

## TECHNICAL MEMORANDUM

**To:** Andy Mork, IDEQ, Boise

**From:** Don Vernon, TerraGraphics, Boise  
Robin Nimmer, TerraGraphics, Moscow

**Date:** June 30, 2011

**Subject:** EMF Floodwater Analysis May 2011

**Job Code:** 2010-7170-2

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The purpose of this memo is to summarize the results of floodwater sampling at East Mission Flats (EMF) in May of 2011. This sampling effort was not part of a regular sampling program but was conducted opportunistically to evaluate surface-water quality during a major flood event at EMF after contaminated soil has been placed on site.

### *General*

The decision to sample was based on the level of flood waters observed on site at EMF. Based on the National Weather Service (NOAA, 2011), the Coeur d'Alene (CDA) River at Cataldo was forecasted to peak at 5:00 PM on May 16, 2011. The actual stage peak of 43.93 feet (elevation of 2147.60 feet above mean sea level [amsl]) was recorded above the gage baseline (2103.67 feet amsl) by the US Geological Survey (USGS) at 6:45 PM on that day. A stage-hydrograph of the Coeur d'Alene River is included as Figure 1 summarizing stage elevations from May 6, 2011 through May 31, 2011 (NOAA, 2011). Sampling before and after the peak level provided the test results for flood waters entering EMF and receding water flowing out of EMF.

Samples were collected on two separate days. The first set of samples was collected on May 16, 2011 while water levels were rising at EMF. Water was observed flowing into EMF through culverts under I-90, via the CDA river water at this time. Surface water at EMF was also likely from the rising water levels in the wetland west of EMF. A second set of samples was collected on May 20, 2011 after the stage height dropped approximately three feet from the peak and water levels at EMF were receding.

On each occasion, samples were taken from four locations (Figure 2). Locations were chosen to represent the various hydrologic zones around EMF and are described in Table 1. Location EMF-SW-A was at the eastern end of the site just south of the proposed dump pad at the mouth of a culvert that feeds water in and out from an area south of the I-90. Location EMF-SW-B was located at the southwestern area of the site at the mouth of a culvert that feeds water in and out from an area between I-90 and the I-90 west off-ramp. Location EMF-SW-C was near the repository bridge, and provided data for water that was backed up from the wetlands northwest

of EMF and river water via the culvert west of the overpass. Location EMF-SW-D was northeast of the repository.

Field parameters measured at the sites included depth to water, pH, conductivity, temperature, dissolved oxygen, and oxidation-reduction potential (ORP). Samples were delivered to SVL Analytical Inc. in Kellogg, Idaho where they were analyzed for total and dissolved antimony, arsenic, cadmium, lead, and zinc.

### ***Results***

Visual observations of surface water during the rise of the water at EMF on May 16, 2011 were noted. The water was turbid at the two culvert area sample locations (EMF-SW-A and EMF-SW-B) where water was actively flowing into and inundating the site from the river. At EMF-SW-C the water was more stagnant and had a tea-like appearance; it was not turbid. This water is likely from the wetland to the west. At EMF-SW-D the water appeared to be a mixture of the tea-colored water from the wetland to the west and the turbid water from the river to the east.

Field parameter results are summarized in Table 2 for the May 16, 2011 and May 20, 2011 sampling dates. pH values increased at each site except EMF-SW-B. Conductivity increased at EMF-SW-A and EMF-SW-D while DO decreased. The water temperature and ORP increased at each of the sites.

Water quality results are summarized in Tables 3 and 4, total recoverable metals and dissolved metals, respectively. Total and dissolved antimony, arsenic, and cadmium were not detected in any of the samples. Total and dissolved zinc were detected in each sample for both sampling dates. Total and dissolved zinc concentrations were highest on May 16 at each site. On May 16 EMF-SW-B had the highest total and dissolved zinc concentrations of 0.172 mg/l and 0.154 mg/l, respectively. On May 20 EMF-SW-A had the highest total and dissolved zinc concentrations of 0.0806 mg/l and 0.0751 mg/l, respectively. Total lead was detected at each of the sites on May 16 with the exception of EMF-SW-B; the highest concentration of 0.0211 mg/l was detected at EMF-SW-A. On May 20 total lead was not detected in any sample. Conversely, dissolved lead was not detected in any samples from May 16, but was detected in EMF-SW-C on May 20 with a concentration of 0.0083 mg/l.

The acute criteria for aquatic life (CMC) for dissolved metals in surface water according to the Rules of the Department of Environmental Quality, IDAPA 58.01.02, "Water Quality Standards," are compared with the dissolved metal data. The regulatory thresholds for dissolved cadmium, lead, and zinc are dependent on water hardness, and were calculated using the equations provided in IDAPA and using a hardness of 80 mg/L as CaCO<sub>3</sub>; this is the average hardness for the Coeur d'Alene River as reported by IDEQ (TerraGraphics, 2008). It should be noted the calculated regulatory threshold for dissolved cadmium is lower than the method reporting limit. Dissolved zinc exceeded the regulatory threshold at EMF-SW-A and EMF-SW-B for the May 16, 2011 sampling event.

### ***Comparison with May 2008 Sampling Event***

In May 2008 a similar floodwater sampling event was conducted at EMF (TerraGraphics, 2008) to evaluate water quality changes and to establish baseline conditions before the repository was built. Samples were collected from four locations on May 20, 2008 and May 28, 2008. Total

and dissolved arsenic, lead, and zinc were analyzed. Water quality results are summarized in Tables 5 and 6. Field parameters were not measured during the 2008 sampling event. Two locations were similar between the 2008 and 2011 sampling events, 1) EMF-3 (2008) and EMF-SW-C (2011), and 2) EMF-1 (2008) and EMF-SW-A (2011).

The overall findings are consistent when comparing the inflow and outflow sampling days (i.e. May 20 and 28, 2008; May 16 and 20, 2011) for each event. The method reporting limits were less in 2008 than in 2011 for arsenic and lead; therefore, only patterns are examined. In 2008, total lead and total zinc were detected above the method reporting limit at each site on both days per event. Consistent with the 2011 sampling event, total lead and total zinc concentrations decreased between the inflow sampling day and the outflow sampling day. Dissolved lead increased at two locations during the May 2008 event which was also seen at EMF-SW-C during the May 2011 event. Dissolved zinc was detected at each site on both days per event; concentrations decreased between the inflow sampling day and the outflow sampling day with the exception of one location during the 2008 event.

A comparison of the total metal and dissolved metal concentrations at the two similar site locations for both the 2008 and 2011 sampling events is depicted in Tables 7 and 8, respectively. The similar sites are 1) EMF-3 (2008) and EMF-SW-C (2011), and 2) EMF-1 (2008) and EMF-SW-A (2011). Different analysis methods were used for the 2008 and 2011 events. The method reporting limit for arsenic was less in 2008 (0.00300 mg/l) than in 2011 (0.025 mg/l). The method reporting limit for lead was also less in 2008 (0.00300 mg/l) than in 2011 (0.0075 mg/l). In order to make a direct comparison, 2008 arsenic and lead concentrations less than the 2011 reporting limits but greater than the 2008 reported values were recorded as Not Detected in Tables 7 and 8. Total and dissolved arsenic were not detected at the two sample locations in either the 2008 or 2011 sampling events. Total and dissolved zinc concentrations and total lead concentrations for both inflow and outflow were higher in 2008 than in 2011. Dissolved lead was only detected in the outflow of EMF-SW-C in 2011.

