9613474.1173

START

BOOX94-PNL-020

0045191

200-BP-1 SITE INVESTIGATION
ANALYTICAL CHEMISTRY SUPPORT PROJECT

TASKS 2 & 4

DATA PACKAGE/REPORT No. 5

Revision 0

SEP 1996
RECEIVED
EDMC

January 15, 1992

Prepared by: B.M. Gillespie

Pacific Northwest Laboratory

JAN 1992
RECEIVED
OSM DMO

(PNL Project #16772)

i Kdb 5/28/96

INTRODUCTION

This data package contains the results obtained by Pacific Northwest Laboratory (PNL) staff in the characterization of samples for the 200-BP-1 site investigation analytical chemistry support Project. The samples were submitted for analysis by Westinghouse Hanford Company (WHC) under the Technical Project Plan (TPP) 16772 and the Quality Assurance Project Plan (QAPjP) ALO-001. The samples are soil samples collected in support of Tasks 2 and 4. The analytical procedures required for analysis were defined in the Test Instructions (TI) prepared by the PNL 200-BP-1 Project Management Office in accordance with the TPP and the QAPjP ALO-001.

The samples (Table 1) were submitted with the appropriate WHC Chain of Custody (COC) and Sample Analysis Request Forms. The samples were delivered at refrigerated temperature to the 300 Area, 325 Building and 314 Building 200-BP-1 Sample Custodian.

The requested analyses for these samples were cyanide, free cyanide and ferrocyanide. A complex cyanide result is determined by the difference of the total cyanide and the free cyanide results. The quality control (QC) requirements for each sample are defined in the test instructions for each sample. The QC requirements outlined in the procedures and requested in the WHC SOW were followed. Sample duplicates, methods blank, matrix spikes and laboratory control standards were analyzed. All QC data that exist are included in this Data Package/Report.

The data in this package are reported in separate tables (Tables 2 through 4) for each analyte or method. Three appendices are provided; one for Test Instruction, one for Chain of Custody, Sample Analysis Request Forms and Sample Receipt Forms and one that contains the primary inorganic analytical data.

CERTIFICATION STATEMENT

I certify that this data package is in compliance with the terms and conditions of the TPP 16772 and QAPjP ALO-001 for completeness. Release of the data contained in this hard copy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Project Manager or the Project Manager's designee, as verified by the following signature.

B. M. Gillespie

B. M. Gillespie
200-BP-1 Project Manager

1-9-92

Date

TABLE 1: 200-BP-1 Sample Numbers

WHC Sample Number	PNL ALO Sample Number	Sample Type
B00X94(S)	91-8352	Soil
B00X96(S)	91-8615	Soil
B00X98(S)	91-8616	Soil

CYANIDE ANALYSIS RESULTS

Total cyanide analysis was performed in room 419 of building 325 in the Hanford Site 300 area. This data package includes cyanide results for four soil-sediment samples. Sample 91-7504 is not part of this data package. Cyanide results are presented by colorimetric analysis run batch. Data package results are summarized in Table 2.

Total cyanide results for soil-sediment samples and duplicates were below the instrument detection limit (IDL) of 0.6 mg/kg.

The 12 day hold time specified for cyanide analysis under the CLP protocol was met for all samples in this sample delivery group.

Average spiked soil-sediment sample cyanide recovery was 98.5% with a standard deviation of 0.5%.

Average recovery of cyanide for the laboratory control /initial calibration verification sample (ICV-6) was 113% with a standard deviation of 4% in the case of the soil-sediment samples. One LCS value was 117%, which was slightly outside the ±15% control limits. This value was accepted because the positive uncorrected blank standard recheck biased the value, forcing it outside the acceptance window. In addition the LCS concentration was less than 2-times the CRDL. Recovery value for ICV-6 (LCS-0789, prepared by ICF Corporation) is based on the spiking of 1 mL of stock standard ICV-6 to 500 mL of deionized water and recovery back calculated to the original ICV-6 cyanide concentration.

Cyanide found in blanks analyzed for analysis groups within the data package were below the IDL. Algebraically correct blank cyanide values are found on page two of each run batch report.

TABLE 2: TOTAL CYANIDE ANALYSIS DATA FOR TASKS 2 AND 4
SDG #5

SOIL-SEDIMENT SAMPLES

Sample ID#	PNL Log#	Sample G1 (mg/kg)	C	Sample dup. G2 (mg/kg)	C	%RPD	Blank G5 (ug/L)	C	Spike added (ug)	Sample+ spike G3 (mg/kg)	sample G4 (ICV) (mg/L)	Sample+ spike G3 recovery(%)	sample G4 (ICV) recovery(%)	Flags Q	Footnote#
															1,2,3 (ALL)
BOOX72	* 91-7504	0.6	U	0.6	U	N/A	5.9	U	39.5	8.1	10.27	99	109		
BOOX94	91-8352	0.6	U												
BOOX96	91-8615	0.6	U	0.6	U	N/A	5.9	U	39.5	7.9	10.96	98	117		
BOOX98	91-8616	0.6	U												
											Mean	98.5	113		
											Std. Dev.	0.5	4		

* = Not a sample in this sample delivery group but reported for QC purposes.

