



SHP 000062



**DATA VALIDATION
SHIPROCK, NEW MEXICO
UMTRA SITE**

August 2003
Water Sampling

Prepared by the
U.S. Department of Energy
Grand Junction Office



SHP 410.02

SHIPROCK, NEW MEXICO

Sampled August 2003

DATA PACKAGE CONTENTS

This data package includes the following information:

- | <u>Item No.</u> | <u>Description of Contents</u> |
|-----------------|--|
| 1. | Site Hydrologist Summary. |
| 2. | Data Package Assessment , which includes the following: <ol style="list-style-type: none">Field activities verification checklist.Confirmation that chain-of-custody was maintained.Confirmation that holding time requirements were met.Evaluation of the adequacy of the QC sample results. |
| 3. | Data Assessment Summary , which describes problems identified in the data validation process and summarizes the validator's findings. |
| 4. | Minimum/Maximum Table , which lists data from this event that is outside the range of historical concentrations. |
| 5. | Anomalous Data Review Checksheets , which list the subset of data that merits explanation or follow-up action. The "Disposition" column of this report describes the evaluator's judgments on the listed anomalies. |
| 6. | UMTRA Database Printouts of analytical data organized as follows: <ol style="list-style-type: none">Ground-water quality data (included on disk).Surface-water quality data (included on disk).Equipment blank data (included on disk).Time versus concentration graphs.Static ground-water level data. |

Site Hydrologist Summary

Site: Shiprock, New Mexico

Sampling Period: August 25 to August 27, 2003

SUMMARY CRITERIA

1. **Did concentrations in water from any domestic wells sampled exceed a ground water standard, a primary drinking water standard, or health advisory?**

Domestic wells were not sampled during this event.

2. **Were standards exceeded at any point-of-compliance wells?**

Point-of-compliance wells have not been established at the Shiprock site.

3. **As a result of this sampling round, is there any indication of unexpected contaminated ground water movement?**

The distribution and rate of movement of contaminated ground water at the site was assessed in the Final Site Observational Work Plan (SOWP) issued in November 2000. Ground water sampling data from this sampling round did not indicate any unexpected movement of contaminated ground water outside of what was portrayed in the SOWP. Wells with sample concentrations that exceeded UMTRA ground water standards are listed in Table 1. Graphs that show nitrate, selenium, and uranium concentrations versus time for selected floodplain and terrace wells are included in this report.

4. **Is there statistical evidence that UMTRA Project related contaminants were detected in a surface body of water in greater concentrations than upstream ambient water quality?**

Surface water concentrations were compared to statistical benchmark values derived using data from 10 samplings of locations 0888 and 0898, which are upstream of the site on the San Juan River. Benchmark values were not exceeded at river locations adjacent to or downstream from the site; however, benchmark values were exceeded at other surface water locations and are listed in Table 2.

At locations 0887 and 0959, which are both on a distributary channel of the San Juan River, concentrations of nitrate, selenium, and uranium exceeded benchmark values at one or more locations. San Juan River water flows through the distributary channel when the river stage is high; however, at the time of this sampling, the river stage was low and no river water was entering the channel. Therefore, the elevated concentrations at 0887 and 0959 reflect contaminated ground water emerging in seeps from the terrace system to the south. The SOWP indicated no unacceptable risks associated with exposure to this surface water.

Site Hydrologist Summary (continued)

Other surface water locations listed in Table 2 receive discharge of ground water from the terrace system and elevated concentrations are expected. In addition, the surface water at most of these locations is ponded; therefore, the elevated concentrations may be partly attributed to concentration by evaporation.

Table 1. Shiprock Wells Exceeding Ground Water Standards in August 2003.

ANALYTE	STANDARD ¹	SITE	WELLS (AND CONCENTRATIONS ¹) EXCEEDING STANDARD
Nitrate	44.27	SHP01	0608 (2,280), 0614 (3,920), 0615 (5,120), 0618 (999), 0735 (1,080), 1008 (354)
Nitrate	44.27	SHP02	0817 (2,840), 0832 (2,610), 0835 (951), 0836 (82.2), 0838 (132), 0839 (2,520), 0841 (2,770), 0846 (103), 1060 (565), 1079 (284)
Selenium	0.01	SHP01	0614 (0.146), 0615 (1.27), 0618 (0.303), 0619 (0.158), 0735 (0.0573), 1008 (0.124)
Selenium	0.01	SHP02	0832 (3.26), 0835 (0.452), 0836 (0.163), 0838 (0.184), 0841 (3.04), 0846 (0.243), 1060 (0.863), 1079 (0.537)
Uranium	0.044	SHP01	0608 (1.75), 0614 (2.2), 0615 (4.23), 0618 (3.21), 0619 (0.764), 0735 (0.095), 1008 (2.58)
Uranium	0.044	SHP02	0817 (8.78), 0832 (0.155), 0835 (0.0577), 0836 (0.0536), 0839 (0.691), 0841 (0.106), 1060 (0.0492)

¹ Standards are listed in 40 CFR 192.02 Table 1 to subpart A; units are in mg/L.

Site Hydrologist Summary (continued)

Table 2. Locations that Exceeded Surface Water Benchmarks in August 2003.

LOCATION CODE	SITE CODE	LOCATION COMMENTS	ANALYTE	BENCH-MARK ¹	CONCENTRATION ¹
0887	SHP01	Distributary Channel	Selenium	0.0023	0.0112
			Uranium	0.0053	0.0141
0959	SHP01	Distributary Channel	Nitrate	4.55	127.0
			Selenium	0.0023	0.106
			Uranium	0.0053	0.0725
0425	SHP02	Seep	Nitrate	4.55	185
			Selenium	0.0023	0.0294
			Uranium	0.0053	0.636
0426	SHP02	Seep	Nitrate	4.55	69.5
			Selenium	0.0023	0.0477
			Uranium	0.0053	0.234
0786	SHP02	Seep	Nitrate	4.55	100
			Selenium	0.0023	0.0432
			Uranium	0.0053	0.0418
0884	SHP02	Lower irrigation return flow ditch	Nitrate	4.55	18
			Selenium	0.0023	0.0496
			Uranium	0.0053	0.0114
0889	SHP02	Many Devils Wash	Nitrate	4.55	3110
			Selenium	0.0023	1.26
			Uranium	0.0053	0.172
0933	SHP02	1 st Wash	Nitrate	4.55	48
			Selenium	0.0023	0.03
			Uranium	0.0053	0.0451
936	SHP02	Seep	Nitrate	4.55	659
			Selenium	0.0023	0.603
			Uranium	0.0053	0.0992
942	SHP02	Pond	Selenium	0.0023	0.0065
			Uranium	0.0053	0.0057

¹ Units are in milligrams per liter.

David Miller
David Miller
Site Lead

10/16/03
Date

Ken Pill
Ken Pill
Site Hydrologist

10/16/03
Date

DATA ASSESSMENT

Water Sampling Field Activities Verification Checklist

Project Shiprock
 Date(s) of Verification 10-10-03

Date(s) of Water Sampling Aug 25 to 27, 2003
 Name of Verifier Sam Campbell

Response Comments
 (Yes, No, N/A)

1. Is the SAP the primary document directing field procedures?

Yes

List other documents, SOP's, instructions.

Sampling work order dated 9-11-03

2. Were the sampling locations specified in the planning documents sampled?

Yes

Except for wells 734 and 736, and surface locations 655, 885, and 934 - all dry
Except date of primary turbidimeter cal was not documented on one of the meters.

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 twice daily?

Yes

Except no op check on one meter on 8-25-03
No op check recorded for turbidity on 8-27-03

Did the operational checks meet criteria?

Yes

5. Were the number and types (alkalinity, temperature, Ec, pH, turbidity, DO, ORP) of field measurements taken as specified?

Yes

Except turbidity at location 959

6. Was the Category of the well documented?

Yes

Except at well 846

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

Could not verify water level at 832 - below top of pump.

Did pH, specific conductance, and turbidity measurements stabilize prior to sampling?

Yes

Except turbidity and specific conductance at 1060

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?

No

839 and 1060 had pumps installed and were sampled prior to 4hrs.

8. Were the following conditions met when purging a Category II well:

Was the flow rate less than 500 mL/min?

NA

Water Sampling Field Activities Verification Checklist (continued)

- | | | |
|---|------------|-------|
| Was one pump/tubing volume removed prior to sampling? | <u>NA</u> | _____ |
| 9. Were duplicates taken at a frequency of one per 20 samples? | <u>Yes</u> | _____ |
| 10. Were equipment blanks taken at a frequency of one per 20 samples that were collected with nondedicated equipment? | <u>Yes</u> | _____ |
| 11. Were trip blanks prepared and included with each shipment of VOC samples? | <u>NA</u> | _____ |
| 12. Were QC samples assigned a fictitious site identification number? | <u>Yes</u> | _____ |
| Was the true identity of the samples recorded on the Quality Assurance Sample Log? | <u>Yes</u> | _____ |
| 13. Were samples collected in the containers specified? | <u>Yes</u> | _____ |
| 14. Were samples filtered and preserved as specified? | <u>Yes</u> | _____ |
| 15. Were the number and types of samples collected as specified? | <u>Yes</u> | _____ |
| 16. Were chain of custody records completed and was sample custody maintained? | <u>Yes</u> | _____ |
| 17. Are field data sheets signed and dated by both team members? | <u>Yes</u> | _____ |
| 18. Was all other pertinent information documented on the field data sheets? | <u>Yes</u> | _____ |
| 19. Was the presence or absence of ice in the cooler documented at every sample location? | <u>Yes</u> | _____ |
| 20. Were water levels measured at the locations specified in the planning documents? | <u>Yes</u> | _____ |

DATA PACKAGE ASSESSMENT

REQUISITION NUMBERS: 18592 SITE: Ship rock LABORATORY: GJO ANALYSIS DATES: 8-29 to 9-22-03

REVIEWER: Sam Campbell Sam Campbell 9-26-03
NAME (print) SIGNATURE DATE

	ICP-MS	ICP-AES	GFAA	FAA	NaBH ₄	AS	LSc	PC	IC	Gravimetric	Colorimetric	Other
CHAIN OF CUSTODY	<u>OK</u>	<u>OK</u>	<u>NA</u>	<u>NA</u>	<u>OK</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>OK</u>	<u>OK</u>	<u>OK</u>	<u>NA</u>
HOLDING TIME	<u>OK</u>	<u>OK</u>			<u>OK</u>				<u>①</u>	<u>②</u>	<u>①</u>	
CALIB. VERIFICATION (For AS, internal tracer)	<u>OK</u>	<u>OK</u>			<u>OK</u>				<u>OK</u>	<u>NA</u>	<u>OK</u>	
PREP. BLANKS (Only if digestion)	<u>NA</u>	<u>NA</u>			<u>NA</u>	↓	↓	↓	<u>NA</u>	<u>NA</u> ^{AS 9-26-03} <u>OK</u>	<u>NA</u>	
INT/CONT CAL. BLANKS	<u>③</u>	<u>④</u>	↓	↓	<u>OK</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>OK</u>	<u>NA</u>	<u>OK</u>	
ICP SERIAL DILUTION	<u>OK</u>	<u>OK</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>	
ICS (ICP only)	<u>NA</u>	<u>OK</u>			<u>NA</u>				<u>NA</u>	<u>NA</u>	<u>NA</u>	
LAB. CONTROL SAMPLE	<u>OK</u>	<u>OK</u>			<u>OK</u>				<u>OK</u>	<u>OK</u>	<u>NA</u>	
DUPLICATES	<u>OK</u>	<u>OK</u>			<u>OK</u>	↓	↓	↓	<u>OK</u>	<u>OK</u>	<u>OK</u>	
POSTDIGEST. SPKS. (Only if MS fails)	<u>NA</u>	<u>NA</u>			<u>NA</u>				<u>NA</u>	<u>NA</u>	<u>NA</u>	
MATRIX SPKS.	<u>OK</u>	<u>OK</u>			<u>OK</u>				<u>OK</u>	<u>NA</u>	<u>OK</u>	
OVERALL ASSESS.	<u>OK</u>	<u>OK</u>	↓	↓	<u>OK</u>	↓	↓	↓	<u>OK</u>	—	<u>OK</u>	↓

REVIEWER COMMENTS:
 ①. NO₂ and NH₄ analyses performed on unpreserved samples; therefore, holding time was exceeded.
 ④. Ca, Mn, K, and Sr detected in CCBs - no samples affected.

ITEMS REQUIRING ATTENTION:
 ① J flag all NO₂ and NH₄ results. ② J flag TDS results 298607, 609, 622, 625, and 626.
 ③ U flag U results 298596 and 298611 because of CCB contamination. ④ U flag Mg and Na results from samples 298596 and 298620 because of CCB contamination.

**SHIPROCK, NEW MEXICO
AUGUST 2003 SAMPLING
DATA ASSESSMENT SUMMARY**

The DOE-GJO Analytical Laboratory analyzed samples and reported results for this sampling event under requisition number 18592.

METALS AND MAJOR CATIONS ANALYSIS

The determination of calcium, magnesium, manganese, potassium, sodium, and strontium were performed by inductively coupled plasma-atomic emission spectrometry (ICP-AES). Uranium was analyzed by inductively coupled plasma-mass spectrometry (ICP-MS). Selenium was determined by hydride generation atomic absorption spectroscopy (NaBH₄).

Several metal/cation results were qualified with a "U" flag (nondetect) because of continuing calibration blank contamination. Qualified results are listed on the *Data Package Assessment* form, and the flags are listed in the data qualifiers column of the database printouts.

INORGANIC ANALYSIS

Chloride, nitrate, and sulfate were determined by ion chromatography (IC). Ammonium was determined by spectrophotometry (colorimetry), and total dissolved solids (TDS) were determined gravimetrically.

All ammonium and nitrate were qualified with a "J" flag (estimated) because the holding time was exceeded prior to analysis. Several TDS results also were qualified with a "J" flag in the database because the holding time was exceeded prior to analysis. Qualified results are listed on the *Data Package Assessment* form, and the flags are listed in the data qualifiers column of the database printouts.

FIELD ANALYSES/ACTIVITIES

Two equipment blanks were collected and analyzed for the same constituents as the Shiprock environmental samples. All concentrations measured in the equipment blanks were below the contract required detection limit (CRDL); therefore, equipment blank results are considered acceptable.

Two field duplicates were collected during the sampling event. There are no established regulatory criteria for the evaluation of field duplicate samples; therefore, EPA guidance for *laboratory* duplicates (which is conservative for field duplicates) was used to assess the precision of the field duplicates. Field duplicate results met the laboratory criteria (20 relative percent difference) and are considered acceptable.

Results from all wells were qualified with an "F" flag in the database indicating that the well was purged and sampled using the low-flow method. Results from wells 0797 and 0839 were qualified with a "Q" flag in the database. The "Q" flag indicates that the data is qualitative because the well did not recover adequately to be sampled with the low-flow method.

ANOMALOUS DATA REVIEW

Data from this sampling event were compared to historical minimum and maximum values to assess potential anomalies. Data from this sampling event that are outside the historical data range are listed in the Minimum/Maximum Table. Results that were greater than 150 percent of the historical maximum value or less than 50 percent of the historical minimum value (excluding results with less than 5 historical data points) are considered potentially anomalous and are listed on the Anomalous Data Review Checksheet.


The TDS result from surface location 0956 was qualified with an "R" flag (unusable) in the database. This result was below the detection limit, which did not agree with concentrations of major ions and the specific conductance measured in the sample.

Several results from the March 2003 sampling event were listed on the Anomalous Data Review Checksheet included in the March 2003 data validation package. The disposition of these results was to compare them to results from this sampling event to make a final determination of validity. As a result of the comparison, ammonium results from well 0618 and surface location 0936 were qualified with an "R" flag (unusable) in the database. Several results from location 0885 were designated for comparison to the results from this event; however, location 0885 was not sampled during this event (dry). These results are listed again on the Anomalous Data Review Checksheet and will be compared to results from the next event if the location is sampled. All other results listed on the checksheet in the March 2003 data validation package are now considered valid and final, with no additional follow up required.

SUMMARY

All analytical quality control criteria were met except as qualified on the Ground Water Quality Data by Parameter, Surface Water Quality by Parameter, or equipment blank database printouts. The meaning of data qualifiers is as defined on the GJO database printout or as defined in the USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, Multi-Media Multi-Concentration, Document Number ILMO2.0, 1991. All data in this package are considered validated and may be treated as final results.

A disk copy of the ground water, surface water, and equipment blank database printouts with the qualifiers incorporated are included in this package.



Sam Campbell
Data Validation Lead

10-15-03
Date

MINIMUM/MAXIMUM TABLE

SAMPLING DATA VALIDATION MINIMUMS AND MAXIMUMS REPORT

LAB REQUISITION(S): 18592

REPORT DATE: 10/14/03 08:59:25: AM

SITE CODE	LOCATION CODE	SAMPLE DATE	ANALYTE	RESULT	QUALIFIER S	MAXIMUM	MAXIMUM LAB DATA	MINIMUM	MINIMUM LAB DATA	N	N BELOW
SHP01	0615	08/26/2003	Alkalinity, Total (As CaCO3)	936	F	860		489		23	0
SHP01	0615	08/26/2003	Calcium	521	F	510		297		21	0
SHP01	0615	08/26/2003	Chloride	911	F	760	F	381	L	21	0
SHP01	0615	08/26/2003	Magnesium	3220	F	2960	F	1252		21	0
SHP01	0615	08/26/2003	Potassium	231	F	182	F	102		19	0
SHP01	0615	08/26/2003	Sodium	5830	F	5000	F	1650		21	0
SHP01	0615	08/26/2003	Specific Conductance	32594	F	27945	F	5610		17	0
SHP01	0615	08/26/2003	Strontium	17	F	14.4	F	7.65		21	0
SHP01	0615	08/26/2003	Sulfate	23100	F	19900	F	6230	H	21	0
SHP01	0615	08/26/2003	Total Dissolved Solids	43500	F	28900		14480		21	0
SHP01	0615	08/26/2003	Turbidity	3.79	F	1000	>	5		10	0
SHP01	0615	08/26/2003	Uranium	4.23	F	4.07		1.64		21	0
SHP01	0618	08/26/2003	Alkalinity, Total (As CaCO3)	1112	F	1035	F	340		9	0
SHP01	0618	08/26/2003	Chloride	681	F	652	F	63.9		7	0
SHP01	0618	08/26/2003	Magnesium	1760	F	1750	F	424		7	0
SHP01	0618	08/26/2003	Sodium	3270	F	3260	F	524		7	0
SHP01	0618	08/26/2003	Specific Conductance	19830	F	19185	F	3190		7	0
SHP01	0618	08/26/2003	Sulfate	14100	F	13300	F	3960		7	0
SHP01	0618	08/26/2003	Uranium	3.21	F	3.12	F	0.415		7	0
SHP01	0619	08/26/2003	Ammonia Total as NH4	0.0116	B JF	273		1.88		24	0
SHP01	0619	08/26/2003	Calcium	341	F	490		348	F	27	0
SHP01	0619	08/26/2003	Nitrate as NO3	3.96	JF	1600		10		26	0
SHP01	0797	08/25/2003	Alkalinity, Total (As CaCO3)	291	FQ	349	L	310	L	7	0
SHP01	0850	08/25/2003	Alkalinity, Total (As CaCO3)	247	F	366	L	289	F	19	0
SHP01	0850	08/25/2003	Potassium	2.52	F	7.12	L	2.64	F	10	0
SHP01	0850	08/25/2003	Sodium	413	F	1350	F	453	F	10	0