### ***Conclusions and Recommendations***

In concurrent findings with the May 2008 floodwater sampling event, the May 2011 floodwater sampling results show a general decrease in total metals in the surface water at EMF between the inflow and outflow sampling days. This is likely a result of metals-laden sediment settling out of the water at EMF. Dissolved lead at EMF-SW-C was the only location with an increase in dissolved lead between the inflow and outflow sampling; however, the concentration was well below the regulatory threshold. This pattern was also seen in the May 2008 sampling event. Of the 2008 and 2011 two similar site locations and including concentration data greater than the method reporting limits, dissolved zinc concentrations for the inflow and outflow were higher in 2008 than their counterparts for 2011. These data suggest the EMF repository is not negatively impacting the surface-water quality of water leaving the EMF area.

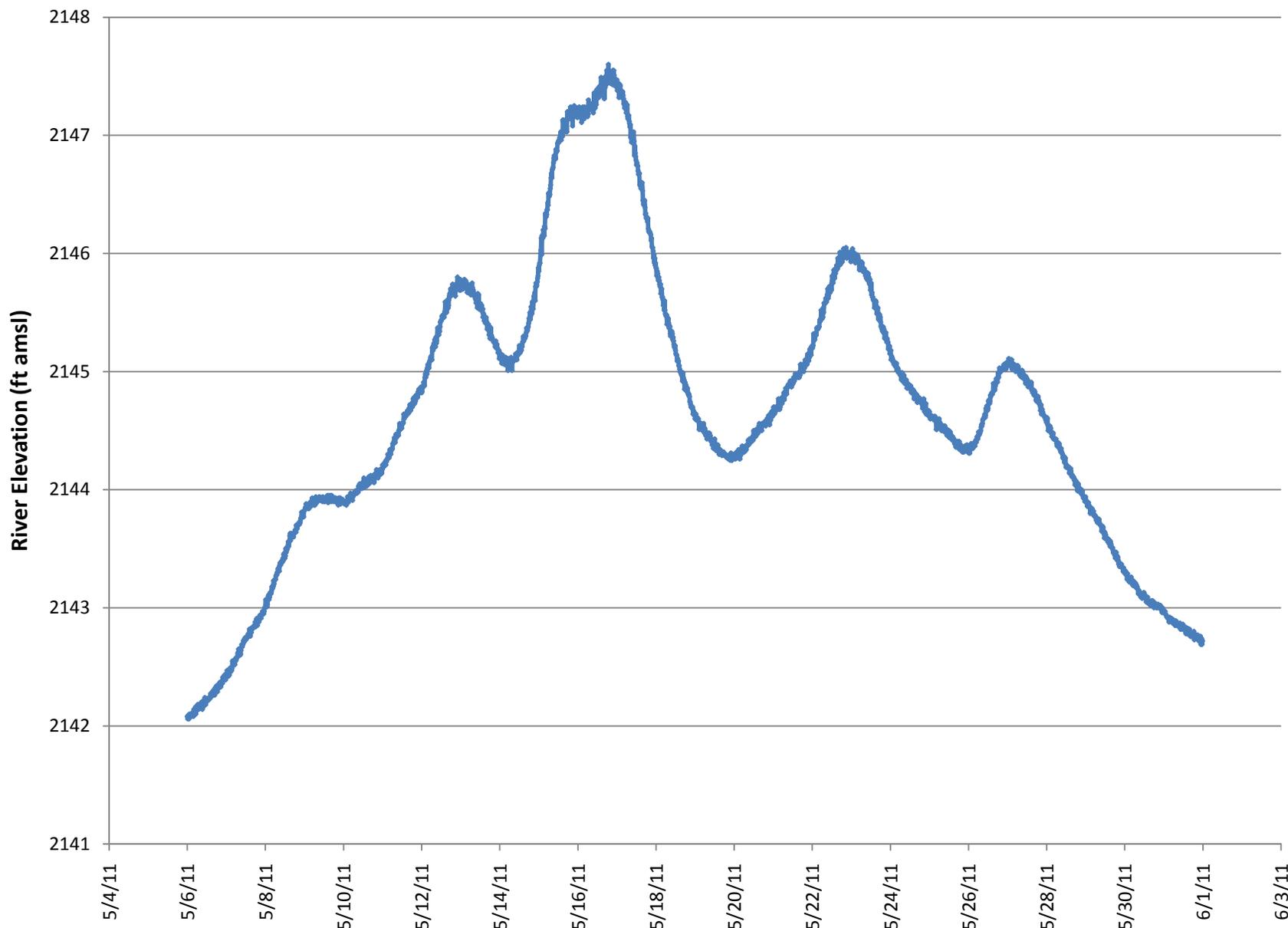
Water-quality monitoring should be continued during subsequent floodwater events. The data should be compared with the 2008 and 2011 floodwater sampling data.

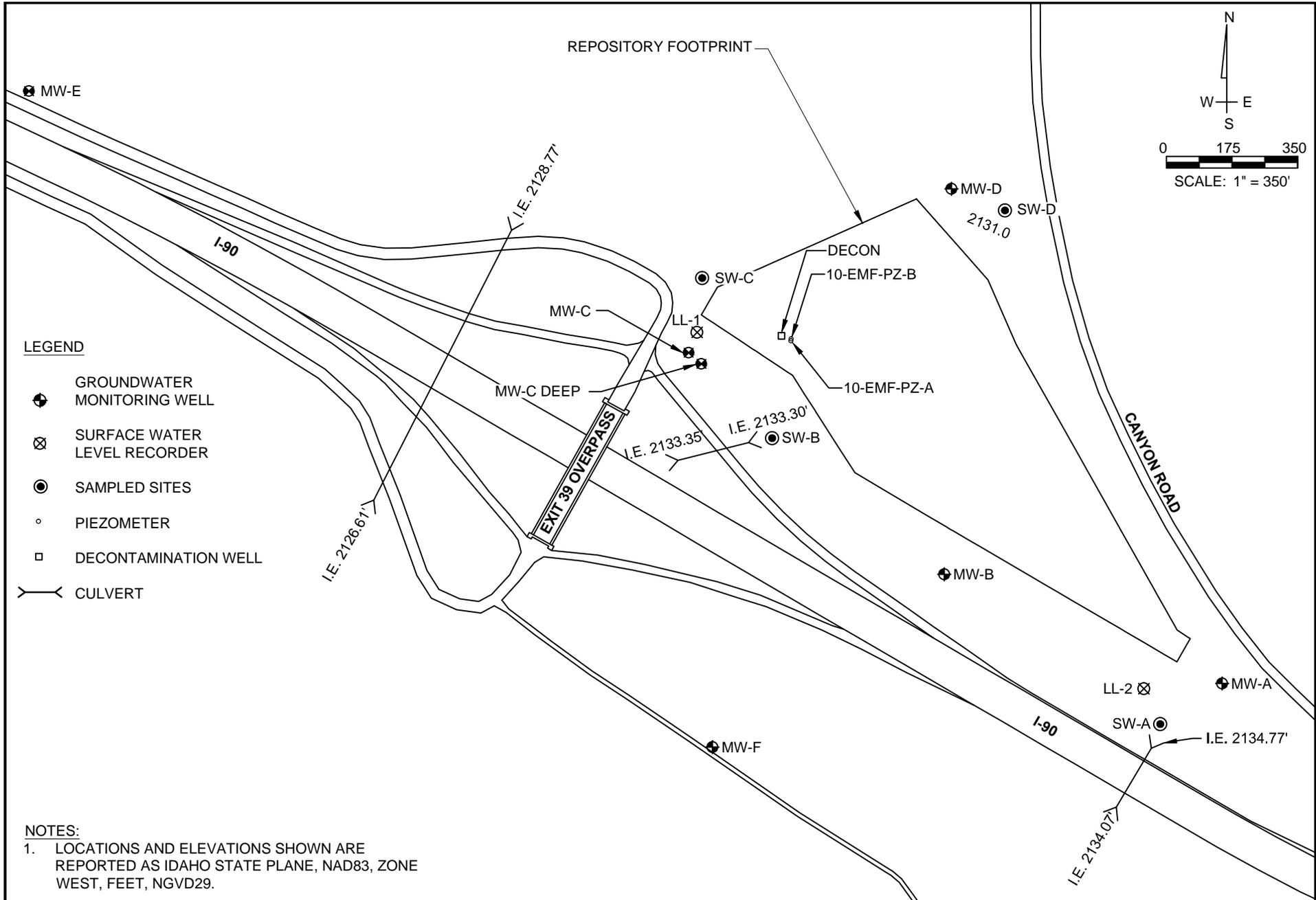
## *References*

National Oceanic Atmospheric Association (NOAA). 2011. Coeur d'Alene River at Cataldo, data courtesy of the US Geologic Survey  
[http://waterdata.usgs.gov/id/nwis/uv/?site\\_no=12413500](http://waterdata.usgs.gov/id/nwis/uv/?site_no=12413500)

TerraGraphics. 2008. Internal memo from Kelly Kincella and Dan McCracken to Don Vernon regarding EMF Flood Water Analysis, June 19, 2008.

