008	N001	47.2	-	57.2	194		F	#		
pH	s.u.	12/09/2008	N001	47.2	-	57.2	7.51		F	#		
Specific Conductance	umhos /cm	12/09/2008	N001	47.2	-	57.2	2551		F	#		
Sulfate	mg/L	12/09/2008	N001	47.2	-	57.2	540		F	#	10	
Temperature	C	12/09/2008	N001	47.2	-	57.2	15.21		F	#		
Turbidity	NTU	12/09/2008	N001	47.2	-	57.2	9.96		F	#		
Uranium	mg/L	12/09/2008	N001	47.2	-	57.2	0.01		F	#	0.0000036	
Vanadium	mg/L	12/09/2008	N001	47.2	-	57.2	0.0054		F	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 3/12/2009
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	12/10/2008	N001	43.5	-	63.5	0.1	U	F	#	0.1	
Chloride	mg/L	12/10/2008	N001	43.5	-	63.5	5.5		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2008	N001	43.5	-	63.5	0.01	U	F	#	0.01	
Oxidation Reduction Potential	mV	12/10/2008	N001	43.5	-	63.5	-143.3		F	#		
pH	s.u.	12/10/2008	N001	43.5	-	63.5	8.13		F	#		
Specific Conductance	umhos /cm	12/10/2008	N001	43.5	-	63.5	399		F	#		
Sulfate	mg/L	12/10/2008	N001	43.5	-	63.5	36		F	#	2.5	
Temperature	C	12/10/2008	N001	43.5	-	63.5	15.69		F	#		
Turbidity	NTU	12/10/2008	N001	43.5	-	63.5	5.24		F	#		
Uranium	mg/L	12/10/2008	N001	43.5	-	63.5	0.00065		F	#	0.0000036	
Vanadium	mg/L	12/10/2008	N001	43.5	-	63.5	0.0001	B	F	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 3/12/2009
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	12/10/2008	0001	24.4	-	44.4	0.47		FQ	#	0.1	
Chloride	mg/L	12/10/2008	0001	24.4	-	44.4	22		FQ	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2008	0001	24.4	-	44.4	0.01	U	FQ	#	0.01	
Oxidation Reduction Potential	mV	12/10/2008	N001	24.4	-	44.4	-222.2		FQ	#		
pH	s.u.	12/10/2008	N001	24.4	-	44.4	8.37		FQ	#		
Specific Conductance	umhos /cm	12/10/2008	N001	24.4	-	44.4	584		FQ	#		
Sulfate	mg/L	12/10/2008	0001	24.4	-	44.4	140		FQ	#	2.5	
Temperature	C	12/10/2008	N001	24.4	-	44.4	15.8		FQ	#		
Turbidity	NTU	12/10/2008	N001	24.4	-	44.4	15.6		FQ	#		
Uranium	mg/L	12/10/2008	0001	24.4	-	44.4	0.00018		FQ	#	0.0000036	
Vanadium	mg/L	12/10/2008	0001	24.4	-	44.4	0.000067	U	FQ	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 3/12/2009
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	12/09/2008	N001	54.9	-	64.9	31		F	#	5	
Chloride	mg/L	12/09/2008	N001	54.9	-	64.9	14		F	#	4	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2008	N001	54.9	-	64.9	22		F	#	0.2	
Oxidation Reduction Potential	mV	12/09/2008	N001	54.9	-	64.9	177.1		F	#		
pH	s.u.	12/09/2008	N001	54.9	-	64.9	7.66		F	#		
Specific Conductance	umhos /cm	12/09/2008	N001	54.9	-	64.9	1035		F	#		
Sulfate	mg/L	12/09/2008	N001	54.9	-	64.9	220		F	#	10	
Temperature	C	12/09/2008	N001	54.9	-	64.9	15.6		F	#		
Turbidity	NTU	12/09/2008	N001	54.9	-	64.9	0.71		F	#		
Uranium	mg/L	12/09/2008	N001	54.9	-	64.9	0.0053		F	#	0.0000036	
Vanadium	mg/L	12/09/2008	N001	54.9	-	64.9	0.00059		F	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 3/12/2009
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	12/09/2008	N001	57.4	-	77.4	230		F	#	10	
Chloride	mg/L	12/09/2008	N001	57.4	-	77.4	19		F	#	2	
Nitrate + Nitrite as Nitrogen	mg/L	12/09/2008	N001	57.4	-	77.4	190		F	#	2	
Oxidation Reduction Potential	mV	12/09/2008	N001	57.4	-	77.4	217		F	#		
pH	s.u.	12/09/2008	N001	57.4	-	77.4	7.34		F	#		
Specific Conductance	umhos /cm	12/09/2008	N001	57.4	-	77.4	4301		F	#		
Sulfate	mg/L	12/09/2008	N001	57.4	-	77.4	1500		F	#	10	
Temperature	C	12/09/2008	N001	57.4	-	77.4	13.34		F	#		
Turbidity	NTU	12/09/2008	N001	57.4	-	77.4	0.66		F	#		
Uranium	mg/L	12/09/2008	N001	57.4	-	77.4	0.013		F	#	0.0000036	
Vanadium	mg/L	12/09/2008	N001	57.4	-	77.4	0.0084		F	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 3/12/2009
Location: 0772 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	12/10/2008	N001	7.4	-	27.4	3.9		F	#	0.1	
Ammonia Total as N	mg/L	12/10/2008	N002	7.4	-	27.4	3.9		F	#	0.1	
Chloride	mg/L	12/10/2008	N001	7.4	-	27.4	14		F	#	2	
Chloride	mg/L	12/10/2008	N002	7.4	-	27.4	14		F	#	2	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2008	N001	7.4	-	27.4	1.2		F	#	0.01	
Nitrate + Nitrite as Nitrogen	mg/L	12/10/2008	N002	7.4	-	27.4	1.2		F	#	0.01	
Oxidation Reduction Potential	mV	12/10/2008	N001	7.4	-	27.4	129		F	#		
pH	s.u.	12/10/2008	N001	7.4	-	27.4	7.88		F	#		
Specific Conductance	umhos /cm	12/10/2008	N001	7.4	-	27.4	718		F	#		
Sulfate	mg/L	12/10/2008	N001	7.4	-	27.4	120		F	#	5	
Sulfate	mg/L	12/10/2008	N002	7.4	-	27.4	130		F	#	5	
Temperature	C	12/10/2008	N001	7.4	-	27.4	15.18		F	#		
Turbidity	NTU	12/10/2008	N001	7.4	-	27.4	3.79		F	#		
Uranium	mg/L	12/10/2008	N001	7.4	-	27.4	0.0068		F	#	0.0000036	
Uranium	mg/L	12/10/2008	N002	7.4	-	27.4	0.0068		F	#	0.0000036	
Vanadium	mg/L	12/10/2008	N001	7.4	-	27.4	0.014		F	#	0.000067	
Vanadium	mg/L	12/10/2008	N002	7.4	-	27.4	0.015		F	#	0.000067	

Groundwater Quality Data by Location (USEE100) FOR SITE MON01, Monument Valley Processing Site

REPORT DATE: 3/12/2009

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	12/08/2008	N001	45 - 55	0.1	U	F	#	0.1	
Chloride	mg/L	12/08/2008	N001	45 - 55	4.5		F	#	1	
Nitrate + Nitrite as Nitrogen	mg/L	12/08/2008	N001	45 - 55	1.7		F	#	0.01	
Oxidation Reduction Potential	mV	12/08/2008	N001	45 - 55	127		F	#		
pH	s.u.	12/08/2008	N001	45 - 55	7.75		F	#		
Specific Conductance	umhos /cm	12/08/2008	N001	45 - 55	385		F	#		
Sulfate	mg/L	12/08/2008	N001	45 - 55	39		F	#	2.5	
Temperature	C	12/08/2008	N001	45 - 55	14.37		F	#		
Turbidity	NTU	12/08/2008	N001	45 - 55	5.21		F	#		
Uranium	mg/L	12/08/2008	N001	45 - 55	0.036		F	#	0.0000036	
Vanadium	mg/L	12/08/2008	N001	45 - 55	0.02		F	#	0.00011	

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: 3/12/2009
Location: 0623 SURFACE LOCATION

Parameter	Units	Sample ID	Date	Result	Qualifiers Data	Qualifiers QA	Lab	Detection Limit	Uncertainty
Ammonia Total as N	mg/L	0001	12/10/2008	0.1	U		#	0.1	
Chloride	mg/L	0001	12/10/2008	14			#	1	
Nitrate + Nitrite as Nitrogen	mg/L	0001	12/10/2008	0.01	U		#	0.01	
Oxidation Reduction Potential	mV	N001	12/10/2008	122			#		
pH	s.u.	N001	12/10/2008	8			#		
Specific Conductance	umhos/cm	N001	12/10/2008	632			#		
Sulfate	mg/L	0001	12/10/2008	49			#	2.5	
Temperature	C	N001	12/10/2008	5.83			#		
Turbidity	NTU	N001	12/10/2008	15.3			#		
Uranium	mg/L	0001	12/10/2008	0.0018			#	0.0000036	
Vanadium	mg/L	0001	12/10/2008	0.0011			#	0.000067	

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

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

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

DATA QUALIFIERS:

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

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: 3/12/2009

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	12/10/2008	14:35:24	4.79	4835.51	
0603	U	4849.41	12/09/2008	16:40:04	11.84	4837.57	
0604	C	4840.42	12/09/2008	16:10:10	9.95	4830.47	
0605	C	4835.07	12/10/2008	15:00:33	11.5	4823.57	
0606	D	4864.73	12/10/2008	15:55:17	37.09	4827.64	
0619	O	4888.63	12/08/2008	17:10:05	58.88	4829.75	
0648	N	4835.14	12/09/2008	14:09:45	34.69	4800.45	
0650	D	4794.28	12/10/2008	10:05:49	20.37	4773.91	
0651	C	4787.88	12/10/2008	11:35:13	9	4778.88	
0652	C	4808.93	12/10/2008	12:15:01	19.3	4789.63	
0653	D	4837.08	12/09/2008	14:25:48	36.33	4800.75	
0655	D	4862.06	12/09/2008	10:25:29	41.1	4820.96	
0656	D	4856.33	12/09/2008	11:24:27	37.87	4818.46	
0657	O	4878.99	12/08/2008	16:40:08	51.56	4827.43	
0662	D	4878.56	12/08/2008	16:00:18	52.6	4825.96	
0669	D	4867.19	12/09/2008	14:48:31	51.19	4816	
0711			12/10/2008	09:50:23	11.84	-11.84	
0715			12/10/2008	10:15:00	11.26	-11.26	
0719			12/10/2008	10:40:58	12.63	-12.63	
0727			12/10/2008	11:15:00	14.69	-14.69	
0760	D	4814.8	12/10/2008	10:50:53	25.97	4788.83	
0761	D	4835.02	12/09/2008	16:22:10	43.49	4791.53	
0762	D	4820.74	12/10/2008	09:35:52	32.82	4787.92	
0764	D	4851.53	12/09/2008	15:14:26	50.19	4801.34	
0765	D	4848.45	12/09/2008	11:51:19	36.54	4811.91	
0766	D	4847.97	12/09/2008	12:54:10	37	4810.97	
0767	D	4808.25	12/10/2008	12:50:37	7.31	4800.94	

