



U.S. DEPARTMENT OF  
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# Analytical Data Report for Water Samples Collected From Operable Unit BP-5 B Well

Michael Lindberg

September 2008



**Pacific Northwest**  
NATIONAL LABORATORY

09/29/08 09:21

To: Dana Widrig

From: Michael J. Lindberg

A handwritten signature in black ink, appearing to read 'MJL', is placed over a light gray rectangular background.

Environmental Sciences Laboratory  
Energy and Environment Directorate, Pacific Northwest National Laboratory

Subject: Analytical Data for Ground Water Samples Collected From Operable Unit BP-5 B Well (C5859/C6226),  
Sample Delivery Group ESL080001, SAF Number F08-005

This letter contains the following information for sample delivery group ESL080001

- Cover Sheet
- Narrative
- Analytical Results
- Quality Control
- Chain of Custodies

## **Introduction**

Between January 10, 2008 and February 26, 2008 groundwater samples were received from Operable Unit BP-5 B Well (C5859/C6226) for geochemical studies.

## **Analytical Results/Methodology**

The analyses for this project were performed at the 325 building located in the 300 Area of the Hanford Site. The analyses were performed according to Pacific Northwest National Laboratory (PNNL) approved procedures and/or nationally recognized test procedures. The data sets include the sample identification numbers, analytical results, estimated quantification limits (EQL), and quality control data.

## **Quality Control**

The preparatory and analytical quality control requirements, calibration requirements, acceptance criteria, and failure actions are defined in the on-line QA plan "Conducting Analytical Work in Support of Regulatory Programs" (CAW). This QA plan implements the Hanford Analytical Services Quality Assurance Requirements Documents (HASQARD) for PNNL.

## **Definitions**

Dup	Duplicate
RPD	Relative Percent Difference

## **Sample Receipt**

Samples were received with a chain of custody (COC) and were analyzed according to the sample identification numbers supplied by the client. All Samples were refrigerated upon receipt until prepared for analysis.

All samples were received with custody seals intact unless noted in the Case Narrative.

## **Holding Times**

Holding time is defined as the time from sample preparation to the time of analyses. The prescribed holding times were met for all analytes unless noted in the Case Narrative.

## **Analytical Results**

All reported analytical results meet the requirements of the CAW or client specified SOW unless noted in the case narrative.

## Case Narrative Report

### **Hold Time:**

Hold Times were not met for pH, Nitrite and Nitrate. Samples were received from the field past the required hold time.

### **Preparation Blank (PB):**

No blanks were analyzed.

### **Duplicate (DUP):**

Duplicates are not required.

### **Laboratory Control Samples (LCS):**

No LCS were analyzed.

### **Post Spike (PS):**

Post-Spike are not required.

### **Matrix Spike (MS):**

No MS were analyzed.

### **Other QC Criteria:**

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## SAMPLES INCLUDED IN THIS REPORT

### 200 BP 5 OU, C5859/C6226 B-Well

HEIS No.	Laboratory ID	Matrix	Date Collected	Date Received
B1T201	0802010-01	WATER	1/8/08 09:30	1/10/08 08:15
B1RLW2	0802036-01	WATER	2/20/08 10:50	2/26/08 13:50

The following analyses were performed on the following samples included in this report:

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Anions By Ion Chromatography

Alkalinity, Titrimetic (pH 4.5)

Metals Water by ICPMS

Metals Water by ICPOES

pH of Waters By Electrode

Specific Conductance

Tc\_U Water by ICPMS

### **SAMPLES ANALYZED IN THIS REPORT**

<b>HEIS No.</b>	<b>Laboratory ID</b>	<b>Matrix</b>	<b>Date Collected</b>	<b>Date Received</b>
B1T201	0802010-01	WATER	1/8/08 09:30	1/10/08 08:15
B1RLW2	0802036-01	WATER	2/20/08 10:50	2/26/08 13:50

### Wet Chemistry

#### Alkalinity as CaCO<sub>3</sub> (ug/mL) by Standard Methods 2320B

Lab ID	HEIS No.	Results	EQL	Analyzed	Batch
0802010-01	B1T201	6.49E2	N/A	1/21/08	8D25005
0802036-01	B1RLW2	1.25E2	N/A	4/02/08	8D02001