**Figure 1. Coeur d'Alene River Elevation at Cataldo**





SCALE:  
 1" = 350' (8.5x11 PRINT)  
 DRAWN BY:  
 C.HALEY  
 ENGINEER:  
 S.BARKER



EAST MISSION FLATS  
 CATALDO, IDAHO

**FIGURE 2**  
 MAY 2011 FLOOD SAMPLING

PROJECT NO:  
 2010-2A-6340-20  
 DATE:  
 6/14/2011  
 FILE NAME:  
 emf  
 gw\_feb2011\_061411.dwg

**Table 1. Sample Location Information.**

<b>Hydrologic Zone</b>	<b>Water Action</b>	<b>Physical Location Description</b>	<b>Site Location ID</b>
Flood water from CDA River entering EMF via culvert	Flowing	Outlet of culvert by MW-A	EMF-SW-A
Water in detention area	Stagnant	Outlet of culvert between MW-C and MW-B	EMF-SW-B
Water likely from the wetland to the north and the river via culvert west of the overpass.	Stagnant	Northeast of the Interstate-90 overpass; near the overpass bridge	EMF-SW-C
Steady flow from SE to NW from the river.	Flowing	Southeast of MW-D	EMF-SW-D

**Table 2**  
**Field Parameters**  
**EMF Flood Water Monitoring Results**  
**May 2011 High Water Event**  
**East Mission Flats Repository**

Site ID	Date	Parameter				
		pH	Conductivity <sup>1</sup>	Temperature <sup>2</sup>	DO <sup>3</sup>	ORP <sup>4</sup>
EMF-SW-A	16-May-11	6.64	49	7.75	10.20	166
	20-May-11	6.70	72	13.73	7.10	186
EMF-SW-B	16-May-11	7.16	118	12.00	5.03	173
	20-May-11	6.70	91	14.60	5.77	189
EMF-SW-C	16-May-11	6.84	106	14.00	4.06	183
	20-May-11	6.89	96	16.42	5.66	192
EMF-SW-D	16-May-11	6.85	47	8.85	10.21	183
	20-May-11	6.88	75	15.62	5.73	196

Notes:

1. Conductivity as measured in microSiemens per centimeter
2. Temperature in degrees Celsius
3. DO = Dissolved oxygen, in milligrams per liter
4. ORP = Oxidation reduction potential, in millivolts

**Table 3**  
**Total Recoverable Metals**  
**EMF Flood Water Monitoring Results**  
**May 2011 High Water Event**  
**East Mission Flats Repository**  
All results in milligrams per liter (mg/L)

Sample ID	Analyte	Reporting Limit	Result <sup>1</sup>		
			16-May-11	20-May-11	Difference <sup>2</sup>
EMF-SW-A	Antimony	0.020	ND <sup>3</sup>	ND	0
	Arsenic	0.025	ND	ND	0
	Cadmium	0.0020	ND	ND	0
	Lead	0.0075	0.0211	ND	0.0136
	Zinc	0.010	0.124	0.0806	0.043
EMF-SW-B	Antimony	0.020	ND	ND	0
	Arsenic	0.025	ND	ND	0
	Cadmium	0.0020	ND	ND	0
	Lead	0.0075	ND	ND	0
	Zinc	0.010	0.172	0.0723	0.100
EMF-SW-C	Antimony	0.020	ND	ND	0
	Arsenic	0.025	ND	ND	0
	Cadmium	0.0020	ND	ND	0
	Lead	0.0075	0.0077	ND	0.0002
	Zinc	0.010	0.112	0.0594	0.053
EMF-SW-D	Antimony	0.020	ND	ND	0
	Arsenic	0.025	ND	ND	0
	Cadmium	0.0020	ND	ND	0
	Lead	0.0075	0.0097	ND	0.0022
	Zinc	0.010	0.087	0.0486	0.038

**Notes**

1. Samples analyzed by EPA Method 200.7
2. Difference = (16 May results) - (20 May results). Positive number indicates decrease in metals concentration over reporting period.
3. ND - Not detected above method reporting limit

**Table 4**  
**Dissolved Metals**  
**EMF Flood Water Monitoring Results**  
**May 2011 High Water Event**  
**East Mission Flats Repository**  
All results in milligrams per liter (mg/L)

Sample ID	Analyte	Reporting Limit	Results <sup>1</sup>			Regulatory Threshold <sup>4</sup>
			16-May-11	20-May-11	Difference <sup>2</sup>	
EMF-SW-A	Antimony	0.020	ND <sup>3</sup>	ND	0	NA
	Arsenic	0.025	ND	ND	0	0.340
	Cadmium	0.0020	ND	ND	0	0.0011
	Lead	0.0075	ND	ND	0	0.049
	Zinc	0.010	0.101	0.0751	0.026	0.097
EMF-SW-B	Antimony	0.020	ND	ND	0	NA
	Arsenic	0.025	ND	ND	0	0.340
	Cadmium	0.0020	ND	ND	0	0.0011
	Lead	0.0075	ND	ND	0	0.049
	Zinc	0.010	0.154	0.064	0.090	0.097
EMF-SW-C	Antimony	0.020	ND	ND	0	NA
	Arsenic	0.025	ND	ND	0	0.340
	Cadmium	0.0020	ND	ND	0	0.0011
	Lead	0.0075	ND	0.0083	-0.0008	0.049
	Zinc	0.010	0.0721	0.0508	0.0213	0.097
EMF-SW-D	Antimony	0.020	ND	ND	0	NA
	Arsenic	0.025	ND	ND	0	0.340
	Cadmium	0.0020	ND	ND	0	0.0011
	Lead	0.0075	ND	ND	0	0.049
	Zinc	0.010	0.0747	0.0424	0.0323	0.097

**Notes**

1. Samples analyzed by EPA Method 200.7
2. Difference = (16 May results) - (20 May results). Positive number indicates decrease in metals concentration over reporting period.
3. ND - Not detected above method reporting limit
4. Idaho Ambient Water Quality Criteria (Aquatic life - Acute criteria)  
Cd, Pb, and Zn values calculated based on hardness of 80 mg/l

= Value exceeds regulatory threshold

**Table 5**  
**Total Recoverable Metals**  
**EMF Flood Water Monitoring Results**  
**May 2008 High Water Event**  
**East Mission Flats Repository**  
All results in milligrams per liter (mg/L)