STATIC WATER LEVELS (USEE700) FOR SITE MON01, Monument Valley Processing Site
REPORT DATE: 3/12/2009

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
0768	D	4820.73	12/10/2008	13:30:42	14.92	4805.81	
0770	D	4857.26	12/09/2008	11:10:47	34.27	4822.99	
0771	D	4863.26	12/09/2008	10:00:36	42.98	4820.28	
0772	O	4847.6	12/10/2008	09:15:33	12.78	4834.82	
0774	O	4880.14	12/08/2008	15:25:13	50.72	4829.42	

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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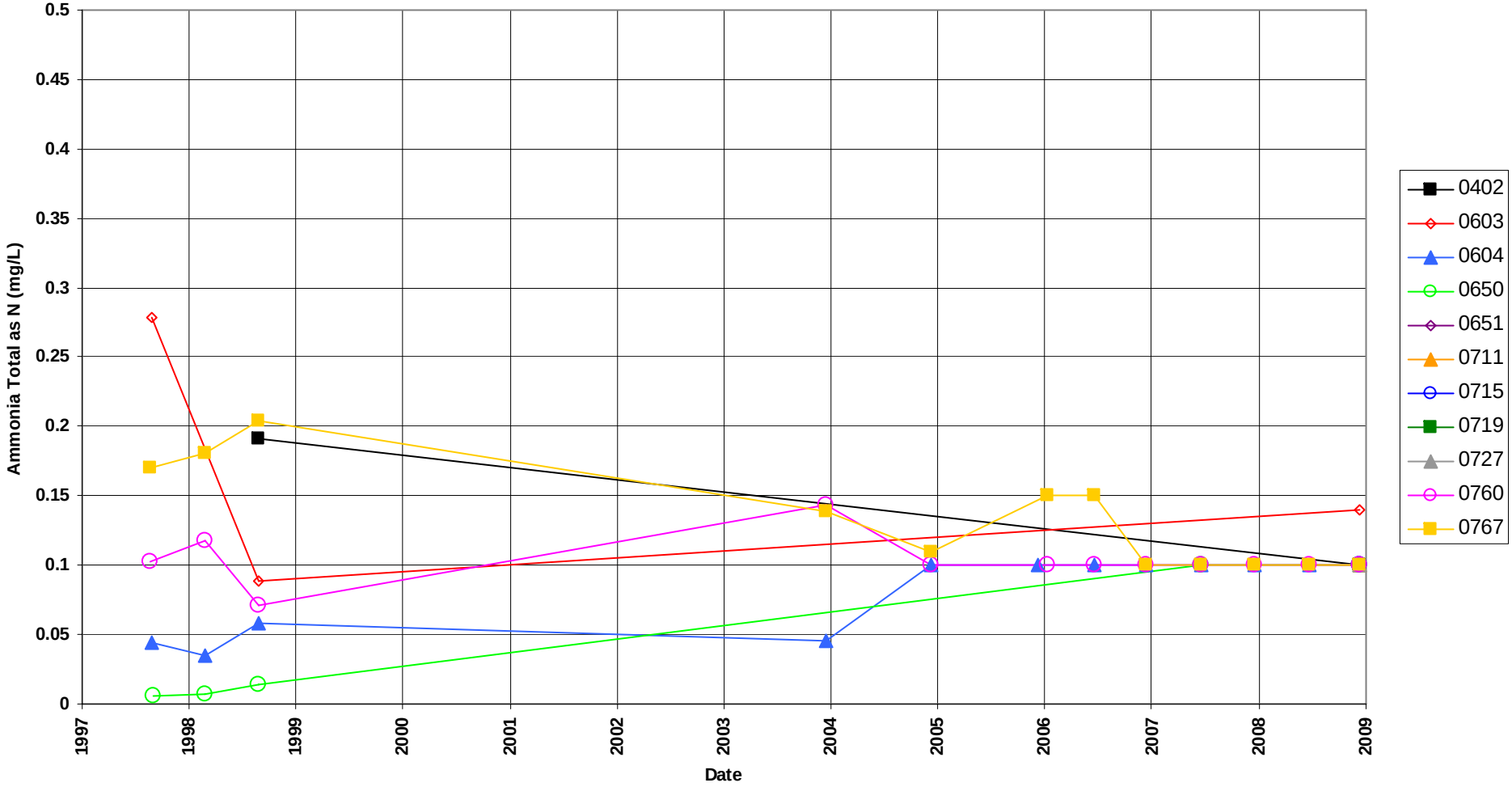
Monument Valley Processing Site
Ammonia Total as N Concentration



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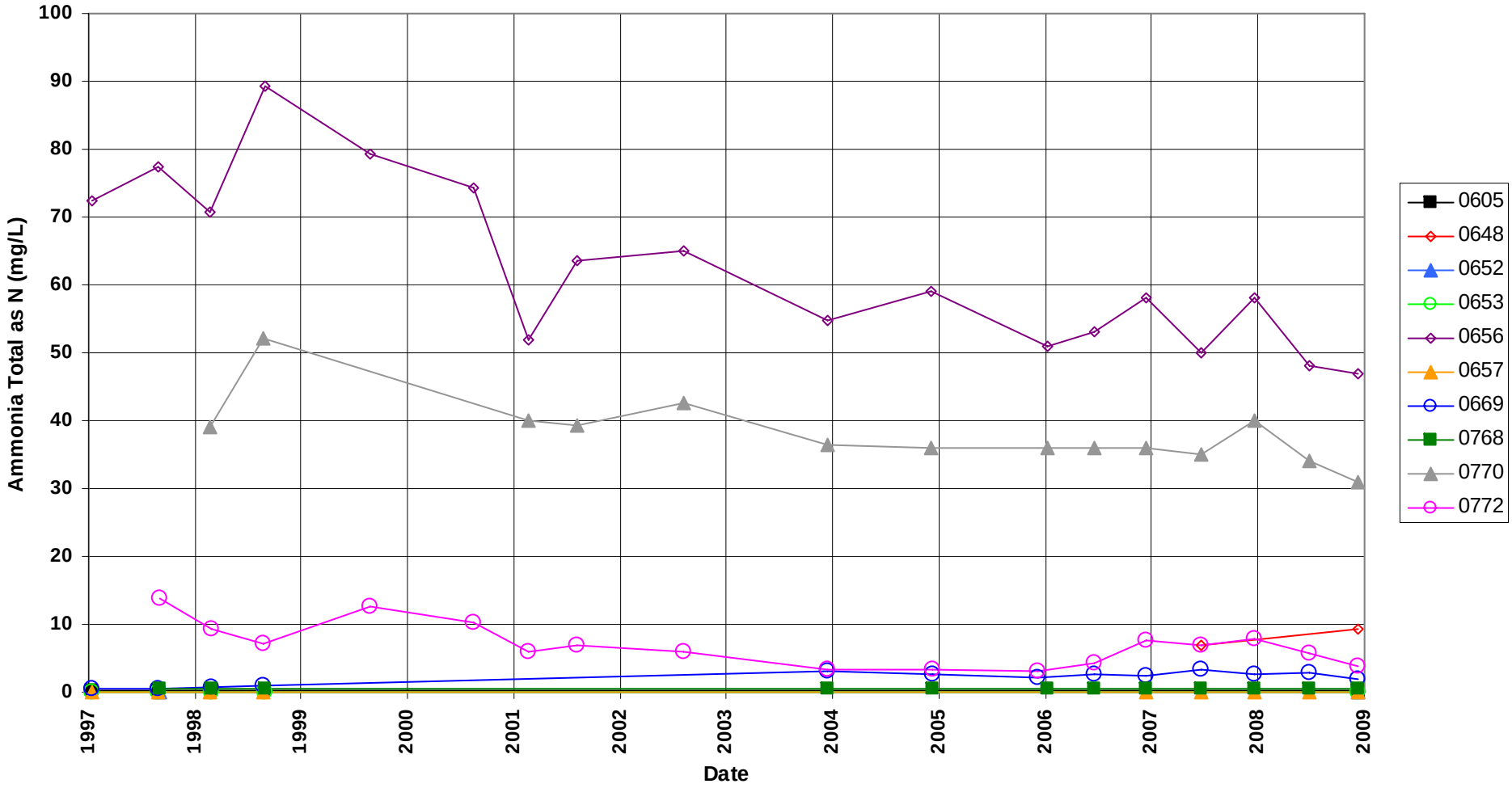
Monument Valley Processing Site
Ammonia Total as N Concentration



