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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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August 14, 1996

Mr. Glenn Goldberg
U.S. Department of Energy
P.O. Box 550, MSIN: H4-83
Richland, WA 99352

Dear Mr. Goldberg:

Re: Comments on *Sampling and Analysis Plan for the 100-D Ponds Voluntary Remediation Project*
(DOE/RL-96-43, Draft A) 44464

Enclosed are the Washington State Department of Ecology's (Ecology) comments on the *Sampling and Analysis Plan for the 100-D Ponds Voluntary Remediation Project* (DOE/RL-96-43, Draft A). Ecology expects this document to be revised accordingly, and approved, before any sampling occurs in support of the planned voluntary action.

In regard to the planned voluntary action, it must be noted the action is a risk the U.S. Department of Energy (USDOE) has decided to take, and is not the result of an approved closure plan. Therefore, to lessen the risk of additional actions to close this unit, USDOE should document Ecology's involvement, and not deviate from any of the documented agreements.

If you have any questions or need clarification on Ecology's comments, please feel free to call me at (509) 736-3036.

Sincerely,

Keith K. Holliday
100-D Area Project Manager
Nuclear Waste Program

KH:skr

cc: Jeff R. James, BHI
Scott W. Petersen, CHI
Administrative Record: 100-D Ponds ✓



Review comments for "Sampling and Analysis Plan
for the 100-D Ponds Voluntary Remediation Project"
(DOE/RL-96-43, Draft A)

1.0 Introduction

p. 1-1, para. 1, l. 3: The text should identify the 100-D Ponds as a RCRA treatment and disposal unit. Waste management activities at this unit did not include storage.

(The acronym TSD should be defined as "treatment, storage, and/or disposal" if it is to be used throughout the document.)

p. 1-1, para. 1, l. 4: The Quality Assurance (QA) Project Plan needs to be complete in this document, not just described.

p. 1-1, para. 1, l. 5: The Field Sampling Plan (FSP) section needs to address all aspects related to sampling. Another section needs to be added for the Analysis Plan; this subject is inadequately covered in the present document.

p. 1-1, para. 1, l. 6: The QA Project Plan needs to state the goals and requirements for carrying out the field and analytical work, as well as the verification, validation, and evaluation of the data that are obtained from these activities. The QA Project Plan needs to include much more than PARCC (precision, accuracy, representativeness, comparability and completeness); note that the text omitted comparability from this list.

p. 1-1, para. 2, l. 3: Item (1) needs to be reworded, as follows: "The purpose of the DQO meetings was (1) to ~~determine~~ identify the appropriate contaminants of concern and ~~their~~ allowable levels the respective MTCA Method B cleanup level for each contaminant under..."

p. 1-1, para. 2, l. 6: The acronym TSD should not be used without specifying that this is a TSD unit (as opposed to a facility).

p. 1-1, para. 3, l. 1: The text needs to include "Ecology regulatory, chemistry, and hydrogeology support."

1.1 Site Description

p. 1-1, para. 1, l. 2 and para. 2, l. 1: The acronym TSD should not be used without specifying that this is a TSD unit (as opposed to a facility).

p. 1-2, para. 2, l. 4-5: Ecology does not agree with this statement because the Phase I and Phase II sampling did not extend through the ash. Delete this statement from the text.

1.2 Project Description

p. 1-2, para. 2, l. 4-5: This sentence needs to be reworded to state that “Near surface verification samples will be collected ...”

p. 1-2, para. 3, item 1: The statement is too sweeping, because state requirements include the need for vadose zone sampling to support the RCRA closure option that is being pursued for this unit.

1.3 Characterization

p.1-3, para. 2, l. 2: The acronym VOA is widely used and has a standard definition, i.e., volatile organics analysis. Note that the text and acronym list need to be modified accordingly.

p. 1-3, para. 2, l. 6-9: Most of this text needs to be deleted. The reference to Section 2.6 is confusing, and Ecology does not concur with the final sentence. Phase II sampling was incomplete because sampling was near surface only. (That thought is paraphrased in the following paragraph.) It would be appropriate to say, “Results from the Phase II sampling and analysis guided selection of the contaminants of concern for the verification samples.”

p. 1-3, para. 3, l. 3 and l. 5: The text omits several words: unit needs to follow “TSD” and near surface soils needs to follow “Ponds.”

2.0 Field Sampling Plan

p. 2-1, para. 1: The text needs to address that this sampling is for verification of near surface soils only. Also, the contaminants of concerns, analytical methods, and method detection limits need to be addressed in an Analysis Plan section.

2.1 Sampling Locations

p. 2-1, para. 1, l. 1 and l. 4: Delete the word “site” in l. 1 and the word “efforts” in l. 4.

2.1.3 Banks of the Ponds

p. 2-2, para. 2, l. 7: Replace the word “sampling” with the words analytical data, so that the phrase reads: “...analytical data indicated elevated levels...”

