Northwest Pipe Company, Portland Facility
Supplemental Remedial Investigation Soil Sampling
October 2009
Data Quality Evaluation Report

Introduction

The objective of this Data Quality Evaluation (DQE) report is to assess the data quality of analytical results for soil samples collected at the Northwest Pipe Company in Portland, Oregon. Individual method requirements, guidelines from the Quality Assurance Project Plan, Supplemental Remedial Investigation – Source Control Evaluation Work Plan, Northwest Pipe Company (CH2M HILL, July 2009) (QAPP), the USEPA Contract Laboratory National Functional Guidelines (NFG) for Organic Data Review (October 1999), and the USEPA Contract Laboratory NFG for Inorganic Data Review (July 2002) were used in this assessment.

This report is intended as a general data quality assessment designed to summarize data issues.

Analytical Data

This DQE report covers 11 normal samples and two field duplicates (FD). A list of samples and collection dates is included in Attachment A at the end of this report. These sample results were reported under one sample delivery group, PSJ0657. Samples were collected on October 19, 2009. Seven methods were used to analyze the environmental samples and are provided in Table 1. The analyses were performed by TestAmerica Laboratories located in Beaverton, Oregon. Samples were collected and hand-delivered to the laboratory. Selected samples were analyzed for one or more of the following analytes/methods:

Table 1
Analytical Parameters

Parameter	Method
Polynuclear Aromatic Hydrocarbons and Phthalates	EPA 8270m
Pesticides	EPA 8081A
Polychlorinated Biphenyls	EPA 8082
Metals (Al, Sb, As, Cd, Cr, Cu, Pb, Ni, Se, Ag, Zn)	EPA 6010B
Mercury	EPA 7471A
Total Organic Carbon	EPA 9060
Percent Solids	NCA SOP

The assessment of data includes a review of: (1) the chain-of-custody (CoC) documentation; (2) holding-time compliance; (3) the required field and laboratory quality control (QC) samples; (4) flagging for method blanks; (5) laboratory control sample/laboratory control sample duplicates (LCS/LCSD); (6) surrogate spike recoveries for organic analyses; (7) matrix spike/matrix spike duplicate samples (MS/MSD); (8) internal standard recoveries; and, (9) calibration information.

Field samples were also reviewed to ascertain field compliance and data quality issues. This included a review of FDs.

Data flags are assigned according to the NFG. These flags, as well as the reason for each flag, are entered into the electronic database and in Table 2. Multiple flags are routinely applied to specific sample method/matrix/analyte combinations, but there will be only one final flag. A final flag is applied to the data and is the most conservative of the applied validation flags. The final flag also includes blank sample impacts.

The data flags are those listed in the QAPP and are defined below:

- J = Analyte was present but reported value may not be accurate or precise.
- R = Analyte was rejected.
- U = Analyte was analyzed for but not detected at the specified detection limit.
- UJ = Analyte was not detected above the detection limit objective. However, the reported detection limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Findings

The overall summaries of the data validation findings are contained in the following sections and Table 2.

Holding Times

All holding-time criteria were met.

Calibration

All initial and continuing calibration criteria were met.

Method Blanks

Method blanks were analyzed at the required frequency and were free of contamination that would affect the data.

Field Blanks

Field blanks were not collected with this event.

Matrix Spike Samples

The results of MS/MSD analyses provide information about the possible influence of the matrix on either accuracy or precision of the measurements. The field crew designated a sample for MS/MSD analysis. All acceptance criteria were met with a couple of exceptions.

The recovery of antimony was below the lower control limit in the MS and MSD of sample SS-405-101909-2 for method EPA 6010B, indicating the associated parent sample result is possibly biased low. The associated detected result in the parent sample was qualified as estimated and flagged "J".

The recovery of bis(2-ethylhexyl)phthalate was above the upper control limit in the MSD of sample SS-405-101909-2 for method EPA 8270m, indicating the associated parent sample result is possibly biased high. The associated detected result in the parent sample was qualified as estimated and flagged "J".

Field Duplicates

Two FD sets were collected with this dataset. All precision criteria were met with the following exceptions:

The relative percent difference (RPD) of total organic carbon was above the acceptance criterion in FD set SS-405-101909-0/SS-405-101909-2 for method EPA 9060. The associated detected results in the normal and duplicate were qualified as estimated and flagged "J".

The RPD of copper was above the acceptance criterion in FD set SS-411-101909-0/ SS-411-101909-1 for method EPA 6010B. The associated detected results in the normal and duplicate were qualified as estimated and flagged "J".

The RPD of mercury was above the acceptance criterion in FD set SS-411-101909-0/ SS-411-101909-1 for method EPA 7471A. The associated detected results in the normal and duplicate were qualified as estimated and flagged "J".

The RPD of naphthalene was above the acceptance criterion in FD set SS-411-101909-0/ SS-411-101909-1 for method EPA 8270m. Additionally, the RPDs of chrysene and benzo(a)anthracene were above the acceptance criterion in FD set SS-405-101909-0/SS-405-101909-2. The associated detected results in the normals and duplicates were qualified as estimated and flagged "J".

Laboratory Duplicates

The RPD of mercury was above the acceptance criterion in the laboratory duplicate of sample SS-405-101909-2. The associated detected result was qualified as estimated and flagged "J".

