



U.S. DEPARTMENT OF
ENERGY

PNNL- SA-62651

Prepared for the U.S. Department of Energy
under Contract DE-AC05-76RL01830

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 centered below the 'From' field.

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:

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor Battelle Memorial Institute, nor any of their employees, makes **any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights.** Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof, or Battelle Memorial Institute. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

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:

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

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

Wet Chemistry

Alkalinity as CaCO₃ (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
HEIS No.	B1T201	Lab ID:		0802010-01			
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
HEIS No.	B1RLW2	Lab ID:		0802036-01			
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
HEIS No.	B1T201	Lab ID:		0802010-01			
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
HEIS No.	B1RLW2	Lab ID:		0802036-01			
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
HEIS No.	B1T201	Lab ID: 0802010-01					
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
HEIS No.	B1RLW2	Lab ID: 0802036-01					
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
HEIS No.	B1T201	Lab ID:		0802010-01			
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
HEIS No.	B1RLW2	Lab ID:		0802036-01			
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