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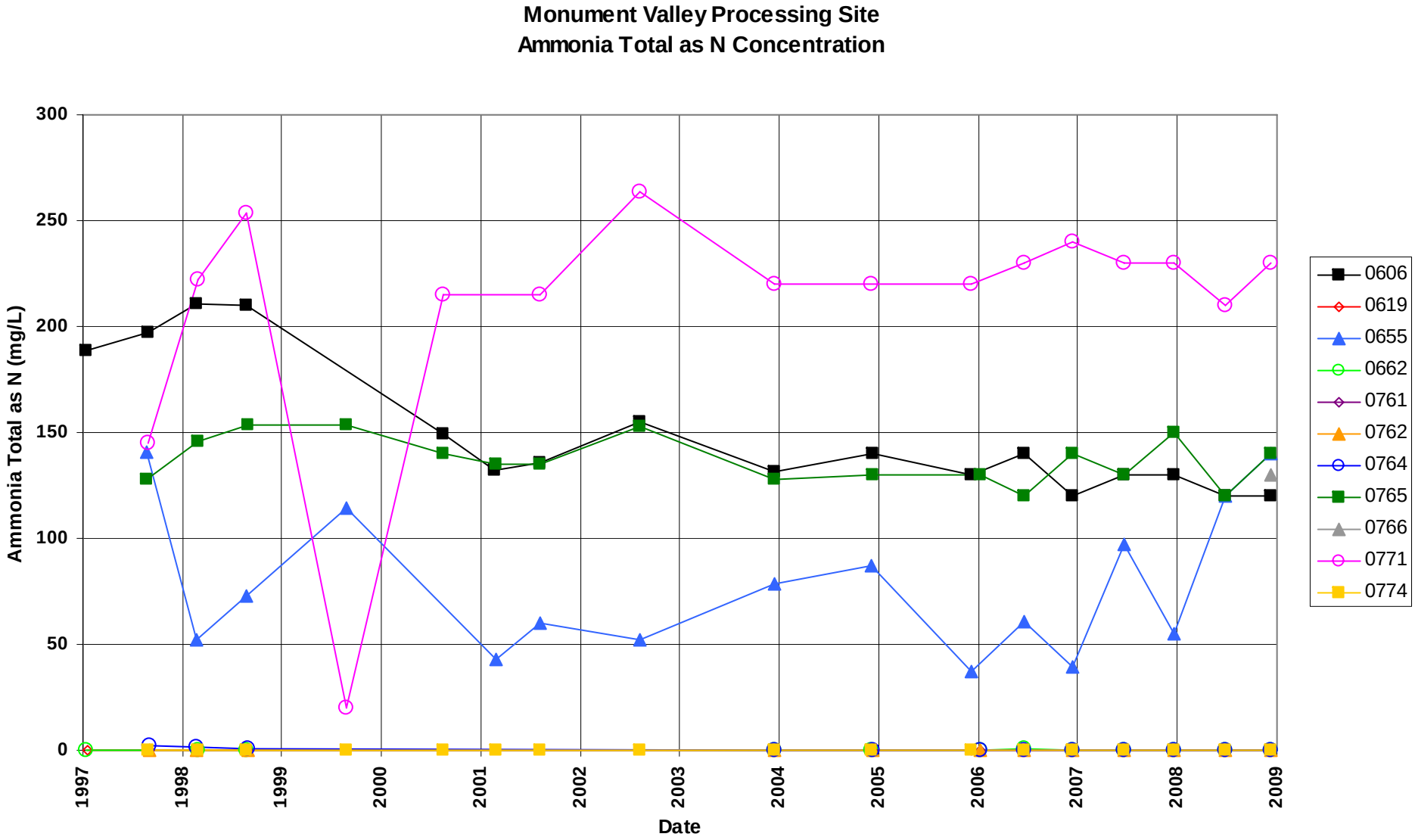
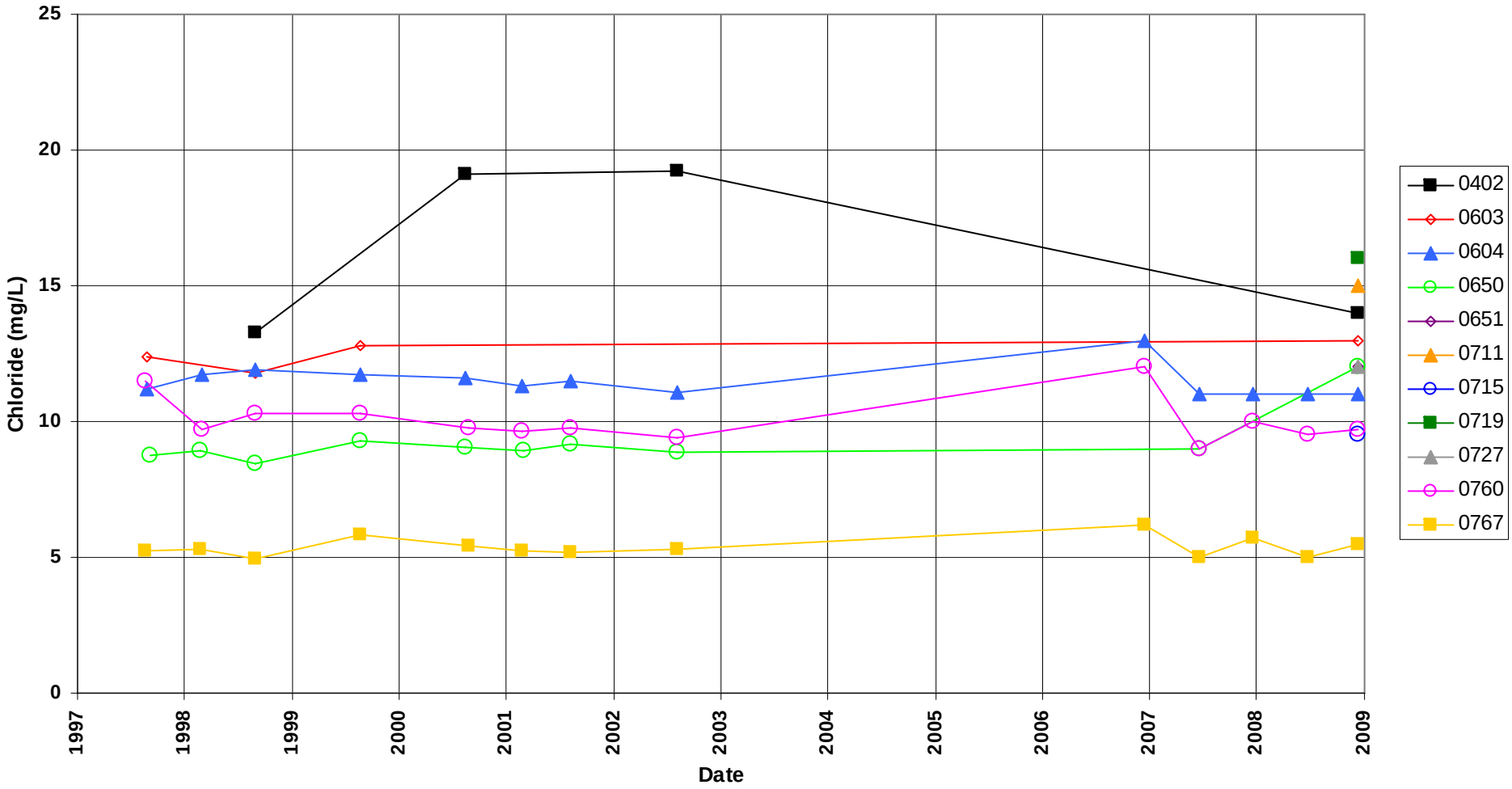
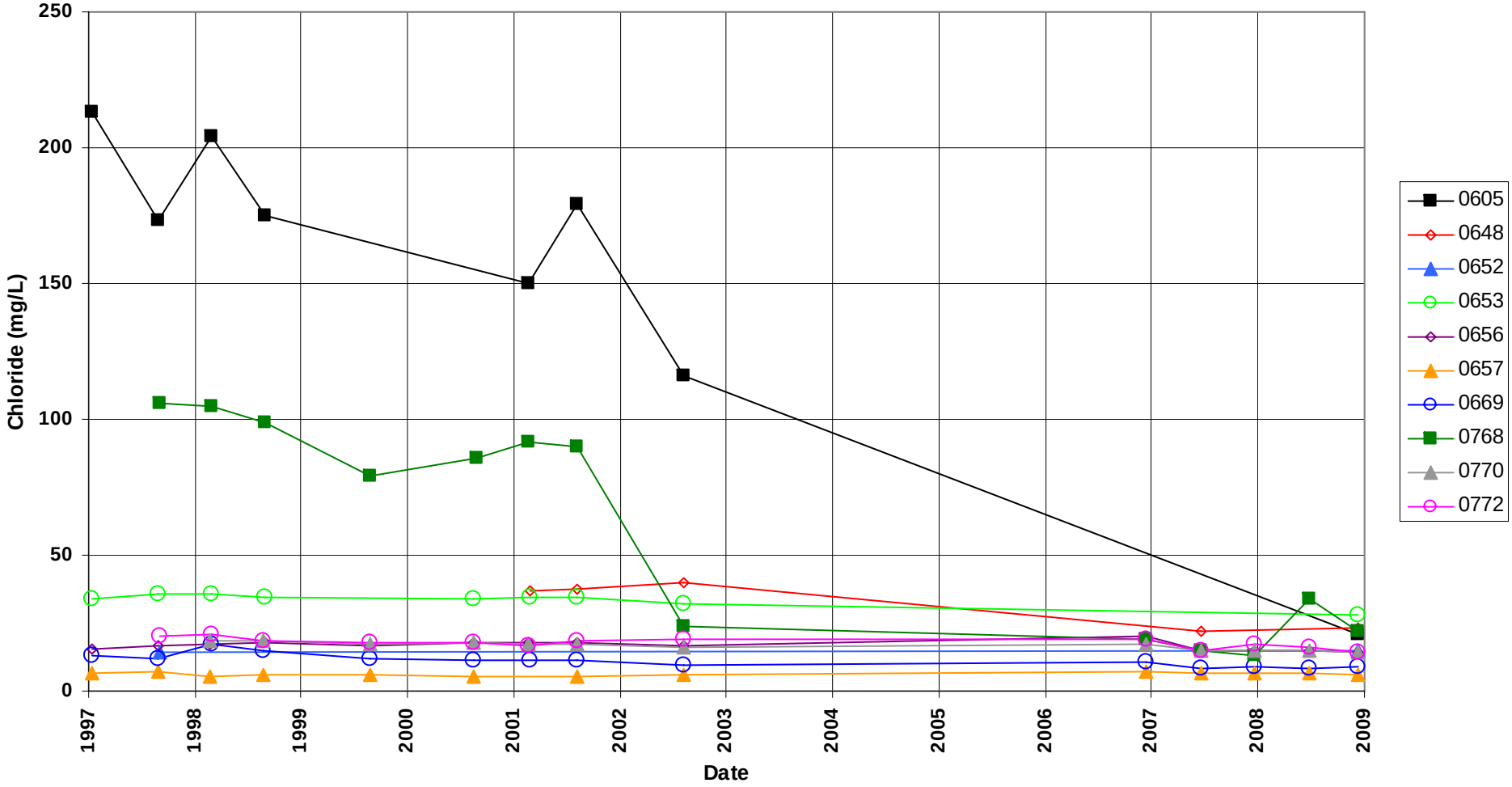

Monument Valley Processing Site
Ammonia Total as N Concentration
Ammonia Total as N (mg/L)
300
250
200
150
100
50
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
Date
0606
0619
0655
0662
0761
0762
0764
0765
0766
0771
0774

-


Monument Valley Processing Site
Chloride Concentration
Chloride (mg/L)
25
20
15
10
5
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
Date
0402
0603
0604
0650
0651
0711
0715
0719
0727
0760
0767