SAMPLING DATA VALIDATION MINIMUMS AND MAXIMUMS REPORT

LAB REQUISITION(S): 18592

REPORT DATE: 10/14/03 08:59:27: AM

SITE CODE	LOCATION CODE	SAMPLE DATE	ANALYTE	RESULT	QUALIFIER S	MAXIMUM	MAXIMUM LAB DATA	MINIMUM	MINIMUM LAB DATA	N	N BELOW
SHP01	0850	08/25/2003	Total Dissolved Solids	1640	F	3270	L	2210		6	0
SHP01	0897	08/26/2003	Potassium	3.32		3.05		1.52		13	0
SHP01	0897	08/26/2003	Uranium	0.003		0.0028		0.00042	B	13	0
SHP01	0898	08/25/2003	Manganese	0.0016	B	0.0396		0.003	B	12	0
SHP01	0940	08/26/2003	Alkalinity, Total (As CaCO3)	145		132		74		17	0
SHP01	0940	08/26/2003	Manganese	0.0018	B	0.107		0.0025	B	12	0
SHP01	0956	08/26/2003	Manganese	0.0026	B	0.468		0.0059	B	10	0
SHP01	0956	08/26/2003	Potassium	3.38		3.09		2		10	0
SHP01	0956	08/26/2003	Total Dissolved Solids	10	U	430		297		6	0
SHP01	0959	08/27/2003	Alkalinity, Total (As CaCO3)	348		472		464		4	0
SHP01	0959	08/27/2003	Chloride	132		287		172		4	0
SHP01	0959	08/27/2003	Nitrate as NO3	127	J	420		171		4	0
SHP01	0959	08/27/2003	Potassium	16.2		20		16.5		4	0
SHP01	0959	08/27/2003	Sodium	834		1110		895		4	0
SHP01	0959	08/27/2003	Strontium	7.23		7.81		7.3		4	0
SHP01	0959	08/27/2003	Uranium	0.0725		0.0908		0.0766		4	0
SHP01	1203	08/25/2003	Alkalinity, Total (As CaCO3)	139		128		111		6	0
SHP01	1203	08/25/2003	Ammonia Total as NH4	0.0559	B J	0.0318	B	0.0047	U	5	3
SHP01	1203	08/25/2003	Manganese	0.0028	B	0.031		0.0083	B	5	0
SHP01	1203	08/25/2003	Nitrate as NO3	2.57	J	1.31		0.0422	B	5	0
SHP01	1203	08/25/2003	Selenium	0.00089	B	0.00075	B	0.0001	U	5	1
SHP01	1203	08/25/2003	Sulfate	209		165		136		5	0
SHP01	1203	08/25/2003	Uranium	0.0031		0.0027		0.0018		5	0
SHP01	1205	08/26/2003	Manganese	0.00099	B	0.0508		0.0023	B	11	0
SHP01	1205	08/26/2003	Potassium	3.06		2.98		2.18		9	0
SHP02	0425	08/26/2003	Total Dissolved Solids	10400	J	9570		5680		15	0

SAMPLING DATA VALIDATION MINIMUMS AND MAXIMUMS REPORT

LAB REQUISITION(S): 18592

REPORT DATE: 10/14/03 08:59:28: AM

SITE CODE	LOCATION CODE	SAMPLE DATE	ANALYTE	RESULT	QUALIFIER		MAXIMUM	MAXIMUM		MINIMUM		N	N BELOW
					S	J		LAB	DATA	LAB	DATA		
SHP02	0425	08/26/2003	Turbidity	2.71			1000	>	3.47			5	0
SHP02	0426	08/26/2003	Total Dissolved Solids	6220			9800		6590			14	0
SHP02	0426	08/26/2003	Turbidity	0.54			48		0.67			6	0
SHP02	0662	08/26/2003	Nitrate as NO3	0.0178	U	J	85.6		0.543	B		17	0
SHP02	0786	08/26/2003	Calcium	392			478		413			6	0
SHP02	0786	08/26/2003	Chloride	93.2			184		145			6	0
SHP02	0786	08/26/2003	Selenium	0.0432			0.179		0.152			6	0
SHP02	0786	08/26/2003	Strontium	6.63			7.46		6.71			6	0
SHP02	0786	08/26/2003	Sulfate	4430			4190		3550			7	0
SHP02	0817	08/27/2003	Alkalinity, Total (As CaCO3)	1360	F		1341	F	1197	F		4	0
SHP02	0817	08/27/2003	Ammonia Total as NH4	1030	JF		923	F	688	L		5	0
SHP02	0817	08/27/2003	Potassium	184	F		230	L	189	F		5	0
SHP02	0832	08/27/2003	Chloride	856	F		832	F	114			9	0
SHP02	0832	08/27/2003	Magnesium	1440	F		1340	F	285			9	0
SHP02	0832	08/27/2003	Nitrate as NO3	2610	JF		2360	F	240			11	0
SHP02	0832	08/27/2003	Sodium	3600	F		3440	F	756			9	0
SHP02	0832	08/27/2003	Specific Conductance	20460	F		18840	F	1225	L		11	0
SHP02	0832	08/27/2003	Sulfate	12800	F		11500	F	2760			11	0
SHP02	0832	08/27/2003	Total Dissolved Solids	23500	JF		16100	JL	5280			6	0
SHP02	0832	08/27/2003	Uranium	0.155	F		0.135	F	0.023			11	0
SHP02	0835	08/27/2003	Chloride	284	F		178	F	13.4			10	1
SHP02	0835	08/27/2003	Magnesium	363	F		260	F	92.9			10	0
SHP02	0835	08/27/2003	Nitrate as NO3	951	JF		621	F	23.2			12	0
SHP02	0835	08/27/2003	Potassium	10.6	F		9.59	F	4.29	E	J	10	0
SHP02	0835	08/27/2003	Selenium	0.452	F		0.326	F	0.037			11	0
SHP02	0835	08/27/2003	Sodium	800	F		500	F	114			10	0

SAMPLING DATA VALIDATION MINIMUMS AND MAXIMUMS REPORT

LAB REQUISITION(S): 18592

REPORT DATE: 10/14/03 08:59:29: AM

SITE CODE	LOCATION CODE	SAMPLE DATE	ANALYTE	RESULT	QUALIFIER S	MAXIMUM	MAXIMUM LAB DATA	MINIMUM	MINIMUM LAB DATA	N	N BELOW
SHP02	0835	08/27/2003	Strontium	7.72	F	7.02	F	3.13		10	0
SHP02	0835	08/27/2003	Sulfate	3490	F	3120	F	882		12	0
SHP02	0835	08/27/2003	Total Dissolved Solids	7300	F	3740		2200		7	0
SHP02	0835	08/27/2003	Turbidity	0.93	F	12.8		1.06	F	10	0
SHP02	0835	08/27/2003	Uranium	0.0577	F	0.0453	F	0.0258		12	0
SHP02	0836	08/26/2003	Sodium	506	F	488		281		10	0
SHP02	0836	08/26/2003	Sodium	500	F	488		281		10	0
SHP02	0836	08/26/2003	Total Dissolved Solids	4820	F	5970		4860		7	0
SHP02	0836	08/26/2003	Turbidity	3.11	F	118		3.45	F	11	0
SHP02	0838	08/27/2003	Chloride	54.1	F	50.2	F	12.8		9	0
SHP02	0838	08/27/2003	Manganese	0.0328	F	0.0245	F	0.00035	B	11	4
SHP02	0838	08/27/2003	Nitrate as NO3	132	JF	105	F	11.2		12	0
SHP02	0838	08/27/2003	Selenium	0.184	F	0.167	F	0.0272		11	0
SHP02	0838	08/27/2003	Sodium	213	F	188	F	91.9		9	0
SHP02	0838	08/27/2003	Specific Conductance	3333	F	3258	F	2070		12	0
SHP02	0838	08/27/2003	Total Dissolved Solids	3340	F	3080		2240		7	0
SHP02	0839	08/27/2003	Magnesium	2150	FQ	2130	Q	1680	L	9	0
SHP02	0839	08/27/2003	Sodium	1910	FQ	2140		1950	L	9	0
SHP02	0839	08/27/2003	Specific Conductance	17084	FQ	16626	Q	13860		12	0
SHP02	0839	08/27/2003	Uranium	0.691	FQ	0.627	Q	0.378	L	12	0
SHP02	0841	08/27/2003	Specific Conductance	24620	F	24420	F	16510		13	0
SHP02	0841	08/27/2003	Turbidity	2.17	F	337		2.56	F	10	0
SHP02	0846	08/26/2003	Calcium	398	F	611		443	F	9	0
SHP02	0846	08/26/2003	Chloride	31.8	F	135		52.2	F	9	0
SHP02	0846	08/26/2003	Magnesium	163	F	252	F	189	F	9	0
SHP02	0846	08/26/2003	Nitrate as NO3	103	JF	547		161	F	11	0

SAMPLING DATA VALIDATION MINIMUMS AND MAXIMUMS REPORT

LAB REQUISITION(S): 18592

REPORT DATE: 10/14/03 08:59:30: AM

SITE CODE	LOCATION CODE	SAMPLE DATE	ANALYTE	RESULT	QUALIFIER S	MAXIMUM	MAXIMUM LAB DATA	MINIMUM	MINIMUM LAB DATA	N	N BELOW
SHP02	0846	08/26/2003	Potassium	6.15	F	10.9	E JF	7.88		9	0
SHP02	0846	08/26/2003	Selenium	0.243	F	0.931		0.349	F	10	0
SHP02	0846	08/26/2003	Sodium	383	F	660		459		9	0
SHP02	0846	08/26/2003	Specific Conductance	3717	F	5640		4070		12	0
SHP02	0846	08/26/2003	Strontium	4.37	F	6.48		4.89	F	9	0
SHP02	0846	08/26/2003	Total Dissolved Solids	3570	F	5660		4650		6	0
SHP02	0846	08/26/2003	Uranium	0.0324	F	0.047		0.034	F	11	0
SHP02	0884	08/26/2003	Alkalinity, Total (As CaCO3)	202		304		229		17	0
SHP02	0884	08/26/2003	Calcium	233		544		412		12	0
SHP02	0884	08/26/2003	Chloride	24.7		69.7		33.2		12	0
SHP02	0884	08/26/2003	Magnesium	64.3		194		129		12	0
SHP02	0884	08/26/2003	Nitrate as NO3	18	J	200		28		13	0
SHP02	0884	08/26/2003	Selenium	0.0496		0.39		0.131		12	0
SHP02	0884	08/26/2003	Sodium	119		388		181		12	0
SHP02	0884	08/26/2003	Specific Conductance	1883		4040		2053		10	0
SHP02	0884	08/26/2003	Strontium	2.51		5.55		4.16		12	0
SHP02	0884	08/26/2003	Sulfate	903		2340		1700		13	0
SHP02	0884	08/26/2003	Total Dissolved Solids	1650		3900		3380	* J	8	0
SHP02	0884	08/26/2003	Uranium	0.0114		0.039		0.0245		13	0
SHP02	0889	08/26/2003	Manganese	0.0041	B	0.123		0.005	B	12	1
SHP02	0889	08/26/2003	Potassium	42.5		117		42.7		12	0
SHP02	0933	08/27/2003	Potassium	32.1		23		12.9		9	0
SHP02	0933	08/27/2003	Selenium	0.03		0.307		0.047		9	0
SHP02	0933	08/27/2003	Strontium	7.91		7.58		6.37		9	0
SHP02	0933	08/27/2003	Turbidity	1000	>	163		12.8		4	0
SHP02	0933	08/27/2003	Uranium	0.0451		0.0978		0.0555		11	0

SAMPLING DATA VALIDATION MINIMUMS AND MAXIMUMS REPORT

LAB REQUISITION(S): 18592

REPORT DATE: 10/14/03 08:59:31: AM

SITE CODE	LOCATION CODE	SAMPLE DATE	ANALYTE	RESULT	QUALIFIER S	MAXIMUM	MAXIMUM LAB DATA	MINIMUM	MINIMUM LAB DATA	N	N BELOW
SHP02	0936	08/27/2003	Total Dissolved Solids	9200		5140		4140		6	0
SHP02	0942	08/26/2003	Alkalinity, Total (As CaCO3)	149		291		232		18	0
SHP02	0942	08/26/2003	Calcium	139		556		263		11	0
SHP02	0942	08/26/2003	Chloride	15		102		16.8		11	0
SHP02	0942	08/26/2003	Magnesium	24.5		237		33.9		11	0
SHP02	0942	08/26/2003	Potassium	3.4		8.15		4.39		11	0
SHP02	0942	08/26/2003	Sodium	49.1		474		68.6		11	0
SHP02	0942	08/26/2003	Specific Conductance	1027		4970		1300		11	0
SHP02	0942	08/26/2003	Strontium	1.47		6.52		2.36		11	0
SHP02	0942	08/26/2003	Sulfate	393		2640		766		12	0
SHP02	0942	08/26/2003	Total Dissolved Solids	810		3900		3540	* J	6	0
SHP02	0942	08/26/2003	Uranium	0.0057		0.0403		0.0092		12	0

SAMPLING DATA VALIDATION MINIMUMS AND MAXIMUMS REPORT

LAB REQUISITION(S): 18592

REPORT DATE: 10/14/03 08:59:31: AM

SITE CODE	LOCATION CODE	SAMPLE DATE	ANALYTE	RESULT	QUALIFIER S	MAXIMUM LAB DATA	MAXIMUM LAB DATA	MINIMUM LAB DATA	MINIMUM LAB DATA	N	N BELOW
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SAMPLE ID CODES: 000X = Filtered sample (0.45 µm). N00X = Unfiltered sample. X = replicate number.

LAB QUALIFIERS:

- * Replicate analysis not within control limits.
- + Correlation coefficient for MSA < 0.995.
- A TIC is a suspected aldol-condensation product.
- B Inorganic: Result is between the IDL and CRDL. Organic: Analyte also found in method blank.
- E Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
- Z Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- H Holding time expired, value suspect.
- I Increased detection limit due to required dilution.
- C Pesticide result confirmed by GC-MS.
- M GFAA duplicate injection precision not met.
- N Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compound (TIC).
- S Result determined by method of standard addition (MSA).
- U Analytical result below detection limit.
- W Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
- D Analyte determined in diluted sample.
- P > 25% difference in detected pesticide or Arochlor concentrations between 2 columns.
- X Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- Y Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- > Result above upper detection limit.
- J Estimated

DATA QUALIFIERS:

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

DATA REVIEW CHECKSHEET

ANOMALOUS DATA REVIEW CHECKSHEET

SITE: Shiprock SAMPLING DATA: Groundwater/Surface water

REVIEWER(s): Sam Campbell Sam Campbell 10-14-03
NAME (print) SIGNATURE DATE

SITE HYDROLOGIST: _____
NAME (print) SIGNATURE DATE

DATE OF REVIEW: 10-14-03

LOC. NO.	ANALYTE	TYPE OF ANOMALY	site	DISPOSITION
0615	TDS	High	SH001	Compare to results from next event
0619	NH ₄	Low	SH001	↓ R flag result Compare to results from next event
↓	NO ₃	↓		
0956	TDS	↓		
1203	NH ₄	High		
↓	Mn	Low		
↓	NO ₃	High		
1205	Mn	Low		
0662	NO ₃	↓		
0786	Se	↓		
0835	Na	High		
↓	TDS	↓		
0884	Se	Low		
↓	TDS	↓		
↓	U	↓		
0936	TDS	High		
0942	TDS	Low		
0885	NH ₄	High		
↓	NO ₃	↓		
↓	K	↓		

March 2003 {

GROUND-WATER QUALITY DATA

CLASSIC GROUND WATER QUALITY DATA BY PARAMETER WITH ZONE (USEE201) FOR SITE SHP01, SHIPROCK
 REPORT DATE: 10/14/2003 3:52 pm

PARAMETER	UNITS	LOCATION ID	LOCATION TYPE	SAMPLE: DATE	ID	ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Alkalinity, Total (As CaCO3	mg/L	0608	WL	08/25/2003	0001	KM		893	F #	-	-
	mg/L	0614	WL	08/26/2003	0001	AL		611	F #	-	-
	mg/L	0615	WL	08/26/2003	0001	AL		936	F #	-	-
	mg/L	0618	WL	08/26/2003	0001	AL		1112	F #	-	-
	mg/L	0619	WL	08/26/2003	0001	AL		579	F #	-	-
	mg/L	0735	WL	08/25/2003	0001	AL		507	F #	-	-
	mg/L	0797	WL	08/25/2003	0001	AL		291	FQ #	-	-
	mg/L	0850	WL	08/25/2003	0001	AL	B	247	F #	-	-
	mg/L	1008	WL	08/26/2003	0001	AL		1116	F #	-	-
Ammonia Total as NH4	mg/L	0608	WL	08/25/2003	0001	KM		391.000	JF #	0.0054	-
	mg/L	0614	WL	08/26/2003	0001	AL		52.400	JF #	0.0054	-
	mg/L	0615	WL	08/26/2003	0001	AL		36.600	JF #	0.0054	-
	mg/L	0618	WL	08/26/2003	0001	AL		76.400	JF #	0.0054	-
	mg/L	0619	WL	08/26/2003	0001	AL		0.0116	B JF #	0.0054	-
	mg/L	0735	WL	08/25/2003	0001	AL		15.300	JF #	0.0054	-
	mg/L	0797	WL	08/25/2003	0001	AL		0.0587	B JFQ #	0.0054	-
	mg/L	0850	WL	08/25/2003	0001	AL	B	0.0404	B JF #	0.0054	-
	mg/L	1008	WL	08/26/2003	0001	AL		20.000	JF #	0.0054	-
Calcium	mg/L	0608	WL	08/25/2003	0001	KM		450.000	F #	0.399	-
	mg/L	0614	WL	08/26/2003	0001	AL		486.000	F #	0.399	-
	mg/L	0615	WL	08/26/2003	0001	AL		521.000	F #	0.399	-
	mg/L	0618	WL	08/26/2003	0001	AL		448.000	F #	0.399	-
	mg/L	0619	WL	08/26/2003	0001	AL		341.000	F #	0.399	-
	mg/L	0735	WL	08/25/2003	0001	AL		198.000	F #	0.399	-
	mg/L	0797	WL	08/25/2003	0001	AL		68.900	FQ #	0.399	-
	mg/L	0850	WL	08/25/2003	0001	AL	B	66.400	F #	0.399	-

CLASSIC GROUND WATER QUALITY DATA BY PARAMETER WITH ZONE (USEE201) FOR SITE SHP01, SHIPROCK
 REPORT DATE: 10/14/2003 3:52 pm

PARAMETER	UNITS	LOCATION ID	LOCATION TYPE	SAMPLE: DATE	ID	ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Calcium	mg/L	1008	WL	08/26/2003	0001	AL		459.000	F #	0.399	-
Chloride	mg/L	0608	WL	08/25/2003	0001	KM		362.000	F #	0.172	-
	mg/L	0614	WL	08/26/2003	0001	AL		547.000	F #	0.172	-
	mg/L	0615	WL	08/26/2003	0001	AL		911.000	F #	0.172	-
	mg/L	0618	WL	08/26/2003	0001	AL		681.000	F #	0.172	-
	mg/L	0619	WL	08/26/2003	0001	AL		384.000	F #	0.172	-
	mg/L	0735	WL	08/25/2003	0001	AL		205.000	F #	0.172	-
	mg/L	0797	WL	08/25/2003	0001	AL		29.900	FQ #	0.0172	-
	mg/L	0850	WL	08/25/2003	0001	AL	B	63.900	F #	0.0172	-
	mg/L	1008	WL	08/26/2003	0001	AL		972.000	F #	0.172	-
Magnesium	mg/L	0608	WL	08/25/2003	0001	KM		1630.000	F #	0.019	-
	mg/L	0614	WL	08/26/2003	0001	AL		2390.000	F #	0.019	-
	mg/L	0615	WL	08/26/2003	0001	AL		3220.000	F #	0.019	-
	mg/L	0618	WL	08/26/2003	0001	AL		1760.000	F #	0.019	-
	mg/L	0619	WL	08/26/2003	0001	AL		825.000	F #	0.019	-
	mg/L	0735	WL	08/25/2003	0001	AL		367.000	F #	0.019	-
	mg/L	0797	WL	08/25/2003	0001	AL		16.200	FQ #	0.019	-
	mg/L	0850	WL	08/25/2003	0001	AL	B	13.500	F #	0.019	-
	mg/L	1008	WL	08/26/2003	0001	AL		1980.000	F #	0.019	-
Manganese	mg/L	0608	WL	08/25/2003	0001	KM		6.980	F #	0.0005	-
	mg/L	0614	WL	08/26/2003	0001	AL		5.710	F #	0.0005	-
	mg/L	0615	WL	08/26/2003	0001	AL		7.740	F #	0.0005	-
	mg/L	0618	WL	08/26/2003	0001	AL		10.500	F #	0.0005	-
	mg/L	0619	WL	08/26/2003	0001	AL		4.640	F #	0.0005	-
	mg/L	0735	WL	08/25/2003	0001	AL		1.510	F #	0.0005	-
	mg/L	0797	WL	08/25/2003	0001	AL		0.424	FQ #	0.0005	-