### Wet Chemistry

#### Specific Conductance (EC) (mS/cm) by EPA 120.1

Lab ID	HEIS No.	Results	EQL	Analyzed	Batch
0802010-01	B1T201	2.82E0	5.00E-3	1/21/08	8D25005
0802036-01	B1RLW2	1.33E0	5.00E-3	4/02/08	8D01001

Wet Chemistry					
pH (pH Units) by AGG-pH-001					
Lab ID	HEIS No.	Results	EQL	Analyzed	Batch
0802010-01	B1T201	8.20E0	N/A	1/21/08	8D25005
0802036-01	B1RLW2	7.68E0	N/A	4/02/08	8D01001



## Anions by Ion Chromatography

CAS #	Analyte	Results	Units	EQL	Analyzed	Batch	Method
<b>HEIS No.</b>	<b>B1T201</b>	<b>Lab ID: 0802010-01</b>					
16984-48-8	Fluoride	7.81E1	ug/mL	2.00E1	1/22/08	8H13001	AGG-IC-001
16887-00-6	Chloride	6.32E1	ug/mL	5.00E1	1/22/08	8H13001	AGG-IC-001
14797-65-0	Nitrite	<1.00E2	ug/mL	1.00E2	1/22/08	8H13001	AGG-IC-001
14797-55-8	Nitrate	3.26E2	ug/mL	1.00E2	1/22/08	8H13001	AGG-IC-001
14808-79-8	Sulfate	4.58E2	ug/mL	1.50E2	1/22/08	8H13001	AGG-IC-001
14265-44-2	Phosphate	<1.50E2	ug/mL	1.50E2	1/22/08	8H13001	AGG-IC-001
<b>HEIS No.</b>	<b>B1RLW2</b>	<b>Lab ID: 0802036-01</b>					
16984-48-8	Fluoride	1.38E0	ug/mL	2.00E-1	4/03/08	8D02005	AGG-IC-001
16887-00-6	Chloride	3.08E1	ug/mL	5.00E-1	4/03/08	8D02005	AGG-IC-001
14797-65-0	Nitrite	2.33E1	ug/mL	1.00E0	4/03/08	8D02005	AGG-IC-001
14797-55-8	Nitrate	2.82E2	ug/mL	1.00E1	4/04/08	8D02005	AGG-IC-001
14808-79-8	Sulfate	1.80E2	ug/mL	1.50E1	4/04/08	8D02005	AGG-IC-001
14265-44-2	Phosphate	<1.50E0	ug/mL	1.50E0	4/03/08	8D02005	AGG-IC-001