-

Monument Valley Processing Site
Chloride Concentration



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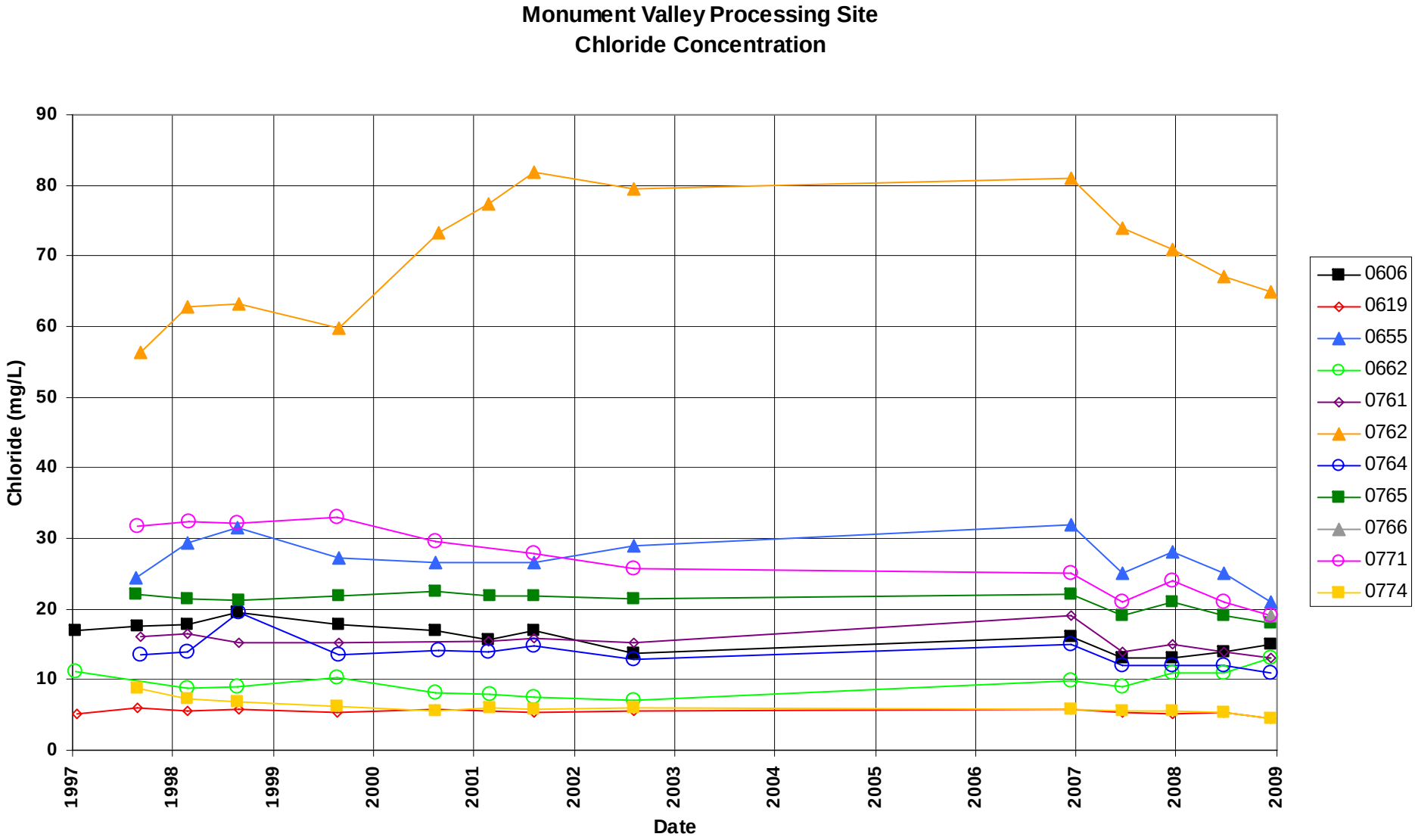
Monument Valley Processing Site
Chloride Concentration
Chloride (mg/L)
90
80
70
60
50
40
30
20
10
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
Date
0606
0619
0655
0662
0761
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0771
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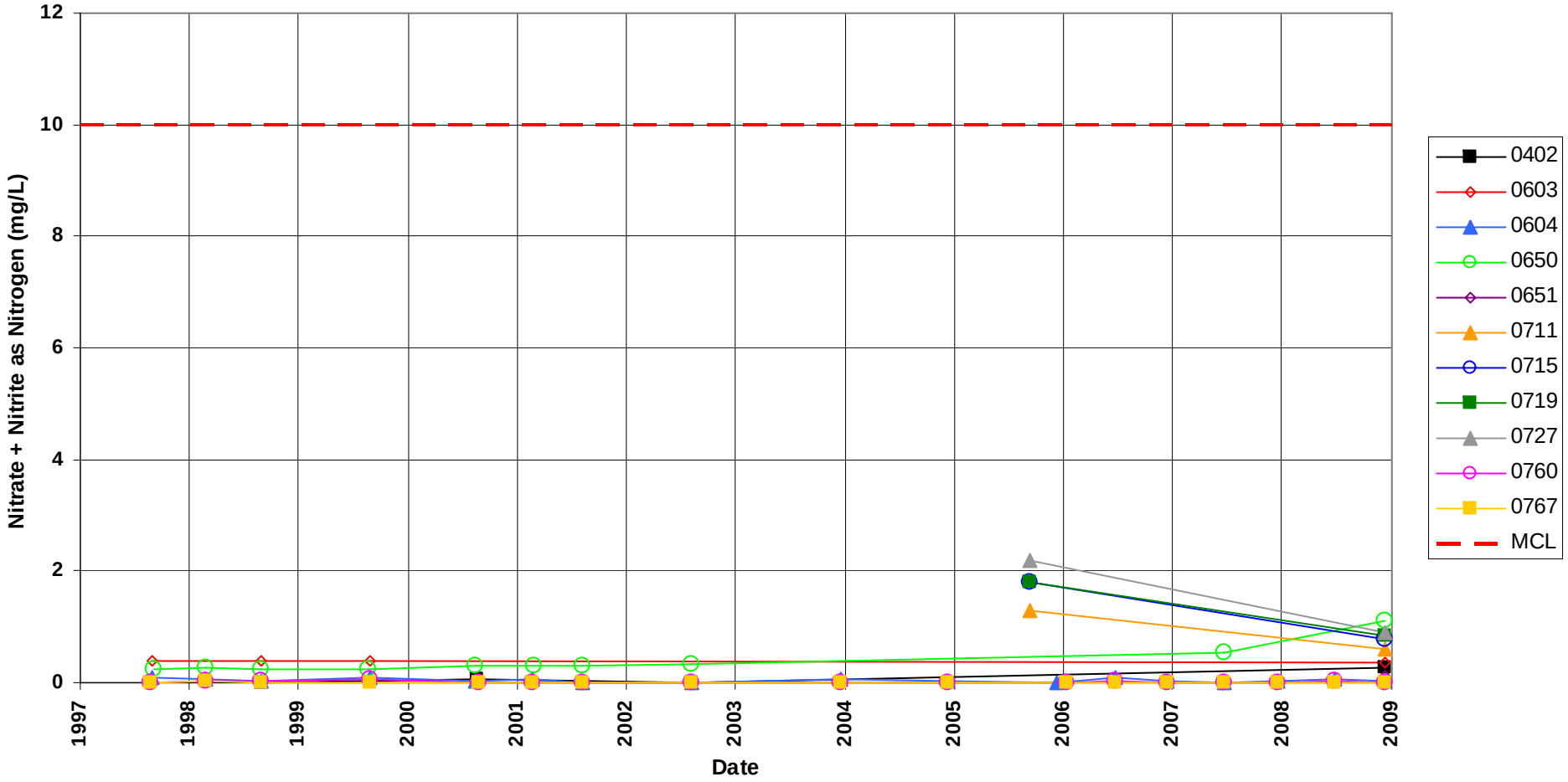
-

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



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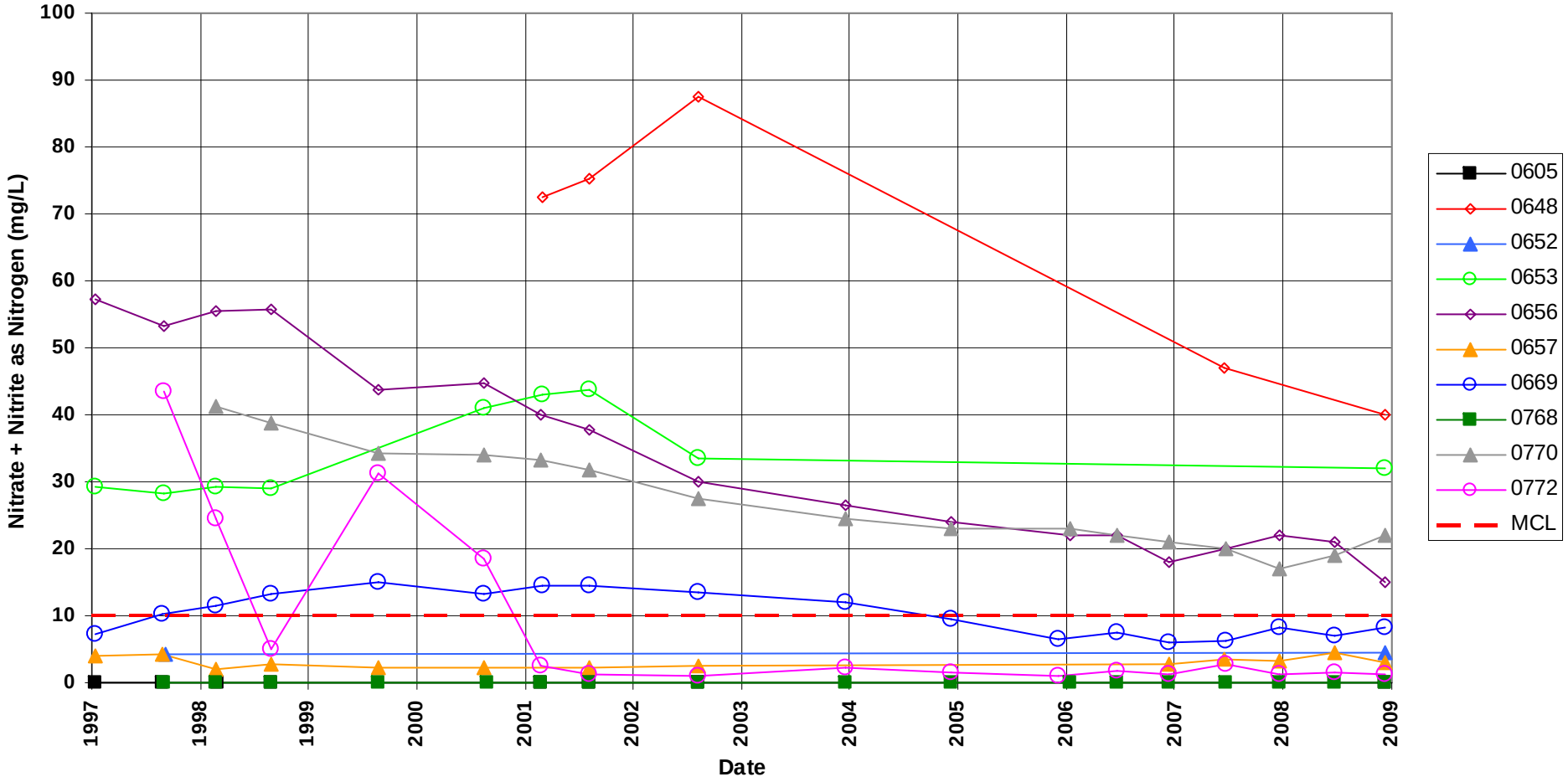
Monument Valley Processing Site
Nitrate + Nitrite as Nitrogen Concentration
Maximum Concentration Limit = 10.0 mg/L