CLASSIC GROUND WATER QUALITY DATA BY PARAMETER WITH ZONE (USEE201) FOR SITE SHP01, SHIPROCK
 REPORT DATE: 10/14/2003 3:52 pm

PARAMETER	UNITS	LOCATION ID	LOCATION TYPE	SAMPLE: DATE	ID	ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Manganese	mg/L	0850	WL	08/25/2003	0001	AL	B	0.743	F #	0.0005	-
	mg/L	1008	WL	08/26/2003	0001	AL		5.960	F #	0.0005	-
Nitrate as NO3	mg/L	0608	WL	08/25/2003	0001	KM		2280.000	JF #	1.78	-
	mg/L	0614	WL	08/26/2003	0001	AL		3920.000	JF #	3.56	-
	mg/L	0615	WL	08/26/2003	0001	AL		5120.000	JF #	3.56	-
	mg/L	0618	WL	08/26/2003	0001	AL		999.000	JF #	0.178	-
	mg/L	0619	WL	08/26/2003	0001	AL		3.960	JF #	0.0178	-
	mg/L	0735	WL	08/25/2003	0001	AL		1080.000	JF #	0.89	-
	mg/L	0797	WL	08/25/2003	0001	AL		0.0178	U JFQ #	0.0178	-
	mg/L	0850	WL	08/25/2003	0001	AL	B	0.0178	U JF #	0.0178	-
Oxidation Reduction Potent	mV	1008	WL	08/26/2003	0001	AL		354.000	JF #	0.178	-
	mV	0608	WL	08/25/2003	N001	KM		284	F #	-	-
	mV	0614	WL	08/26/2003	N001	AL		250	F #	-	-
	mV	0615	WL	08/26/2003	N001	AL		254	F #	-	-
	mV	0618	WL	08/26/2003	N001	AL		269	F #	-	-
	mV	0619	WL	08/26/2003	N001	AL		243	F #	-	-
	mV	0735	WL	08/25/2003	N001	AL		259	F #	-	-
	mV	0797	WL	08/25/2003	N001	AL		-56	FQ #	-	-
	mV	0850	WL	08/25/2003	N001	AL	B	-168	F #	-	-
pH	mV	1008	WL	08/26/2003	N001	AL		264	F #	-	-
	s.u.	0608	WL	08/25/2003	N001	KM		6.64	F #	-	-
	s.u.	0614	WL	08/26/2003	N001	AL		6.63	F #	-	-
	s.u.	0615	WL	08/26/2003	N001	AL		6.62	F #	-	-
	s.u.	0618	WL	08/26/2003	N001	AL		6.68	F #	-	-
	s.u.	0619	WL	08/26/2003	N001	AL		7	F #	-	-
s.u.	0735	WL	08/25/2003	N001	AL		6.75	F #	-	-	

CLASSIC GROUND WATER QUALITY DATA BY PARAMETER WITH ZONE (USEE201) FOR SITE SHP01, SHIPROCK
 REPORT DATE: 10/14/2003 3:52 pm

PARAMETER	UNITS	LOCATION ID	LOCATION TYPE	SAMPLE: DATE	ID	ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
pH	s.u.	0797	WL	08/25/2003	N001	AL		7.62	FQ #	-	-
	s.u.	0850	WL	08/25/2003	N001	AL	B	7.44	F #	-	-
	s.u.	1008	WL	08/26/2003	N001	AL		6.91	F #	-	-
Potassium	mg/L	0608	WL	08/25/2003	0001	KM		137.000	F #	0.047	-
	mg/L	0614	WL	08/26/2003	0001	AL		119.000	F #	0.047	-
	mg/L	0615	WL	08/26/2003	0001	AL		231.000	F #	0.047	-
	mg/L	0618	WL	08/26/2003	0001	AL		86.200	F #	0.047	-
	mg/L	0619	WL	08/26/2003	0001	AL		55.900	F #	0.047	-
	mg/L	0735	WL	08/25/2003	0001	AL		23.600	F #	0.047	-
	mg/L	0797	WL	08/25/2003	0001	AL		2.440	FQ #	0.047	-
	mg/L	0850	WL	08/25/2003	0001	AL	B	2.520	F #	0.047	-
	mg/L	1008	WL	08/26/2003	0001	AL		113.000	F #	0.047	-
Selenium	mg/L	0608	WL	08/25/2003	0001	KM		0.00710	F #	0.0001	-
	mg/L	0614	WL	08/26/2003	0001	AL		0.146	F #	0.002	-
	mg/L	0615	WL	08/26/2003	0001	AL		1.270	F #	0.01	-
	mg/L	0618	WL	08/26/2003	0001	AL		0.303	F #	0.002	-
	mg/L	0619	WL	08/26/2003	0001	AL		0.158	F #	0.002	-
	mg/L	0735	WL	08/25/2003	0001	AL		0.0573	F #	0.0005	-
	mg/L	0797	WL	08/25/2003	0001	AL		0.00010	U FQ #	0.0001	-
	mg/L	0850	WL	08/25/2003	0001	AL	B	0.00032	B F #	0.0001	-
	mg/L	1008	WL	08/26/2003	0001	AL		0.124	F #	0.002	-
Sodium	mg/L	0608	WL	08/25/2003	0001	KM		1890.000	F #	0.185	-
	mg/L	0614	WL	08/26/2003	0001	AL		2590.000	F #	0.185	-
	mg/L	0615	WL	08/26/2003	0001	AL		5830.000	F #	0.185	-
	mg/L	0618	WL	08/26/2003	0001	AL		3270.000	F #	0.185	-
	mg/L	0619	WL	08/26/2003	0001	AL		2550.000	F #	0.185	-

CLASSIC GROUND WATER QUALITY DATA BY PARAMETER WITH ZONE (USEE201) FOR SITE SHP01, SHIPROCK
 REPORT DATE: 10/14/2003 3:52 pm

PARAMETER	UNITS	LOCATION ID	LOCATION TYPE	SAMPLE:		ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS:			DETECTION LIMIT	UN-CERTAINTY
				DATE	ID				LAB	DATA	QA		
Sodium	mg/L	0735	WL	08/25/2003	0001	AL		1390.000	F	#	0.037	-	
	mg/L	0797	WL	08/25/2003	0001	AL		337.000	FQ	#	0.0185	-	
	mg/L	0850	WL	08/25/2003	0001	AL	B	413.000	F	#	0.0185	-	
	mg/L	1008	WL	08/26/2003	0001	AL		4270.000	F	#	0.185	-	
Specific Conductance	umhos/cm	0608	WL	08/25/2003	N001	KM		16841	F	#	-	-	
	umhos/cm	0614	WL	08/26/2003	N001	AL		20695	F	#	-	-	
	umhos/cm	0615	WL	08/26/2003	N001	AL		32594	F	#	-	-	
	umhos/cm	0618	WL	08/26/2003	N001	AL		19830	F	#	-	-	
	umhos/cm	0619	WL	08/26/2003	N001	AL		14006	F	#	-	-	
	umhos/cm	0735	WL	08/25/2003	N001	AL		8448	F	#	-	-	
	umhos/cm	0797	WL	08/25/2003	N001	AL		1869	FQ	#	-	-	
	umhos/cm	0850	WL	08/25/2003	N001	AL	B	2300	F	#	-	-	
	umhos/cm	1008	WL	08/26/2003	N001	AL		23442	F	#	-	-	
Strontium	mg/L	0608	WL	08/25/2003	0001	KM		11.300	F	#	0.0005	-	
	mg/L	0614	WL	08/26/2003	0001	AL		12.200	F	#	0.0005	-	
	mg/L	0615	WL	08/26/2003	0001	AL		17.000	F	#	0.0005	-	
	mg/L	0618	WL	08/26/2003	0001	AL		10.600	F	#	0.0005	-	
	mg/L	0619	WL	08/26/2003	0001	AL		8.170	F	#	0.0005	-	
	mg/L	0735	WL	08/25/2003	0001	AL		4.170	F	#	0.0005	-	
	mg/L	0797	WL	08/25/2003	0001	AL		1.270	FQ	#	0.0005	-	
	mg/L	0850	WL	08/25/2003	0001	AL	B	1.020	F	#	0.0005	-	
	mg/L	1008	WL	08/26/2003	0001	AL		12.300	F	#	0.0005	-	
Sulfate	mg/L	0608	WL	08/25/2003	0001	KM		10600.000	F	#	3.5	-	
	mg/L	0614	WL	08/26/2003	0001	AL		13300.000	F	#	3.5	-	
	mg/L	0615	WL	08/26/2003	0001	AL		23100.000	F	#	8.75	-	
	mg/L	0618	WL	08/26/2003	0001	AL		14100.000	F	#	3.5	-	

CLASSIC GROUND WATER QUALITY DATA BY PARAMETER WITH ZONE (USEE201) FOR SITE SHP01, SHIPROCK
 REPORT DATE: 10/14/2003 3:52 pm

PARAMETER	UNITS	LOCATION ID	LOCATION TYPE	SAMPLE: DATE	ID	ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Sulfate	mg/L	0619	WL	08/26/2003	0001	AL		9510.000	F #	3.5	-
	mg/L	0735	WL	08/25/2003	0001	AL		3700.000	F #	0.875	-
	mg/L	0797	WL	08/25/2003	0001	AL		679.000	FQ #	0.35	-
	mg/L	0850	WL	08/25/2003	0001	AL	B	866.000	F #	0.175	-
	mg/L	1008	WL	08/26/2003	0001	AL		18200.000	F #	3.5	-
Temperature	C	0608	WL	08/25/2003	N001	KM		23.5	F #	-	-
	C	0614	WL	08/26/2003	N001	AL		19.3	F #	-	-
	C	0615	WL	08/26/2003	N001	AL		25.2	F #	-	-
	C	0618	WL	08/26/2003	N001	AL		21.5	F #	-	-
	C	0619	WL	08/26/2003	N001	AL		20.5	F #	-	-
	C	0735	WL	08/25/2003	N001	AL		18.9	F #	-	-
	C	0797	WL	08/25/2003	N001	AL		21.09	FQ #	-	-
	C	0850	WL	08/25/2003	N001	AL	B	18.58	F #	-	-
	C	1008	WL	08/26/2003	N001	AL		21.5	F #	-	-
Total Dissolved Solids	mg/L	0608	WL	08/25/2003	0001	KM		17400	F #	10	-
	mg/L	0614	WL	08/26/2003	0001	AL		23800	F #	10	-
	mg/L	0615	WL	08/26/2003	0001	AL		43500	F #	10	-
	mg/L	0618	WL	08/26/2003	0001	AL		23800	F #	10	-
	mg/L	0619	WL	08/26/2003	0001	AL		14900	F #	10	-
	mg/L	0735	WL	08/25/2003	0001	AL		7490	F #	10	-
	mg/L	0797	WL	08/25/2003	0001	AL		1340	FQ #	10	-
	mg/L	0850	WL	08/25/2003	0001	AL	B	1640	F #	10	-
	mg/L	1008	WL	08/26/2003	0001	AL		29100	F #	10	-
Turbidity	NTU	0608	WL	08/25/2003	N001	KM		3.82	F #	-	-
	NTU	0614	WL	08/26/2003	N001	AL		1.13	F #	-	-
	NTU	0615	WL	08/26/2003	N001	AL		3.79	F #	-	-

CLASSIC GROUND WATER QUALITY DATA BY PARAMETER WITH ZONE (USEE201) FOR SITE SHP01, SHIPROCK
 REPORT DATE: 10/14/2003 3:52 pm

PARAMETER	UNITS	LOCATION ID	LOCATION TYPE	SAMPLE:		ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS:			DETECTION LIMIT	UN-CERTAINTY
				DATE	ID				LAB	DATA	QA		
Turbidity	NTU	0618	WL	08/26/2003	N001	AL		2.39	F	#	-	-	
	NTU	0619	WL	08/26/2003	N001	AL		1.75	F	#	-	-	
	NTU	0735	WL	08/25/2003	N001	AL		2.42	F	#	-	-	
	NTU	0797	WL	08/25/2003	N001	AL		27	FQ	#	-	-	
	NTU	0850	WL	08/25/2003	N001	AL	B	6.49	F	#	-	-	
	NTU	1008	WL	08/26/2003	N001	AL		1.64	F	#	-	-	
Uranium	mg/L	0608	WL	08/25/2003	0001	KM		1.750	F	#	0.0025	-	
	mg/L	0614	WL	08/26/2003	0001	AL		2.200	F	#	0.0025	-	
	mg/L	0615	WL	08/26/2003	0001	AL		4.230	F	#	0.0025	-	
	mg/L	0618	WL	08/26/2003	0001	AL		3.210	F	#	0.0025	-	
	mg/L	0619	WL	08/26/2003	0001	AL		0.764	F	#	0.0001	-	
	mg/L	0735	WL	08/25/2003	0001	AL		0.0950	F	#	0.0001	-	
	mg/L	0797	WL	08/25/2003	0001	AL		0.01000	FQ	#	0.0001	-	
	mg/L	0850	WL	08/25/2003	0001	AL	B	0.0118	F	#	0.0001	-	
	mg/L	1008	WL	08/26/2003	0001	AL		2.580	F	#	0.0025	-	

CLASSIC GROUND WATER QUALITY DATA BY PARAMETER WITH ZONE (USEE201) FOR SITE SHP01, SHIPROCK
 REPORT DATE: 10/14/2003 3:52 pm

PARAMETER	UNITS	LOCATION ID	LOCATION TYPE	SAMPLE: DATE	ID	ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
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RECORDS: SELECTED FROM USEE200 WHERE site_code='SHP01' AND quality_assurance = TRUE AND (data_validation_qualifiers IS NULL OR data_validation_qualifiers NOT LIKE '%R%' AND data_validation_qualifiers NOT LIKE '%X%') AND DATE_SAMPLED between #8/25/2003# and #8/28/2003#

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

LOCATION TYPES: WL WELL

ZONES OF COMPLETION:

AL ALLUVIUM KM MANCOS SHALE

FLOW CODES: B BACKGROUND

LAB QUALIFIERS:

- * Replicate analysis not within control limits.
- + Correlation coefficient for MSA < 0.995.
- > Result above upper detection limit.
- A TIC is a suspected aldol-condensation product.
- B Inorganic: Result is between the IDL and CRDL. Organic: Analyte also found in method blank.
- C Pesticide result confirmed by GC-MS.
- D Analyte determined in diluted sample.
- E Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
- H Holding time expired, value suspect.
- I Increased detection limit due to required dilution.
- J Estimated
- M GFAA duplicate injection precision not met.
- N Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compound (TIC).
- P > 25% difference in detected pesticide or Arochlor concentrations between 2 columns.
- S Result determined by method of standard addition (MSA).
- U Analytical result below detection limit.
- W Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
- X Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- Y Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- Z Laboratory defined (USEPA CLP organic) qualifier, see case narrative.

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.

CLASSIC GROUND WATER QUALITY DATA BY PARAMETER WITH ZONE (USEE201) FOR SITE SHP02, SHIPROCK (TAILINGS AREA)
 REPORT DATE: 10/14/2003 3:54 pm

PARAMETER	UNITS	LOCATION ID	LOCATION TYPE	SAMPLE: DATE	ID	ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Alkalinity, Total (As CaCO3	mg/L	0817	WL	08/27/2003	0001	KM		1360	F #	-	-
	mg/L	0832	WL	08/27/2003	0001	AL		390	F #	-	-
	mg/L	0835	WL	08/27/2003	0001	AL		380	F #	-	-
	mg/L	0836	WL	08/26/2003	0001	AL		394	F #	-	-
	mg/L	0838	WL	08/27/2003	0001	AL		285	F #	-	-
	mg/L	0839	WL	08/27/2003	0001	AL		874	FQ #	-	-
	mg/L	0841	WL	08/27/2003	0001	AL		841	F #	-	-
	mg/L	0846	WL	08/26/2003	0001	AL		254	F #	-	-
	mg/L	1060	WL	08/27/2003	0001	AL		416	F #	-	-
	mg/L	1079	WL	08/27/2003	0001			259	F #	-	-
Ammonia Total as NH4	mg/L	0817	WL	08/27/2003	0001	KM		1030.000	JF #	0.0054	-
	mg/L	0832	WL	08/27/2003	0001	AL		0.0485	B JF #	0.0054	-
	mg/L	0835	WL	08/27/2003	0001	AL		0.00540	U JF #	0.0054	-
	mg/L	0836	WL	08/26/2003	0001	AL		0.00540	U JF #	0.0054	-
	mg/L	0836	WL	08/26/2003	0002	AL		0.00540	U JF #	0.0054	-
	mg/L	0838	WL	08/27/2003	0001	AL		0.00540	U JF #	0.0054	-
	mg/L	0839	WL	08/27/2003	0001	AL		134.000	JFQ #	0.0054	-
	mg/L	0841	WL	08/27/2003	0001	AL		0.00540	U JF #	0.0054	-
	mg/L	0846	WL	08/26/2003	0001	AL		0.00540	U JF #	0.0054	-
	mg/L	1060	WL	08/27/2003	0001	AL		0.00540	U JF #	0.0054	-
	mg/L	1079	WL	08/27/2003	0001			0.00540	U JF #	0.0054	-
Calcium	mg/L	0817	WL	08/27/2003	0001	KM		477.000	F #	0.399	-
	mg/L	0832	WL	08/27/2003	0001	AL		493.000	F #	0.399	-
	mg/L	0835	WL	08/27/2003	0001	AL		709.000	F #	0.399	-
	mg/L	0836	WL	08/26/2003	0001	AL		486.000	F #	0.399	-
	mg/L	0836	WL	08/26/2003	0002	AL		482.000	F #	0.399	-

CLASSIC GROUND WATER QUALITY DATA BY PARAMETER WITH ZONE (USEE201) FOR SITE SHP02, SHIPROCK (TAILINGS AREA)
 REPORT DATE: 10/14/2003 3:54 pm