Sample ID	Analyte	Reporting Limit	Result <sup>1</sup>		
			20-May-08	28-May-08	Difference <sup>2</sup>
EMF-1	Arsenic	0.00300	ND <sup>3</sup>	ND	NA
	Lead	0.00300	0.0656	0.00885	0.0568
	Zinc	0.0100	0.21	0.108	0.1020
EMF-2	Arsenic	0.00300	0.00376	ND	NA
	Lead	0.00300	0.0706	0.00911	0.0615
	Zinc	0.0100	0.188	0.129	0.0590
EMF-3	Arsenic	0.00300	0.00542	0.00317	0.0023
	Lead	0.00300	0.0573	0.00535	0.0520
	Zinc	0.0100	0.44	0.0821	0.3579
EMF-4	Arsenic	0.00300	ND	ND	NA
	Lead	0.00300	0.0879	0.0274	0.0605
	Zinc	0.0100	0.125	0.0874	0.0376

**Notes**

1. Samples analyzed by EPA Method 200.8
2. Difference = (20 May results) - (28 May results). Positive number indicates decrease in metals concentration over reporting period.
3. ND - Not detected above method reporting limit

**Table 6**  
**Dissolved Metals**  
**EMF Flood Water Monitoring Results**  
**May 2008 High Water Event**  
**East Mission Flats Repository**  
All results in milligrams per liter (mg/L)

Sample ID	Analyte	Reporting Limit	Results <sup>1</sup>			Regulatory Threshold <sup>4</sup>
			20-May-08	28-May-08	Difference <sup>2</sup>	
EMF-1	Arsenic	0.00300	ND <sup>3</sup>	ND	0	0.340
	Lead	0.00300	0.00305	0.00449	-0.00144	0.049
	Zinc	0.0100	0.153	0.109	0.044	0.097
EMF-2	Arsenic	0.00300	ND	ND	0	0.340
	Lead	0.00300	0.00326	0.00519	-0.00193	0.049
	Zinc	0.0100	0.135	0.126	0.009	0.097
EMF-3	Arsenic	0.00300	ND	ND	0	0.340
	Lead	0.00300	0.0049	0.00324	0.00166	0.049
	Zinc	0.0100	0.259	0.0802	0.1788	0.097
EMF-4	Arsenic	0.00300	ND	ND	0	0.340
	Lead	0.00300	ND	ND	0	0.049
	Zinc	0.0100	0.0492	0.0658	-0.0166	0.097

**Notes**

1. Samples analyzed by EPA Method 200.8
2. Difference = (20 May results) - (28 May results). Positive number indicates decrease in metals concentration over reporting period.
3. ND - Not detected above method reporting limit
4. Idaho Ambient Water Quality Criteria (Aquatic life - Acute criteria)  
Cd, Pb, and Zn values calculated based on hardness of 80 mg/l

= Value exceeds regulatory threshold

**Table 7**  
**Total Recoverable Metals**  
**2008 & 2011 EMF Flood Water Monitoring Results**  
**Comparison at Similar Site Locations**  
**East Mission Flats Repository**  
All results in milligrams per liter (mg/L)

Sample Site ID	Analyte	Result <sup>1</sup>			
		Inflow		Outflow	
		2008	2011	2008	2011
EMF-1 (2008) & EMF-SW-A (2011)	Arsenic	ND <sup>2</sup>	ND	ND	ND
	Lead	0.06560	0.0211	0.00885	ND
	Zinc	0.2100	0.124	0.1080	0.0806
EMF-3 (2008) & EMF-SW-C (2011)	Arsenic	ND	ND	ND	ND
	Lead	0.05730	0.0077	ND	ND
	Zinc	0.4400	0.112	0.0821	0.0594

**Notes**

1. 2011 reporting limits.
2. ND - Not detected above method reporting limit

**Table 8**  
**Dissolved Metals**  
**2008 & 2011 EMF Flood Water Monitoring Results**  
**Comparison at Similar Site Locations**  
**East Mission Flats Repository**  
All results in milligrams per liter (mg/L)

Sample Site ID	Analyte	Result <sup>1</sup>				Regulatory Threshold <sup>3</sup>
		Inflow		Outflow		
		2008	2011	2008	2011	
EMF-1 (2008) & EMF-SW-A (2011)	Arsenic	ND <sup>2</sup>	ND	ND	ND	0.340
	Lead	ND	ND	ND	ND	0.049
	Zinc	0.1530	0.101	0.1090	0.0751	0.097
EMF-3 (2008) & EMF-SW-C (2011)	Arsenic	ND	ND	ND	ND	0.340
	Lead	ND	ND	ND	0.0083	0.049
	Zinc	0.2590	0.0721	0.0802	0.0508	0.097

**Notes**

1. 2011 reporting limits
2. ND - Not detected above method reporting limit
3. Idaho Ambient Water Quality Criteria (Aquatic life - Acute criteria)  
Cd, Pb, and Zn values calculated based on hardness of 80 mg/l

= Value exceeds regulatory threshold



Terragraphics (Moscow)  
121 S Jackson  
Moscow, ID 83843

**Project Name: Terragraphics EMF Well**  
Work Order: **W1E0382**  
Reported: 29-May-11 18:28

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received
(EMF-SW-A)051611	W1E0382-01	Surface Water	16-May-11 12:15	GM	16-May-2011
(EMF-SW-B)051611	W1E0382-02	Surface Water	16-May-11 13:01	GM	16-May-2011
(EMF-SW-C)051611	W1E0382-03	Surface Water	16-May-11 13:29	GM	16-May-2011
(EMF-SW-C-C)051611	W1E0382-04	Surface Water	16-May-11 13:29	GM	16-May-2011
(EMF-SW-D)051611	W1E0382-05	Surface Water	16-May-11 14:15	GM	16-May-2011

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.

Sample preparation is defined by the client as per their Data Quality Objectives.

This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.

The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.



One Government Gulch - PO Box 929

Kellogg ID 83837-0929

(208) 784-1258

Fax (208) 783-0891

Terragraphics (Moscow)  
121 S Jackson  
Moscow, ID 83843

**Project Name: Terragraphics EMF Well**  
Work Order: **W1E0382**  
Reported: 29-May-11 18:28

Client Sample ID: **(EMF-SW-A)051611**

SVL Sample ID: **W1E0382-01 (Surface Water)**

Sample Report Page 1 of 1

Sampled: 16-May-11 12:15  
Received: 16-May-11  
Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
<b>Metals (Total Recoverable--reportable as Total per 40 CFR 136)</b>										
EPA 200.7	Antimony	< 0.020	mg/L	0.020	0.002		W122041	AS	05/29/11 11:58	
EPA 200.7	Arsenic	< 0.025	mg/L	0.025	0.004		W122041	AS	05/29/11 11:58	
EPA 200.7	Cadmium	< 0.0020	mg/L	0.0020	0.0002		W122041	AS	05/29/11 11:58	
EPA 200.7	Lead	0.0211	mg/L	0.0075	0.0012		W122041	AS	05/29/11 11:58	
EPA 200.7	Zinc	0.124	mg/L	0.0100	0.0010		W122041	AS	05/29/11 11:58	
<b>Metals (Dissolved)</b>										
EPA 200.7	Antimony	< 0.020	mg/L	0.020	0.003		W121423	AS	05/29/11 11:11	
EPA 200.7	Arsenic	< 0.025	mg/L	0.025	0.007		W121423	AS	05/29/11 11:11	
EPA 200.7	Cadmium	< 0.0020	mg/L	0.0020	0.0005		W121423	AS	05/29/11 11:11	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0023		W121423	AS	05/29/11 11:11	
EPA 200.7	Zinc	0.101	mg/L	0.0100	0.0019		W121423	AS	05/29/11 11:11	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

**Larry Drew**  
Technical Director



One Government Gulch - PO Box 929

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Terragraphics (Moscow)  
121 S Jackson  
Moscow, ID 83843