2.2 Quality Assurance/Quality Control Sampling Requirements

This text is incomplete and insufficient to address the quality assurance and quality control concerns of the sampling. In fact, sections 2.3 Sampling Designations, 2.4 Sampling Procedures, and 2.5 Sample Handling describe QA information.

The QC requirements for sampling were not addressed in the DQO meetings. Ecology expects that field duplicate samples will be collected one per 10 soil samples or one per each day of sampling activity, whichever is greater. If all samples from this verification sampling are sent to

one contract laboratory, no split samples will be required to be analyzed by DOE/ERC. (Those would be in addition to Ecology's split samples.)

The text needs to describe how the sampling location for the field duplicate will be determined. Text describing that the field duplicate is a unique sample taken from a co-located position near the routine sample is needed here. Note that field duplicates are used to evaluate spatial variability. The text needs to describe how samplers will take and handle field duplicates.

The text needs to describe how the samplers will take and handle field blanks.

The text needs to specify what equipment will be used for sampling. Is the list in section 2.4 exhaustive as one would interpret from the use of "i.e."? The text needs to specify which procedure(s) described in EIP 4.0 will be used.

Comments on the references:

(1) The references are cited in an inconsistent manner, sometimes as BHI-EE-01; sometimes as a procedure, such as Procedure 1.5; and sometimes as an EIP, such as EIP 2.0. Make references consistent.

(2) To the reviewers knowledge, the Environmental Investigations Procedures have never been reviewed and approved by Ecology. Therefore, the inadequacies and omissions of the EIPs will need to be addressed in this SAP.

(3) EIP 1.5 states that field logbooks are assigned and completed logbooks copied by Document Information Services. Document Information Services is not sufficiently identified. The existence of an inventory list of assigned logbooks is not addressed. It is not clear how the original logbooks are turned over to DOE and archived as permanent records for the Hanford site. Note that the SAP text must state that, for the 100-D Ponds field work, copies of the pertinent logbook pages including the unique identity number of the logbook(s) must be placed in the Administrative Record for the unit.

(4) EIP 4.0, Section 4.2, item 8.a. states that "If samples are secured as stated above, evidence tape/custody seals are not required on individual samples (however they are recommended) until the samples are shipped." Ecology requires the proper use of custody seals and does not agree with this procedure stating that custody seals are not required. The SAP must state that custody seals must be used for 100-D Ponds samples and must be affixed in the field prior to moving the samples from 100-D Ponds and before any onsite or offsite shipment.

(5) EIP 4.0, Section 5.0 states that "Specific requirements for QA/QC samples will be found in project specific document (WP, SAP, or DOW). This project specific document will state what QA/QC samples (if any) are required, and the number of QA/QC samples and frequency of collection required.

“The type of QA/QC sample (e.g., field blank, split sample, duplicate sample, trip blank) required will be specified in the project specific documents. Media type for blank samples (e.g., deionized water or silica sand) will also be specified.”

The SAP text does not fulfill these requirements.

2.6 Analysis of Samples

This topic needs to be addressed in more detail. Ecology expects to see a section devoted to the analytical requirements.

(1) Note that, contrary to the SAP text, EIP 2.0 does not contain a process for identifying analytical methods, holding times, and volume requirements. This information must be specified in the SAP for Ecology review.

(2) Although Table 2-2 of the SAP does include the contaminants of concern as agreed to in the DQO meetings, it was agreed that ERC would identify appropriate analytical methods in the SAP for Ecology review. Appropriateness of the methods would be determined by the ability to meet the required method detection limits (note that the method detection limits are required, not target).

(3) Ecology acknowledges that some deviations from the method detection limits discussed in the DQO meetings and found in the DQO document (under the heading DL) can be agreed upon during the SAP review; however, until the specific method information is provided, Ecology does not indicate approval or disapproval of the method detection limits presented in the SAP.

(4) The analytical method for chromium VI was specified in the DQO meeting, but was not captured in the DQO summary document or this SAP.

(5) During the DQO meetings and as stated in the DQO document, Ecology expects to receive all data produced by an analytical method for all analytes, e.g., for total metals by SW-846 6010, Ecology expect to receive data for all metals specified in the method.

(6) Note that the title of Table 2-2 should read, as follows: Contaminants of Concern, Cleanup Levels, and Method Detection Limits for 100-D Ponds. The column headings need to be modified, as well. Also note that the cleanup level for Silver should be 8 mg/Kg, rather than 5 mg/Kg.

3.0 Quality Assurance Project Plan

Note that this section needs to be expanded to address the QA for this project.

Ecology expects that the HASQAP will be referenced as the basis for laboratory QA.

3.1 Project Description

p. 3-1: The acronym TSD should not be used without specifying that this is a TSD unit (as opposed to a facility).