PARAMETER	UNITS	LOCATION ID	LOCATION TYPE	SAMPLE:		ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS:			DETECTION LIMIT	UN-CERTAINTY
				DATE	ID				LAB	DATA	QA		
Calcium	mg/L	0838	WL	08/27/2003	0001	AL		508.000	F	#	0.399	-	
	mg/L	0839	WL	08/27/2003	0001	AL		450.000	FQ	#	0.399	-	
	mg/L	0841	WL	08/27/2003	0001	AL		408.000	F	#	0.399	-	
	mg/L	0846	WL	08/26/2003	0001	AL		398.000	F	#	0.399	-	
	mg/L	1060	WL	08/27/2003	0001	AL		122.000	F	#	0.399	-	
	mg/L	1079	WL	08/27/2003	0001			672.000	F	#	0.399	-	
Chloride	mg/L	0817	WL	08/27/2003	0001	KM		495.000	F	#	0.172	-	
	mg/L	0832	WL	08/27/2003	0001	AL		856.000	F	#	0.172	-	
	mg/L	0835	WL	08/27/2003	0001	AL		284.000	F	#	0.172	-	
	mg/L	0836	WL	08/26/2003	0001	AL		43.100	F	#	0.0172	-	
	mg/L	0836	WL	08/26/2003	0002	AL		44.100	F	#	0.0172	-	
	mg/L	0838	WL	08/27/2003	0001	AL		54.100	F	#	0.172	-	
	mg/L	0839	WL	08/27/2003	0001	AL		443.000	FQ	#	0.172	-	
	mg/L	0841	WL	08/27/2003	0001	AL		897.000	F	#	0.344	-	
	mg/L	0846	WL	08/26/2003	0001	AL		31.800	F	#	0.172	-	
	mg/L	1060	WL	08/27/2003	0001	AL		160.000	F	#	0.172	-	
	mg/L	1079	WL	08/27/2003	0001			95.600	F	#	0.0172	-	
	Magnesium	mg/L	0817	WL	08/27/2003	0001	KM		1720.000	F	#	0.019	-
mg/L		0832	WL	08/27/2003	0001	AL		1440.000	F	#	0.019	-	
mg/L		0835	WL	08/27/2003	0001	AL		363.000	F	#	0.019	-	
mg/L		0836	WL	08/26/2003	0001	AL		299.000	F	#	0.019	-	
mg/L		0836	WL	08/26/2003	0002	AL		298.000	F	#	0.019	-	
mg/L		0838	WL	08/27/2003	0001	AL		138.000	F	#	0.019	-	
mg/L		0839	WL	08/27/2003	0001	AL		2150.000	FQ	#	0.019	-	
mg/L		0841	WL	08/27/2003	0001	AL		715.000	F	#	0.019	-	
mg/L		0846	WL	08/26/2003	0001	AL		163.000	F	#	0.019	-	

CLASSIC GROUND WATER QUALITY DATA BY PARAMETER WITH ZONE (USEE201) FOR SITE SHP02, SHIPROCK (TAILINGS AREA)
 REPORT DATE: 10/14/2003 3:54 pm

PARAMETER	UNITS	LOCATION ID	LOCATION TYPE	SAMPLE: DATE	ID	ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Magnesium	mg/L	1060	WL	08/27/2003	0001	AL		251.000	F #	0.019	-
	mg/L	1079	WL	08/27/2003	0001			150.000	F #	0.019	-
Manganese	mg/L	0817	WL	08/27/2003	0001	KM		2.070	F #	0.0005	-
	mg/L	0832	WL	08/27/2003	0001	AL		0.00066 B	F #	0.0001	-
	mg/L	0835	WL	08/27/2003	0001	AL		0.00041 B	F #	0.0001	-
	mg/L	0836	WL	08/26/2003	0001	AL		1.990	F #	0.0005	-
	mg/L	0836	WL	08/26/2003	0002	AL		1.980	F #	0.0005	-
	mg/L	0838	WL	08/27/2003	0001	AL		0.0328	F #	0.0001	-
	mg/L	0839	WL	08/27/2003	0001	AL		0.831	FQ #	0.0005	-
	mg/L	0841	WL	08/27/2003	0001	AL		0.0295	F #	0.0001	-
	mg/L	0846	WL	08/26/2003	0001	AL		0.00060 B	F #	0.0001	-
	mg/L	1060	WL	08/27/2003	0001	AL		0.0243	F #	0.0001	-
	mg/L	1079	WL	08/27/2003	0001			0.00500 B	F #	0.0001	-
	Nitrate as NO3	mg/L	0817	WL	08/27/2003	0001	KM		2840.000	JF #	1.78
mg/L		0832	WL	08/27/2003	0001	AL		2610.000	JF #	1.78	-
mg/L		0835	WL	08/27/2003	0001	AL		951.000	JF #	0.178	-
mg/L		0836	WL	08/26/2003	0001	AL		82.200	JF #	0.0178	-
mg/L		0836	WL	08/26/2003	0002	AL		83.900	JF #	0.0178	-
mg/L		0838	WL	08/27/2003	0001	AL		132.000	JF #	0.178	-
mg/L		0839	WL	08/27/2003	0001	AL		2520.000	JFQ #	3.56	-
mg/L		0841	WL	08/27/2003	0001	AL		2770.000	JF #	3.56	-
mg/L		0846	WL	08/26/2003	0001	AL		103.000	JF #	0.178	-
mg/L		1060	WL	08/27/2003	0001	AL		565.000	JF #	0.178	-
mg/L		1079	WL	08/27/2003	0001			284.000	JF #	0.89	-
Oxidation Reduction Potent		mV	0817	WL	08/27/2003	N001	KM		248	F #	-
	mV	0832	WL	08/27/2003	N001	AL		88	F #	-	-

CLASSIC GROUND WATER QUALITY DATA BY PARAMETER WITH ZONE (USEE201) FOR SITE SHP02, SHIPROCK (TAILINGS AREA)
 REPORT DATE: 10/14/2003 3:54 pm

PARAMETER	UNITS	LOCATION ID	LOCATION TYPE	SAMPLE:		ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS:			DETECTION LIMIT	UN-CERTAINTY
				DATE	ID				LAB	DATA	QA		
Oxidation Reduction Potent	mV	0835	WL	08/27/2003	N001	AL		198	F	#	-	-	
	mV	0836	WL	08/26/2003	N001	AL		152	F	#	-	-	
	mV	0838	WL	08/27/2003	N001	AL		171	F	#	-	-	
	mV	0839	WL	08/27/2003	N001	AL		213	FQ	#	-	-	
	mV	0841	WL	08/27/2003	N001	AL		108	F	#	-	-	
	mV	0846	WL	08/26/2003	N001	AL		173	F	#	-	-	
	mV	1060	WL	08/27/2003	N001	AL		181	F	#	-	-	
	mV	1079	WL	08/27/2003	N001			-80	F	#	-	-	
pH	s.u.	0817	WL	08/27/2003	N001	KM		6.5	F	#	-	-	
	s.u.	0832	WL	08/27/2003	N001	AL		7.09	F	#	-	-	
	s.u.	0835	WL	08/27/2003	N001	AL		7	F	#	-	-	
	s.u.	0836	WL	08/26/2003	N001	AL		7.14	F	#	-	-	
	s.u.	0838	WL	08/27/2003	N001	AL		6.83	F	#	-	-	
	s.u.	0839	WL	08/27/2003	N001	AL		6.72	FQ	#	-	-	
	s.u.	0841	WL	08/27/2003	N001	AL		7.09	F	#	-	-	
	s.u.	0846	WL	08/26/2003	N001	AL		7.23	F	#	-	-	
	s.u.	1060	WL	08/27/2003	N001	AL		7.52	F	#	-	-	
	s.u.	1079	WL	08/27/2003	N001			6.7	F	#	-	-	
Potassium	mg/L	0817	WL	08/27/2003	0001	KM		184.000	F	#	0.047	-	
	mg/L	0832	WL	08/27/2003	0001	AL		27.300	F	#	0.047	-	
	mg/L	0835	WL	08/27/2003	0001	AL		10.600	F	#	0.047	-	
	mg/L	0836	WL	08/26/2003	0001	AL		5.200	F	#	0.047	-	
	mg/L	0836	WL	08/26/2003	0002	AL		5.120	F	#	0.047	-	
	mg/L	0838	WL	08/27/2003	0001	AL		5.730	F	#	0.047	-	
	mg/L	0839	WL	08/27/2003	0001	AL		102.000	FQ	#	0.047	-	
	mg/L	0841	WL	08/27/2003	0001	AL		42.500	F	#	0.047	-	

CLASSIC GROUND WATER QUALITY DATA BY PARAMETER WITH ZONE (USEE201) FOR SITE SHP02, SHIPROCK (TAILINGS AREA)
 REPORT DATE: 10/14/2003 3:54 pm

PARAMETER	UNITS	LOCATION ID	LOCATION TYPE	SAMPLE: DATE	ID	ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Potassium	mg/L	0846	WL	08/26/2003	0001	AL		6.150	F #	0.047	-
	mg/L	1060	WL	08/27/2003	0001	AL		10.800	F #	0.047	-
	mg/L	1079	WL	08/27/2003	0001			6.180	F #	0.047	-
Selenium	mg/L	0817	WL	08/27/2003	0001	KM		0.00200	B F #	0.0001	-
	mg/L	0832	WL	08/27/2003	0001	AL		3.260	F #	0.05	-
	mg/L	0835	WL	08/27/2003	0001	AL		0.452	F #	0.005	-
	mg/L	0836	WL	08/26/2003	0001	AL		0.163	F #	0.002	-
	mg/L	0836	WL	08/26/2003	0002	AL		0.160	F #	0.002	-
	mg/L	0838	WL	08/27/2003	0001	AL		0.184	F #	0.002	-
	mg/L	0839	WL	08/27/2003	0001	AL		0.00110	B FQ #	0.0001	-
	mg/L	0841	WL	08/27/2003	0001	AL		3.040	F #	0.05	-
	mg/L	0846	WL	08/26/2003	0001	AL		0.243	F #	0.002	-
	mg/L	1060	WL	08/27/2003	0001	AL		0.863	F #	0.01	-
	mg/L	1079	WL	08/27/2003	0001			0.537	F #	0.005	-
	Sodium	mg/L	0817	WL	08/27/2003	0001	KM		1480.000	F #	0.037
mg/L		0832	WL	08/27/2003	0001	AL		3600.000	F #	0.185	-
mg/L		0835	WL	08/27/2003	0001	AL		800.000	F #	0.0185	-
mg/L		0836	WL	08/26/2003	0001	AL		506.000	F #	0.0185	-
mg/L		0836	WL	08/26/2003	0002	AL		500.000	F #	0.0185	-
mg/L		0838	WL	08/27/2003	0001	AL		213.000	F #	0.0185	-
mg/L		0839	WL	08/27/2003	0001	AL		1910.000	FQ #	0.185	-
mg/L		0841	WL	08/27/2003	0001	AL		5760.000	F #	0.185	-
mg/L		0846	WL	08/26/2003	0001	AL		383.000	F #	0.0185	-
mg/L		1060	WL	08/27/2003	0001	AL		1280.000	F #	0.037	-
mg/L		1079	WL	08/27/2003	0001			242.000	F #	0.0185	-
Specific Conductance	umhos/cm	0817	WL	08/27/2003	N001	KM		18600	F #	-	-

CLASSIC GROUND WATER QUALITY DATA BY PARAMETER WITH ZONE (USEE201) FOR SITE SHP02, SHIPROCK (TAILINGS AREA)
 REPORT DATE: 10/14/2003 3:54 pm

PARAMETER	UNITS	LOCATION ID	LOCATION TYPE	SAMPLE: DATE	ID	ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Specific Conductance	umhos/cm	0832	WL	08/27/2003	N001	AL		20460	F #	-	-
	umhos/cm	0835	WL	08/27/2003	N001	AL		7100	F #	-	-
	umhos/cm	0836	WL	08/26/2003	N001	AL		4879	F #	-	-
	umhos/cm	0838	WL	08/27/2003	N001	AL		3333	F #	-	-
	umhos/cm	0839	WL	08/27/2003	N001	AL		17084	FQ #	-	-
	umhos/cm	0841	WL	08/27/2003	N001	AL		24620	F #	-	-
	umhos/cm	0846	WL	08/26/2003	N001	AL		3717	F #	-	-
	umhos/cm	1060	WL	08/27/2003	N001	AL		7179	F #	-	-
	umhos/cm	1079	WL	08/27/2003	N001			4145	F #	-	-
Strontium	mg/L	0817	WL	08/27/2003	0001	KM		11.500	F #	0.0005	-
	mg/L	0832	WL	08/27/2003	0001	AL		9.400	F #	0.0005	-
	mg/L	0835	WL	08/27/2003	0001	AL		7.720	F #	0.0005	-
	mg/L	0836	WL	08/26/2003	0001	AL		6.270	F #	0.0005	-
	mg/L	0836	WL	08/26/2003	0002	AL		6.220	F #	0.0005	-
	mg/L	0838	WL	08/27/2003	0001	AL		4.990	F #	0.0005	-
	mg/L	0839	WL	08/27/2003	0001	AL		10.600	FQ #	0.0005	-
	mg/L	0841	WL	08/27/2003	0001	AL		8.190	F #	0.0005	-
	mg/L	0846	WL	08/26/2003	0001	AL		4.370	F #	0.0005	-
	mg/L	1060	WL	08/27/2003	0001	AL		2.510	F #	0.0005	-
	mg/L	1079	WL	08/27/2003	0001			6.360	F #	0.0005	-
Sulfate	mg/L	0817	WL	08/27/2003	0001	KM		10900.000	F #	3.5	-
	mg/L	0832	WL	08/27/2003	0001	AL		12800.000	F #	3.5	-
	mg/L	0835	WL	08/27/2003	0001	AL		3490.000	F #	0.875	-
	mg/L	0836	WL	08/26/2003	0001	AL		3020.000	F #	0.875	-
	mg/L	0836	WL	08/26/2003	0002	AL		3010.000	F #	0.875	-
	mg/L	0838	WL	08/27/2003	0001	AL		1920.000	F #	0.875	-

CLASSIC GROUND WATER QUALITY DATA BY PARAMETER WITH ZONE (USEE201) FOR SITE SHP02, SHIPROCK (TAILINGS AREA)

REPORT DATE: 10/14/2003 3:54 pm

PARAMETER	UNITS	LOCATION ID	LOCATION TYPE	SAMPLE: DATE	ID	ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Sulfate	mg/L	0839	WL	08/27/2003	0001	AL		11600.000	FQ #	3.5	-
	mg/L	0841	WL	08/27/2003	0001	AL		13600.000	F #	3.5	-
	mg/L	0846	WL	08/26/2003	0001	AL		2150.000	F #	0.875	-
	mg/L	1060	WL	08/27/2003	0001	AL		3390.000	F #	1.75	-
	mg/L	1079	WL	08/27/2003	0001			2260.000	F #	0.875	-
Temperature	C	0817	WL	08/27/2003	N001	KM		20.6	F #	-	-
	C	0832	WL	08/27/2003	N001	AL		20.5	F #	-	-
	C	0835	WL	08/27/2003	N001	AL		17.5	F #	-	-
	C	0836	WL	08/26/2003	N001	AL		18.1	F #	-	-
	C	0838	WL	08/27/2003	N001	AL		17.2	F #	-	-
	C	0839	WL	08/27/2003	N001	AL		23.1	FQ #	-	-
	C	0841	WL	08/27/2003	N001	AL		24.6	F #	-	-
	C	0846	WL	08/26/2003	N001	AL		18.8	F #	-	-
	C	1060	WL	08/27/2003	N001	AL		21.79	F #	-	-
	C	1079	WL	08/27/2003	N001			17.62	F #	-	-
Total Dissolved Solids	mg/L	0817	WL	08/27/2003	0001	KM		17200	F #	10	-
	mg/L	0832	WL	08/27/2003	0001	AL		23500	JF #	10	-
	mg/L	0835	WL	08/27/2003	0001	AL		7300	F #	10	-
	mg/L	0836	WL	08/26/2003	0001	AL		5070	F #	10	-
	mg/L	0836	WL	08/26/2003	0002	AL		4820	F #	10	-
	mg/L	0838	WL	08/27/2003	0001	AL		3340	F #	10	-
	mg/L	0839	WL	08/27/2003	0001	AL		19600	FQ #	10	-
	mg/L	0841	WL	08/27/2003	0001	AL		25700	JF #	10	-
	mg/L	0846	WL	08/26/2003	0001	AL		3570	F #	10	-
	mg/L	1060	WL	08/27/2003	0001	AL		6180	F #	10	-
	mg/L	1079	WL	08/27/2003	0001			4110	F #	10	-

CLASSIC GROUND WATER QUALITY DATA BY PARAMETER WITH ZONE (USEE201) FOR SITE SHP02, SHIPROCK (TAILINGS AREA)
 REPORT DATE: 10/14/2003 3:54 pm

PARAMETER	UNITS	LOCATION ID	LOCATION TYPE	SAMPLE: DATE	ID	ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Turbidity	NTU	0817	WL	08/27/2003	N001	KM		4.74	F #	-	-
	NTU	0832	WL	08/27/2003	N001	AL		7.91	F #	-	-
	NTU	0835	WL	08/27/2003	N001	AL		0.93	F #	-	-
	NTU	0836	WL	08/26/2003	N001	AL		3.11	F #	-	-
	NTU	0838	WL	08/27/2003	N001	AL		3.89	F #	-	-
	NTU	0839	WL	08/27/2003	N001	AL		66.9	FQ #	-	-
	NTU	0841	WL	08/27/2003	N001	AL		2.17	F #	-	-
	NTU	0846	WL	08/26/2003	N001	AL		5.68	F #	-	-
	NTU	1060	WL	08/27/2003	N001	AL		46.7	F #	-	-
	NTU	1079	WL	08/27/2003	N001			0.85	F #	-	-
Uranium	mg/L	0817	WL	08/27/2003	0001	KM		8.780	F #	0.0025	-
	mg/L	0832	WL	08/27/2003	0001	AL		0.155	F #	0.0001	-
	mg/L	0835	WL	08/27/2003	0001	AL		0.0577	F #	0.0001	-
	mg/L	0836	WL	08/26/2003	0001	AL		0.0536	F #	0.0001	-
	mg/L	0836	WL	08/26/2003	0002	AL		0.0533	F #	0.0001	-
	mg/L	0838	WL	08/27/2003	0001	AL		0.0327	F #	0.0001	-
	mg/L	0839	WL	08/27/2003	0001	AL		0.691	FQ #	0.0001	-
	mg/L	0841	WL	08/27/2003	0001	AL		0.106	F #	0.0001	-
	mg/L	0846	WL	08/26/2003	0001	AL		0.0324	F #	0.0001	-
	mg/L	1060	WL	08/27/2003	0001	AL		0.0492	F #	0.0001	-
	mg/L	1079	WL	08/27/2003	0001			0.0323	F #	0.0001	-

CLASSIC GROUND WATER QUALITY DATA BY PARAMETER WITH ZONE (USEE201) FOR SITE SHP02, SHIPROCK (TAILINGS AREA)
 REPORT DATE: 10/14/2003 3:54 pm

PARAMETER	UNITS	LOCATION ID	LOCATION TYPE	SAMPLE: DATE	ID	ZONE COMPL	FLOW REL.	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
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RECORDS: SELECTED FROM USEE200 WHERE site_code='SHP02' AND quality_assurance = TRUE AND (data_validation_qualifiers IS NULL OR data_validation_qualifiers NOT LIKE '%R%' AND data_validation_qualifiers NOT LIKE '%X%') AND DATE_SAMPLED between #8/25/2003# and #8/28/2003#

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

LOCATION TYPES: WL WELL

ZONES OF COMPLETION:

AL ALLUVIUM KM MANCOS SHALE

FLOW CODES:

LAB QUALIFIERS:

- * Replicate analysis not within control limits.
- + Correlation coefficient for MSA < 0.995.
- > Result above upper detection limit.
- A TIC is a suspected aldol-condensation product.
- B Inorganic: Result is between the IDL and CRDL. Organic: Analyte also found in method blank.
- C Pesticide result confirmed by GC-MS.
- D Analyte determined in diluted sample.
- E Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
- H Holding time expired, value suspect.
- I Increased detection limit due to required dilution.
- J Estimated
- M GFAA duplicate injection precision not met.
- N Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compound (TIC).
- P > 25% difference in detected pesticide or Arochlor concentrations between 2 columns.
- S Result determined by method of standard addition (MSA).
- U Analytical result below detection limit.
- W Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
- X Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- Y Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- Z Laboratory defined (USEPA CLP organic) qualifier, see case narrative.

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.