**Project Name: Terragraphics EMF Well**  
Work Order: **W1E0382**  
Reported: 29-May-11 18:28

Client Sample ID: **(EMF-SW-B)051611**

SVL Sample ID: **W1E0382-02 (Surface Water)**

Sample Report Page 1 of 1

Sampled: 16-May-11 13:01  
Received: 16-May-11  
Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
<b>Metals (Total Recoverable--reportable as Total per 40 CFR 136)</b>										
EPA 200.7	Antimony	< 0.020	mg/L	0.020	0.002		W122041	AS	05/29/11 12:16	
EPA 200.7	Arsenic	< 0.025	mg/L	0.025	0.004		W122041	AS	05/29/11 12:16	
EPA 200.7	Cadmium	< 0.0020	mg/L	0.0020	0.0002		W122041	AS	05/29/11 12:16	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0012		W122041	AS	05/29/11 12:16	
EPA 200.7	Zinc	0.172	mg/L	0.0100	0.0010		W122041	AS	05/29/11 12:15	
<b>Metals (Dissolved)</b>										
EPA 200.7	Antimony	< 0.020	mg/L	0.020	0.003		W121423	AS	05/29/11 11:29	
EPA 200.7	Arsenic	< 0.025	mg/L	0.025	0.007		W121423	AS	05/29/11 11:29	
EPA 200.7	Cadmium	< 0.0020	mg/L	0.0020	0.0005		W121423	AS	05/29/11 11:29	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0023		W121423	AS	05/29/11 11:29	
EPA 200.7	Zinc	0.154	mg/L	0.0100	0.0019		W121423	AS	05/29/11 11:29	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

**Larry Drew**  
Technical Director



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Terragraphics (Moscow)  
121 S Jackson  
Moscow, ID 83843

**Project Name: Terragraphics EMF Well**  
Work Order: **W1E0382**  
Reported: 29-May-11 18:28

Client Sample ID: **(EMF-SW-C)051611**

SVL Sample ID: **W1E0382-03 (Surface Water)**

Sample Report Page 1 of 1

Sampled: 16-May-11 13:29  
Received: 16-May-11  
Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
<b>Metals (Total Recoverable--reportable as Total per 40 CFR 136)</b>										
EPA 200.7	Antimony	< 0.020	mg/L	0.020	0.002		W122041	AS	05/29/11 12:22	
EPA 200.7	Arsenic	< 0.025	mg/L	0.025	0.004		W122041	AS	05/29/11 12:22	
EPA 200.7	Cadmium	< 0.0020	mg/L	0.0020	0.0002		W122041	AS	05/29/11 12:22	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0012		W122041	AS	05/29/11 12:22	
EPA 200.7	Zinc	0.112	mg/L	0.0100	0.0010		W122041	AS	05/29/11 12:22	
<b>Metals (Dissolved)</b>										
EPA 200.7	Antimony	< 0.020	mg/L	0.020	0.003		W121423	AS	05/29/11 11:35	
EPA 200.7	Arsenic	< 0.025	mg/L	0.025	0.007		W121423	AS	05/29/11 11:35	
EPA 200.7	Cadmium	< 0.0020	mg/L	0.0020	0.0005		W121423	AS	05/29/11 11:35	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0023		W121423	AS	05/29/11 11:35	
EPA 200.7	Zinc	0.0721	mg/L	0.0100	0.0019		W121423	AS	05/29/11 11:35	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

**Larry Drew**  
Technical Director



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Kellogg ID 83837-0929

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Terragraphics (Moscow)  
121 S Jackson  
Moscow, ID 83843

**Project Name: Terragraphics EMF Well**  
Work Order: **W1E0382**  
Reported: 29-May-11 18:28

Client Sample ID: **(EMF-SW-C-C)051611**

SVL Sample ID: **W1E0382-04 (Surface Water)**

Sample Report Page 1 of 1

Sampled: 16-May-11 13:29  
Received: 16-May-11  
Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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**Metals (Total Recoverable--reportable as Total per 40 CFR 136)**

EPA 200.7	Antimony	< 0.020	mg/L	0.020	0.002		W122041	AS	05/29/11 12:28	
EPA 200.7	Arsenic	< 0.025	mg/L	0.025	0.004		W122041	AS	05/29/11 12:28	
EPA 200.7	Cadmium	< 0.0020	mg/L	0.0020	0.0002		W122041	AS	05/29/11 12:28	
EPA 200.7	Lead	0.0077	mg/L	0.0075	0.0012		W122041	AS	05/29/11 12:28	
EPA 200.7	Zinc	0.109	mg/L	0.0100	0.0010		W122041	AS	05/29/11 12:28	

**Metals (Dissolved)**

EPA 200.7	Antimony	< 0.020	mg/L	0.020	0.003		W121423	AS	05/29/11 11:40	
EPA 200.7	Arsenic	< 0.025	mg/L	0.025	0.007		W121423	AS	05/29/11 11:40	
EPA 200.7	Cadmium	< 0.0020	mg/L	0.0020	0.0005		W121423	AS	05/29/11 11:40	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0023		W121423	AS	05/29/11 11:40	
EPA 200.7	Zinc	0.0465	mg/L	0.0100	0.0019		W121423	AS	05/29/11 11:40	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

**Larry Drew**  
Technical Director



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Terragraphics (Moscow)  
121 S Jackson  
Moscow, ID 83843

**Project Name: Terragraphics EMF Well**  
Work Order: **W1E0382**  
Reported: 29-May-11 18:28

Client Sample ID: **(EMF-SW-D)051611**

SVL Sample ID: **W1E0382-05 (Surface Water)**

Sample Report Page 1 of 1

Sampled: 16-May-11 14:15  
Received: 16-May-11  
Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
<b>Metals (Total Recoverable--reportable as Total per 40 CFR 136)</b>										
EPA 200.7	Antimony	< 0.020	mg/L	0.020	0.002		W122041	AS	05/29/11 12:34	
EPA 200.7	Arsenic	< 0.025	mg/L	0.025	0.004		W122041	AS	05/29/11 12:34	
EPA 200.7	Cadmium	< 0.0020	mg/L	0.0020	0.0002		W122041	AS	05/29/11 12:34	
EPA 200.7	Lead	0.0097	mg/L	0.0075	0.0012		W122041	AS	05/29/11 12:34	
EPA 200.7	Zinc	0.0870	mg/L	0.0100	0.0010		W122041	AS	05/29/11 12:34	
<b>Metals (Dissolved)</b>										
EPA 200.7	Antimony	< 0.020	mg/L	0.020	0.003		W121423	AS	05/29/11 11:46	
EPA 200.7	Arsenic	< 0.025	mg/L	0.025	0.007		W121423	AS	05/29/11 11:46	
EPA 200.7	Cadmium	< 0.0020	mg/L	0.0020	0.0005		W121423	AS	05/29/11 11:46	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0023		W121423	AS	05/29/11 11:46	
EPA 200.7	Zinc	0.0747	mg/L	0.0100	0.0019		W121423	AS	05/29/11 11:46	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

**Larry Drew**  
Technical Director



Terragraphics (Moscow)  
121 S Jackson  
Moscow, ID 83843

**Project Name: Terragraphics EMF Well**  
Work Order: **W1E0382**  
Reported: 29-May-11 18:28

**Quality Control - BLANK Data**

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
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**Metals (Total Recoverable--reportable as Total per 40 CFR 136)**

EPA 200.7	Antimony	mg/L	<0.020	0.002	0.020	W122041	29-May-11	
EPA 200.7	Arsenic	mg/L	<0.025	0.004	0.025	W122041	29-May-11	
EPA 200.7	Cadmium	mg/L	<0.0020	0.0002	0.0020	W122041	29-May-11	
EPA 200.7	Lead	mg/L	<0.0075	0.0012	0.0075	W122041	29-May-11	
EPA 200.7	Zinc	mg/L	<0.0100	0.0010	0.0100	W122041	29-May-11	