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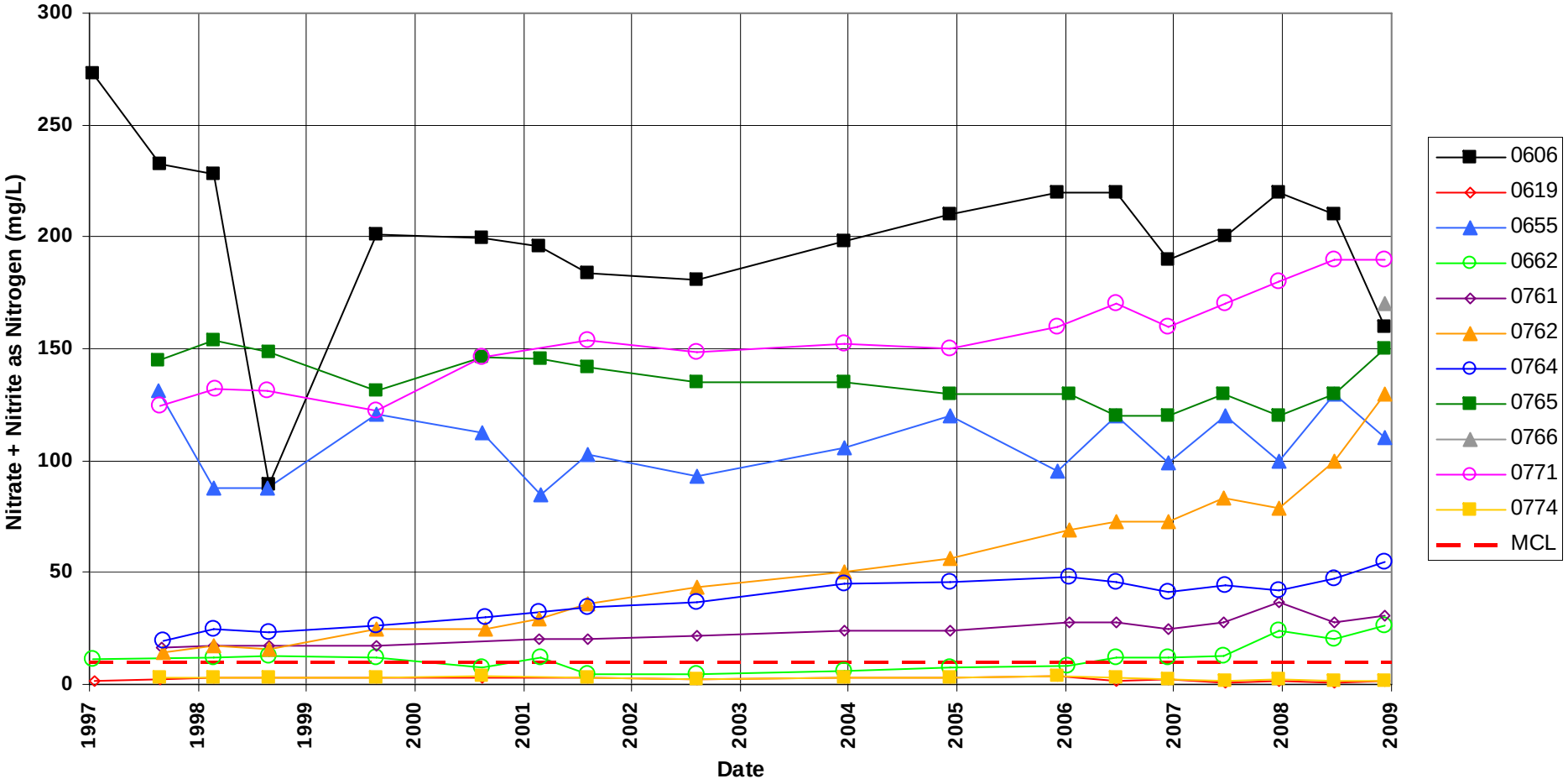
Monument Valley Processing Site
Nitrate + Nitrite as Nitrogen Concentration
Maximum Concentration Limit = 10.0 mg/L



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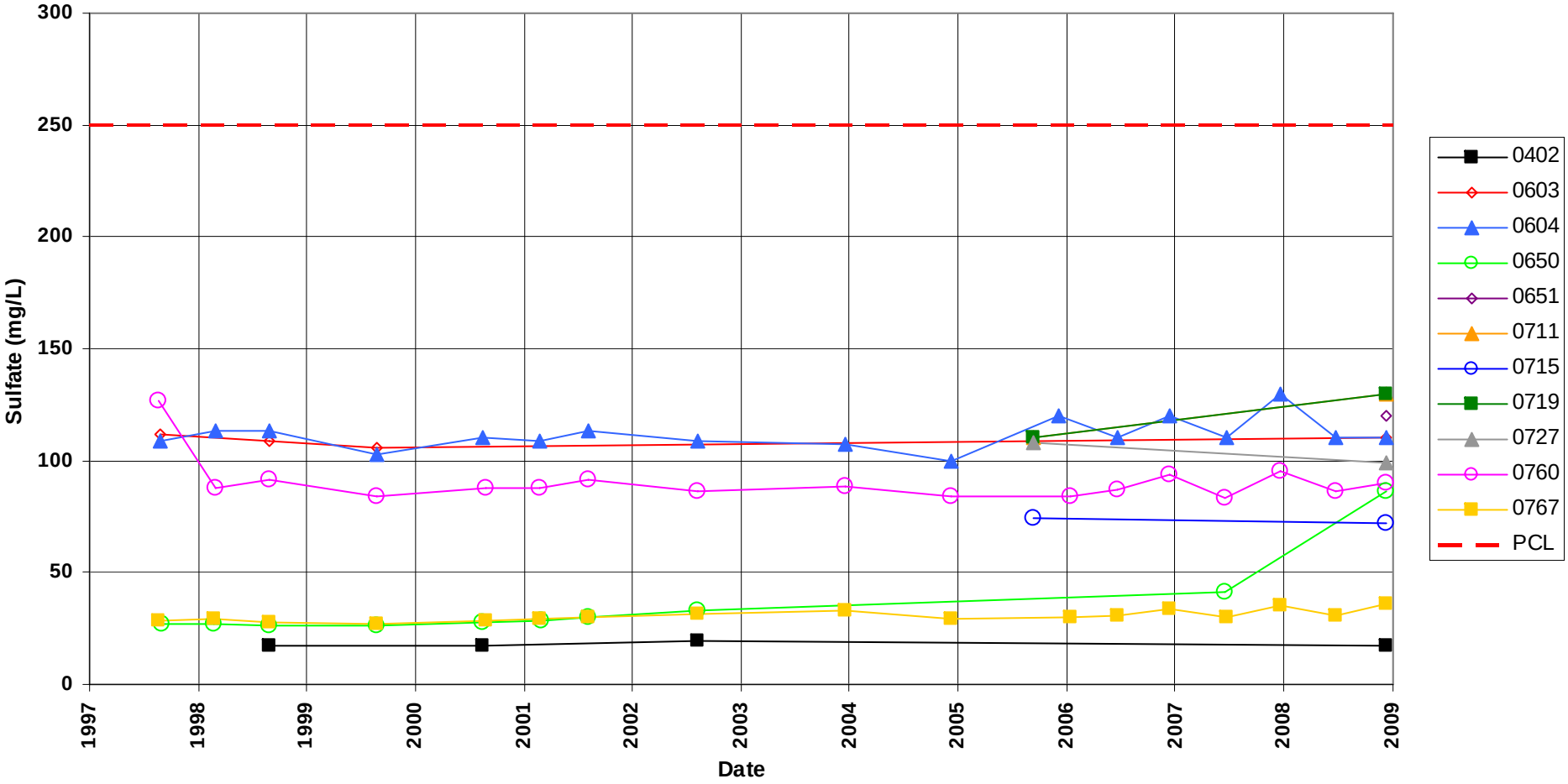
Monument Valley Processing Site
Sulfate Concentration
Proposed Cleanup Standard = 250 mg/L



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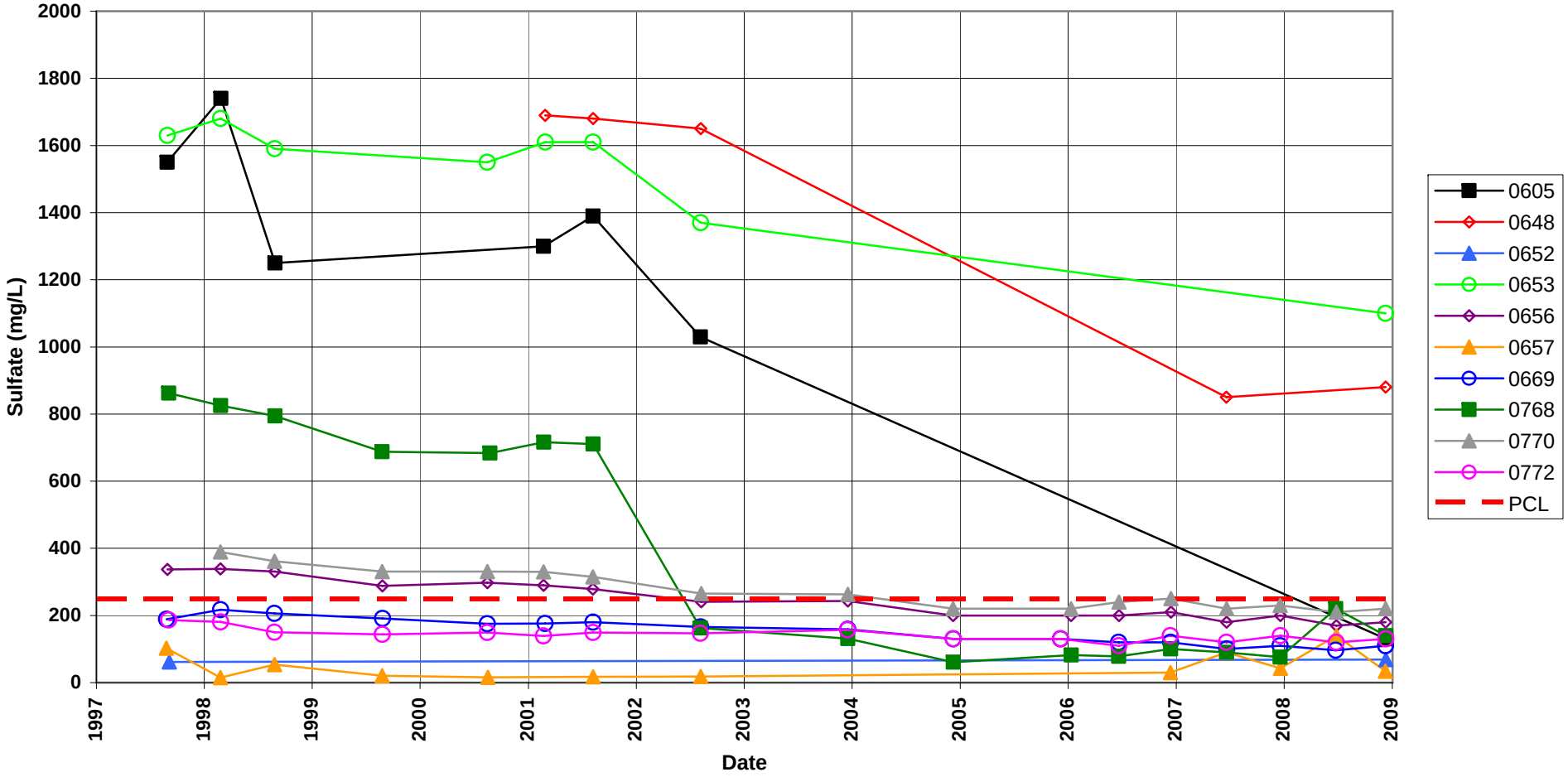
Monument Valley Processing Site
Sulfate Concentration
Proposed Cleanup Standard = 250 mg/L