Surrogates

Surrogate spikes were analyzed as required. All acceptance criteria were met with the following exceptions:

Surrogate recovery was above the upper control limit in samples SS-411-101909-0 and SS-402-101909-0 for method EPA 8270m, indicating associated sample results are possibly biased high. Four associated detected results were qualified as estimated and flagged "J".

Internal Standards

All internal standard acceptance criteria were met.

Laboratory Control Samples

LCS/LCSDs were analyzed as required. Accuracy and precision criteria were met.

Chain of Custody

All samples were received intact with correct CoC documentation.

Samples were received at the laboratory at 11.6 degrees Celsius. The samples were delivered to the laboratory the same day as collection and the samples did not have sufficient time to reach 6 degrees Celsius. The temperature of 11.6 degrees Celsius indicates the samples were chilled and no data were qualified.

Overall Assessment

The final activity in the data quality evaluation is an assessment of whether the data meets the data quality objectives (DQO). The goal of this assessment is to demonstrate that a sufficient number of representative samples were collected and the resulting analytical data can be used to support the decisionmaking process. The following summary highlights the data evaluation findings for the above defined events:

1. No data were rejected and completeness was 100 percent.
2. No data were qualified because of low-level blank contamination.
3. MS/MSD recovery exceedances were observed for methods EPA 6010B and EPA 8270m; two results were qualified as estimated.
4. FD RPD exceedances were observed for methods EPA 9060, EPA6010B, EPA 7471A and EPA 8270m; 12 results were qualified as estimated.
5. Surrogate recovery exceedances were observed in two samples for method EPA 8270m; four results were qualified as estimated.
6. A laboratory duplicate RPD exceedances was observed for method EPA 7471A; one result was qualified as estimated.
7. The precision and accuracy of the data, as measured by laboratory QC indicators, suggest that the DQOs were met.

Table 2 – Validation Findings

NativeID	Method	Analyte	Final Result	Units	Final Flag	Validation Reason
SS-402-101909-0	EPA 8270m	Bis(2-ethylhexyl)phthalate	389	ug/kg	J	Sur>UCL
SS-402-101909-0	EPA 8270m	Butyl benzyl phthalate	84.6	ug/kg	J	Sur>UCL
SS-405-101909-0	EPA 9060	Total Organic Carbon	62000	mg/Kg	J	FD>RPD
SS-405-101909-0	EPA 8270m	Benzo (a) anthracene	1670	ug/kg	J	FD>RPD
SS-405-101909-0	EPA 8270m	Chrysene	2090	ug/kg	J	FD>RPD
SS-405-101909-2	EPA 9060	Total Organic Carbon	37000	mg/Kg	J	FD>RPD
SS-405-101909-2	EPA 6010B	Antimony	4.08	mg/kg	J	MS<LCL MSD<LCL
SS-405-101909-2	EPA 7471A	Mercury	0.00846	mg/kg	J	LabDUP>RPD
SS-405-101909-2	EPA 8270m	Benzo (a) anthracene	956	ug/kg	J	FD>RPD
SS-405-101909-2	EPA 8270m	Bis(2-ethylhexyl)phthalate	95.2	ug/kg	J	MSD>UCL
SS-405-101909-2	EPA 8270m	Chrysene	1220	ug/kg	J	FD>RPD
SS-411-101909-0	EPA 6010B	Copper	255	mg/kg	J	FD>RPD
SS-411-101909-0	EPA 7471A	Mercury	0.0944	mg/kg	J	FD>RPD
SS-411-101909-0	EPA 8270m	Bis(2-ethylhexyl)phthalate	1900	ug/kg	J	Sur>UCL
SS-411-101909-0	EPA 8270m	Butyl benzyl phthalate	637	ug/kg	J	Sur>UCL
SS-411-101909-0	EPA 8270m	Naphthalene	631	ug/kg	J	FD>RPD
SS-411-101909-1	EPA 6010B	Copper	139	mg/kg	J	FD>RPD
SS-411-101909-1	EPA 7471A	Mercury	0.203	mg/kg	J	FD>RPD
SS-411-101909-1	EPA 8270m	Naphthalene	135	ug/kg	J	FD>RPD

Notes:

FD>RPD = Field duplicate relative percent difference greater than the acceptance criterion.
LabDUP>RPD = Laboratory duplicate relative percent difference greater than the acceptance criterion.
MS<LCL = Matrix spike recovery less than the lower control limit.
MSD<LCL = Matrix spike duplicate recovery less than the lower control limit.
MSD>UCL = Matrix spike duplicate recovery greater than the upper control limit.
Sur>UCL – Surrogate recovery greater than the upper control limit.

Attachment A

Samples Associated with DQE		
SampleID	**Sample Type**	**Sample Date**
SS-411-101909-1	FD	10/19/2009
SS-405-101909-2	FD	10/19/2009
SS-401-101909-0	N	10/19/2009
SS-402-101909-0	N	10/19/2009
SS-403-101909-0	N	10/19/2009
SS-404-101909-0	N	10/19/2009
SS-405-101909-0	N	10/19/2009
SS-406-101909-0	N	10/19/2009
SS-407-101909-0	N	10/19/2009
SS-408-101909-0	N	10/19/2009
SS-409-101909-0	N	10/19/2009
SS-410-101909-0	N	10/19/2009
SS-411-101909-0	N	10/19/2009

N = Normal sample
FD = Field duplicate