Footnotes

1. Concentration of stock ICV-6=9.4 mg/L (9.4 ug of cyanide is added to each distillation flask and recovered in 250 mL of NaOH).
2. Contract required detection limit for soil-sediment = 1.0 mg/kg.
3. Duplicate precision under the CLP protocol must be within one CRDL when either sample or duplicate are below 5X CRDL.

CLP FLAGS

U = Analyzed byt not detected (less than IDL)

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FREE CYANIDE ANALYSIS RESULTS

Free cyanide analysis was not performed as samples must have a total cyanide concentration of greater than 2 mg/kg before free cyanide analysis is required.

Table 3: Free Cyanide Analysis Data

NO DATA REQUIRED

COMPLEX CYANIDE RESULTS

Complex cyanide cannot be determined from the existing total cyanide data as no free cyanide results were required.

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Table 4: Complex (Ferro) Cyanide Determination

NO DATA REQUIRED

Westinghouse Hanford Company 9613474.1183

CHAIN OF CUSTODY

Custody Form Initiator W.S. Thompson

Project #: 91-019

Company Contact W.S. Thompson

Telephone (509) 376-2153

Project Designation/Sampling Locations 200-BP-1 Operable-Unit

Collection Date 8/16/91

Boring: 216-B-57A

Time 1040

Ice Chest No.

Field Logbook No. WHC-N-287-3

Bill of Lading/Airbill No.

Offsite Property No.

Method of Shipment Hand Carry

Shipped to 325 PNL Laboratory (300 Area)

Possible Sample Hazards/Remarks None indicated with hand-held field instruments.

Sample Identification

① B00X94

1, 125ml; glass; soil; CLP-TOTAL CN; free CN; ferro-CN

☐ Field Transfer of Custody

CHAIN OF POSSESSION

(Sign and Print Names)

Relinquished by:	Received by:	Date/Time:
W.S. Thompson Wendy S. Thompson	J.G. Hogan J B Hogan	8-16-91 / 1130
Relinquished by: J.G. Hogan J B Hogan	Received by: J. ROBBINS J Robbins	Date/Time: 8/19/91 1320
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

B01-002

A-6000-407 (12/90)

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector W.S. Thompson Date Sampled 8/16/91 Time 1040 hours

Company Contact W.S. Thompson Telephone (509) 376-2153

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B00X94	1, 125ml; glass;	Soil;	CLP-Total CN; Ferro-CN; Free CN

Field Information** This sample supports 200-BP-1 RI/FS. 216-B-57A Boeing.

Special Handling and/or Storage Keep chilled

Possible Sample Hazards None indicated with hand held field instruments

PART II: LABORATORY SECTION

Received by J. Robbins Title Sr. RES SCIENTIST Date 8/19/91

Analysis Required TOTAL CN

B01-003

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

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SAMPLE RECEIPT FORM

Delivered by: J.G. HOGAN Date/Time: 8/19/91 1320

Received by: J. ROBBINS

Customer Sample Number(s): BØØX94

ALO Sample Number(s): 91-8352

1. Customer Chain-of-Custody Form: Present ✓ Absent _____

2. Additional Shipping Forms (list):

3. Custody Seals on Shipping and/or Sample Containers and their Conditions.

   Present ✓ Absent _____

   If Present, Condition: INTACT

4. Sample Tag(s) ID Numbers if not Recorded on the Chain-of-Custody Record or on Sample Vial.

   Notes:
   N/A

5. Condition of Shipping Container (Verify that ice still exists such that samples are at refrigerated temperature).

   OK 0°C

6. Condition of Sample Vials.

   OK

7. Verification of Agreement or Nonagreement of Information on Receiving Documents.

   OK

8. Resolution of Problems or Discrepancies.

   OK

RETURN COMPLETED FORM TO PROJECT MANAGER

WESTINGHOUSE HANFORD COMPANY
P.O. BOX 1970
RICHLAND, WA 99352

ENVIRONMENTAL FIELD SERVICES GROUP

ENVIRONMENTAL DIVISION
WNP-1/TRL. #57/N3-05
FAX NUMBER: 6-5991

COMMENTS: Sample analysis request for sample # B00X94 delivered on 8-19-91.