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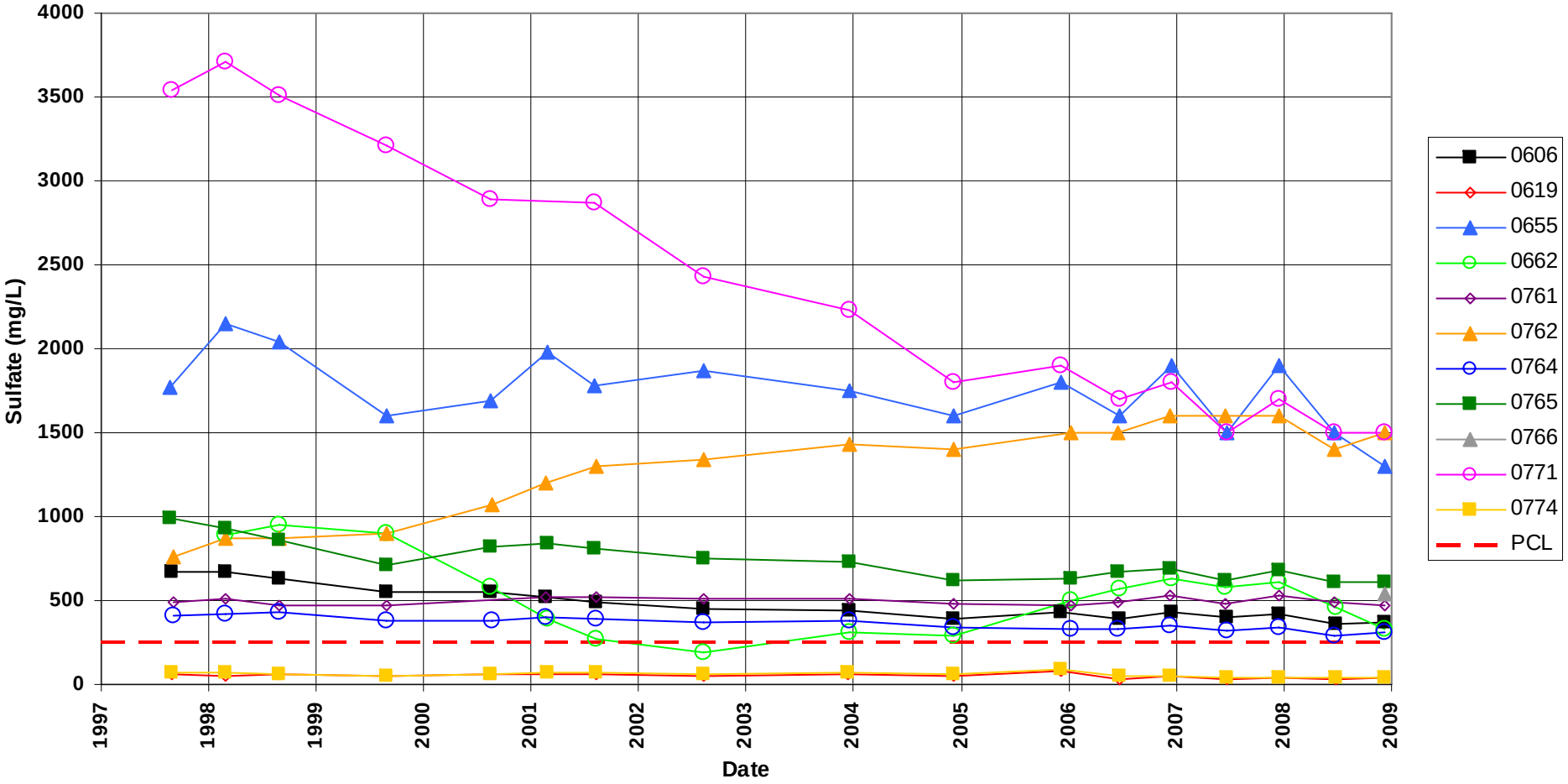
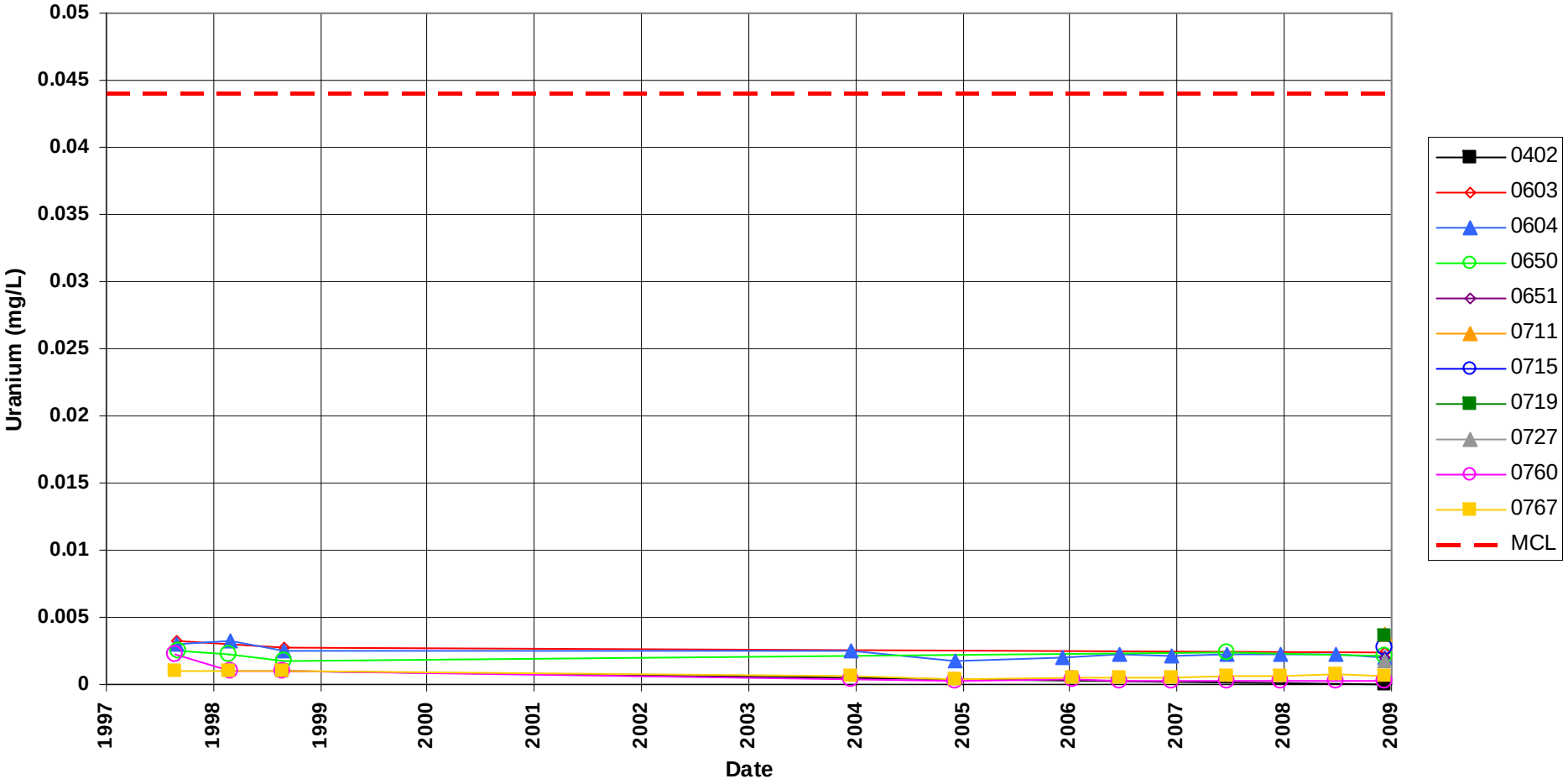
Monument Valley Processing Site
Sulfate Concentration
Proposed Cleanup Standard = 250 mg/L



-

Monument Valley Processing Site
Uranium Concentration
Maximum Concentration Limit = 0.044 mg/L



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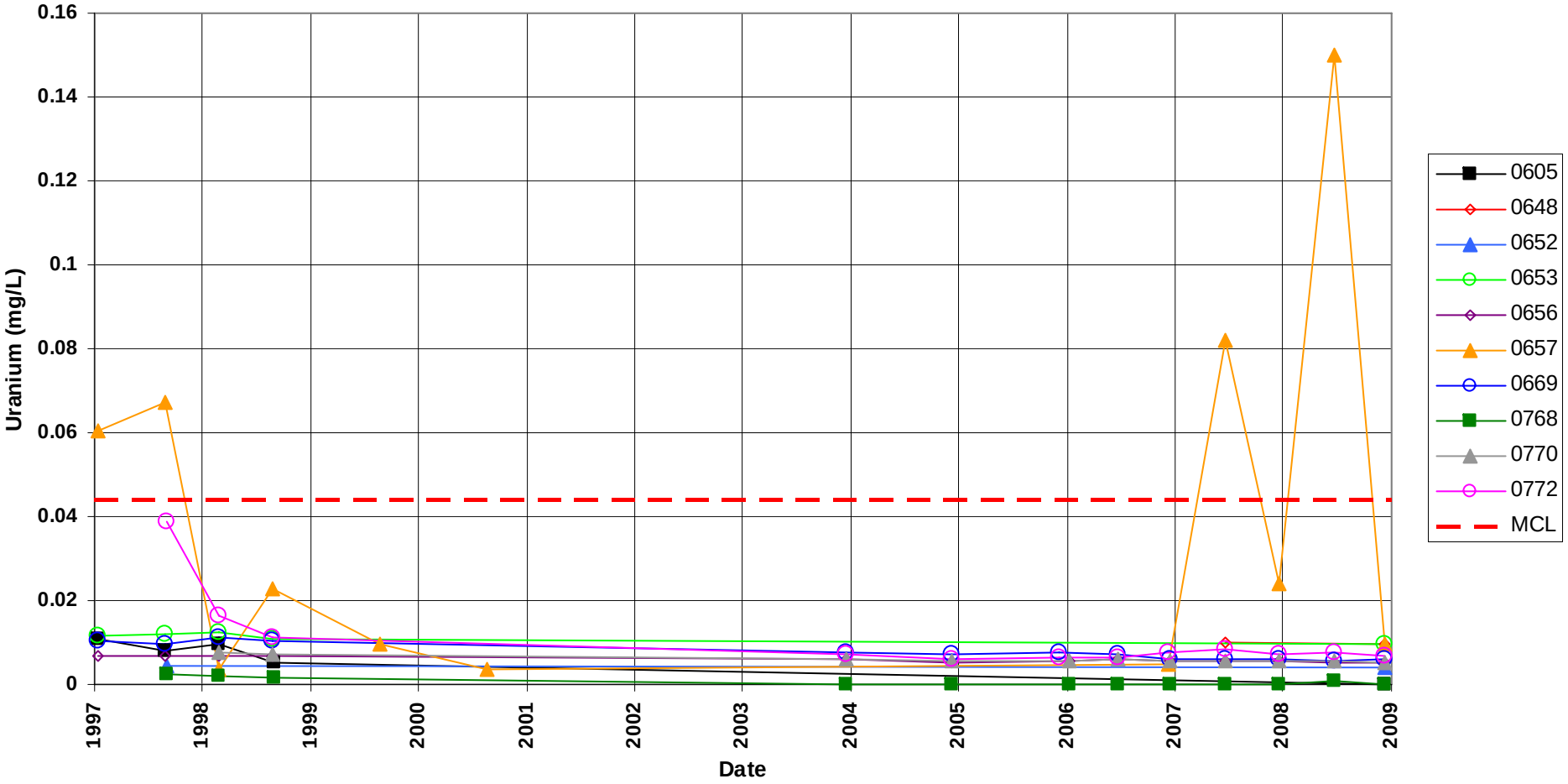
Monument Valley Processing Site
Uranium Concentration
Maximum Concentration Limit = 0.044 mg/L