SURFACE-WATER QUALITY DATA

SURFACE WATER QUALITY DATA BY PARAMETER (USEE800) FOR SITE SHP01, SHIPROCK
 REPORT DATE: 10/15/2003 10:16 am

PARAMETER	UNITS	LOCATION ID	SAMPLE: DATE	ID	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Alkalinity, Total (As CaCO3	mg/L	0501	08/25/2003	0001	131	#	-	-
	mg/L	0887	08/26/2003	0001	99	#	-	-
	mg/L	0897	08/26/2003	0001	125	#	-	-
	mg/L	0898	08/25/2003	0001	116	#	-	-
	mg/L	0940	08/26/2003	0001	145	#	-	-
	mg/L	0956	08/26/2003	0001	123	#	-	-
	mg/L	0959	08/27/2003	0001	348	#	-	-
	mg/L	0965	08/27/2003	0001	118	#	-	-
	mg/L	1203	08/25/2003	0001	139	#	-	-
	mg/L	1205	08/26/2003	0001	114	#	-	-
Ammonia Total as NH4	mg/L	0501	08/25/2003	0001	0.0299 B	J #	0.0054	-
	mg/L	0887	08/26/2003	0001	0.0233 B	J #	0.0054	-
	mg/L	0897	08/26/2003	0001	0.0054 U	J #	0.0054	-
	mg/L	0898	08/25/2003	0001	0.166	J #	0.0054	-
	mg/L	0940	08/26/2003	0001	0.0054 U	J #	0.0054	-
	mg/L	0956	08/26/2003	0001	0.0421 B	J #	0.0054	-
	mg/L	0959	08/27/2003	0001	0.0218 B	J #	0.0054	-
	mg/L	0965	08/27/2003	0001	0.0054 U	J #	0.0054	-
	mg/L	1203	08/25/2003	0001	0.0559 B	J #	0.0054	-
	mg/L	1205	08/26/2003	0001	0.139	J #	0.0054	-
Calcium	mg/L	0501	08/25/2003	0001	71.300	#	0.399	-
	mg/L	0887	08/26/2003	0001	288.000	#	0.399	-
	mg/L	0897	08/26/2003	0001	73.200	#	0.399	-
	mg/L	0898	08/25/2003	0001	70.300	#	0.399	-
	mg/L	0940	08/26/2003	0001	70.400	#	0.399	-
	mg/L	0956	08/26/2003	0001	70.400	#	0.399	-
	mg/L	0959	08/27/2003	0001	444.000	#	0.399	-
	mg/L	0965	08/27/2003	0001	69.300	#	0.399	-
	mg/L	1203	08/25/2003	0001	71.200	#	0.399	-
	mg/L	1205	08/26/2003	0001	70.000	#	0.399	-
Chloride	mg/L	0501	08/25/2003	0001	17.900	#	0.0172	-
	mg/L	0887	08/26/2003	0001	76.800	#	0.086	-
	mg/L	0897	08/26/2003	0001	18.000	#	0.0172	-
	mg/L	0898	08/25/2003	0001	17.900	#	0.0172	-
	mg/L	0940	08/26/2003	0001	15.500	#	0.0172	-
	mg/L	0956	08/26/2003	0001	18.300	#	0.0172	-
	mg/L	0959	08/27/2003	0001	132.000	#	0.086	-
	mg/L	0965	08/27/2003	0001	17.200	#	0.0172	-

SURFACE WATER QUALITY DATA BY PARAMETER (USEE800) FOR SITE SHP01, SHIPROCK
 REPORT DATE: 10/15/2003 10:16 am

PARAMETER	UNITS	LOCATION ID	SAMPLE: DATE	ID	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Chloride	mg/L	1203	08/25/2003	0001	17.200	#	0.0172	-
	mg/L	1205	08/26/2003	0001	15.000	#	0.0172	-
Magnesium	mg/L	0501	08/25/2003	0001	10.300	#	0.019	-
	mg/L	0887	08/26/2003	0001	97.800	#	0.019	-
	mg/L	0897	08/26/2003	0001	10.900	#	0.019	-
	mg/L	0898	08/25/2003	0001	10.700	#	0.019	-
	mg/L	0940	08/26/2003	0001	10.900	#	0.019	-
	mg/L	0956	08/26/2003	0001	10.600	#	0.019	-
	mg/L	0959	08/27/2003	0001	524.000	#	0.019	-
	mg/L	0965	08/27/2003	0001	11.600	#	0.019	-
	mg/L	1203	08/25/2003	0001	10.300	#	0.019	-
	mg/L	1205	08/26/2003	0001	10.600	#	0.019	-
Manganese	mg/L	0501	08/25/2003	0001	0.0023 B	#	0.0001	-
	mg/L	0887	08/26/2003	0001	0.0928	#	0.0005	-
	mg/L	0897	08/26/2003	0001	0.0028 B	#	0.0001	-
	mg/L	0898	08/25/2003	0001	0.0016 B	#	0.0001	-
	mg/L	0940	08/26/2003	0001	0.0018 B	#	0.0001	-
	mg/L	0956	08/26/2003	0001	0.0026 B	#	0.0001	-
	mg/L	0959	08/27/2003	0001	0.0045 B	#	0.0001	-
	mg/L	0965	08/27/2003	0001	0.0110	#	0.0001	-
	mg/L	1203	08/25/2003	0001	0.0028 B	#	0.0001	-
	mg/L	1205	08/26/2003	0001	0.0009 B	#	0.0001	-
Nitrate as NO3	mg/L	0501	08/25/2003	0001	3.120	J #	0.0178	-
	mg/L	0887	08/26/2003	0001	1.910	J #	0.0178	-
	mg/L	0897	08/26/2003	0001	2.510	J #	0.0178	-
	mg/L	0898	08/25/2003	0001	1.900	J #	0.0178	-
	mg/L	0940	08/26/2003	0001	1.730	J #	0.0178	-
	mg/L	0956	08/26/2003	0001	2.700	J #	0.0178	-
	mg/L	0959	08/27/2003	0001	127.000	J #	0.089	-
	mg/L	0965	08/27/2003	0001	1.550	J #	0.0178	-
	mg/L	1203	08/25/2003	0001	2.570	J #	0.0178	-
	mg/L	1205	08/26/2003	0001	1.540	J #	0.0178	-
Oxidation Reduction Potent	mV	0501	08/25/2003	N001	222	#	-	-
	mV	0887	08/26/2003	N001	101	#	-	-
	mV	0897	08/26/2003	N001	174	#	-	-
	mV	0898	08/25/2003	N001	-154	#	-	-
	mV	0940	08/26/2003	N001	25	#	-	-
	mV	0956	08/26/2003	N001	79	#	-	-

SURFACE WATER QUALITY DATA BY PARAMETER (USEE800) FOR SITE SHP01, SHIPROCK
 REPORT DATE: 10/15/2003 10:16 am

PARAMETER	UNITS	LOCATION ID	SAMPLE: DATE	ID	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Oxidation Reduction Potent	mV	0959	08/27/2003	N001	144	#	-	-
	mV	0965	08/27/2003	N001	233	#	-	-
	mV	1203	08/25/2003	N001	210	#	-	-
	mV	1205	08/26/2003	N001	54	#	-	-
pH	s.u.	0501	08/25/2003	N001	8.02	#	-	-
	s.u.	0887	08/26/2003	N001	8.44	#	-	-
	s.u.	0897	08/26/2003	N001	7.99	#	-	-
	s.u.	0898	08/25/2003	N001	8.3	#	-	-
	s.u.	0940	08/26/2003	N001	8.31	#	-	-
	s.u.	0956	08/26/2003	N001	8.14	#	-	-
	s.u.	0959	08/27/2003	N001	7.34	#	-	-
	s.u.	0965	08/27/2003	N001	7.99	#	-	-
	s.u.	1203	08/25/2003	N001	8.21	#	-	-
	s.u.	1205	08/26/2003	N001	8.21	#	-	-
Potassium	mg/L	0501	08/25/2003	0001	3.880	#	0.047	-
	mg/L	0887	08/26/2003	0001	11.100	#	0.047	-
	mg/L	0897	08/26/2003	0001	3.320	#	0.047	-
	mg/L	0898	08/25/2003	0001	3.420	#	0.047	-
	mg/L	0940	08/26/2003	0001	3.130	#	0.047	-
	mg/L	0956	08/26/2003	0001	3.380	#	0.047	-
	mg/L	0959	08/27/2003	0001	16.200	#	0.047	-
	mg/L	0965	08/27/2003	0001	2.920	#	0.047	-
	mg/L	1203	08/25/2003	0001	3.910	#	0.047	-
	mg/L	1205	08/26/2003	0001	3.060	#	0.047	-
Selenium	mg/L	0501	08/25/2003	0001	0.0008 B	#	0.0001	-
	mg/L	0887	08/26/2003	0001	0.0112	#	0.0001	-
	mg/L	0897	08/26/2003	0001	0.0007 B	#	0.0001	-
	mg/L	0898	08/25/2003	0001	0.0007 B	#	0.0001	-
	mg/L	0940	08/26/2003	0001	0.0006 B	#	0.0001	-
	mg/L	0956	08/26/2003	0001	0.0006 B	#	0.0001	-
	mg/L	0959	08/27/2003	0001	0.106	#	0.001	-
	mg/L	0965	08/27/2003	0001	0.0005 B	#	0.0001	-
	mg/L	1203	08/25/2003	0001	0.0008 B	#	0.0001	-
	mg/L	1205	08/26/2003	0001	0.0006 B	#	0.0001	-
Sodium	mg/L	0501	08/25/2003	0001	59.300	#	0.0185	-
	mg/L	0887	08/26/2003	0001	424.000	#	0.0185	-
	mg/L	0897	08/26/2003	0001	55.900	#	0.0185	-
	mg/L	0898	08/25/2003	0001	49.700	#	0.0185	-

SURFACE WATER QUALITY DATA BY PARAMETER (USEE800) FOR SITE SHP01, SHIPROCK
 REPORT DATE: 10/15/2003 10:16 am

PARAMETER	UNITS	LOCATION ID	SAMPLE: DATE	ID	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Sodium	mg/L	0940	08/26/2003	0001	43.700	#	0.0185	-
	mg/L	0956	08/26/2003	0001	58.000	#	0.0185	-
	mg/L	0959	08/27/2003	0001	834.000	#	0.0185	-
	mg/L	0965	08/27/2003	0001	40.900	#	0.0185	-
	mg/L	1203	08/25/2003	0001	59.500	#	0.0185	-
	mg/L	1205	08/26/2003	0001	41.700	#	0.0185	-
Specific Conductance	umhos/cm	0501	08/25/2003	N001	999	#	-	-
	umhos/cm	0887	08/26/2003	N001	3470	#	-	-
	umhos/cm	0897	08/26/2003	N001	740	#	-	-
	umhos/cm	0898	08/25/2003	N001	706	#	-	-
	umhos/cm	0940	08/26/2003	N001	372	#	-	-
	umhos/cm	0956	08/26/2003	N001	745	#	-	-
	umhos/cm	0959	08/27/2003	N001	7487	#	-	-
	umhos/cm	0965	08/27/2003	N001	653	#	-	-
	umhos/cm	1203	08/25/2003	N001	768	#	-	-
	umhos/cm	1205	08/26/2003	N001	641	#	-	-
Strontium	mg/L	0501	08/25/2003	0001	0.989	#	0.0005	-
	mg/L	0887	08/26/2003	0001	5.110	#	0.0005	-
	mg/L	0897	08/26/2003	0001	1.010	#	0.0005	-
	mg/L	0898	08/25/2003	0001	0.969	#	0.0005	-
	mg/L	0940	08/26/2003	0001	0.990	#	0.0005	-
	mg/L	0956	08/26/2003	0001	0.972	#	0.0005	-
	mg/L	0959	08/27/2003	0001	7.230	#	0.0005	-
	mg/L	0965	08/27/2003	0001	0.933	#	0.0005	-
	mg/L	1203	08/25/2003	0001	0.988	#	0.0005	-
	mg/L	1205	08/26/2003	0001	0.975	#	0.0005	-
Sulfate	mg/L	0501	08/25/2003	0001	216.000	#	0.175	-
	mg/L	0887	08/26/2003	0001	1940.000	#	0.875	-
	mg/L	0897	08/26/2003	0001	227.000	#	0.175	-
	mg/L	0898	08/25/2003	0001	193.000	#	0.175	-
	mg/L	0940	08/26/2003	0001	190.000	#	0.175	-
	mg/L	0956	08/26/2003	0001	213.000	#	0.175	-
	mg/L	0959	08/27/2003	0001	4550.000	#	0.875	-
	mg/L	0965	08/27/2003	0001	173.000	#	0.175	-
	mg/L	1203	08/25/2003	0001	209.000	#	0.175	-
	mg/L	1205	08/26/2003	0001	177.000	#	0.175	-
Temperature	C	0501	08/25/2003	N001	27	#	-	-
	C	0887	08/26/2003	N001	30	#	-	-

SURFACE WATER QUALITY DATA BY PARAMETER (USEE800) FOR SITE SHP01, SHIPROCK
 REPORT DATE: 10/15/2003 10:16 am

PARAMETER	UNITS	LOCATION ID	SAMPLE: DATE	ID	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Temperature	C	0897	08/26/2003	N001	23.64	#	-	-
	C	0898	08/25/2003	N001	28.9	#	-	-
	C	0940	08/26/2003	N001	21.94	#	-	-
	C	0956	08/26/2003	N001	27.02	#	-	-
	C	0959	08/27/2003	N001	20.66	#	-	-
	C	0965	08/27/2003	N001	22.1	#	-	-
	C	1203	08/25/2003	N001	28.2	#	-	-
	C	1205	08/26/2003	N001	20.4	#	-	-
Total Dissolved Solids	mg/L	0501	08/25/2003	0001	480	#	10	-
	mg/L	0887	08/26/2003	0001	3110	#	10	-
	mg/L	0897	08/26/2003	0001	502	#	10	-
	mg/L	0898	08/25/2003	0001	470	#	10	-
	mg/L	0940	08/26/2003	0001	447	#	10	-
	mg/L	0956	08/26/2003	0001	10.00	U R	#	10
	mg/L	0959	08/27/2003	0001	7890	J	#	10
	mg/L	0965	08/27/2003	0001	433	#	10	-
	mg/L	1203	08/25/2003	0001	490	#	10	-
	mg/L	1205	08/26/2003	0001	430	#	10	-
Turbidity	NTU	0501	08/25/2003	N001	1000	>	#	-
	NTU	0887	08/26/2003	N001	4.05		#	-
	NTU	0897	08/26/2003	N001	1000	>	#	-
	NTU	0898	08/25/2003	N001	1000	>	#	-
	NTU	0940	08/26/2003	N001	1000	>	#	-
	NTU	0956	08/26/2003	N001	1000	>	#	-
	NTU	0965	08/27/2003	N001	1000	>	#	-
	NTU	1203	08/25/2003	N001	1000	>	#	-
Uranium	mg/L	0501	08/25/2003	0001	0.0027	#	0.0001	-
	mg/L	0887	08/26/2003	0001	0.0141	#	0.0001	-
	mg/L	0897	08/26/2003	0001	0.0030	#	0.0001	-
	mg/L	0898	08/25/2003	0001	0.0023	#	0.0001	-
	mg/L	0940	08/26/2003	0001	0.0032	#	0.0001	-
	mg/L	0956	08/26/2003	0001	0.0030	#	0.0001	-
	mg/L	0959	08/27/2003	0001	0.0725	#	0.0001	-
	mg/L	0965	08/27/2003	0001	0.0022	#	0.0001	-
	mg/L	1203	08/25/2003	0001	0.0031	#	0.0001	-
	mg/L	1205	08/26/2003	0001	0.0022	#	0.0001	-

SURFACE WATER QUALITY DATA BY PARAMETER (USEE800) FOR SITE SHP01, SHIPROCK
 REPORT DATE: 10/15/2003 10:16 am

PARAMETER	UNITS	LOCATION ID	SAMPLE: DATE	ID	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
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RECORDS: SELECTED FROM USEE800 WHERE site_code='SHP01' AND quality_assurance = TRUE AND (data_validation_qualifiers IS NULL OR data_validation_qualifiers NOT LIKE '%X%') AND DATE_SAMPLED between #8/25/2003# and #8/28/2003#

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

LAB QUALIFIERS:

- * Replicate analysis not within control limits.
- + Correlation coefficient for MSA < 0.995.
- > Result above upper detection limit.
- A TIC is a suspected aldol-condensisation 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
- M GFAA duplicate injection precision not met.
- N Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compound (TIC).
- P > 25% difference in detected pesticide or Arochlor concentrations between 2 columns.
- S Result determined by method of standard addition (MSA).
- U Analytical result below detection limit.
- W Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
- X Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- Y Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- Z Laboratory defined (USEPA CLP organic) qualifier, see case narrative.

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 BY PARAMETER (USEE800) FOR SITE SHP02, SHIPROCK (TAILINGS AREA)
 REPORT DATE: 10/14/2003 3:54 pm

PARAMETER	UNITS	LOCATION ID	SAMPLE: DATE	ID	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Alkalinity, Total (As CaCO3	mg/L	0425	08/26/2003	0001	838	#	-	-
	mg/L	0426	08/26/2003	0001	302	#	-	-
	mg/L	0662	08/26/2003	0001	67	#	-	-
	mg/L	0786	08/26/2003	0001	315	#	-	-
	mg/L	0884	08/26/2003	0001	202	#	-	-
	mg/L	0889	08/26/2003	0001	570	#	-	-
	mg/L	0933	08/27/2003	0001	525	#	-	-
	mg/L	0942	08/26/2003	0001	149	#	-	-
	mg/L	0958	08/26/2003	0001	121	#	-	-
Ammonia Total as NH4	mg/L	0425	08/26/2003	0001	0.0210 B	J #	0.0054	-
	mg/L	0426	08/26/2003	0001	0.0216 B	J #	0.0054	-
	mg/L	0662	08/26/2003	0001	0.0597 B	J #	0.0054	-
	mg/L	0786	08/26/2003	0001	0.0176 B	J #	0.0054	-
	mg/L	0884	08/26/2003	0001	0.0235 B	J #	0.0054	-
	mg/L	0889	08/26/2003	0001	0.108	J #	0.0054	-
	mg/L	0933	08/27/2003	0001	0.918	J #	0.0054	-
	mg/L	0936	08/27/2003	0001	0.0208 B	J #	0.0054	-
	mg/L	0942	08/26/2003	0001	0.0192 B	J #	0.0054	-
	mg/L	0958	08/26/2003	0001	0.0054 U	J #	0.0054	-
	mg/L	0958	08/26/2003	0002	0.0054 U	J #	0.0054	-
Calcium	mg/L	0425	08/26/2003	0001	476.000	#	0.399	-
	mg/L	0426	08/26/2003	0001	417.000	#	0.399	-
	mg/L	0662	08/26/2003	0001	105.000	#	0.399	-
	mg/L	0786	08/26/2003	0001	392.000	#	0.399	-
	mg/L	0884	08/26/2003	0001	233.000	#	0.399	-
	mg/L	0889	08/26/2003	0001	419.000	#	0.399	-
	mg/L	0933	08/27/2003	0001	509.000	#	0.399	-
	mg/L	0936	08/27/2003	0001	534.000	#	0.399	-
	mg/L	0942	08/26/2003	0001	139.000	#	0.399	-
	mg/L	0958	08/26/2003	0001	70.300	#	0.399	-
	mg/L	0958	08/26/2003	0002	69.900	#	0.399	-
Chloride	mg/L	0425	08/26/2003	0001	289.000	#	0.172	-
	mg/L	0426	08/26/2003	0001	107.000	#	0.086	-
	mg/L	0662	08/26/2003	0001	59.200	#	0.0172	-
	mg/L	0786	08/26/2003	0001	93.200	#	0.086	-
	mg/L	0884	08/26/2003	0001	24.700	#	0.0172	-
	mg/L	0889	08/26/2003	0001	1580.000	#	0.344	-
	mg/L	0933	08/27/2003	0001	119.000	#	0.172	-

SURFACE WATER QUALITY DATA BY PARAMETER (USEE800) FOR SITE SHP02, SHIPROCK (TAILINGS AREA)
 REPORT DATE: 10/14/2003 3:54 pm