TO: Jim Robbins — 6-4997
NAME — PHONE

FROM: G.B. Gould — 948-0834 / 6-2977
NAME — PHONE

NUMBER OF PAGES (EXCLUDING COVERSHEET) 1

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SAMPLE STATUS REPORT FOR E 6663. E-BLANK BOOX93 TIME: 8/19/91 8:34
DISPATCHED: 7/25/91 14:59 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 8/19/91 8:20

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	< 5.00000E 01 PICI/G	N	Y	EE3E5

END OF REPORT

Westinghouse Hanford Company 9613471.1188

CHAIN OF CUSTODY

Custody Form Initiator G.B. Gould

Project #: 91-019

Company Contact W.S. Thompson

Telephone (509) 376-2153

Project Designation/Sampling Locations 200-BP-1 Operable Unit

Collection Date Aug 21, 1991 Aug 22, 1991

Boring: 216-B-57A

Time 0950, 0840

Ice Chest No.

Field Logbook No. WHC-N-287-3

Bill of Lading/Airbill No. NA

Offsite Property No. NA

Method of Shipment Hand Carry

Shipped to 325 PNL Laboratory (300 Area)

Possible Sample Hazards/Remarks None detected with hand held field instruments.

Sample Identification

B00X96

1, 125ml, glass, soil, Total CN, Free CN, Ferro-CN

B00X98

1, 125ml, glass, soil, Total CN, Free CN, Ferro CN

☐ Field Transfer of Custody

CHAIN OF POSSESSION		(Sign and Print Names)
Relinquished by: G.B. Gould	Received by: J.G. HOGAN	Date/Time: 8-21-91 / 1355
Relinquished by: J.G. HOGAN	Received by: J. ROBBINS	Date/Time: 8/23/91 11:45am
Relinquished by:	Received by:	Date/Time:
Relinquished by:	Received by:	Date/Time:

Final Sample Disposition

Disposal Method:	Disposed by:	Date/Time:

Comments:

B01-007

A-6000-407 (12/90)

9613474.1189

Westinghouse Hanford Company

SAMPLE ANALYSIS REQUEST

PART I: FIELD SECTION

Collector G.B. Gould

Date Sampled ~~0950~~ 8-21-91 8-22-91 Time 0950 0840 hours

Company Contact G.B. Gould

Telephone (509) 376-2977

Sample Number	Number and Type of Sample Containers	Type of Sample*	Analysis Requested
B00X96	1, 125ml, glass	soil	CLP - Total CN, Ferro-CN, free CN
B00X98	1, 125ml, glass	soil	CLP - Total CN, Ferro-CN, Free CN.

Field Information** Sample supports 200-BP-1 RI/FS 216-B-57A Vadose borehole. Sample hand carried to 325 Lab.

Special Handling and/or Storage Keep chilled.

Possible Sample Hazards None detected with field instrumentation.

PART II: LABORATORY SECTION

Received by J. Robbins J. ROBBINS Title Sr. RESEARCH SCIENTIST Date 8/23/91

Analysis Required TOTAL CN

B01-008

*Indicate whether sample is soil, sludge, water, etc.

**Use back of page for additional information relative to sample location.

A-6000-406 (05/90

9613474.1190

SAMPLE RECEIPT FORM

Delivered by: J. HOGAN Date/Time: 8/23/91 1145

Received by: J. ROBBINS

Customer Sample Number(s): BØØX96, BØØX98

ALO Sample Number(s): 91-8615, 91-8616

1. Customer Chain-of-Custody Form: Present ✓ Absent _____

2. Additional Shipping Forms (list):

   SAR

3. Custody Seals on Shipping and/or Sample Containers and their Conditions.

   Present V Absent _____

   If Present, Condition: INTACT

4. Sample Tag(s) ID Numbers if not Recorded on the Chain-of-Custody Record or on Sample Vial.

   Notes: N/A

5. Condition of Shipping Container (Verify that ice still exists such that samples are at refrigerated temperature).

   OK 1°C

6. Condition of Sample Vials.

   OK

7. Verification of Agreement or Nonagreement of Information on Receiving Documents. OK

8. Resolution of Problems or Discrepancies.

   OK

RETURN COMPLETED FORM TO PROJECT MANAGER

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SAMPLE STATUS REPORT FOR E 6665. E-BLANK BOOX97 TIME: 8/23/91 10:26
DISPATCHED: 7/25/91 15: 0 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 8/23/91 7:59

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	< 5.00000E 01 PICI/G	N	Y	EE3E5

END OF REPORT

9613474.1192

SAMPLE STATUS REPORT FOR E 6664. E-BLANK BOOX95 TIME: 8/22/91 8:34
DISPATCHED: 7/25/91 15: 0 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 8/22/91 8:21

EXT.	DETER.	RESULTS OR STATUS	OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********	***	***	******
4271	TOT-ACT	< 5.00000E 01 PICI/G	N	Y	EEBES

END OF REPORT

9613474.1193

Samples were delivered directly to the Analysts. Therefore, no other PNL Chain of Custody forms were needed.