3.3 Quality Assurance Objectives for Measurements

Note that the QA objectives apply to sampling, as well as to measurements. The section title should be changed.

p. 3-1, bullet 2, l. 2: The text needs to be read, as follows: "...known and documented quality, and can be are legally defended where appropriate defensible."

p. 3-1, bullet 4, l. 2-3: This sentence is ambiguous and needs to be reworded: "...verify by reinspection that corrective action is executed implemented and maintained for any nonconformance identified through and provide QA reports to management and Ecology."

3.3.1 Data Quality Objectives

Note that this subject was not covered in the DQO meetings. Ecology does not agree with the objectives that have been stated for precision, accuracy, and completeness. See below.

3.3.1.1 Precision

The precision stated here, i.e., $\pm 30\%$, is normally applied to organic analyses and is not acceptable to Ecology for this project. Precision will be estimated as the relative standard deviation (RSD) of the analytical data; for field duplicate samples the precision goal for non-contaminant constituents is 20% and for contaminants in replicate test portions (or matrix spike duplicates, if used) the precision goal is 15%.

3.3.1.2 Accuracy

The accuracy stated here, i.e., 75 to 125 %, is normally applied to organic analysis and is not acceptable to Ecology for this project. The accuracy goal for percent recovery for a known analytical spike or for the QC check sample or standard reference material will be 80 to 120 %. In addition, analytical data from split samples will be evaluated by Ecology for laboratory bias.

3.3.1.3 Completeness

Ecology requires 100 % completeness of validated data for this project. A sentence needs to be added to the section to state that: "If samples are compromised, resampling will be required."

3.3.1.4 Representativeness

The text needs to be reworded to state that the sampling and analytical methods will be Ecology-approved methods. The reference to field analytical procedures needs to be deleted because this SAP does not include any field analytical procedures.

3.3.1.5 Comparability

This section needs to be rewritten. The last sentence is not true and needs to be deleted. Comparability for this project will be ensured by the use of SW-846 methods for analysis and achievement of the required method detection limits. Ecology agrees that comparability will not be quantified.

3.4 Sampling Procedures

p. 3-3, l. 3-4: In addition, the text must state that the use of custody seals is required for this project.

3.5 Sample Custody

p. 3-3, l. 1-2: In addition, the text must state that custody seals are required and will be applied in the field prior to onsite transport of samples.

3.5.3 Final Custody Procedures

Because this section addresses custody of items other than samples, the section should not be under 3.5, Sample Custody.

Ecology requests that a copy of the "Document and Information Services" section of BHI-MA-02, ERC Project Procedures, be made available for review.

3.6 Calibration Procedures

It is unclear what QA Plan is referenced in l. 4, because this QA Plan section of the SAP does not contain details of calibration.

3.7 Analytical Procedures and Data Reduction

p. 3-3, para. 1: Contrary to this text, analytical procedures are to be specified in this document for Ecology review and approval.

p. 3-3, para. 2, and p. 3-4, para. 1: This paragraph is too vague about what preparative and determinative methods will be used. Ecology expects a listing of the methods, the analytes to be determined by each method, and the respective method detection limits. Note that Ecology specified that hexavalent chromium must be prepared using SW-846 3060A; whether EPA has promulgated that method by the time of this work is of no consequence.

3.8 Data Reporting and Validation

This section does not address verification of the data package(s) returned to Sample Management. Some description is needed of the checks that will be performed to ensure that the requirements of this SAP have been fulfilled. The text also needs to describe the corrective action to be employed, if any problems are identified.

3.8.1 Reporting

Ecology expects that complete data packages will be obtained from the analytical laboratory(ies).

3.8.2 Validation

p. 3-4, para. 1, l. 1-2: Data validation should be performed by a third-party, not the organization which oversees the contract laboratories.

p. 3-4, para. 1, l. 3: Ecology expects that full data validation will be performed on 100 % of the data. Because "level C" is not a standard term, the text needs to explain what validation entails.

p. 3-4, para. 2, l. 1: The text should read, as follows: "All coordination of validation services..."

p. 3-4, para. 2, l. 3-4: Ecology expects that full data validation will be performed on 100 % of the data packages, not 10 % as stated here, but only for the contaminants of concern. The final sentence of this paragraph needs to be deleted.

3.8.2.1 Data Management

p. 3-4, para. 1, l. 2-3: Delete the following phrase from the text: "for the 100-DR-1 Area Remedial Action Project performed at a "Standard Fixed Base Laboratory".

p. 3-4, para. 2, l. 1-2: The phrase "as directed by the BHI Project Manager" should be deleted.

3.8.3. Final Review and Records Management Considerations

This paragraph needs to state that the data packages will be placed in the Administrative Record for 100-D Ponds.