**Metals (Dissolved)**

EPA 200.7	Antimony	mg/L	<0.020	0.003	0.020	W121423	29-May-11	
EPA 200.7	Arsenic	mg/L	<0.025	0.007	0.025	W121423	29-May-11	
EPA 200.7	Cadmium	mg/L	<0.0020	0.0005	0.0020	W121423	29-May-11	
EPA 200.7	Lead	mg/L	<0.0075	0.0023	0.0075	W121423	29-May-11	
EPA 200.7	Zinc	mg/L	<0.0100	0.0019	0.0100	W121423	29-May-11	

**Quality Control - LABORATORY CONTROL SAMPLE Data**

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
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**Metals (Total Recoverable--reportable as Total per 40 CFR 136)**

EPA 200.7	Antimony	mg/L	1.03	1.00	103	85 - 115	W122041	29-May-11	
EPA 200.7	Arsenic	mg/L	1.00	1.00	100	85 - 115	W122041	29-May-11	
EPA 200.7	Cadmium	mg/L	0.971	1.00	97.1	85 - 115	W122041	29-May-11	
EPA 200.7	Lead	mg/L	0.932	1.00	93.2	85 - 115	W122041	29-May-11	
EPA 200.7	Zinc	mg/L	0.977	1.00	97.7	85 - 115	W122041	29-May-11	

**Metals (Dissolved)**

EPA 200.7	Antimony	mg/L	1.01	1.00	101	85 - 115	W121423	29-May-11	
EPA 200.7	Arsenic	mg/L	1.01	1.00	101	85 - 115	W121423	29-May-11	
EPA 200.7	Cadmium	mg/L	1.02	1.00	102	85 - 115	W121423	29-May-11	
EPA 200.7	Lead	mg/L	1.02	1.00	102	85 - 115	W121423	29-May-11	
EPA 200.7	Zinc	mg/L	1.01	1.00	101	85 - 115	W121423	29-May-11	

**Quality Control - DUPLICATE Data**

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
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**Metals (Total Recoverable--reportable as Total per 40 CFR 136)**

EPA 200.7	Antimony	mg/L	<0.020	<0.020	UDL	20	W122041	29-May-11	
EPA 200.7	Arsenic	mg/L	<0.025	<0.025	UDL	20	W122041	29-May-11	
EPA 200.7	Cadmium	mg/L	<0.0020	<0.0020	<RL	20	W122041	29-May-11	
EPA 200.7	Lead	mg/L	0.0218	0.0211	3.1	20	W122041	29-May-11	
EPA 200.7	Zinc	mg/L	0.127	0.124	2.7	20	W122041	29-May-11	

**Metals (Dissolved)**

EPA 200.7	Antimony	mg/L	<0.020	<0.020	UDL	20	W121423	29-May-11	
EPA 200.7	Arsenic	mg/L	<0.025	<0.025	UDL	20	W121423	29-May-11	
EPA 200.7	Cadmium	mg/L	<0.0020	<0.0020	UDL	20	W121423	29-May-11	
EPA 200.7	Lead	mg/L	<0.0075	<0.0075	UDL	20	W121423	29-May-11	
EPA 200.7	Zinc	mg/L	0.103	0.101	2.3	20	W121423	29-May-11	



Terragraphics (Moscow)  
121 S Jackson  
Moscow, ID 83843

**Project Name: Terragraphics EMF Well**  
Work Order: **W1E0382**  
Reported: 29-May-11 18:28

**Quality Control - MATRIX SPIKE Data**

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
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**Metals (Total Recoverable--reportable as Total per 40 CFR 136)**

EPA 200.7	Antimony	mg/L	1.04	<0.020	1.00	104	70 - 130	W122041	29-May-11	
EPA 200.7	Arsenic	mg/L	1.02	<0.025	1.00	102	70 - 130	W122041	29-May-11	
EPA 200.7	Cadmium	mg/L	0.984	<0.0020	1.00	98.4	70 - 130	W122041	29-May-11	
EPA 200.7	Lead	mg/L	0.967	0.0211	1.00	94.5	70 - 130	W122041	29-May-11	
EPA 200.7	Zinc	mg/L	1.11	0.124	1.00	98.5	70 - 130	W122041	29-May-11	

**Metals (Dissolved)**

EPA 200.7	Antimony	mg/L	1.04	<0.020	1.00	104	70 - 130	W121423	29-May-11	
EPA 200.7	Antimony	mg/L	0.991	<0.020	1.00	99.1	70 - 130	W121423	29-May-11	
EPA 200.7	Arsenic	mg/L	1.06	<0.025	1.00	106	70 - 130	W121423	29-May-11	
EPA 200.7	Arsenic	mg/L	1.01	<0.025	1.00	101	70 - 130	W121423	29-May-11	
EPA 200.7	Cadmium	mg/L	1.05	<0.0020	1.00	105	70 - 130	W121423	29-May-11	
EPA 200.7	Cadmium	mg/L	0.996	<0.0020	1.00	99.6	70 - 130	W121423	29-May-11	
EPA 200.7	Lead	mg/L	1.05	<0.0075	1.00	105	70 - 130	W121423	29-May-11	
EPA 200.7	Lead	mg/L	0.991	<0.0075	1.00	99.1	70 - 130	W121423	29-May-11	
EPA 200.7	Zinc	mg/L	1.15	0.101	1.00	105	70 - 130	W121423	29-May-11	
EPA 200.7	Zinc	mg/L	0.998	<0.0100	1.00	99.8	70 - 130	W121423	29-May-11	

**Notes and Definitions**

LCS	Laboratory Control Sample (Blank Spike)
RPD	Relative Percent Difference
UDL	A result is less than the detection limit
R > 4S	% recovery not applicable, sample concentration more than four times greater than spike level
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable



Terragraphics (Moscow)  
121 S Jackson  
Moscow, ID 83843

**Project Name: Terragraphics EMF Well**  
Work Order: **W1E0521**  
Reported: 03-Jun-11 15:34

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received
(EMF-SW-A)052011	W1E0521-01	Surface Water	20-May-11 08:47	GM	20-May-2011
(EMF-SW-B)052011	W1E0521-02	Surface Water	20-May-11 09:15	GM	20-May-2011
(EMF-SW-C)052011	W1E0521-03	Surface Water	20-May-11 09:35	GM	20-May-2011
(EMF-SW-C-C)052011	W1E0521-04	Surface Water	20-May-11 09:35	GM	20-May-2011
(EMF-SW-D)052011	W1E0521-05	Surface Water	20-May-11 10:16	GM	20-May-2011

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.

Sample preparation is defined by the client as per their Data Quality Objectives.

This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.

The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.

(Q6) SVL received the following containers outside of published EPA guidelines for preservation temperatures (0-6°C).

The guidelines do not pertain to nitric-preserved metals.

**Default Cooler (Received Temperature: 9.2°C)**

Labnumber	Container	Client ID	Labnumber	Container	Client ID
W1E0521-01 A	Filtered nitric HDPE	(EMF-SW-A)052011	W1E0521-01 B	Nitric HDPE	(EMF-SW-A)052011
W1E0521-02 A	Filtered nitric HDPE	(EMF-SW-B)052011	W1E0521-02 B	Nitric HDPE	(EMF-SW-B)052011
W1E0521-03 A	Filtered nitric HDPE	(EMF-SW-C)052011	W1E0521-03 B	Nitric HDPE	(EMF-SW-C)052011
W1E0521-04 A	Filtered nitric HDPE	(EMF-SW-C-C)052011	W1E0521-04 B	Nitric HDPE	(EMF-SW-C-C)052011
W1E0521-05 A	Filtered nitric HDPE	(EMF-SW-D)052011	W1E0521-05 B	Nitric HDPE	(EMF-SW-D)052011



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Terragraphics (Moscow)  
121 S Jackson  
Moscow, ID 83843