PARAMETER	UNITS	LOCATION ID	SAMPLE: DATE	ID	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Chloride	mg/L	0936	08/27/2003	0001	330.000	#	0.172	-
	mg/L	0942	08/26/2003	0001	15.000	#	0.0172	-
	mg/L	0958	08/26/2003	0001	14.200	#	0.0172	-
	mg/L	0958	08/26/2003	0002	14.400	#	0.0172	-
Magnesium	mg/L	0425	08/26/2003	0001	751.000	#	0.019	-
	mg/L	0426	08/26/2003	0001	196.000	#	0.019	-
	mg/L	0662	08/26/2003	0001	15.700	#	0.019	-
	mg/L	0786	08/26/2003	0001	429.000	#	0.019	-
	mg/L	0884	08/26/2003	0001	64.300	#	0.019	-
	mg/L	0889	08/26/2003	0001	1040.000	#	0.019	-
	mg/L	0933	08/27/2003	0001	585.000	#	0.019	-
	mg/L	0936	08/27/2003	0001	590.000	#	0.019	-
	mg/L	0942	08/26/2003	0001	24.500	#	0.019	-
	mg/L	0958	08/26/2003	0001	10.700	#	0.019	-
	mg/L	0958	08/26/2003	0002	10.900	#	0.019	-
	Manganese	mg/L	0425	08/26/2003	0001	0.0173	#	0.0001
mg/L		0426	08/26/2003	0001	0.0123	#	0.0001	-
mg/L		0662	08/26/2003	0001	0.0084 B	#	0.0001	-
mg/L		0786	08/26/2003	0001	0.0015 B	#	0.0001	-
mg/L		0884	08/26/2003	0001	0.0008 B	#	0.0001	-
mg/L		0889	08/26/2003	0001	0.0041 B	#	0.0001	-
mg/L		0933	08/27/2003	0001	1.410	#	0.0005	-
mg/L		0936	08/27/2003	0001	0.152	#	0.0005	-
mg/L		0942	08/26/2003	0001	0.0208	#	0.0001	-
mg/L		0958	08/26/2003	0001	0.0004 B	#	0.0001	-
mg/L		0958	08/26/2003	0002	0.0002 B	#	0.0001	-
Nitrate as NO3		mg/L	0425	08/26/2003	0001	185.000	J #	0.178
	mg/L	0426	08/26/2003	0001	69.500	J #	0.089	-
	mg/L	0662	08/26/2003	0001	0.0178 U	J #	0.0178	-
	mg/L	0786	08/26/2003	0001	100.000	J #	0.089	-
	mg/L	0884	08/26/2003	0001	18.000	J #	0.0178	-
	mg/L	0889	08/26/2003	0001	3110.000	J #	3.56	-
	mg/L	0933	08/27/2003	0001	48.000	J #	0.178	-
	mg/L	0936	08/27/2003	0001	659.000	J #	0.178	-
	mg/L	0942	08/26/2003	0001	2.910	J #	0.0178	-
	mg/L	0958	08/26/2003	0001	1.430	J #	0.0178	-
	mg/L	0958	08/26/2003	0002	1.560	J #	0.0178	-
	Oxidation Reduction Potent	mV	0425	08/26/2003	N001	58	#	-

SURFACE WATER QUALITY DATA BY PARAMETER (USEE800) FOR SITE SHP02, SHIPROCK (TAILINGS AREA)
 REPORT DATE: 10/14/2003 3:54 pm

PARAMETER	UNITS	LOCATION ID	SAMPLE: DATE	ID	RESULT	QUALIFIERS:			UN-CERTAINTY
						LAB	DATA	QA	
Oxidation Reduction Potent	mV	0426	08/26/2003	N001	70.1	#	-	-	-
	mV	0662	08/26/2003	N001	-65	#	-	-	-
	mV	0786	08/26/2003	N001	75	#	-	-	-
	mV	0884	08/26/2003	N001	97	#	-	-	-
	mV	0889	08/26/2003	N001	136	#	-	-	-
	mV	0933	08/27/2003	N001	25	#	-	-	-
	mV	0942	08/26/2003	N001	83	#	-	-	-
	mV	0958	08/26/2003	N001	71	#	-	-	-
pH	s.u.	0425	08/26/2003	N001	6.82	#	-	-	-
	s.u.	0426	08/26/2003	N001	7.17	#	-	-	-
	s.u.	0662	08/26/2003	N001	7.72	#	-	-	-
	s.u.	0786	08/26/2003	N001	8.34	#	-	-	-
	s.u.	0884	08/26/2003	N001	7.83	#	-	-	-
	s.u.	0889	08/26/2003	N001	7.8	#	-	-	-
	s.u.	0933	08/27/2003	N001	7.17	#	-	-	-
	s.u.	0942	08/26/2003	N001	7.43	#	-	-	-
Potassium	mg/L	0425	08/26/2003	0001	30.700	#	0.047	-	-
	mg/L	0426	08/26/2003	0001	13.300	#	0.047	-	-
	mg/L	0662	08/26/2003	0001	6.810	#	0.047	-	-
	mg/L	0786	08/26/2003	0001	18.800	#	0.047	-	-
	mg/L	0884	08/26/2003	0001	4.280	#	0.047	-	-
	mg/L	0889	08/26/2003	0001	42.500	#	0.047	-	-
	mg/L	0933	08/27/2003	0001	32.100	#	0.047	-	-
	mg/L	0936	08/27/2003	0001	21.000	#	0.047	-	-
	mg/L	0942	08/26/2003	0001	3.400	#	0.047	-	-
	mg/L	0958	08/26/2003	0001	2.940	#	0.047	-	-
Selenium	mg/L	0425	08/26/2003	0001	0.0294	#	0.0005	-	-
	mg/L	0426	08/26/2003	0001	0.0477	#	0.0005	-	-
	mg/L	0662	08/26/2003	0001	0.0001 U	#	0.0001	-	-
	mg/L	0786	08/26/2003	0001	0.0432	#	0.0005	-	-
	mg/L	0884	08/26/2003	0001	0.0496	#	0.0005	-	-
	mg/L	0889	08/26/2003	0001	1.260	#	0.01	-	-
	mg/L	0933	08/27/2003	0001	0.0300	#	0.0005	-	-
	mg/L	0936	08/27/2003	0001	0.603	#	0.005	-	-
	mg/L	0942	08/26/2003	0001	0.0065	#	0.0001	-	-
	mg/L	0958	08/26/2003	0001	0.0003 B	#	0.0001	-	-

SURFACE WATER QUALITY DATA BY PARAMETER (USEE800) FOR SITE SHP02, SHIPROCK (TAILINGS AREA)
 REPORT DATE: 10/14/2003 3:54 pm

PARAMETER	UNITS	LOCATION ID	SAMPLE DATE	SAMPLE ID	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Selenium	mg/L	0958	08/26/2003	0002	0.0004 B	#	0.0001	-
Sodium	mg/L	0425	08/26/2003	0001	1150.000	#	0.0185	-
	mg/L	0426	08/26/2003	0001	1070.000	#	0.0185	-
	mg/L	0662	08/26/2003	0001	784.000	#	0.0185	-
	mg/L	0786	08/26/2003	0001	799.000	#	0.0185	-
	mg/L	0884	08/26/2003	0001	119.000	#	0.0185	-
	mg/L	0889	08/26/2003	0001	7700.000	#	0.185	-
	mg/L	0933	08/27/2003	0001	754.000	#	0.0185	-
	mg/L	0936	08/27/2003	0001	1210.000	#	0.0185	-
	mg/L	0942	08/26/2003	0001	49.100	#	0.0185	-
	mg/L	0958	08/26/2003	0001	38.600	#	0.0185	-
	mg/L	0958	08/26/2003	0002	39.000	#	0.0185	-
Specific Conductance	umhos/cm	0425	08/26/2003	N001	9288	#	-	-
	umhos/cm	0426	08/26/2003	N001	6650	#	-	-
	umhos/cm	0662	08/26/2003	N001	4112	#	-	-
	umhos/cm	0786	08/26/2003	N001	6481	#	-	-
	umhos/cm	0884	08/26/2003	N001	1883	#	-	-
	umhos/cm	0889	08/26/2003	N001	32770	#	-	-
	umhos/cm	0933	08/27/2003	N001	6650	#	-	-
	umhos/cm	0942	08/26/2003	N001	1027	#	-	-
	umhos/cm	0958	08/26/2003	N001	651	#	-	-
Strontium	mg/L	0425	08/26/2003	0001	8.690	#	0.0005	-
	mg/L	0426	08/26/2003	0001	9.610	#	0.0005	-
	mg/L	0662	08/26/2003	0001	11.100	#	0.0005	-
	mg/L	0786	08/26/2003	0001	6.630	#	0.0005	-
	mg/L	0884	08/26/2003	0001	2.510	#	0.0005	-
	mg/L	0889	08/26/2003	0001	9.580	#	0.0005	-
	mg/L	0933	08/27/2003	0001	7.910	#	0.0005	-
	mg/L	0936	08/27/2003	0001	9.550	#	0.0005	-
	mg/L	0942	08/26/2003	0001	1.470	#	0.0005	-
	mg/L	0958	08/26/2003	0001	0.953	#	0.0005	-
	mg/L	0958	08/26/2003	0002	0.961	#	0.0005	-
Sulfate	mg/L	0425	08/26/2003	0001	5910.000	#	1.75	-
	mg/L	0426	08/26/2003	0001	3900.000	#	0.875	-
	mg/L	0662	08/26/2003	0001	2100.000	#	0.875	-
	mg/L	0786	08/26/2003	0001	4430.000	#	1.75	-
	mg/L	0884	08/26/2003	0001	903.000	#	0.875	-
	mg/L	0889	08/26/2003	0001	18800.000	#	3.5	-

SURFACE WATER QUALITY DATA BY PARAMETER (USEE800) FOR SITE SHP02, SHIPROCK (TAILINGS AREA)
 REPORT DATE: 10/14/2003 3:54 pm

PARAMETER	UNITS	LOCATION ID	SAMPLE: DATE	ID	RESULT	QUALIFIERS: LAB DATA QA	DETECTION LIMIT	UN-CERTAINTY
Sulfate	mg/L	0933	08/27/2003	0001	4550.000	#	0.875	-
	mg/L	0936	08/27/2003	0001	4360.000	#	0.875	-
	mg/L	0942	08/26/2003	0001	393.000	#	0.0875	-
	mg/L	0958	08/26/2003	0001	174.000	#	0.175	-
	mg/L	0958	08/26/2003	0002	178.000	#	0.175	-
Temperature	C	0425	08/26/2003	N001	17.8	#	-	-
	C	0426	08/26/2003	N001	15.9	#	-	-
	C	0662	08/26/2003	N001	25.8	#	-	-
	C	0786	08/26/2003	N001	18.92	#	-	-
	C	0884	08/26/2003	N001	21.03	#	-	-
	C	0889	08/26/2003	N001	27.3	#	-	-
	C	0933	08/27/2003	N001	20.7	#	-	-
	C	0942	08/26/2003	N001	25.15	#	-	-
	C	0958	08/26/2003	N001	23	#	-	-
Total Dissolved Solids	mg/L	0425	08/26/2003	0001	10400	J #	10	-
	mg/L	0426	08/26/2003	0001	6220	#	10	-
	mg/L	0662	08/26/2003	0001	3140	#	10	-
	mg/L	0786	08/26/2003	0001	7000	J #	10	-
	mg/L	0884	08/26/2003	0001	1650	#	10	-
	mg/L	0889	08/26/2003	0001	35400	#	10	-
	mg/L	0933	08/27/2003	0001	7670	#	10	-
	mg/L	0936	08/27/2003	0001	9200	#	10	-
	mg/L	0942	08/26/2003	0001	810	#	10	-
	mg/L	0958	08/26/2003	0001	418	#	10	-
	mg/L	0958	08/26/2003	0002	420	#	10	-
	Turbidity	NTU	0425	08/26/2003	N001	2.71	#	-
NTU		0426	08/26/2003	N001	0.54	#	-	-
NTU		0662	08/26/2003	N001	19.5	#	-	-
NTU		0786	08/26/2003	N001	4.33	#	-	-
NTU		0889	08/26/2003	N001	3.13	#	-	-
NTU		0933	08/27/2003	N001	1000 >	#	-	-
NTU		0942	08/26/2003	N001	27.6	#	-	-
NTU		0958	08/26/2003	N001	187	#	-	-
Uranium	mg/L	0425	08/26/2003	0001	0.636	#	0.0001	-
	mg/L	0426	08/26/2003	0001	0.234	#	0.0001	-
	mg/L	0662	08/26/2003	0001	0.0004 B	U #	0.0001	-
	mg/L	0786	08/26/2003	0001	0.0418	#	0.0001	-
	mg/L	0884	08/26/2003	0001	0.0114	#	0.0001	-

SURFACE WATER QUALITY DATA BY PARAMETER (USEE800) FOR SITE SHP02, SHIPROCK (TAILINGS AREA)
 REPORT DATE: 10/14/2003 3:54 pm

PARAMETER	UNITS	LOCATION ID	SAMPLE:		RESULT	QUALIFIERS:		DETECTION LIMIT	UN-CERTAINTY
			DATE	ID		LAB DATA	QA		
Uranium	mg/L	0889	08/26/2003	0001	0.172	#		0.0001	-
	mg/L	0933	08/27/2003	0001	0.0451	#		0.0001	-
	mg/L	0936	08/27/2003	0001	0.0992	#		0.0001	-
	mg/L	0942	08/26/2003	0001	0.0057	#		0.0001	-
	mg/L	0958	08/26/2003	0001	0.0024	#		0.0001	-
	mg/L	0958	08/26/2003	0002	0.0021	#		0.0001	-

RECORDS: SELECTED FROM USEE800 WHERE site_code='SHP02' AND quality_assurance = TRUE AND (data_validation_qualifiers IS NULL OR data_validation_qualifiers NOT LIKE '%R%' AND data_validation_qualifiers NOT LIKE '%X%') AND DATE_SAMPLED between #8/25/2003# and #8/28/2003#

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

LAB QUALIFIERS:

- * Replicate analysis not within control limits.
- + Correlation coefficient for MSA < 0.995.
- > Result above upper detection limit.
- A TIC is a suspected aldol-condensation product.
- B Inorganic: Result is between the IDL and CRDL. Organic: Analyte also found in method blank.
- C Pesticide result confirmed by GC-MS.
- D Analyte determined in diluted sample.
- E Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
- H Holding time expired, value suspect.
- I Increased detection limit due to required dilution.
- J Estimated
- M GFAA duplicate injection precision not met.
- N Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compound (TIC).
- P > 25% difference in detected pesticide or Arochlor concentrations between 2 columns.
- S Result determined by method of standard addition (MSA).
- U Analytical result below detection limit.
- W Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
- X Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- Y Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- Z Laboratory defined (USEPA CLP organic) qualifier, see case narrative.

DATA QUALIFIERS:

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

QA QUALIFIER: # = validated according to Quality Assurance guidelines.

EQUIPMENT BLANK DATA

BLANKS REPORT

LAB REQUISITION(S): 18592

REPORT DATE: 10/14/03 08:56:23: AM

PARAMETER	SITE CODE	LOCATION ID	SAMPLE DATE	SAMPLE ID	UNITS	RESULT	QUALIFIERS LAB DATA	DETECTION LIMIT	UNCERTAINTY	SAMPLE TYPE
Ammonia Total as NH4	SHP01	0999	08/27/2003	0001	mg/L	0.0054	U J	0.0054		E
Calcium	SHP01	0999	08/27/2003	0001	mg/L	0.147	B	0.0797		E
Chloride	SHP01	0999	08/27/2003	0001	mg/L	0.0172	U	0.0172		E
Magnesium	SHP01	0999	08/27/2003	0001	mg/L	0.0076	B U	0.0038		E
Manganese	SHP01	0999	08/27/2003	0001	mg/L	0.0001	U	0.0001		E
Nitrate as NO3	SHP01	0999	08/27/2003	0001	mg/L	0.0178	U J	0.0178		E
Potassium	SHP01	0999	08/27/2003	0001	mg/L	0.0094	U	0.0094		E
Selenium	SHP01	0999	08/27/2003	0001	mg/L	0.0001	U	0.0001		E
Sodium	SHP01	0999	08/27/2003	0001	mg/L	0.0098	B U	0.0037		E
Strontium	SHP01	0999	08/27/2003	0001	mg/L	0.0001	U	0.0001		E
Sulfate	SHP01	0999	08/27/2003	0001	mg/L	0.0175	U	0.0175		E
Total Dissolved Solids	SHP01	0999	08/27/2003	0001	mg/L	10	U	10		E
Uranium	SHP01	0999	08/27/2003	0001	mg/L	0.0001	U	0.0001		E

BLANKS REPORT

LAB REQUISITION(S): 18592

REPORT DATE: 10/14/03 08:56:25: AM

PARAMETER	SITE CODE	LOCATION ID	SAMPLE DATE	SAMPLE ID	UNITS	RESULT	QUALIFIERS LAB DATA	DETECTION LIMIT	UNCERTAINTY	SAMPLE TYPE
<p>SAMPLE ID CODES: 000X = Filtered sample (0.45 µm). N00X = Unfiltered sample. X = replicate number.</p> <p>LAB QUALIFIERS:</p> <ul style="list-style-type: none"> * Replicate analysis not within control limits. + Correlation coefficient for MSA < 0.995. A TIC is a suspected aldol-condensation product. B Inorganic: Result is between the IDL and CRDL. Organic: Analyte also found in method blank. E Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS. Z Laboratory defined (USEPA CLP organic) qualifier, see case narrative. H Holding time expired, value suspect. I Increased detection limit due to required dilution. C Pesticide result confirmed by GC-MS. M GFAA duplicate injection precision not met. N Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compound (TIC). S Result determined by method of standard addition (MSA). U Analytical result below detection limit. W Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance. D Analyte determined in diluted sample. P > 25% difference in detected pesticide or Arochlor concentrations between 2 columns. X Laboratory defined (USEPA CLP organic) qualifier, see case narrative. Y Laboratory defined (USEPA CLP organic) qualifier, see case narrative. > Result above upper detection limit. J Estimated <p>DATA QUALIFIERS:</p> <ul style="list-style-type: none"> J Estimated value. L Less than 3 bore volumes purged prior to sampling. U Parameter analyzed for but was not detected. F Low flow sampling method used. R Unusable result. Q Qualitative result due to sampling technique G Possible grout contamination, pH > 9. X Location is undefined. <p>SAMPLE TYPES:</p> <ul style="list-style-type: none"> AK ANALYTICAL KNOWN F FIELD SAMPLE K KNOWN R REPLICATE XB EXTRACTION BLANK D DUPLICATE FB FIELD BLANK L LABORATORY TB TRIP BLANK E EQUIPMENT BLANK FR FIELD SAMPLE WITH REPLICATES N NOT KNOWN TK THEORETICAL KNOWN 										
Ammonia Total as NH4	SHP02	0999	08/27/2003	0001	mg/L	0.0054	U J	0.0054		E
Calcium	SHP02	0999	08/27/2003	0001	mg/L	0.136	B	0.0797		E
Chloride	SHP02	0999	08/27/2003	0001	mg/L	0.0172	U	0.0172		E

BLANKS REPORT

LAB REQUISITION(S): 18592

REPORT DATE: 10/14/03 08:56:26: AM

PARAMETER	SITE CODE	LOCATION ID	SAMPLE DATE	SAMPLE ID	UNITS	RESULT	QUALIFIERS LAB DATA	DETECTION LIMIT	UNCERTAINTY	SAMPLE TYPE
Magnesium	SHP02	0999	08/27/2003	0001	mg/L	0.0065	B U	0.0038		E
Manganese	SHP02	0999	08/27/2003	0001	mg/L	0.00036	B	0.0001		E
Nitrate as NO3	SHP02	0999	08/27/2003	0001	mg/L	0.0178	U J	0.0178		E
Potassium	SHP02	0999	08/27/2003	0001	mg/L	0.0196	B	0.0094		E
Selenium	SHP02	0999	08/27/2003	0001	mg/L	0.0001	U	0.0001		E
Sodium	SHP02	0999	08/27/2003	0001	mg/L	0.075	B U	0.0037		E
Strontium	SHP02	0999	08/27/2003	0001	mg/L	0.0001	U	0.0001		E
Sulfate	SHP02	0999	08/27/2003	0001	mg/L	0.0175	U	0.0175		E
Total Dissolved Solids	SHP02	0999	08/27/2003	0001	mg/L	10	U	10		E
Uranium	SHP02	0999	08/27/2003	0001	mg/L	0.00019	B U	0.0001		E