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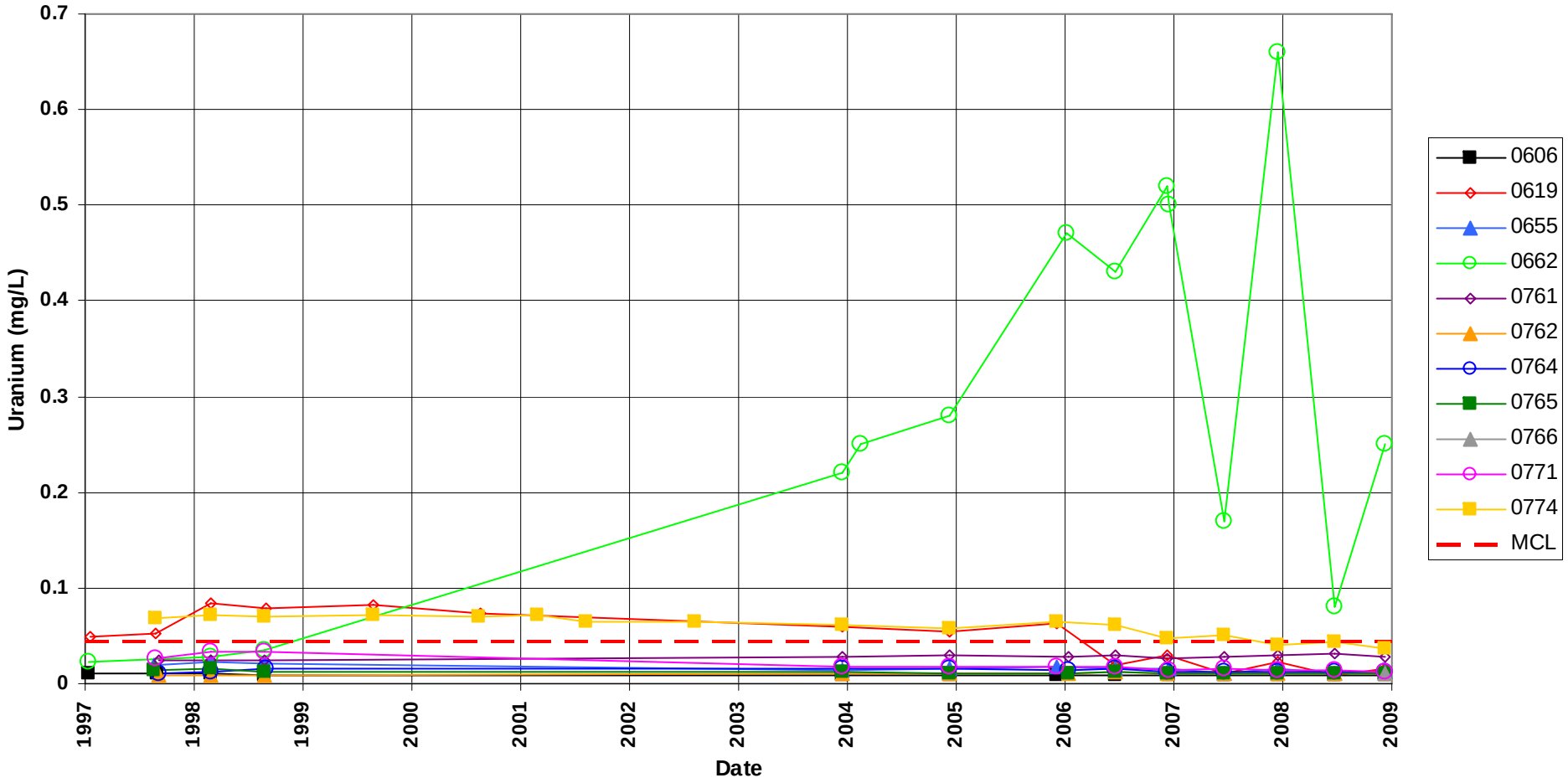
Monument Valley Processing Site
Uranium Concentration
Maximum Concentration Limit = 0.044 mg/L



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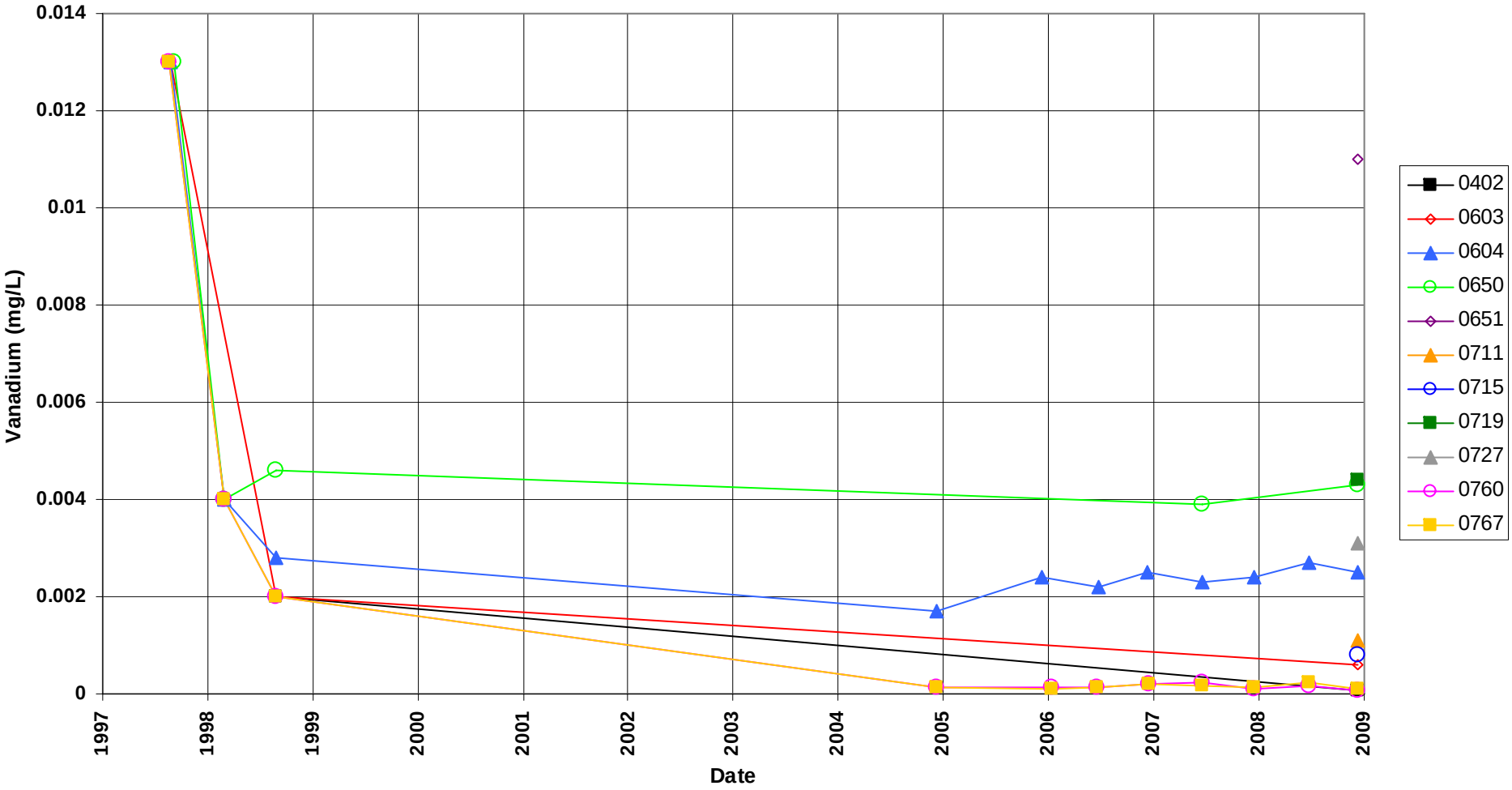
Monument Valley Processing Site
Vanadium Concentration