**Project Name: Terragraphics EMF Well**  
Work Order: **W1E0521**  
Reported: 03-Jun-11 15:34

Client Sample ID: **(EMF-SW-A)052011**

SVL Sample ID: **W1E0521-01 (Surface Water)**

Sample Report Page 1 of 1

Sampled: 20-May-11 08:47  
Received: 20-May-11  
Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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**Metals (Total Recoverable--reportable as Total per 40 CFR 136)**

EPA 200.7	Antimony	< 0.020	mg/L	0.020	0.002		W122266	DT	06/03/11 13:28	
EPA 200.7	Arsenic	< 0.025	mg/L	0.025	0.004		W122266	DT	06/03/11 13:28	
EPA 200.7	Cadmium	< 0.0020	mg/L	0.0020	0.0002		W122266	DT	06/03/11 13:28	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0012		W122266	DT	06/03/11 13:28	
EPA 200.7	Zinc	0.0806	mg/L	0.0100	0.0010		W122266	DT	06/03/11 13:28	

**Metals (Dissolved)**

EPA 200.7	Antimony	< 0.020	mg/L	0.020	0.003		W121427	AS	06/02/11 14:37	
EPA 200.7	Arsenic	< 0.025	mg/L	0.025	0.007		W121427	AS	06/02/11 14:37	
EPA 200.7	Cadmium	< 0.0020	mg/L	0.0020	0.0005		W121427	AS	06/02/11 14:37	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0023		W121427	AS	06/02/11 14:37	
EPA 200.7	Zinc	0.0751	mg/L	0.0100	0.0019		W121427	AS	06/02/11 14:37	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

**John Kern**  
Laboratory Director



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Terragraphics (Moscow)  
121 S Jackson  
Moscow, ID 83843

**Project Name: Terragraphics EMF Well**  
Work Order: **W1E0521**  
Reported: 03-Jun-11 15:34

Client Sample ID: **(EMF-SW-B)052011**

SVL Sample ID: **W1E0521-02 (Surface Water)**

Sample Report Page 1 of 1

Sampled: 20-May-11 09:15  
Received: 20-May-11  
Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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**Metals (Total Recoverable--reportable as Total per 40 CFR 136)**

EPA 200.7	Antimony	< 0.020	mg/L	0.020	0.002		W122266	DT	06/03/11 13:45	
EPA 200.7	Arsenic	< 0.025	mg/L	0.025	0.004		W122266	DT	06/03/11 13:45	
EPA 200.7	Cadmium	< 0.0020	mg/L	0.0020	0.0002		W122266	DT	06/03/11 13:45	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0012		W122266	DT	06/03/11 13:45	
EPA 200.7	Zinc	0.0723	mg/L	0.0100	0.0010		W122266	DT	06/03/11 13:45	

**Metals (Dissolved)**

EPA 200.7	Antimony	< 0.020	mg/L	0.020	0.003		W121427	AS	06/02/11 14:43	
EPA 200.7	Arsenic	< 0.025	mg/L	0.025	0.007		W121427	AS	06/02/11 14:43	
EPA 200.7	Cadmium	< 0.0020	mg/L	0.0020	0.0005		W121427	AS	06/02/11 14:43	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0023		W121427	AS	06/02/11 14:43	
EPA 200.7	Zinc	0.0640	mg/L	0.0100	0.0019		W121427	AS	06/02/11 14:43	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

**John Kern**  
Laboratory Director



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Terragraphics (Moscow)  
121 S Jackson  
Moscow, ID 83843

**Project Name: Terragraphics EMF Well**  
Work Order: **W1E0521**  
Reported: 03-Jun-11 15:34

Client Sample ID: **(EMF-SW-C)052011**

SVL Sample ID: **W1E0521-03 (Surface Water)**

Sample Report Page 1 of 1

Sampled: 20-May-11 09:35  
Received: 20-May-11  
Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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**Metals (Total Recoverable--reportable as Total per 40 CFR 136)**

EPA 200.7	Antimony	< 0.020	mg/L	0.020	0.002		W122266	DT	06/03/11 13:51	
EPA 200.7	Arsenic	< 0.025	mg/L	0.025	0.004		W122266	DT	06/03/11 13:51	
EPA 200.7	Cadmium	< 0.0020	mg/L	0.0020	0.0002		W122266	DT	06/03/11 13:51	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0012		W122266	DT	06/03/11 13:51	
EPA 200.7	Zinc	0.0581	mg/L	0.0100	0.0010		W122266	DT	06/03/11 13:51	

**Metals (Dissolved)**

EPA 200.7	Antimony	< 0.020	mg/L	0.020	0.003		W121427	AS	06/02/11 14:48	
EPA 200.7	Arsenic	< 0.025	mg/L	0.025	0.007		W121427	AS	06/02/11 14:48	
EPA 200.7	Cadmium	< 0.0020	mg/L	0.0020	0.0005		W121427	AS	06/02/11 14:48	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0023		W121427	AS	06/02/11 14:48	
EPA 200.7	Zinc	0.0508	mg/L	0.0100	0.0019		W121427	AS	06/02/11 14:48	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

**John Kern**  
Laboratory Director



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Terragraphics (Moscow)  
121 S Jackson  
Moscow, ID 83843

**Project Name: Terragraphics EMF Well**  
Work Order: **W1E0521**  
Reported: 03-Jun-11 15:34

Client Sample ID: **(EMF-SW-C-C)052011**

SVL Sample ID: **W1E0521-04 (Surface Water)**

Sample Report Page 1 of 1

Sampled: 20-May-11 09:35  
Received: 20-May-11  
Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
<b>Metals (Total Recoverable--reportable as Total per 40 CFR 136)</b>										
EPA 200.7	Antimony	< 0.020	mg/L	0.020	0.002		W122266	DT	06/03/11 15:05	
EPA 200.7	Arsenic	< 0.025	mg/L	0.025	0.004		W122266	DT	06/03/11 15:05	
EPA 200.7	Cadmium	< 0.0020	mg/L	0.0020	0.0002		W122266	DT	06/03/11 15:05	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0012		W122266	DT	06/03/11 15:05	
EPA 200.7	Zinc	0.0594	mg/L	0.0100	0.0010		W122266	DT	06/03/11 15:05	
<b>Metals (Dissolved)</b>										
EPA 200.7	Antimony	< 0.020	mg/L	0.020	0.003		W121427	AS	06/02/11 15:05	
EPA 200.7	Arsenic	< 0.025	mg/L	0.025	0.007		W121427	AS	06/02/11 15:05	
EPA 200.7	Cadmium	< 0.0020	mg/L	0.0020	0.0005		W121427	AS	06/02/11 15:05	
EPA 200.7	Lead	0.0083	mg/L	0.0075	0.0023		W121427	AS	06/02/11 16:27	
EPA 200.7	Zinc	0.0502	mg/L	0.0100	0.0019		W121427	AS	06/02/11 15:05	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

**John Kern**  
Laboratory Director



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Terragraphics (Moscow)  
121 S Jackson  
Moscow, ID 83843

**Project Name: Terragraphics EMF Well**  
Work Order: **W1E0521**  
Reported: 03-Jun-11 15:34

Client Sample ID: **(EMF-SW-D)052011**

SVL Sample ID: **W1E0521-05 (Surface Water)**

Sample Report Page 1 of 1

Sampled: 20-May-11 10:16  
Received: 20-May-11  
Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
<b>Metals (Total Recoverable--reportable as Total per 40 CFR 136)</b>										
EPA 200.7	Antimony	< 0.020	mg/L	0.020	0.002		W122266	DT	06/03/11 15:10	
EPA 200.7	Arsenic	< 0.025	mg/L	0.025	0.004		W122266	DT	06/03/11 15:10	
EPA 200.7	Cadmium	< 0.0020	mg/L	0.0020	0.0002		W122266	DT	06/03/11 15:10	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0012		W122266	DT	06/03/11 15:10	
EPA 200.7	Zinc	0.0486	mg/L	0.0100	0.0010		W122266	DT	06/03/11 15:10	
<b>Metals (Dissolved)</b>										
EPA 200.7	Antimony	< 0.020	mg/L	0.020	0.003		W121427	AS	06/02/11 15:11	
EPA 200.7	Arsenic	< 0.025	mg/L	0.025	0.007		W121427	AS	06/02/11 15:11	
EPA 200.7	Cadmium	< 0.0020	mg/L	0.0020	0.0005		W121427	AS	06/02/11 15:11	
EPA 200.7	Lead	< 0.0075	mg/L	0.0075	0.0023		W121427	AS	06/02/11 16:33	
EPA 200.7	Zinc	0.0424	mg/L	0.0100	0.0019		W121427	AS	06/02/11 15:11	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