BLANKS REPORT

LAB REQUISITION(S): 18592

REPORT DATE: 10/14/03 08:56:27: AM

PARAMETER	SITE CODE	LOCATION ID	SAMPLE DATE	SAMPLE ID	UNITS	RESULT	QUALIFIERS LAB DATA	DETECTION LIMIT	SAMPLE UNCERTAINTY	SAMPLE TYPE
-----------	-----------	-------------	-------------	-----------	-------	--------	---------------------	-----------------	--------------------	-------------

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

LAB QUALIFIERS:

- Replicate analysis not within control limits.
- + Correlation coefficient for MSA < 0.995.
- A TIC is a suspected aldol-condensation product
- B Inorganic: Result is between the IDL and CRDL. Organic: Analyte also found in method blank.
- E Inorganic: Estimate value because of interference, see case narrative. Organic: Analyte exceeded calibration range of the GC-MS.
- Z Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- H Holding time expired, value suspect.
- I Increased detection limit due to required dilution.
- C Pesticide result confirmed by GC-MS.
- M GFAA duplicate injection precision not met.
- N Inorganic or radiochemical: Spike sample recovery not within control limits. Organic: Tentatively identified compound (TIC).
- S Result determined by method of standard addition (MSA).
- U Analytical result below detection limit.
- W Post-digestion spike outside control limits while sample absorbance < 50% of analytical spike absorbance.
- D Analyte determined in diluted sample.
- P > 25% difference in detected pesticide or Arochlor concentrations between 2 columns.
- X Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- Y Laboratory defined (USEPA CLP organic) qualifier, see case narrative.
- > Result above upper detection limit.
- J Estimated

DATA QUALIFIERS:

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

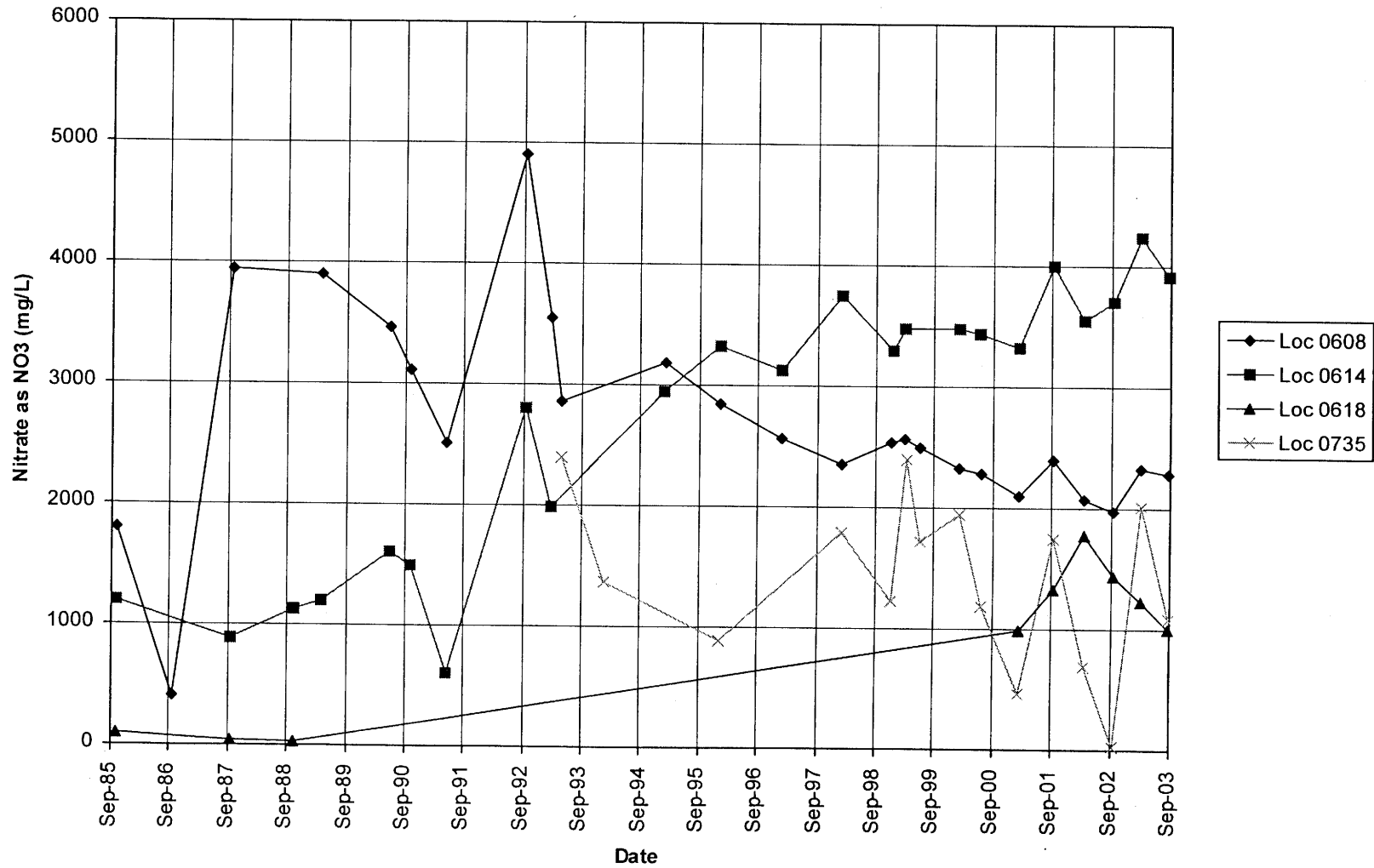
SAMPLE TYPES:

- AK ANALYTICAL KNOWN
- F FIELD SAMPLE
- K KNOWN
- R REPLICATE
- XB EXTRACTION BLANK
- D DUPLICATE
- FB FIELD BLANK
- L LABORATORY
- TB TRIP BLANK
- E EQUIPMENT BLANK
- FR FIELD SAMPLE WITH REPLICATES
- N NOT KNOWN
- TK THEORETICAL KNOWN

TIME VERSUS CONCENTRATION GRAPHS

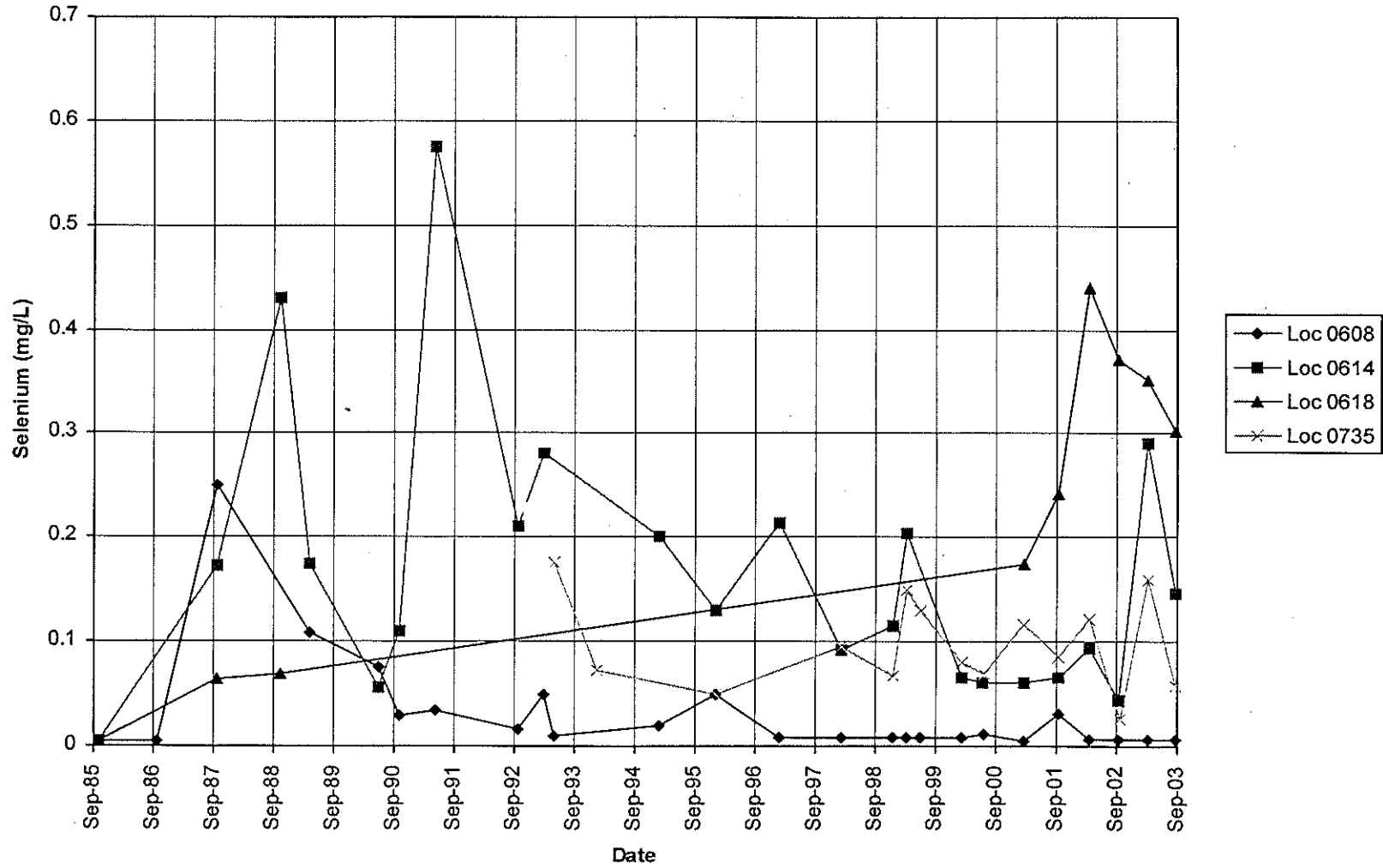
SHIPROCK (SHP01)

Nitrate as NO3 Concentration



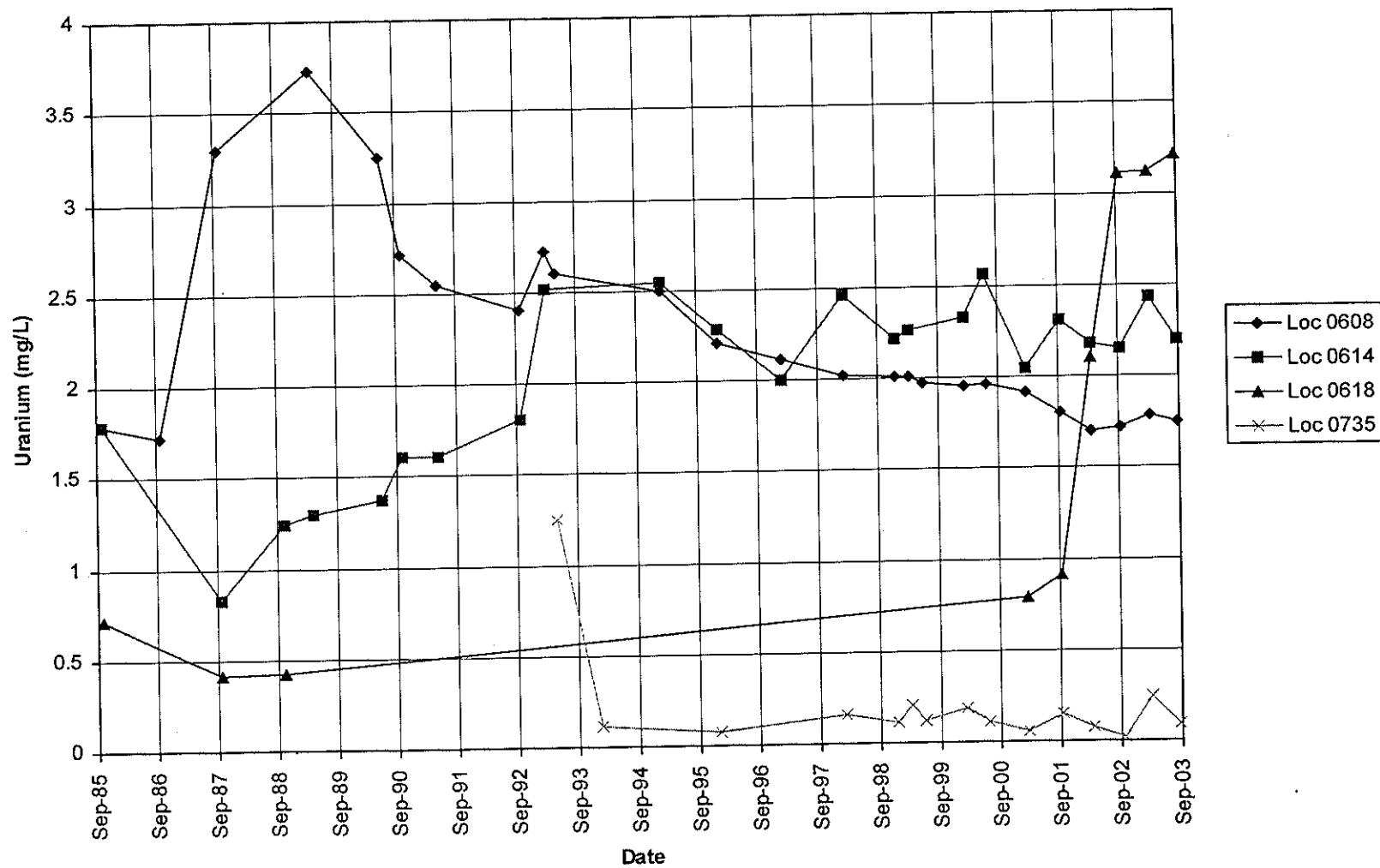
SHIPROCK (SHP01)

Selenium Concentration



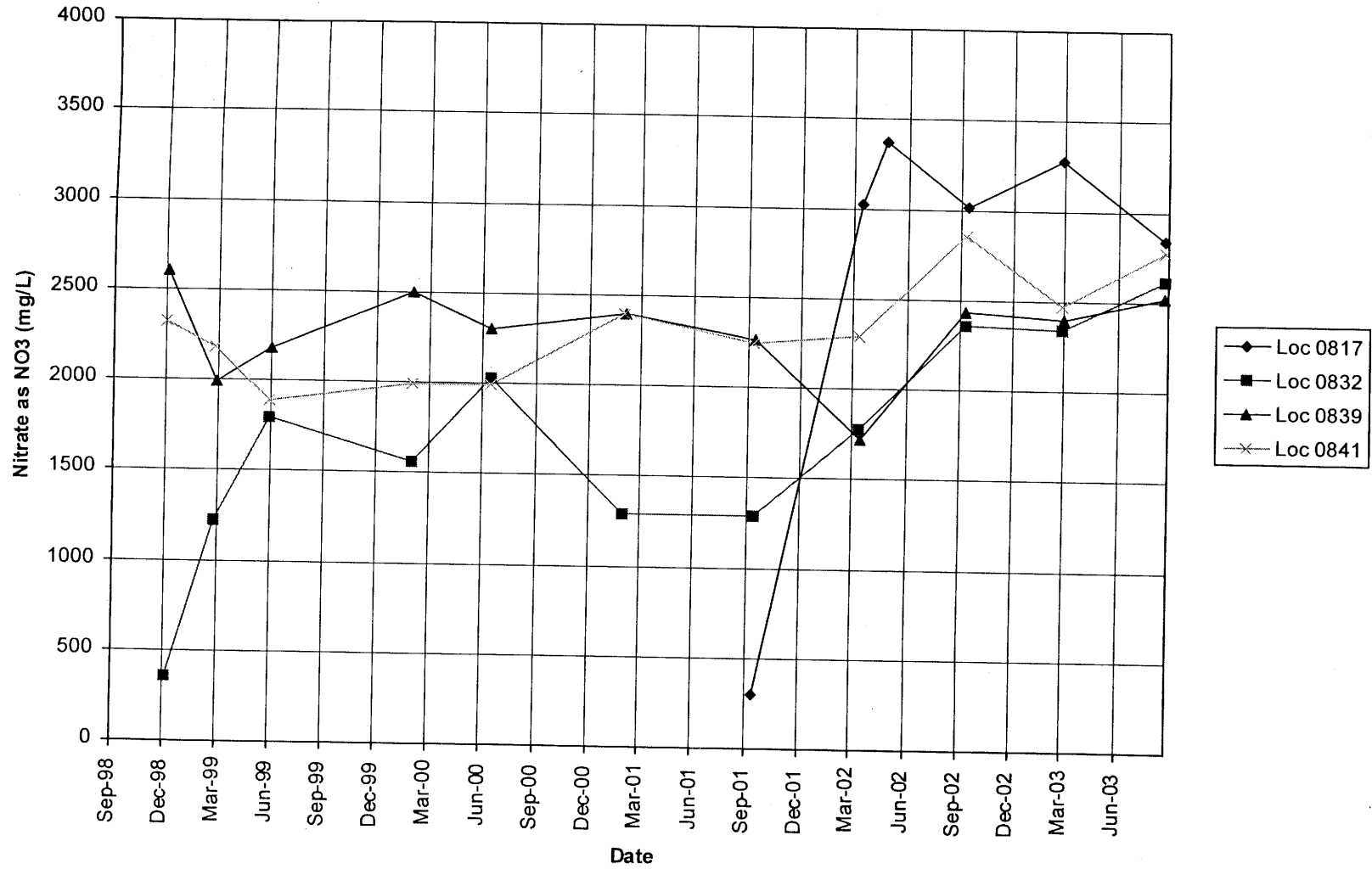
SHIPROCK (SHP01)

Uranium Concentration



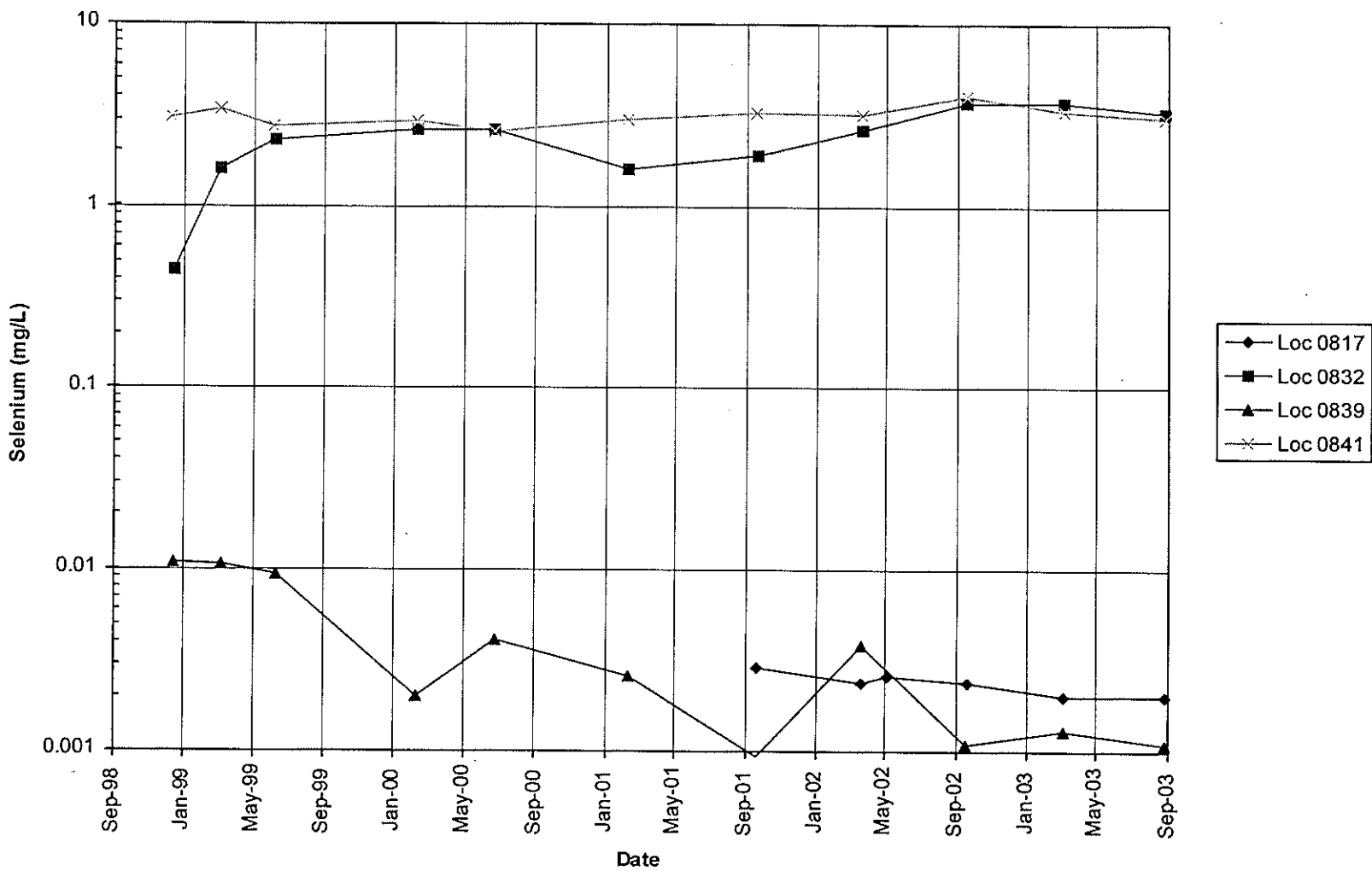
SHIPROCK (TAILINGS AREA) (SHP02)