3.9 Internal Quality Control

3.9.1.1 Field Duplicates

p. 3-5, l. 1-2: To avoid any potential for misunderstanding, the definition of field duplicates needs to be restated. "Field duplicates are two unique, co-located samples ~~produced from~~

material collected in the same location (co-located). The samples are handled independently, i.e., there is no mixing or splitting of the sample material.

p. 3-5, l. 2-3: The text needs to be revised to read, as follows: "Field duplicates ~~are should be~~ sent to the same laboratory..." Unless field duplicates are sent to the same laboratory the analytical data also will express components of laboratory bias and cannot be used to assess spatial variability.

p. 3-5, l. 4-6: The sentence that begins in l. 4 is inaccurate and needs to be deleted. The sentence that begins in l. 5 should read as follow: "Field duplicate data will be evaluated for precision; the data for constituents that are not contaminants are expected to be within 20 % RSD." The final sentence of this paragraph needs to be replaced with the information stated above.

3.9.1.2 Field Splits

p. 3-5, l. 3: The text should read as follows: "Split samples ~~are should be~~ sent to the specified laboratories ~~laboratory~~ in the same manner..."

3.9.1.3 Field Blanks

p. 3-5, l. 1: Please clarify if monitoring well filter pack sand is silica sand. Data should be provided to show that the sand is free of contaminants.

p. 3-5, l. 2-3: Because sand is a solid, no reagents are added for preservation. The text needs to be revised accordingly.

3.9.2 Analytical Laboratory Quality Control

Revise the text to note that the control samples are to meet Ecology approval. Delete the reference to Section 2.6, because no description or listing of laboratory methods appears in that section. After the SAP has been revised, another cross-reference may be appropriate. Also, Ecology expects that the HASQAP is the basis for the minimum level of QA and QC for the analytical laboratories providing data for the Hanford Site. The SAP needs to reference the HASQAP.

3.9.2.1 Matrix Spike Samples/Matrix Spike Duplicate Samples

p. 3-5, l. 1-3: The text describes something more like a surrogate. Ecology expects that all constituents will be spiked into the routine sample, not just a representative analyte.

p. 3-5, l. 3: Clarify that the spike is made to a test portion of a routine sample. (Note that this would not be true if any of the contaminants of interest were volatile organics, for example.)

p. 3-5, l. 5: Revise the text by replacing "will be" with **are**.

3.9.2.2 Replicate Samples

Note in the text that replicate samples, as used in this document, are equivalent to test portions.

3.9.2.4 Analytical Blanks

Expand text to describe that the analytical blanks are subjected to the same handling (e.g., splitting) and preparative and determinative procedures (not just analytical procedure in the singular), as the routine samples.

3.10 Performance and System Audits

This text needs to state what audit activities will be conducted, not what may be conducted. The text also needs to describe how often these activities will take place (e.g., once over the course of the project, weekly, monthly). The text needs to describe if the QA Department has authority to immediately affect the work or to “stop work.”

3.11 Preventative Maintenance

p. 3-6, l. 1: Delete the following phrase from the text: “in the field.”

p. 3-6, l. 2: Replace “will be” with the word are.

p. 3-6, l. 3: Delete the following phrase from the text: “and field-screening organizations.”

p. 3-6, l. 4-5: Replace “will be” with the word are.

p. 3-6, l. 5: Delete the following phrase from the text: “and field-screening organization.”

3.12 Data Assessment Procedures

Data assessment procedures needs to include verification that the appropriate analytes and analytical methods were requested from the laboratory, that the laboratory fulfilled the request, and that all information is present in the data package.

p. 3-7, l. 1: Note that validation needs to be performed by a third party.

p. 3-7, l. 2-7: Delete the first two sentences and revise the remaining text, as follows:
“~~Statistical comparison with~~ Because the number of verification samples is fewer than are required under MTCA, each analytical value will be compared to the cleanup levels presented in Table 2-2 ~~will be made using statistical guidance from Ecology and/or EPA~~. If new cleanup levels are issued by Ecology prior to the approval of the RCRA closure plan of the unit, the data will be compared to the new cleanup values.”

Note that any statistical evaluations will be at Ecology’s discretion.

3.13 Corrective Action

p. 3-7, l. 2: Replace "may" with the word will. Ecology needs to receive a copy of the referenced procedure (BHI-MA-02, Section 2.1, Corrective Action) for review.

p. 3-7, l. 5: Add the following text to this section: Ecology will be notified of the need for any corrective action and the corrective action taken. This information also will be placed in the Administrative Record for 100-D Ponds.

3.14 Quality Assurance Reports

p. 3-7, l. 1: This sentence needs to be revised to address what "regularly" means, e.g., weekly, monthly.

p. 3-7, l. 6: Add the following text to this section: The final report also will be placed in the Administrative Record for 100-D Ponds.