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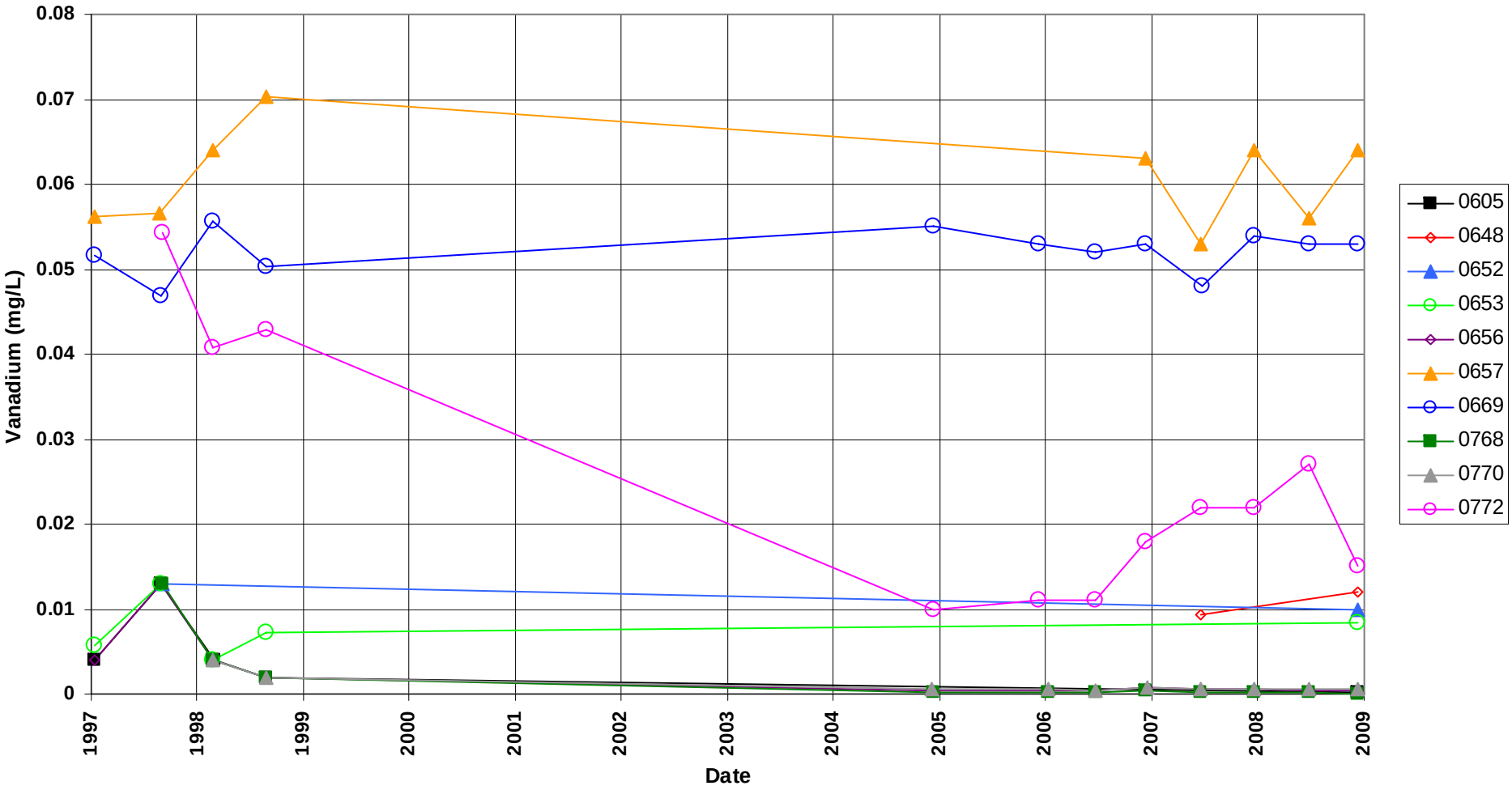
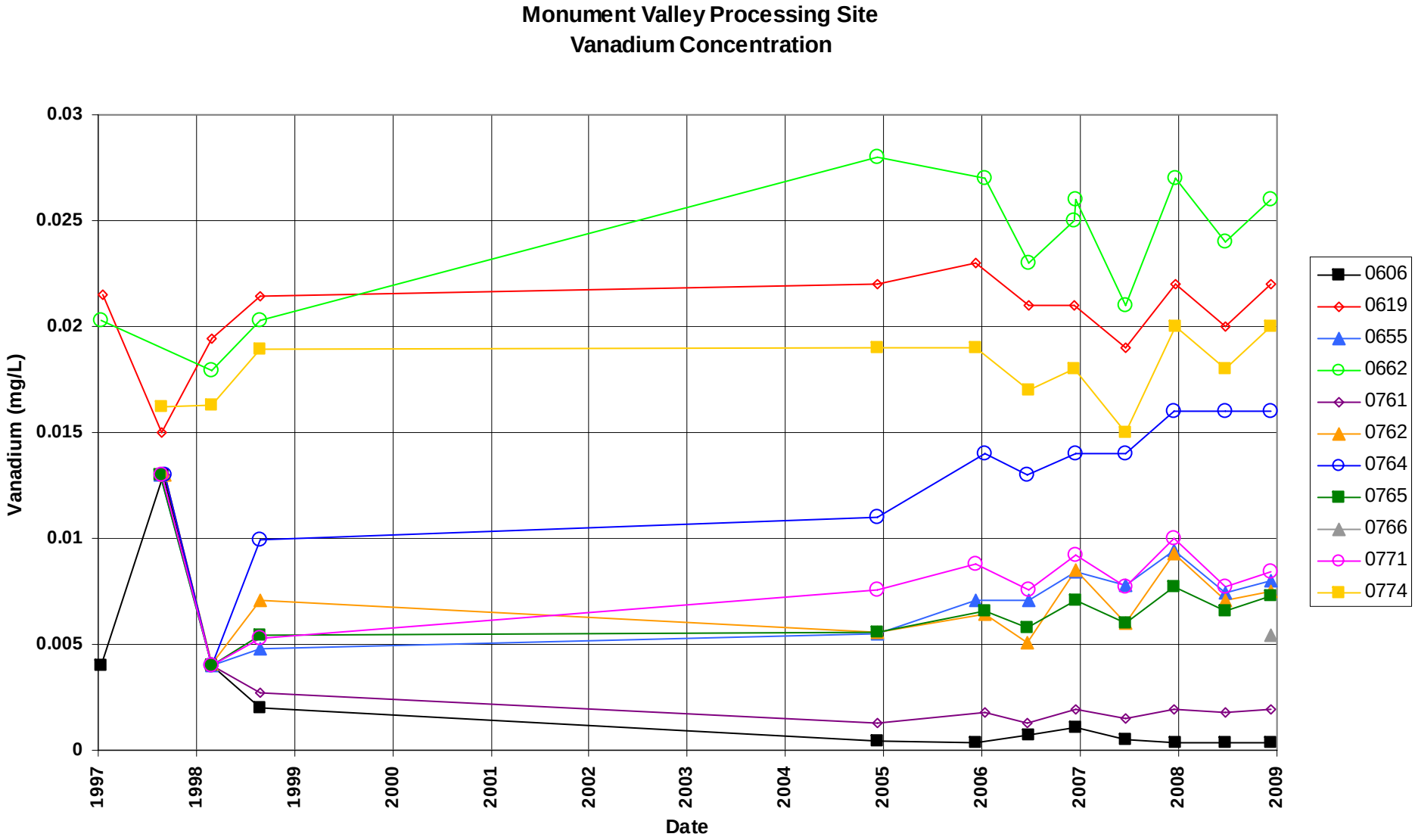

Monument Valley Processing Site
Vanadium Concentration
Vanadium (mg/L)
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
Date
0605
0648
0652
0653
0656
0657
0669
0768
0770
0772

-


Monument Valley Processing Site
Vanadium Concentration
Vanadium (mg/L)
0.03
0.025
0.02
0.015
0.01
0.005
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
Date
0606
0619
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Attachment 3
Sampling and Analysis Work Order

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Stoller established 1959

Task Order LM00-501
Control Number 09-0163

November 6, 2008

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

SUBJECT: Contract No. DE-AM01-07LM00060, Stoller
December 2008 Environmental Sampling at Monument Valley, Arizona

Reference: LM-501-02-114-402, Monument Valley, AZ, Disposal 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 disposal site. Water quality data will be collected from monitor wells at this site as part of the routine environmental sampling currently scheduled to begin the week of December 8, 2008.

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

Monitor Wells*

402 Al	617 Al	652 Al	662 Al	727 Nr	765 Al	771 Al
603 Al	619 Dc	653 Al	669 Al	760 Al	766 Al	772 Al
604 Al	648 Al	655 Al	711 Nr	761 Al	767 Al	774 Al
605 Al	650 Al	656 Al	715 Nr	762 Al	768 Al	777 Al
606 Al	651 Al	657 Dc	719 Nr	764 Al	770 Al	

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

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.

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

If you have any questions, please call me at extension 6652.

Sincerely,

Dave Miller
Site Lead

DM/lcg/lb
Enclosures (3)

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

Constituent Sampling Breakdown

Site	Monument Valley				
Analyte	Groundwater	Surface Water	Required Detection Limit (mg/L)	Analytical Method	Line Item Code
Approx. No. Samples/yr	38	0			
Field Measurements					
Alkalinity					
Dissolved Oxygen					
Redox Potential	X				
pH	X				
Specific Conductance	X				
Turbidity	X				
Temperature	X				
Laboratory Measurements					
Aluminum					
Ammonia as N (NH3-N)	X		0.1	EPA 350.1	WCH-A-005
Calcium					
Chloride	X		0.5	SW-846 9056	MIS-A_039
Chromium					
Magnesium					
Manganese					
Nitrate + Nitrite as N (NO3+NO2)-N	X		0.05	EPA 353.1	WCH-A-022
Potassium					
Sodium					
Strontium					
Sulfate	X		0.5	SW-846 9056	MIS-A-044
Uranium	X		0.0001	SW-846 6020	LMM-02
Vanadium	X		0.0003	SW-846 6020	IMM-02
Zinc					
Total No. of Analytes	6	0			

Note: All analyte samples are considered unfiltered unless stated otherwise. All private well samples are to be unfiltered. The total number of analytes does not include field parameters.

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Attachment 4
Trip Report

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Stoller established 1959
Grand Junction Office

Memorandum

Control Number N/A

DATE: December 23, 2008

TO: David Miller

FROM: Jeff Price

SUBJECT: Trip Report

Site: Monument Valley, Processing Site.

Dates of Sampling Event: December 8-11, 2008.

Team Members: Gretchen Baer, Kent Moe, Joe Trevino, and Jeff Price.

Number of Locations Sampled: 32 monitor wells, one surface location.

Locations Not Sampled/Reason: Private location 0617 and monitor well 0777 were not sampled at direction of project manager.

Location Specific Information: Turbidity could not be made on several wells. Well 0762 needs to be redeveloped. Well 0402, a flush mount, was full of loose sand, possibly deposited by flooding.

Field Variance: None.

Quality Control Sample Cross Reference: Following are the false identifications assigned to the quality control samples:

False ID	True ID	Sample Type	Ticket Number
2711	0772	Duplicate	GMR-597
2712	0650	Duplicate	GMR-598

Requisition Numbers Assigned: Samples were assigned to report identification number (RIN) 08111964.

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

Well Inspection Summary: Wind has removed sand from beneath the well pads at locations 0764 and 0760. This condition has caused the protective casing and concrete pad to become pedestalled and quite unstable.

Equipment: One YSI sonde failed to operate properly; a replacement sonde was delivered to the site. The check valve in well 0619 seems to be malfunctioning; water is draw backwards between pump cycles.

Regulatory: None.

Institutional Controls

Fences, Gates, Locks: OK.
Signs: Not applicable
Trespassing/Site Disturbances: None observed.

Site Issues: None.

Disposal Cell/Drainage Structure Integrity: Not applicable.
Vegetation/Noxious Weed Concerns: Not applicable.
Maintenance Requirements: Well pads mentioned earlier.

Access Issues: None.

Corrective Action Required/Taken: None.

JP/lcg

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