Nitrate as NO3 Concentration



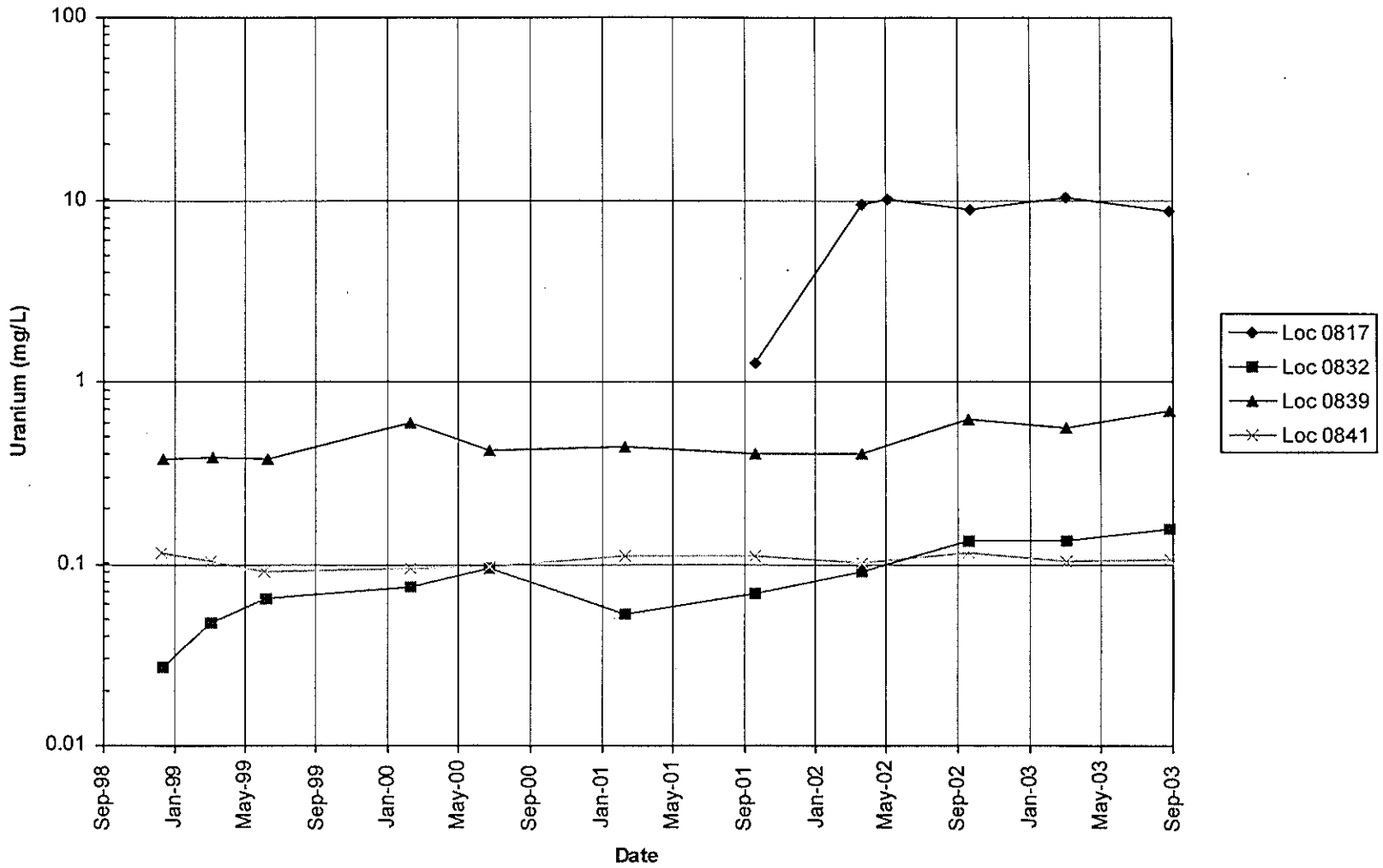
SHIPROCK (TAILINGS AREA) (SHP02)

Selenium Concentration



SHIPROCK (TAILINGS AREA) (SHP02)

Uranium Concentration



STATIC GROUND WATER LEVELS

STATIC WATER LEVELS (USEE700) FOR SITE SHP01, SHIPROCK
 REPORT DATE: 10/14/2003 3:53 pm

LOCATION CODE	FLOW CODE	TOP OF CASING ELEVATION (FT)	MEASUREMENT		DEPTH FROM TOP OF CASING (FT)	WATER ELEVATION (FT)	WATER LEVEL FLAG
			DATE	TIME			
0608		4893.35	08/25/2003	16:55	7.25	4886.10	
0614		4892.79	08/26/2003	08:30	8.81	4883.98	
0615		4892.23	08/26/2003	09:07	8.93	4883.30	
0618		4891.51	08/26/2003	09:59	8.42	4883.09	
0619		4892.19	08/26/2003	10:33	9.54	4882.65	
0734		4886.55	08/26/2003	13:15	7.37	4879.18	
0735		4895.85	08/25/2003	15:38	7.44	4888.41	
0736		4887.99	08/26/2003			-	D
0797		4908.04	08/25/2003	16:32	9.79	4898.25	
0850	B	4907.51	08/25/2003	17:10	9.76	4897.75	
1008		4890.80	08/26/2003	11:23	9.62	4881.18	

RECORDS: SELECTED FROM USEE700 WHERE site_code='SHP01' AND LOG_DATE between #8/25/2003# and #8/28/2003#

FLOW CODES: B BACKGROUND

WATER LEVEL FLAGS:

D Dry

STATIC WATER LEVELS (USEE700) FOR SITE SHP02, SHIPROCK (TAILINGS AREA)
REPORT DATE: 10/14/2003 3:53 pm

LOCATION CODE	FLOW CODE	TOP OF CASING ELEVATION (FT)	MEASUREMENT		DEPTH FROM TOP OF CASING (FT)	WATER ELEVATION (FT)	WATER LEVEL FLAG
			DATE	TIME			
0817		4957.34	08/27/2003	16:27	18.66	4938.68	
0832		4964.65	08/27/2003	13:54		-	
0835		4930.48	08/27/2003	16:01	20.23	4910.25	
0836		4901.74	08/26/2003	15:41	23.15	4878.59	
0838		4937.70	08/27/2003	13:10	26.40	4911.30	
0839		4943.21	08/27/2003	15:40	26.00	4917.21	
0841		4984.05	08/27/2003	15:06	45.12	4938.93	
0846		4934.57	08/26/2003	16:50	22.20	4912.37	
1060		4970.62	08/27/2003	14:15	34.61	4936.01	
1079		4925.22	08/27/2003	12:55	14.66	4910.56	

RECORDS: SELECTED FROM USEE700 WHERE site_code='SHP02' AND LOG_DATE between #8/25/2003# and #8/28/2003#

FLOW CODES:

WATER LEVEL FLAGS:

**SAMPLING AND ANALYSIS
WORK ORDER
AND TRIP REPORT**



August 11, 2003

Donald R. Metzler
Program Manager
U.S. Department of Energy
Grand Junction Office
2597 B 3/4 Road
Grand Junction, CO 81503

SUBJECT: Contract No. DE-AC13-02GJ79491, Stoller
September 2003 UMTRA Ground Water Sampling at Shiprock, New Mexico

Reference: FY 2003 UGW Task Order No. ST03-109-10

Dear Mr. Metzler:

Enclosed are the map and tables specifying sample locations and analytes for routine monitoring at the Shiprock, New Mexico, UMTRA site. Water quality data will be collected from monitor wells and surface locations at this site as part of the routine UMTRA Ground Water sampling scheduled to begin the week of September 8, 2003.

The following lists show the Ground Water Project monitor well and surface water locations that will be sampled during this event.

Ground Water Project Monitor Wells (filtered)*

SHP01

608 Km	615 Al	619 Al	735 Al	797 Al	850 Al	1008 Al
614 Al	618 Al	734 Al	736 Al			

SHP02

817 Km	835 Al	838 Al	841 Al	846 Al	1060 Al	1079 Al
832 Al	836 Al	839 Al				

*NOTE: Al = Alluvium; Km = Mancos Shale

Surface Water (filtered)

SHP01

501	887	898	956	965	1203	1205
655	897	940	959			

SHP02

425	662	884	889	934	942	958
426	786	885	933	936		

RECORD COPY



GW Shp 14.6

Data loggers will be downloaded from the following locations:

SHP01

617	736	766	854	857	899	1008
-----	-----	-----	-----	-----	-----	------

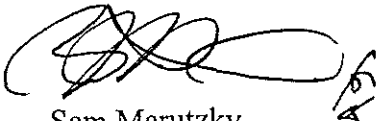
SHP02

602	730	819	828	835	841	848
604	731	826	830	836	843	1060
728	813	827	832	837	846	

QA/QC samples will be collected as directed in the *Sampling and Analysis Plan for the GJO Projects*. Access agreements are covered under the cooperative agreement.

If you have any questions, please call me at extension 6059 or Dave Traub at extension 6557.

Sincerely,



Sam Marutzky
Project Manager

SM/lcg/lad
Enclosures (3)

cc: C. S. Goodknight, Stoller
R. B. Chessmore, Stoller
D. G. Traub, Stoller
Project File GWSHP 14.06 (Thru S. Morris)

cc w/o enclosures:
K. E. Miller, Stoller
Correspondence Control File (Thru V. Creagar)

**Sampling Frequencies for Locations at
Shiprock, New Mexico**

Wells	Quarterly	Semiannually	Annually	Biennially	Not Sampled	Notes
Ground Water Project Monitor Wells						
SHP01						
608		X				Low flow
614		X				Low flow
615		X				Low flow
617					X	Data logger only
618		X				Low flow
619		X				Low flow
734		X				Low flow
735		X				Low flow
736		X				Low flow
766					X	Data logger only
797		X				Low flow
850		X				Low flow
854					X	Data logger only
857					X	Data logger only
899					X	Data logger only
1008		X				Low flow
SHP02						
602					X	Data logger only
604					X	Data logger
648				Odd year	X	Measure flow rate semiannually; sample next in 3/05
728					X	Data logger
730					X	Data logger only
731					X	Data logger only
800					X	Water levels only; in March
801					X	Water levels only; in March
802					X	Water levels only; in March
803					X	Water levels only; in March
813					X	Data logger
817		X				Low flow
819					X	Data logger
826					X	Data logger
827					X	Data logger only
828					X	Data logger
830					X	Data logger only
832		X				Low flow; data logger
835		X				Low flow; data logger
836		X				Low flow; data logger
837					X	Data logger only
838		X				Low flow
839		X				Low flow
841		X				Low flow; data logger
843					X	Data logger only
846		X				Low flow; data logger
848					X	Data logger only
1060		X				Low flow; data logger
1079		X				Low flow

**Sampling Frequencies for Locations at
Shiprock, New Mexico**

Wells	Quarterly	Semiannually	Annually	Biennially	Not Sampled	Notes
<i>Ground Water Project Surface Locations</i>						
SHP01						
501		X				E of pile, San Juan River
655		X				Drainage channel
887		X				Distributary channel
897		X				Just below mouth of Many Devils Wash
898		X				San Juan River upgradient
940		X				Just NE of 1008, San Juan River
956		X				San Juan River at intake
959		X				Distributary channel just below 1st wash
965		X				San Juan River about 1500' below dist. Channel
1203		X				E of pile, San Juan River
1205		X				San Juan River E of well 853
SHP02						
425		X				Escarpment Seep
426		X				Escarpment Seep
662		X				Lower Bob Lee Wash
786		X				Seep below US Hwy 419 bridge; FLOW RATE
884		X				Irrigation return flow
885		X				Upper Bob Lee Wash; water level
889		X				Many Devils Wash; just below knickpoint
933		X				1st wash W of Highway 419
934		X				2nd wash W of Highway 419
936		X				Seep between 1st & 2nd washes
942		X				Pond NW of 847
958					Odd year	Helium lateral canal where water comes into canal at pump station; SAMPLE IF THERE IS ANY WATER

Sampling conducted in March and September

**Constituent Sampling Breakdown
For Individual Sites**

Site	Shiprock	
	Ground Water	Surface Water
Analyte		
Approx. No. Samples/yr	47	43
<i>Field Measurements</i>	<i>UGW</i>	<i>UGW</i>
Alkalinity	X	X
Dissolved Oxygen		
Redox Potential	X	X
pH	X	X
Specific Conductance	X	X
Turbidity	X	
Temperature	X	X
<i>Laboratory Measurements</i>	<i>UGW</i>	<i>UGW</i>
Aluminum		
Ammonium	X	X
Antimony		
Arsenic		
Beryllium		
Bromide		
BTEX		
Cadmium		
Calcium	X	X
Chloride	X	X
Chromium		
Cobalt		
Copper		
Fluoride		
Gamma Spec		
Gross Alpha		
Gross Beta		
Iron		
Lead		
Lead-210		
Magnesium	X	X
Manganese	X	X
Mercury		
Molybdenum		

**Constituent Sampling Breakdown
For Individual Sites**

Site	Shiprock	
	Ground Water	Surface Water
<i>Laboratory Measurements (Continued)</i>	<i>UGW</i>	<i>UGW</i>
Nickel		
Nickel-63		
Nitrate	X	X
Organics		
PCBs		
Phosphate		
Polonium-210		
Potassium	X	X
Radium-226		
Radium-228		
Radon-222		
Selenium	X	X
Silica		
Sodium	X	X
Strontium	X	X
Sulfate	X	X
Sulfide		
Thallium		
Thorium-230		
Thorium-232		
Tin		
Total Dissolved Solids	X	X
Total Organic Carbon		
Tritium		
Uranium	X	X
Uranium-234, -238		
Vanadium		
Zinc		
Total Analytes	13	13

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



USHP000997

Stoller

Grand Junction Office

established 1959

Memorandum

Control Number N/A

DATE: September 16, 2003
TO: Sam J. Marutzky
FROM: Jeff E. Price *reed for*
SUBJECT: UGW Sampling Trip Report

Site: Shiprock, New Mexico

Dates of Sampling Event: August 25 – 28, 2003

Team Members: Dave Miller, Dan Sellers, Dave Traub, and Jeff Price

Number of Locations Sampled: 19 wells; 20 surface locations.

Locations Not Sampled/Reason: Wells 0734 and 0736, and surface locations 0655, 0885, and 0934 were dry.

Field Variance: Wells 0839 and 1060 were sampled with a non-dedicated pump prior to the four-hour waiting period between pump placement and sampling.

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

False ID	True ID	Sample Type	Associated Matrix	Ticket Number
1836	836	Duplicate	Ground water	NDU-559
9581	958	Duplicate	Surface water	NDU-188
9560	9560	Equipment Blank	Surface water	NDU-193
1846	1846	Equipment Blank	Ground water	NDU-561

Water Level Measurements: Water level elevations were measured on sampled wells.

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Well Inspection Summary: All wells inspected were in satisfactory conditions. The surface casing from well 0730 had been hit by an automobile and was found lying on the ground. A data logger, which had been installed in well 0730, appeared to be undamaged and was removed by the sampling crew. The crater left by the well casing removal was temporarily filled and marked and will be repaired at a later date.

Requisition Number: 18592.

Equipment: All sampling equipment operated properly, except for GSA truck 03308, in which the transmission failed.

Regulatory: None.

Site Issues: Tamarisk plants need to be cut to clear access to several well and surface water locations.

Location Specific Information: See following table.

Well/ Location Number.	Date Sampled	Ticket Number	Comments
0797	08/25/2003	NDU 176	Purge rate was slowed to <100 ml/min just before well went dry.
0850	08/25/2003	NDU 177	
0898	08/25/2003	NDU 178	
1205	08/26/2003	NDU 179	
0425	8/26/2003	NDU 180	Flow rate is ~0.33 gpm; lot of tamarisk growing around seep
0940	8/26/2003	NDU 181	Sample collected ~100' NE of stake. River is low and very, very silty
0655	8/26/2003		DRY; no sample
0786	8/26/2003	NDU 182	Sample collected west of bridge from small pool ~20" x 8" x ¾" deep. This pool collects water dripping from seep.
0426	8/26/2003	NDU 183	Flow rate ~1.6 gpm. Lots of weeds growing.
0662	8/26/2003	NDU 184	
0885	8/26/2003		DRY; no sample
0897	8/26/2003	NDU 185	
0889	8/26/2003	NDU 186	All water is coming from shale on east side of wash; west side is dry. Flow rate below seeps at old nick point is about 0.5 gpm.
0958	8/26/2003	NDU 187	Ditch is full.
0884	8/26/2003	NDU 189	Flow between 30 – 50 gpm.
0887	8/26/2003	NDU 190	No flow; stagnant pool.
0942	8/26/2003	NDU 191	Strong flow; ~30-50 gpm.
0934	8/26/2003		DRY; no sample; large patch of green weeds.
0956	8/26/2003	NDU 192	
0959	8/27/2003	NDU 195	Sampled from small pools at base of cliff.
0936	8/27/2003	NDU 196	Mostly dry; made holes that slowly filled.
1079	8/27/2003	NDU 197	
0832	8/27/2003	NDU 198	WL below pump top.
0841	8/27/2003	NDU 199	
0735	8/25/2003	NDU 117	
0501	8/25/2003	NDU 118	High flow (rain)
1203	8/25/2003	NDU 119	High water in river.
0608	8/25/2003	NDU 120	
0614	8/26/2003	NDU 121	
0615	8/26/2003	NDU 122	

Well/ Location Number.	Date Sampled	Ticket Number	Comments
0618	8/26/2003	NDU 123	
0619	8/26/2003	NDU 124	
1008	8/26/2003	NDU 125	
0736	8/26/2003		DRY; no sample
0734	8/26/2003		Purged dry; no sample.
0839	8/26/2003	NDU 565	Drawdown below pump @ 100 ml/min.
0836	8/26/2003	NDU 558	
0846	8/26/2003	NDU 560	
0965	8/27/2003	NDU 194	
0933		NDU 562	
0838		NDU 563	
1060		NDU 564	Whale placed in well right before purging. Could not get turbidity to drop.
0835		NDU 566	
0817		NDU 567	

(JEP/lcg)

cc: D. R. Metzler, DOE-GJO
C. S. Goodknight, Stoller
K. E. Miller, Stoller
Project File GWSHP 14.12 (Thru S. Morris)

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