## Total Metals by PNNL-AGG-ICP-AES

CAS #	Analyte	Results	Units	EQL	Analyzed	Batch	Method
<b>HEIS No.</b>	<b>B1T201</b>	<b>Lab ID:</b>		<b>0802010-01</b>			
7429-90-5	Aluminum	5.43E2	ug/L	5.22E1	1/24/08	8E01005	PNNL-AGG-ICP-AES
7440-39-3	Barium	3.32E1	ug/L	1.95E1	1/24/08	8E01005	PNNL-AGG-ICP-AES
7440-70-2	Calcium	6.62E3	ug/L	8.66E1	1/24/08	8E01005	PNNL-AGG-ICP-AES
7440-48-4	Cobalt	<2.31E1	ug/L	2.31E1	1/24/08	8E01005	PNNL-AGG-ICP-AES
7440-47-3	Chromium	4.05E1	ug/L	1.07E1	1/24/08	8E01005	PNNL-AGG-ICP-AES
7440-50-8	Copper	4.38E1	ug/L	1.27E1	1/24/08	8E01005	PNNL-AGG-ICP-AES
7440-09-7	Potassium	5.26E3	ug/L	1.52E3	1/24/08	8E01005	PNNL-AGG-ICP-AES
7439-95-4	Magnesium	5.59E3	ug/L	1.50E1	1/24/08	8E01005	PNNL-AGG-ICP-AES
7439-96-5	Manganese	1.06E2	ug/L	7.62E0	1/24/08	8E01005	PNNL-AGG-ICP-AES
7440-02-0	Nickel	<2.84E1	ug/L	2.84E1	1/24/08	8E01005	PNNL-AGG-ICP-AES
7440-62-2	Vanadium	<1.48E2	ug/L	1.48E2	1/24/08	8E01005	PNNL-AGG-ICP-AES
7440-66-6	Zinc	7.66E1	ug/L	5.06E1	1/24/08	8E01005	PNNL-AGG-ICP-AES
7440-23-5	Sodium	7.51E5	ug/L	6.48E2	1/24/08	8E01005	PNNL-AGG-ICP-AES
<b>HEIS No.</b>	<b>B1RLW2</b>	<b>Lab ID:</b>		<b>0802036-01</b>			
7429-90-5	Aluminum	<5.22E1	ug/L	5.22E1	5/01/08	8D11003	PNNL-AGG-ICP-AES
7440-39-3	Barium	8.31E1	ug/L	1.95E1	5/01/08	8D11003	PNNL-AGG-ICP-AES
7440-70-2	Calcium	1.12E5	ug/L	8.66E1	5/01/08	8D11003	PNNL-AGG-ICP-AES
7440-48-4	Cobalt	<2.31E1	ug/L	2.31E1	5/01/08	8D11003	PNNL-AGG-ICP-AES
7440-47-3	Chromium	<1.07E1	ug/L	1.07E1	5/01/08	8D11003	PNNL-AGG-ICP-AES
7440-50-8	Copper	<1.27E1	ug/L	1.27E1	5/01/08	8D11003	PNNL-AGG-ICP-AES
7440-09-7	Potassium	1.42E4	ug/L	1.52E3	5/01/08	8D11003	PNNL-AGG-ICP-AES
7439-95-4	Magnesium	3.41E4	ug/L	1.50E1	5/01/08	8D11003	PNNL-AGG-ICP-AES
7439-96-5	Manganese	9.44E2	ug/L	7.62E0	5/01/08	8D11003	PNNL-AGG-ICP-AES
7440-02-0	Nickel	<2.84E1	ug/L	2.84E1	5/01/08	8D11003	PNNL-AGG-ICP-AES
7440-62-2	Vanadium	<1.48E2	ug/L	1.48E2	5/01/08	8D11003	PNNL-AGG-ICP-AES
7440-66-6	Zinc	<5.06E1	ug/L	5.06E1	5/01/08	8D11003	PNNL-AGG-ICP-AES
7440-23-5	Sodium	7.61E4	ug/L	6.48E2	5/01/08	8D11003	PNNL-AGG-ICP-AES

## Radionuclides By ICP-MS

CAS #	Analyte	Results	Units	EQL	Analyzed	Batch	Method
<b>HEIS No.</b>	<b>B1T201</b>	<b>Lab ID:</b>		<b>0802010-01</b>			
14133-76-7	Technetium-99	<3.50E-1	ug/L	3.50E-1	1/22/08	8D23012	PNNL-AGG-415
	Uranium 238	5.11E2	ug/L	6.76E0	1/22/08	8D23012	PNNL-AGG-415
<b>HEIS No.</b>	<b>B1RLW2</b>	<b>Lab ID:</b>		<b>0802036-01</b>			
14133-76-7	Technetium-99	5.80E-2	ug/L	1.75E-2	4/16/08	8D16003	PNNL-AGG-415
	Uranium 238	6.42E1	ug/L	3.38E-1	4/16/08	8D16003	PNNL-AGG-415

## RCRA Metals By PNNL-AGG-415

CAS #	Analyte	Results	Units	EQL	Analyzed	Batch	Method
<b>HEIS No.</b>	<b>B1T201</b>	<b>Lab ID:</b>		<b>0802010-01</b>			
14378-38-2	Silver	1.52E-1	ug/L	7.40E-2	1/24/08	8D23011	PNNL-AGG-415
14336-64-2	Cadmium	1.35E0	ug/L	1.65E-1	1/24/08	8D23011	PNNL-AGG-415
14265-72-6	Antimony	1.18E0	ug/L	1.20E-1	1/24/08	8D23011	PNNL-AGG-415
13966-28-4	Lead	4.36E-1	ug/L	2.44E-1	1/24/08	8D23011	PNNL-AGG-415
<b>HEIS No.</b>	<b>B1RLW2</b>	<b>Lab ID:</b>		<b>0802036-01</b>			
14378-38-2	Silver	<7.40E-2	ug/L	7.40E-2	4/24/08	8D21002	PNNL-AGG-415
14336-64-2	Cadmium	8.02E-1	ug/L	1.65E-1	4/24/08	8D21002	PNNL-AGG-415
14265-72-6	Antimony	2.48E0	ug/L	1.20E-1	4/24/08	8D21002	PNNL-AGG-415
13966-28-4	Lead	<2.44E-1	ug/L	2.44E-1	4/24/08	8D21002	PNNL-AGG-415