**John Kern**  
Laboratory Director



Terragraphics (Moscow)  
121 S Jackson  
Moscow, ID 83843

**Project Name: Terragraphics EMF Well**  
Work Order: **W1E0521**  
Reported: 03-Jun-11 15:34

**Quality Control - BLANK Data**

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
<b>Metals (Total Recoverable--reportable as Total per 40 CFR 136)</b>								
EPA 200.7	Antimony	mg/L	<0.020	0.002	0.020	W122266	03-Jun-11	
EPA 200.7	Arsenic	mg/L	<0.025	0.004	0.025	W122266	03-Jun-11	
EPA 200.7	Cadmium	mg/L	<0.0020	0.0002	0.0020	W122266	03-Jun-11	
EPA 200.7	Lead	mg/L	<0.0075	0.0012	0.0075	W122266	03-Jun-11	
EPA 200.7	Zinc	mg/L	<0.0100	0.0010	0.0100	W122266	03-Jun-11	
<b>Metals (Dissolved)</b>								
EPA 200.7	Antimony	mg/L	<0.020	0.003	0.020	W121427	02-Jun-11	
EPA 200.7	Arsenic	mg/L	<0.025	0.007	0.025	W121427	02-Jun-11	
EPA 200.7	Cadmium	mg/L	<0.0020	0.0005	0.0020	W121427	02-Jun-11	
EPA 200.7	Lead	mg/L	<0.0075	0.0023	0.0075	W121427	02-Jun-11	
EPA 200.7	Zinc	mg/L	<0.0100	0.0019	0.0100	W121427	02-Jun-11	

**Quality Control - LABORATORY CONTROL SAMPLE Data**

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
<b>Metals (Total Recoverable--reportable as Total per 40 CFR 136)</b>									
EPA 200.7	Antimony	mg/L	1.02	1.00	102	85 - 115	W122266	03-Jun-11	
EPA 200.7	Arsenic	mg/L	1.03	1.00	103	85 - 115	W122266	03-Jun-11	
EPA 200.7	Cadmium	mg/L	0.980	1.00	98.0	85 - 115	W122266	03-Jun-11	
EPA 200.7	Lead	mg/L	0.922	1.00	92.2	85 - 115	W122266	03-Jun-11	
EPA 200.7	Zinc	mg/L	0.923	1.00	92.3	85 - 115	W122266	03-Jun-11	
<b>Metals (Dissolved)</b>									
EPA 200.7	Antimony	mg/L	1.00	1.00	100	85 - 115	W121427	02-Jun-11	
EPA 200.7	Arsenic	mg/L	1.01	1.00	101	85 - 115	W121427	02-Jun-11	
EPA 200.7	Cadmium	mg/L	1.01	1.00	101	85 - 115	W121427	02-Jun-11	
EPA 200.7	Lead	mg/L	0.996	1.00	99.6	85 - 115	W121427	02-Jun-11	
EPA 200.7	Zinc	mg/L	1.01	1.00	101	85 - 115	W121427	02-Jun-11	

**Quality Control - DUPLICATE Data**

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
<b>Metals (Total Recoverable--reportable as Total per 40 CFR 136)</b>									
EPA 200.7	Antimony	mg/L	<0.020	<0.020	UDL	20	W122266	03-Jun-11	
EPA 200.7	Arsenic	mg/L	<0.025	<0.025	UDL	20	W122266	03-Jun-11	
EPA 200.7	Cadmium	mg/L	<0.0020	<0.0020	<RL	20	W122266	03-Jun-11	
EPA 200.7	Lead	mg/L	<0.0075	<0.0075	<RL	20	W122266	03-Jun-11	
EPA 200.7	Zinc	mg/L	0.0800	0.0806	0.7	20	W122266	03-Jun-11	
<b>Metals (Dissolved)</b>									
EPA 200.7	Antimony	mg/L	<0.020	<0.020	UDL	20	W121427	02-Jun-11	
EPA 200.7	Arsenic	mg/L	<0.025	<0.025	UDL	20	W121427	02-Jun-11	
EPA 200.7	Cadmium	mg/L	<0.0020	<0.0020	UDL	20	W121427	02-Jun-11	
EPA 200.7	Lead	mg/L	<0.0075	<0.0075	UDL	20	W121427	02-Jun-11	
EPA 200.7	Zinc	mg/L	0.0320	0.0339	5.5	20	W121427	02-Jun-11	



Terragraphics (Moscow)  
121 S Jackson  
Moscow, ID 83843

**Project Name: Terragraphics EMF Well**  
Work Order: **W1E0521**  
Reported: 03-Jun-11 15:34

**Quality Control - MATRIX SPIKE Data**

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
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**Metals (Total Recoverable--reportable as Total per 40 CFR 136)**

EPA 200.7	Antimony	mg/L	1.05	<0.020	1.00	105	70 - 130	W122266	03-Jun-11	
EPA 200.7	Arsenic	mg/L	1.06	<0.025	1.00	106	70 - 130	W122266	03-Jun-11	
EPA 200.7	Cadmium	mg/L	0.991	<0.0020	1.00	99.0	70 - 130	W122266	03-Jun-11	
EPA 200.7	Lead	mg/L	0.944	<0.0075	1.00	93.8	70 - 130	W122266	03-Jun-11	
EPA 200.7	Zinc	mg/L	1.01	0.0806	1.00	93.2	70 - 130	W122266	03-Jun-11	

**Metals (Dissolved)**

EPA 200.7	Antimony	mg/L	1.11	<0.020	1.00	111	70 - 130	W121427	02-Jun-11	
EPA 200.7	Antimony	mg/L	0.900	<0.020	1.00	90.0	70 - 130	W121427	02-Jun-11	
EPA 200.7	Arsenic	mg/L	1.13	<0.025	1.00	113	70 - 130	W121427	02-Jun-11	
EPA 200.7	Arsenic	mg/L	0.954	<0.025	1.00	93.6	70 - 130	W121427	02-Jun-11	
EPA 200.7	Cadmium	mg/L	1.09	<0.0020	1.00	109	70 - 130	W121427	02-Jun-11	
EPA 200.7	Cadmium	mg/L	0.893	<0.0020	1.00	89.3	70 - 130	W121427	02-Jun-11	
EPA 200.7	Lead	mg/L	1.07	<0.0075	1.00	107	70 - 130	W121427	02-Jun-11	
EPA 200.7	Lead	mg/L	1.01	<0.0075	1.00	100	70 - 130	W121427	02-Jun-11	
EPA 200.7	Zinc	mg/L	1.12	0.0339	1.00	108	70 - 130	W121427	02-Jun-11	
EPA 200.7	Zinc	mg/L	0.889	<0.0100	1.00	88.9	70 - 130	W121427	02-Jun-11	

**Notes and Definitions**

LCS	Laboratory Control Sample (Blank Spike)
RPD	Relative Percent Difference
UDL	A result is less than the detection limit
R > 4S	% recovery not applicable, sample concentration more than four times greater than spike level
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable