HNRTC NRDA INJURY ASSESSMENT

QUALITY MANAGEMENT PLAN (QMP)

July 2021

Revision 1
(Provisional Draft)

Approved for Public Release;
Further Dissemination Unlimited

HANFORD NATURAL RESOURCE DAMAGE ASSESSMENT QUALITY MANAGEMENT PLAN CONCURRENCES

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Document Background:

Revision 0 of the HNRTC Quality Management Plan was authored by Industrial Economics, Inc., in coordination with EcoChem, Inc. and approved by the Hanford Natural Resource Trustee Council (HNRTC) in 2011. At that time, the data management process had not yet begun, and no Data Management System (DMS) was in place. In 2015, a Data Management System was selected for use by the HNRTC in the Natural Resource Damage Assessment (NRDA) process. Based on the expected functions of the Data Management Team (DMT) and the HNRTC Technical Working Groups (later described as Project Teams), the Quality Management Plan was updated and consolidated with a revision of the HNRTC Data Management Plan by HNRTC authors. At that time, study participation, Project Team organization, and the implementation of data and quality management was in its early stages. The document integration was intended to simplify work planning as no new data collection and no data analyses were in progress.

Since 2015, and in earnest since approximately 2018, the HNRTC Project Teams have conducted numerous reference reviews and data compilation efforts to populate the DMS. As of 2021, historical data compilation is ongoing, and data analysis is anticipated. The purpose of segregating the Quality Management Plan from the Data Management Plan in this revision is to explicitly highlight requirements for study design and data use to ensure the quality of data used in the analyses.

Document Version History:

- Revision 1 (July 2021) Authored by Freestone Environmental Services
- Revision 0 (August 2011) Authored by Industrial Economic, Inc. and EcoChem, Inc.

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APPENDIX A Data Utility Assessment Report (Sample)

APPENDIX B QA Project Plan Outline and Review Checklist for Secondary Data

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LIST OF ACRONYMS

CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act of 1980*
DMP	Data Management Plan
DMS	Data Management System
DOE	U.S. Department of Energy
DQA	Data Quality Assessment
EPA	U.S. Environmental Protection Agency
HNRTC	Hanford Natural Resource Trustee Council
NRDA	Natural Resource Damage Assessment
QA	quality assurance
QAPP	Quality Assurance Project Plan
QA/QC	Quality assurance/Quality control
QC	quality control
QMP	Quality Management Plan
SOP	Standard Operating Procedures

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1 INTRODUCTION

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA, 42 U.S.C. 9601 *et seq.*) provides the authority for natural resource trustees to assess damages to natural resources resulting from releases of certain hazardous substances. At the Hanford Assessment Area in the State of Washington, natural resource trustees include representatives of the U.S. Department of Energy (DOE); the U.S. Department of the Interior through the U.S. Fish and Wildlife Service; the U.S. Department of Commerce through the National Oceanic and Atmospheric Administration; the States of Washington and Oregon; the Yakama Nation, the Confederated Tribes of the Umatilla Indian Reservation, and the Nez Perce Tribe.

Representatives of these organizations have formed the Hanford Natural Resource Trustee Council (HNRTC), which is pursuing a natural resource damage assessment (NRDA) of the Hanford Assessment Area in the State of Washington.

The purpose of this plan is to document the HNRTC's Quality Systems and to provide a blueprint for how the HNRTC will plan, implement, and assess its Quality Systems for work performed by or on behalf of the HNRTC. Consistent with EPA (1999 and 2001) this plan presents the organizational structure, functional responsibilities of management and staff, lines of authority, and required interfaces for those planning, implementing, and assessing all activities conducted under this NRDA.

1.1 Importance of Data Quality

Many of the management decisions being made to accomplish the Hanford NRDA ultimately require the use of environmental data. The collection, compilation, evaluation, and reporting of environmental data are necessary to carry out the functions of the NRDA. It is necessary that the origin and quality of the data used to make these decisions is of known and documented quality so that data gaps can be identified; assessments of the severity, location and extent of injury are accurate, and thus eventually appropriate decisions can be made as to the needed type and scale of restoration actions. The HNRTC also recognizes that careful study design and appropriate interpretation of results including consideration of uncertainty are essential to achieve these goals.

1.2 Goals and Objectives of the Quality System

This Quality Management Plan (QMP) has been developed in order to ensure that all environmental data and related information relied upon in this NRDA are of the quality needed to ensure the data are scientifically valid, legally defensible, and are of known and documented quality. The validity, defensibility, and quality of the data are known when all components associated with their derivation (methods, precision, bias, completeness, comparability, sensitivity, and representativeness) are documented and compared to appropriate criteria. This requires the development of appropriate Work Plans along with study-specific Quality Assurance Project Plans (QAPPs), as well as data management processes and data review processes.

To achieve these objectives, quality assurance (QA) practices should be incorporated into all phases of study design and data collection (including assembly of historical data as well as new data generation), from the planning stages through implementation, assessment and ultimately dissemination of data products and services.

2 MANAGEMENT AND ORGANIZATION

2.1 Policy

The HNRTC's policy is to implement a Quality System that will ensure all environmental data, whether historical or acquired during NRDA investigations, will be scientifically valid (e.g., reproducible); of acceptable completeness, representativeness, and comparability; and be of a known and documented quality. It is also the policy of the HNRTC to disseminate information in an accurate, clear, complete, and unbiased manner.

The HNRTC recognizes that the implementation of a quality assurance program requires Trustee commitment and support as well as the involvement of the entire staff involved in the NRDA, and that every participant in the NRDA plays an integral part in quality assurance.

2.2 Organizational Chart

The HNRTC, Project Teams, and appointed contractors may carry out the responsibilities of the quality management system. The function of each role as they pertain to data and quality management in the NRDA process is detailed in the Data Management Plan (HNRTC 2021). Figure 2-1 presents the Quality Assurance Management organization for the Hanford NRDA.

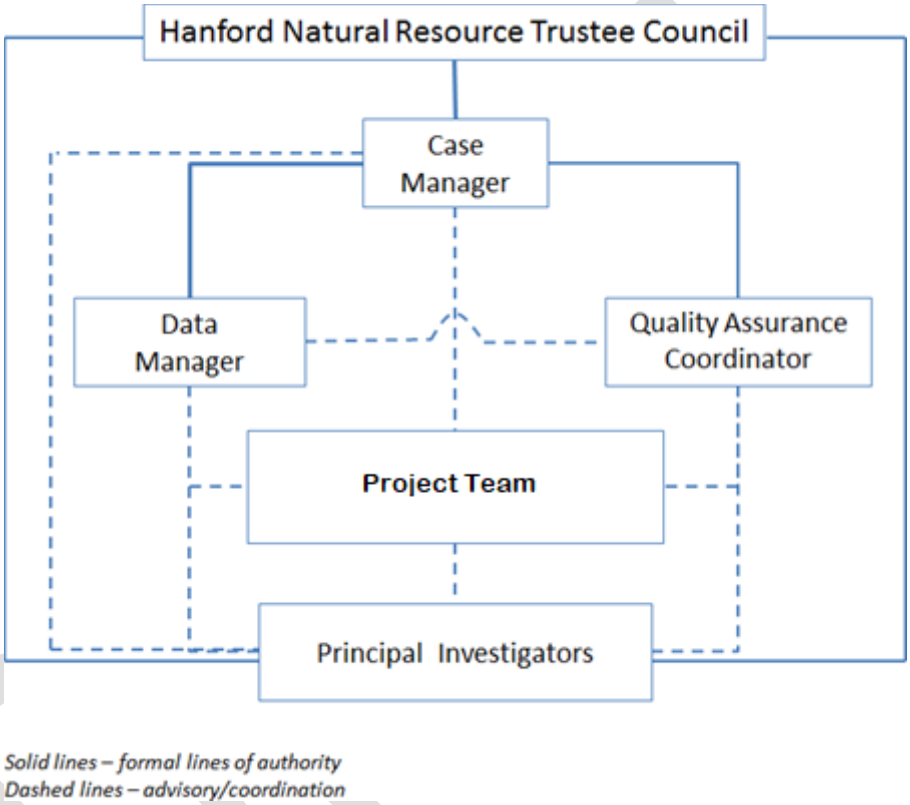

Figure 2-1. QA Management Organization for Hanford NRDA

2.3 Responsibilities

The HNRTC has overall program management responsibilities for the NRDA including data quality management. The Case Manager has responsibility for management and communication of specific quality assurance activities with advisory input from the Project Teams. Project Teams also work closely with Principal Investigators in the technical design of Work Plans to help ensure that these documents meet the HNRTC's needs. The Data Manager is responsible for assembling documents and data collected in support of the NRDA (both current and historical) in an accessible and complete format for NRDA purposes. Principal Investigators are responsible for project-specific design and implementation of the quality assurance/quality control (QA/QC) activities. The Quality Assurance Coordinator oversees QA program implementation, contributing to the Work Plan development, data review, and documentation processes. Specific responsibilities of the Hanford Quality Assurance Coordinator include:

- Reviewing the Hanford NRDA QMP, revising it if changes are necessary, and obtaining appropriate document approvals.
- Overseeing the verification and validation of the historical and newly acquired data for the Hanford NRDA.
- Identifying and delegating responsibility for responding to specific QA/QC needs and ensuring timely answers to requests for guidance or assistance including interpretation of the QMP and providing guidance on compliance.
- Ensuring all Work Plans and standard operating procedures (SOPs) are technically reviewed and approved prior to collection and/or analysis of environmental data.
- Ensuring that problems and deficiencies identified in technical audits and data assessments are resolved.

3 QUALITY SYSTEM DESCRIPTION

The goal of the Quality System is to ensure that the acquisition and use of environmental data, whether historical or generated under the oversight of the HNRTC, includes sufficient up-front planning and review to ensure data quality is adequate to meet project goals. In order for the data to be useful for the NRDA, the data must be of known and documented quality: it must have sufficient supporting documentation such that data users can evaluate whether the data meet their needs. This is achieved by ensuring that adequate QA tools are used throughout the entire data collection and assessment process from initial planning through data usage. The tools used in the Quality System include:

- This QMP
- The Data Management Plan (DMP) (HNRTC 2021)
- Work plans including associated QA project plans (QAPPs) that may be developed to support NRDA activities
- Standard Operating Procedures (SOPs)
- Peer reviews
- Technical systems audits
- Field and laboratory audits
- Data verification and validation

Figure 3-1 depicts the relationship of these tools to one another. The Project Teams, Data Manager, Project Team QA Coordinator, Principal Investigators, and appropriate staff participate in and are responsible for the creation and implementation of each of these tools.

Quality system components shall be consistent with, and supportive of, project objectives (i.e., they will have a graded approach as described in EPA 2001). In other words, the level of application of quality system controls to an environmental data program can vary according to the intended use of the results and the degree of confidence needed in the quality of the results. For example, if historical data are being used to support planning for additional sampling, the degree of review and documentation may be less than the degree of review and documentation if historical data are to be used for injury determination.

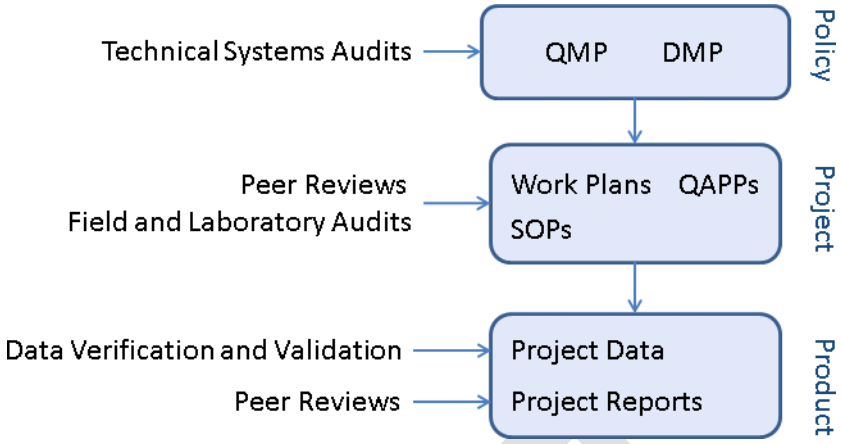

Figure 3-1. Components of the Quality System

Specifically, it is the responsibility of the Project Team QA Coordinator working with the Project Team Leader and Principal Investigators to ensure that the following objectives are achieved:

- All environmental data used and generated are of known and acceptable quality for the intended use. The data quality information developed with all environmental data is documented and available within the Data Management System (DMS).
- If new data are to be collected, the intended uses of the data are defined before the data collection effort begins so that appropriate QA measures can be applied to ensure a level of data quality commensurate with the project data objectives. The determination of this level of data quality takes into account the prospective data needs of secondary users.
- General audit and data review procedures are stated during the planning process for the acquisition and use of any data used in the NRDA process. The audits and data assessments should be documented and provided with the final data reports.

3.1 Description

It is the policy of the HNRTC that:

- This Quality Management Plan is implemented as described herein and reviewed annually to ensure that it continues to accurately describe the organization and quality management policies of the HNRTC.
- The Data Manager will implement the Data Management Plan. The data quality information developed for all environmental data will be documented and made electronically available along with the data themselves, such that limitations of data quality are understood.
- Each Work Plan will have an associated QAPP that includes project specific QA/QC requirements. Both these documents must be approved by the HNRTC prior to environmental data collection.

3.2 Principal Components of the Quality System

3.2.1 Quality Management Plan

This QMP has been prepared in accordance with *EPA QA/R-2: EPA Requirements for Quality Management Plans (March 2001)*. It documents and defines the overall policies, organization objectives, and functional responsibilities for achieving the HNRTC's goals.

This QMP documents how the HNRTC structures its Quality System. A Quality System is a structured system that describes the policies and procedures for ensuring that work processes, products, or services satisfy stated expectations or specifications (EPA 2001). This QA program functions at the management level through HNRTC goals and management policies, and at the analytical level through the full set of tools that comprise the Quality System. The QA program is designed to minimize system-based error, encourage constructive, documented problem solving, and provide a framework for continuous improvement within the organization.

3.2.2 Data Management Plan (DMP)

The HNRTC DMP provides an organized system for management, decision making, and communicating Hanford NRDA information. It also includes a list of the roles and responsibilities of Trustees and their approved contractors in the data management process. The plan describes how data for the injury assessment activities will be acquired, reviewed, and stored, along with associated QA/QC information.

3.2.3 Historical Data Acquisition and Use

If a historical data set is identified that may be useful for formulating or performing a study, the request for potential inclusion of the data set in the HNRTC DMS will be made through the development and submittal of a statement of work for data compilation as described in the DMP. Once approved by the HNTRC, the data set(s) will be obtained, reviewed, and assigned a QA Category, as described below. The categories are based on similar categories developed for the Columbia River Component database (DOE 2006), but slightly different definitions have been developed for NRDA purposes:

- **Category QA1 –** Data are of known quality and thus can be evaluated to determine if data are useful for specific NRDA studies. Work plans and QA documentation adequately summarize the study design, and data sets include QA/QC results for sampling and analytical methods such that data can be assessed as to the adequacy for use.
- **Category QA2 –** Data are of partially known or suspect quality because study design and/or QA/QC information for sampling and analysis are incomplete. These data are considered suitable for qualitative use and may be considered suitable for further evaluation based on project specific data quality objectives and intended end uses.
- **Category QA3 –** Data that are of unknown quality: they have information on sampling and analytical methods but lack an adequate level of supporting study design and/or QA/QC information; or are summarized and only provide ranges of concentrations. These data can be used on a limited or provisional basis for qualitative comparisons with other Category 1 or 2 data.
- **Category QA4 – A)** No information is available or ascertainable as to the study design, sampling and/or analytical methods; or **B)** it is documented that inappropriate sampling and/or analytical methods were used, e.g., sample preservation was not used; holding times were grossly exceeded, or the acceptance criteria for measurement bias were not satisfied for the entire data set. These data sets are entered into the database to indicate they were reviewed, but they should not be used for NRDA purposes.

The general types of information reviewed and the criteria used to categorize the quality level of a data set are summarized in Table 3-1. The criteria are based on a matrix for evaluating usability of data presented in the *River Corridor Baseline Risk Assessment Volume II: Human Health Risk Assessment Draft C,* DOE/RL-2007-21, December 2010. Each reviewed data set is assigned an overall usability category that is equivalent to the lowest category applied to any single criterion. For example, a data set that is ranked Category QA1 for four of the criteria and Category QA2 for two will be considered Category QA2 overall.

The results of the data set review are recorded in a Data Utility Assessment Report (DUA) (see example in Appendix A) and uploaded to the appropriate location in the DMS so that they are available to project personnel for references. Metadata supporting the DUA include but are not limited to:

- The name and organizational affiliation of the reviewer
- The date of the review
- The overall category rank for the dataset
- The dataset's rank associated with each of the criteria set forth in Table 3-1
- For each criterion, a description of the reason for assigning the specified rank

It is important to note that if a data set is assigned to Category QA4 overall, the data set is considered unusable for NRDA purposes. Assignment of QA1, QA2, or QA3 to a data set is to alert investigators to potential limitations in the data. The decision to use or not use a data set remains the responsibility of the investigator and must be made in the context of the particular study.

Reports relying on historical data shall describe the data review procedures undertaken as part of report development, as well as the results of those efforts (i.e., whether or not specific data sets were included/excluded from use). The Project Team QA Coordinator shall advise as to the appropriate nature and type of data review procedures for use in connection with specific efforts.

Table 3-1. Decision Criteria Matrix for Evaluating Usability of Data for NRDA Purposes

	CATEGORY QA1	**CATEGORY QA2**	**CATEGORY QA3**	**CATEGORY QA4**
CRITERIA	**Fully Documented QA**	**Partially Documented QA**	**Unknown Quality, Conditionally Acceptable for Qualitative Uses**	**Not Acceptable for Use**
Criterion 1: Data Sources	Accompanying report provides complete description of study design and sample location(s) with justification and rationale.	Report is generally complete and well written but lacks sufficient detail in a few areas. Sampling locations specified, but not located with GPS or equivalent.	Accompanying report is incomplete but does provide sufficient information for one or more parameters of interest. Sampling locations may not be well specified.	No information available on background and conduct of study. Significant questions regarding sampling locations.
Criterion 2: Documentation	Work Plan, QAPP, chain-of-custody records, SOPs, and similar field and laboratory documentation exists and is available for review.	Documentation exists for most areas but is insufficient or lacking in a few areas considered non-critical.	Documentation generally not available but sufficient information is known or available via other sources to establish validity of field and analytical procedures.	Documentation non-existent, not available for review, or status unknown.

CRITERIA	CATEGORY QA1 Fully Documented QA	CATEGORY QA2 Partially Documented QA	CATEGORY QA3 Unknown Quality, Conditionally Acceptable for Qualitative Uses	CATEGORY QA4 Not Acceptable for Use
Criterion 3: Analytical Methods	Analytical procedures follow documented standard methods such as EPA or ASTM.	Analytical procedures non-standard but sufficiently documented to establish validity of and ensure confidence in data.	Analytical procedures nonstandard and not well documented, but data are believed to be valid due to other information provided.	Insufficient information provided or available via other sources to establish validity of data.
Criterion 4: Data Quality Indicators	Study had established data quality indicators and data substantially meet all acceptability criteria for completeness, comparability, representativeness, precision, and accuracy.	Data quality indicators not established, but data appear to meet minimum standards for DQIs.	Data quality indicators not established; data appear to not satisfy minimum standards for one or more non-critical DQIs.	Data fail to meet minimum standards for one or more critical DQIs, or not possible to evaluate DQIs
Criterion 5: Data Review	Study incorporated all or most of the full range of QA/QC procedures, e.g., blanks, spikes, duplicates, data review, and data validation.	Study generally employed and documented established QA/QC procedures but did not conduct data validation.	Nonstandard or incomplete QA/QC procedures were followed.	No QA/QC procedures employed or documented.
Criterion 6: Data Reporting	Data reported in standard units and are reasonable and internally consistent. Methods followed meet current standards for scientific investigation and were followed consistently.	Data appear to be of acceptable quality. Methods may not meet current standards but are judged to have produced data equivalent to current methodologies.	Portions of the data appear to be of questionable quality due to age, changes in methods, and/or failure to follow current standards for scientific investigation.	The overall data quality is questionable due to outmoded methodologies, poor performance, and/or apparent lack of consistency with current standards.

ASTM =American Society for Testing and Materials
DQI = Data quality indicator
GPS = Global positioning system

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3.2.4 Work Plans and QAPPs

All Hanford NRDA projects that involve the generation of new environmental data (activities that involve the measurement, monitoring or collection of physical, chemical, or biological data) are required to document all aspects of their project's sampling design, sample collection, analysis, quality control, and data management activities in a Work Plan. Work plans should generally include but are not necessarily limited to the following elements:

- Cover page with title and date
- Signatory page (including the Principal Investigator(s) and Project Team QA Coordinator)
- Background/introduction
- Study measurement endpoints
- Sampling design strategy (e.g., numbers and types of samples, sampling locations, sampling timing, and identification of analyses that will be conducted on the samples)
- Detailed methods, including new, study-specific SOPs or references to SOPs
- A description of the statistical methods to be used in interpreting results
- Provisions for health and safety, as applicable
- Descriptions of all permissions needed to conduct the study (e.g., collection permits, paperwork documenting approval for work on-site at Hanford)
- References

Accompanying the Work Plan must be a study-specific QAPP that describes the methods for documenting and assessing environmental data, QA, QC, and other technical activities that must be implemented to ensure that the results of the work performed will satisfy the stated performance criteria. The QAPP should follow the EPA guidelines for QAPP preparation for both new data collection (EPA 2002) and for the collection and use of secondary (historical) data (EPA 1999). A review checklist for developing a QAPP for use of secondary source data was adapted from EPA 1999 guidance provided as Appendix B. These checklists provide general guidance for preparing QAPPs. Not all studies will require the same level of information. The HNRTC QMP and DMP should be referenced in the QAPP, and any inconsistencies with these documents noted. There will be some overlap of information between the Work Plan and the QAPP, so these documents can be used by project personnel independently.

3.2.5 Standard Operating Procedures

Work plans submitted for the NRDA must include SOPs to describe detailed sample collection and laboratory procedures. The SOPs may be incorporated by reference, but should be submitted, reviewed, and approved at the same time as the corresponding Work Plan and QAPP (see Section 8.3).

SOPs that are developed *de novo* (or that are adapted from existing SOPs) for specific Work Plans should include detailed equipment/materials lists and, as appropriate, should include associated datasheets into which researchers record sample numbers, measurements, and other pertinent information. Furthermore, sampling SOPs must specify and/or describe:

- Sampling and/or sample processing undertaken for QA purposes (e.g., the frequency of collection of duplicate samples or measurements, field blanks, etc.)
- Sample containers and sample volumes
- Sample labeling procedures
- Shipping/handling procedures
- Equipment calibration requirements
- Cleaning/decontamination methods and frequencies

If samples are to be composited in the field or in the laboratory, these methods should also be described. Overall, SOPs should be consistent with *EPA Guidance for Preparing SOPs* (QA/G-6).

The Hanford NRDA Data Manager maintains internal SOPs for the management of environmental data submitted to the DMS (e.g., Content Submission SOP). These SOPs should be written by personnel performing the routine data management tasks and reflect actual data processing practices. SOPs should be prepared in document control format and are submitted to the Project Team Leader and Project Team QA Coordinator for approval and maintenance in a permanent file. Where applicable, the SOP is also filed with the associated Project Team.

3.2.6 Audits

Field and laboratory audits will be performed by the Project Team QA Coordinator or designee as stated in the Work Plans for new data collection efforts. The field audits will be performed during sample collection, and laboratory audits will be performed before or during analysis. The audit checklists will be based on the performance criteria specified in field and laboratory SOPs, general Work Plan protocols, project specific QAPP requirements, and requirements outlined in audit procedures of the EPA National Enforcement Investigation Center "*NEIC Procedures Manual for the Contract Evidence Audit and Litigation Support for EPA Enforcement Case Development*" (EPA 330/9-89-00). Field Team Supervisors or Laboratory Project Managers will be informed of the findings and recommendations of the audit before the auditors leave the field operations area or laboratory. A written report discussing the audits will be submitted to the Case Manager, the appropriate Principal Investigator, and the audited facility or team.

If an audit involves formal findings that are requested to be corrected, the Principal Investigator will be responsible for providing a summary of corrective actions and the timeline for its implementation to the Case Manager. After approval by the Case Manager, the Project Team QA Coordinator will review the response from the audited party and sign off on the corrective action after verifying its implementation.

4 PERSONNEL AND TRAINING

Personnel must demonstrate competence in the areas where they have responsibility. All personnel are responsible for complying with QA/QC requirements that pertain to their area of responsibility. Each staff member must have a combination of experience and education to adequately demonstrate a specific knowledge appropriate to their particular area of responsibility.

HNRTC members and participants are required to draw upon their educational background, experience, professional symposia, and on-the-job training. Trustees and support staff participate in technical workshops to share and expand their knowledge in their areas of expertise. Staff proficiency is demonstrated through workshop presentations, written reports, committee presentations and publications.

The Case Manager, Project Team QA Coordinator, Data Manager, and Principal Investigators must have documentation in the QA file that they have read, understood, and agreed to follow the most recent version of the QMP, DMP, SOPs and Work Plans as appropriate to their responsibilities.

Proper training and ability need to be demonstrated for personnel collecting data for studies. When a Work Plan and QAPP is submitted, all personnel involved and their qualifications need to be reviewed and assessed by the Project Team QA Coordinator or designee. If, in the Project Team QA Coordinator's view, personnel designing or implementing studies do not possess adequate qualifications, the Project Team QA Coordinator shall immediately inform the Case Manager and HNRTC. The HNRTC will make a determination as to the appropriateness of the individual continuing to work in the given role.

5 PROCUREMENT OF ITEMS, SERVICES, AND ACTIVITIES

Contractors and suppliers are responsible for the quality of work performed, including items or services provided by subcontractors and secondary suppliers. The Quality System requires that all applicable field and laboratory facilities, equipment, and services be capable of producing acceptable quality data in an efficient manner with minimum risk to personnel.

Cooperating laboratories will ensure:

- Acceptable environmental conditions (lighting, ventilation, temperature, noise levels)
- Acceptable utility services (electricity and voltage control; purity, pressure, and supply of water and air)
- Acceptable general laboratory equipment (analytical instrumentation support, air conditioners, furnaces, generators, refrigerators, incubators, laboratory hoods, sinks, counters)
- Routine inspection and preventive maintenance for all facilities and equipment

Field and laboratory equipment used to conduct environmental data operations for new sampling events will be calibrated prior to work, following work, and at intervals according to specifications in the manufacturers' instructions. These procedures must be addressed in each Work Plan and QAPP and documented in SOPs. The Case Manager and/or the Project Team QA Coordinator will ensure that acceptable equipment is used in the field and the laboratory, and that it is maintained in good working order.

6 DOCUMENTS AND RECORDS

6.1 Document Review Requirements

Quality system documents, including revisions, must be prepared and reviewed for conformance with the quality system requirements and approved for release by the Project Team QA Coordinator.

Technical guidance documents such as Work Plans, QAPPs, and SOPs must be peer-reviewed, signed by the Principal Investigator(s) and the Project Team QA Coordinator, then approved by the HNRTC. The purpose of the peer review is to ensure that technical documents reflect appropriate scientific factual information and judgments. Qualified individuals independent from those responsible for the original work product shall serve as peer reviewers. For any given review effort, qualified peer reviewers may include members of HNRTC organizations (i.e., internal peer reviewers), but should consider including at least one person not regularly associated with Trustee activities at Hanford (i.e., external peer reviewers).

The Project Team QA Coordinator shall ensure appropriate QA/QC measures are included in all technical guidance documents. The Principal Investigator and the Project Team QA Coordinator are jointly responsible for the proper use of these documents, which is ensured through the training and audit processes. The Case Manager provides higher-level oversight to ensure documents are consistent with overall HNRTC priorities.

Once approved, quality system and technical guidance documents are provided to the Data Manager for storage in the site assessment files. The Data Manager is responsible for ensuring that all documents and records produced by a project are handled appropriately and properly filed within the DMS.

Project reports (e.g., reports on injury studies) developed for this NRDA that contain data or reporting the results of environmental data operations will also be subject to independent peer review to confirm that the data or results reflect appropriate scientific factual information and judgments. Once finalized, these documents will be maintained per the DMP.

6.2 Records

Every data set stored in the HNRTC DMS will be accompanied by a related file documenting the source of the data, the contact for additional information, the sponsoring and collecting organizations, reasons for

collecting the data, published documents or reports associated with the data. For historical references and data, the source record is the Data Utility Assessment Report and its accompanying Content Submission Table.

Records substantiating the data review process and QA/QC results should accompany any newly generated data set. This may be accomplished through a data quality analysis (DQA), data verification summary, or data validation report. Documentation on database content sources is essential for drawing meaningful interpretations of the data contained in the database. In addition, database management is dependent upon structured, easy-to-use documentation.

6.3 Document and Record Retention

Generally, project QA/QC documents, including the approved Work Plans, QAPPs, SOPs and revisions, chain-of-custody forms, corrective action records, sample collection forms, and audit reports will be maintained as specified in the DMP after the conclusion of the project by the HNRTC.

Maintenance of records will entail transmittal, distribution, retention, access, protection, preservation, traceability, retrieval, and disposition. Record maintenance will be more fully described in the DMP and associated Content Submission SOP.

7 COMPUTER HARDWARE AND SOFTWARE

7.1 Hardware and Software Selection

As detailed in the DMP, the Data Manager is responsible for ensuring that hardware and software used for recording and maintaining data from environmental data operations meets program requirements. The Data Manager is also responsible for evaluating the impact of potential hardware and software changes on program performance.

7.2 Data and Information Standards

The Data Manager will adopt data and information standards to improve coordination, compatibility, standardization, and access to data. Trustees, Project Teams, contractors, field operations and laboratories, are required to submit deliverables in electronic format. Electronic deliverables include reports, graphics, spreadsheets, imagery, data files, audio, and digital video products. Standards for submitting data and information are documented in the DMP.

The DMP describes how data security will be maintained as well as how the data will be reviewed and processed prior to making the information available for general project use. The Data Manager or designee will contact the data generator directly to resolve minor errors; however, the manager may consult with the Case Manager or Project Team QA Coordinator to resolve major reporting errors or omissions.

8 PLANNING AND IMPLEMENTATION

8.1 Participants

The planning process begins with the HNRTC Project Teams. The following is a list of the Teams primarily responsible for initiating the planning process:

- Source/Pathway
- Groundwater
- Aquatic Resources
- Terrestrial Resources
- Human Use
- Restoration

8.2 Development and Documentation of Quality Needs

The Work Plans developed during this NRDA shall describe a systematic planning process, details of which will include a description of how, when, and where the data will be obtained as well as any constraints on data collection. The following are the steps described in Appendix A of the *Uniform Federal Policy for Implementing Environmental Quality Systems* (IDQTF 2005) for determining data quality needs:

1. Establish a Team-Based Approach to Planning
2. Description of the Project Goal, Objectives, and Questions and Issues to Be Addressed
3. Identification of Project Schedule, Resources (Including Budget), Milestones, and Any Applicable Requirements (e.g., Regulatory Requirements, Contractual Requirements)
4. Match the Data Collection and Analysis Process to Project Objectives
5. Identification of Collection and Analysis Requirements
   a. Determine how, when, and where data (including existing [*i.e., historical*] data) will be obtained
   b. Determine the quantity of data needed and performance criteria for measuring quality
   c. Specify QA/QC activities needed to assess the quality performance criteria
6. Describe the Process for Generation, Evaluation, and Assessment of Collected Data

8.3 Development and Approval of Work Plans and QAPPs

As shown in Table 8-1 the Principal Investigator and Project Team QA Coordinator shall sign off on the Work Plan and associated QAPP. The Project Team Leader shall submit these documents to the Case Manager and HNRTC, along with a formal recommendation to proceed (or not) with the described work, at least 60 days prior to the initiation of each data generation activity. The Case Manager shall formally inform the HNRTC about whether or not he or she concurs with the recommendation of the Project Team Lead, and the HNRTC will make a determination about whether to proceed with the described work.

Table 8-1. Work Plan and QAPP Approval Process

Step	Activity	Implemented by
1	Identify data gap as priority; select Project Team to define path forward for acquiring needed information.	HNRTC, with Project Teams
2	Prepare scope of work; contact prospective Principal Investigator(s) or prepare and release Request for Proposals.	Project Team, with Case Manager
3	After contract award, prepare draft Work Plan and QAPP (with SOPs), coordinating with Project Team(s); include preliminary estimated budget and projected timeline as separate documents.[1]	Principal Investigator,[2] with input from Project Team(s) and Project Team QA Coordinator
4	Submit draft Work Plan, QAPP, estimated budget and projected timeline to the Case Manager and HNRTC, with recommendation to proceed to the peer review.	Project Team Lead
5	Recommend to HNRTC to proceed with the peer review.	Case Manager
6	Decide whether to approve the draft Work Plan/QAPP and proceed to the peer review, or to request further changes.	HNRTC
7	Peer review:[3,4] select reviewers, manage review process, communicate results to Principal Investigator.	Project Team(s)

Table 8-1. Work Plan and QAPP Approval Process

Step	Activity	Implemented by
8	Finalize Work Plan and QAPP in response to peer review. Revise estimated budget and projected timeline.	Principal Investigator
9	Submit final Work Plan and QAPP to the Case Manager and HNRTC, with recommendation about implementation.	Project Team Lead
10	Recommend HNRTC to proceed with implementation.	Case Manager
11	Decide whether to authorize funding for Work Plan implementation.	HNRTC

Notes:

[1] In some cases, this might be an iterative process, with submission and review of a preliminary Work Plan and budget (without QAPP), which is then cycled back to the Principal Investigator for preparation of a more detailed plan with QAPP.

[2] The Principal Investigator may be an employee of the selected organization (whether a Federal, state, or Tribal organization), or a contractor.

[3] The peer review encompasses the Work Plan, QAPP, and SOPs.

[4] Peer review can be accomplished by written review, or by conducting a review workshop.

9 MANAGEMENT OF THE WORK PROCESS IMPLEMENTATION

Work processes can vary substantially from one activity to another in terms of complexity, repetition, standardization, accuracy, and precision requirements, and in the level of verification/validation required.

9.1 Development of Standard Operating Procedures

The Trustees will develop SOPs for activities expected to span multiple projects and that need uniformity across multiple cooperating parties. These activities may include but are not necessarily limited to the:

- process for maintaining proper chain of custody
- coding for sample identification
- sample location documentation
- analytical chemistry measurements in various media
- procedures for collection of various field sample QC samples

SOPs will also be referenced in or developed for individual Work Plans (e.g., animal husbandry, toxicity testing procedures, necropsy methods, field survey methods, etc.). All SOPs will be reviewed and approved as described in Section 6.1.

Careful development and implementation of SOPs ensures that a project is conducted according to a defined process. As noted in Section 3.2.5, SOPs should be consistent with *EPA Guidance for Preparing SOPs (QA/G-6)*.

9.2 Implementation of the Work Plan

The Principal Investigator shall work closely with the HNRTC to acquire all permissions that may be necessary to implement the work (e.g., acquisition of collection permits, DOE badge acquisition, acquisition of permission to conduct research on-site, etc.) in a timely fashion.

In addition, mechanisms for implementation of each Work Plan and QAPP are the responsibility of the Principal Investigator. These include oversight, monitoring, and inspection. Oversight and inspection are

carried out by the Project Team QA Coordinator, as well as by Principal Investigator, to check performance against technical and quality specifications.

9.3 Project Report Review

As noted previously, project reports that contain data or reporting the results of environmental data operations will also be subject to independent peer review to confirm that the data or results reflect appropriate scientific factual information and judgments. Once finalized, these documents will be maintained per the DMP.

10 REFERENCES

ANSI 1994, Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs, ANSI/ASQC E4-1994, American National Standards Institute, New York, New York.

HNRTC 2021a, *HNRTC NRDA Injury Assessment Data Management Plan*, Revision 2, Provisional Draft, Prepared by Freestone Environmental, Inc., July 2021.

HNRTC 2021b, *NRDA Content Submission Standard Operating Procedure*, Revision 1, Provisional Draft, HNRTC-SOP-16-002, Prepared by Freestone Environmental, Inc., July 2021.

Intergovernmental Data Quality Task Force 2005, *Uniform Federal Policy for Implementing Environmental Quality Systems*. Version 2. EPA-505-F-03-001. Washington, D.C.

DOE-RL 2007, *Hanford Analytical Services Quality Assurance Requirements Documents*. HASQARD, Volumes 1, 2, 3, and 4. U.S. Department of Energy, Richland Operations Office, Richland, Washington http://www.hanford.gov/page.cfm/AnalyticalServices. DOE/RL-96-68.

DOE-RL 2006, *Columbia River Component Data Evaluation Summary Report*. U.S. Department of Energy, Richland Operations Office, Richland, Washington. WCH-91 Rev. 0.

EPA 2001, *EPA Requirements for Quality Management Plans* (QA/R-2). EPA-240-B-01-002, U.S. Environmental Protection Agency, Washington, D.C.

EPA 2002, *EPA Guidance for Quality Assurance Project Plans*(QA/G-5). EPA-240-R-02-009, U.S. Environmental Protection Agency, Washington, D.C.

DRAFT

APPENDIX A

DATA UTILITY ASSESSMENT REPORT (SAMPLE)

DRAFT

Appendix A

Data Utility Assessment Report Example

This Appendix provides an example of the Data Utility Assessment (DUA) Report that is generated as a result of reviewing secondary (historic) references and data for consideration in the NRDA injury assessment process. The DUA serves to document the quality review process and traceability of environmental data considered for use in the assessment. The DUA, with supporting references, supporting analytical data, and metadata are entered into the Data Management System with a Content Submission Table indexing all relevant reference materials.

The structure of the DUA follows the guidance of the Quality Management System in terms of documenting:

- Purpose of review
- Source of secondary references and data
- Any environmental data acquired and provided for inclusion in the DMS
- Geospatial data associated with or generated as a result of the review process

It should be noted that as of the time of revision of this Quality Management Plan (QMP), no injury study-specific data usability criteria or Quality Assurance Project Plans have been established. In the absence of a formal study objective, reviewed reports and data are intended as references from which to pull project-relevant information. The quality code categories assigned to date reflect the traceability of the reference material and data as they pertain to their original collection purpose.

Use of the secondary source references and data for the Injury Assessment process should follow the requirements of injury study-specific Quality Assurance Project Plans (QAPPs). Appendices B and C of this QMP provide an outline and review checklist listing the recommended contents for study-specific QAPPs for both secondary reference use and new data collection, respectively.

DUA Form No. 0005

Aquatic Data Utility Assessment Screening Form (Hanford) Aquatic Data Compilation Project - HNRTC Resolution 2017-R-02

Sampling and Analysis of 100 Area Springs (dated 11/13/18)

PURPOSE: The purpose of this data utility assessment (DUA) was to evaluate and document the quality of analytical data and project planning documentation supporting the Sampling and Analysis of 100 Area Springs Report (DOE/RL-92-12). The DOE/RL-92-12 documentation, in conjunction with Council work products, was used to create a final project delivery package that contains the following components:

1. This DUA Form
2. Source documents
3. Environmental data acquired for this project
4. GIS File Geodatabase
5. Data file(s) for the Project Portal Environmental Database Module
6. Content Submission Table

As a result of this DUA:

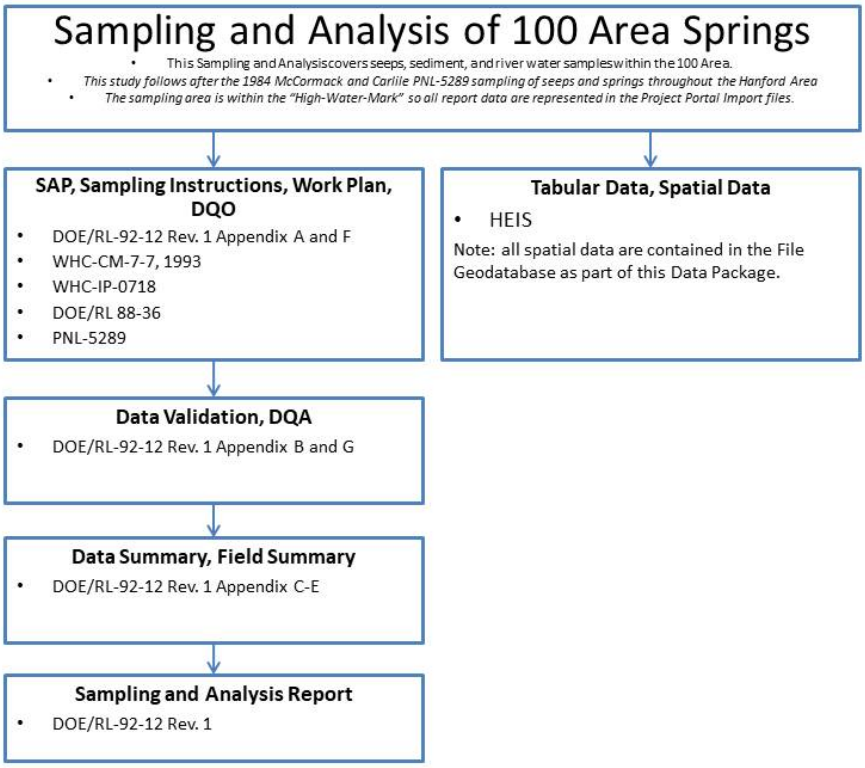
1. The DOE/RL-92-12 analytical data deemed to be of sufficient quality (i.e., QA 1-3) are recommended for inclusion in the Project Portal Environmental Database Module for subsequent analysis.
2. Project planning documentation and reports supporting the quality and defensibility of the analytical data and reporting, as well as any analytical data categorized as QA-4, shall be submitted to the NRDA Case File (or workspace, as appropriate).
3. The geospatial coordinate lookup table shall be submitted for use in populating null coordinate fields in the Environmental Database, as applicable.

EXAMPLE

DUA Form No. 0005

Basic Information

Document Citation or Data Source Description



Primary Study for Aquatic Data Utility Assessment Screening Form:

DOE-RL, 1992a, Sampling and Analysis of 100 Area Springs, DOE/RL-92-12, Rev. 1, May 1992, U.S. Department of Energy, Richland Field Office, Richland, Washington.

Secondary/Support documentation for Aquatic Data Utility Assessment Screening Form:

WHC, 1993a, Environmental Investigations and Site Characterization Manual, WHC-CM-7-7, Westinghouse Hanford Company, Richland, Washington.

WHC, 1993b, Guidelines for the Conduct of Radiological Work, WHC-IP-0718, Westinghouse Hanford Company, Richland, Washington.

DOE/RL, 1990, RCRA Facility Investigation/Corrective Measures Study Work Plan for the 100-HR-3 Operable Unit, Hanford Site, Richland, WA, DOE/RL 88-36, Richland Field Office, Richland, Washington.

McCormack, W. D. and J. M. V. Carlile, 1984, Investigation of Groundwater Seepage from the Hanford Shoreline of the Columbia River, PNL-5289, November 1984, Pacific Northwest Laboratory, Richland, Washington.

DUA Form No. 0005

Equivalent Project Portal Field	Field Content Description
Document Title	*Sampling and Analysis of 100 Area Springs*
Content Description	*Water and sediment samples were collected from 26 locations between September 16, 1991, and October 21, 1991, coinciding with the normal low-flow period of the Columbia River. Samples were submitted for chemical and radiological analyses following onsite screening for radioactivity.*
Bibliography	*1992 Sampling and Analysis of 100 Area Springs, DOE/RL-92-12, Rev. 1*
Parent Data Package	*DOE/RL-92-12*
Data or Content Owner	*United States Department of Energy* *P.O. Box 550, Richland, Washington 99352*
Filename	*DOERL-92-12_1992a.pdf, WHC-CM-7-7_1993.pdf, WHC-IP-0718.pdf, DOERL-88-36_1990.pdf*

Form Submittal Date

March 23, 2018

Form preparer(s). Please include title and affiliation.

Jane Brown, GISP, GIS Data Analyst, Sarah Smith Principal Scientist, Science and Engineering Inc.

Equivalent Project Portal Field	Field Content Description
Contributor Name	*Jason Bateman - Science & Engineering Inc.*
Contributor Phone Number	*1-208-786-1206*
Contributor Email Address	*JasonBateman@se.inc*
Project Affiliation	*Aquatic Data Compilation Program*
Agency Affiliation	*NOAA, CTUIR, USDOE*

Are these data relevant to the Injury Assessment Process?

☒ Yes
☐ No

Do these data potentially answer specific questions Trustees have about resource/service loss, or exposure/injury from Hanford contamination?

☒ Yes
☐ No

If "No", do the data address other important NRDA questions, such as but not including to, "What is the source?", "Can we establish a pathway?", "Are there confounding factors that need to be accounted for?", or "Do we have a baseline for

exposure or effects?"
☐ Yes
☐ No

Describe the exposure/injury questions answered by the data or how the data can be used to resolve specific injury questions.

Are there Hanford Site related contaminants that were released to the Columbia River that currently exist at concentrations that pose adverse effects to ecological receptors either within the Columbia River or within the Riparian zone?

Describe the original purpose of the data related to Hanford.

This study was initiated to ascertain the concentrations of chemical and radiological constituents discharged through seeps and springs into the Columbia River. Definition of the chemical and radiological concentrations retained on sediments adjacent to springs was attempted. Sediment samples were collected adjacent to the springs to indicate retention of contaminants by the sediments. Near-shore river water samples were also collected adjacent to the springs.

Generally describe the pedigree of the source data. The description may include a description of sampling handling and chain-of-custody, changes in data set management or data transfer, whether analytical methods were used, or special requirements associated with holding, transporting, or other performance criteria of the collected data.

DOE/RL-92-12 describes the main data source. WHC-CM-7-7 and WHC-IP-0718 describe the standards followed.

Three nonconformance and variances to approved procedures are listed in Appendix B of DOE/RL-92-12. All three nonconformance issues and their corrective actions were signed as approved by F.D. Carter, QA Manager on 02/12/1992.

All data in the report underwent a sample ID revision listed in Appendix F and now match HEIS numbers in the HEIS database where the data were transferred.

Samples were shipped within appropriate holding times in appropriate containers at appropriate temperatures. Radiological samples were tested as per WHC-IP-0718, GUIDELINES FOR THE CONDUCT OF RADIOLOGICAL WORK due to their radiological nature needing additional testing before being released from the Hanford Site to go to the lab.

Sample handling and COC are mentioned in Appendix A, and Appendix G - Data validation shows processing groups, data limits and qualifiers for analytes sampled.

Original COCs are not provided in the report but methods indicate their use. It appears that COCs were used appropriately based on the data summaries in Appendix G.

EXAMPLE

1. Conductivity meter calibration issues during sampling.
2. Installation of range markers did not conform to standards due to rocky terrain.
3. Collection procedures for sediment samples required some modifications.

Provide keywords for the citation / data source

100 Area, spring, surface water, seep, sediment, 1991, SD, SW, SE

Equivalent Project Portal Field	Field Content Description
Searchable Keywords	*100 Area, seep, spring, sediment, SW, SD, SE, DOE_92_12, HEIS, DUA 0005, 1991, 1992, DOE/RL-92-12*

Provide a description of the data source/owner and work contact information (i.e., email, phone), with job title and affiliation.

Data Source (Company)	U.S. Department of Energy, Hanford Site
Point of Contact Name	John A. Veteran
Contact Title	Program Manager
Content affiliation	U.S. Department of Energy representative
Email address	records@rl.doe.gov
Phone number	(509) 376-XXXX

Equivalent Project Portal Field	Field Content Description
Data or Content Owner	U.S. Department of Energy, Hanford Site

Quality Management Descriptors for Historical Data and Use

The six criteria below are based on the descriptors in the Hanford Quality Management Plan and Final Data Management Plan. These criteria also are incorporated into the DataAcquisitionSOP_revised.doc dated 9/9/2016.

Criterion 1: Data Sources

QA1

Data sites and locations are referenced in document **DOE/RL-92-12 Rev.1.**

Criterion 2: Documentation

QA1

Descriptions of study designs are provided in documents listed below:

- DOE/RL-92-12 Rev. 1
- WHC-CM-7-7
- WHC-IP-0718

EXAMPLE

- DOE/RL 88-36
- 42 U.S.C. 9601, et seq.

Criterion 3: Analytical Methods

QA1

Analytical procedures follow documented standard methods in DOE/RL 88-36 and WHC-CM-7-7.

Criterion 4: Data Quality Indicators

QA1

- All data quality objectives and data quality indicators have been established in DOE\RL 88-36 and data meet criteria as described in DOE/RL-92-12 Rev. 1, Appendix G.

Criterion 5: Data Review

QA1 - original study data

QA2 - data in HEIS due to transcription errors.

QA/QC procedures and data validation for DOE/RL-92-12 Rev. 1 are found in Appendix A and G of that document and DOE\RL 88-36. DOE/RL-92-12 Rev. 1 Appendix C-G list QC samples as described throughout the report. A listing of rejected samples can be found in Appendix G. A basic summary of these rejections are as follows:

Gross Alpha:
(Sample Delivery Group) SDG N1-10-035-9561, SDG N1-10-200-9563, and SDG N1-09-143-9581

- All soil matrix samples are qualified as unusable (R) due to the laboratory control sample recovery (48%) below the 100 ± 20% acceptable limits.

Gross Beta:

- The total beta result for Sample B06KV3 (BO15DO) is qualified as unusable (R). See note below.

  NOTE: Sample B06KV3 (BO15DO), run in this processing group as the duplicate sample for the water matrix, was noted by the laboratory as having anomalous results. The laboratory initiated a rerun analysis of this sample and confirmed the initial value obtained. OSM directed the laboratory to reanalyze the sample one more time. The results of this rerun confirmed the duplicate result originally obtained. Four total beta results have now been obtained for this sample, two total beta results that are close to background and two other results that are 838 pCi/L and 886 pCi/L. OSM directed the laboratory to investigate this anomaly and report back with an explanation. The laboratory investigated sources of possible laboratory error which included sample aliquoting and cross contamination. The laboratory was able to eliminate these possible sources by extra attention that was placed on the sample rerun analysis. Other sources of error that could be investigated are related to sample collection and labeling. The two higher values are more consistent with the concentration of 90Sr. Acceptance of this data can be made if the highest sample result is used for final reporting. Technical judgement qualifies this data point as unusable, but this should not preclude this data point from being used as information only.

Technetium-99:

- Sample B06LB0 (B015B1) (sediment) had the 99Tc recovery of 25.8%, this sample is

EXAMPLE

qualified as unusable (R).

> NOTE: Appendix G qualifier lists show sample B06LB0 (B015B1) for both SDG N1-09-57-9543 and SDG N1-10-012-9544; however, sample B06LB0 (B015B1) is clearly listed in Appendix G as belonging in SDG N1-10-036-9552 which has no qualification needed as the Technetium-99 qualifier note. In main data spreadsheets, sample B06L45 from SDG N1-09-57-9543 is R qualified.

The 100 Area Springs Radiochemical Validation was performed to the requirements outlined in the draft procedure titled "Data Validation Procedure for Radiological Analysis, Rev. 0, June 18, 1991." The 100 Area Springs project is the first case where the Westinghouse Hanford OSM validated radiological data to the guidelines described in the above referenced procedure.

Data downloaded from HEIS appear to have several transcription errors. As such, the data provided in this data package are rated as a QA2 until the discrepancies can be explained. The main issue is that the sample data shown as rejected in DOE/RL-92-12 Rev. 1 are shown in the HEIS database with no rejection (R) qualifier present. Alternatively, the HEIS database contains rejected qualifiers for sample data that do not appear to be qualified as such in the original published report.

Criterion 6: Data Reporting

QA1

Units reported in metric convertible forms and 2σ for ranges in radionuclides.

Please choose a total data quality level based on the descriptors in the Hanford Quality Management Plan, dated 8/23/11 (draft, unpublished) and Final Data Management Plan dated 7/16/2015.

Each data set will be assigned an overall usability category that is equivalent to the lowest category applied to any single criterion. For example, a data set that is ranked Category QA1 for four of the criteria and Category QA2 for two will be considered Category QA2 overall. It is important to note that if a data set is assigned to Category QA4 overall, the data set may be considered unusable for NRDA purposes. Assignment of QA1, QA2, or QA3 to a data set is to alert investigators to potential limitations in the data.

☐ Category QA1 – Data are of known quality and thus can be evaluated to determine if data are useful for specific NRDA studies. Work plans and QA documentation adequately summarize the study design, and data sets include QA/QC results for sampling and analytical methods such that data can be assessed as to the adequacy for use.

☒ Category QA2 – Data are of partially known or suspect quality because study design and/or QA/QC information for sampling and analysis are incomplete. These data are considered suitable for qualitative use and may be considered suitable for further evaluation based on project specific DQOs and intended end uses.

EXAMPLE

☐ Category QA3 – Data that are of unknown quality: they have information on sampling and analytical methods but lack an adequate level of supporting study design and/or QA/QC information, or are summarized and only provide ranges of concentrations. These data can be used on a limited or provisional basis for qualitative comparisons with other Category 1 or 2 data.

☐ Category QA4 – A) No information is available or ascertainable as to the study design, sampling and/or analytical methods, or B) it is documented that inappropriate sampling and/or analytical methods were used, e.g. sample preservation was not used, holding times were grossly exceeded, or the acceptance criteria for measurement bias were not satisfied for the entire data set.

Equivalent Project Portal Field	Field Content Description
Reviewer Name	*Science & Engineering, Inc.*
QA Code	*QA2*

EXAMPLE

DUA Form No. 0005

Study Notes

Study notes by data quality reviewers and Trustees will be kept as metadata in Project Portal for the source data. Each study may have different notes but this section usually captures important information needed by the Trustees or Principal Investigator(s) during interpretation of the results.

Sample location SD-110-2 had an error in its easting coordinate from the original report literature. This error was perpetuated within HEIS. Figure 1. "Locations of Spring Sampled During 1991" of DOE/RL-92-12 clearly depicts the correct location of this sample point and was used along with coordinate logic to ascertain that the 1 in the points easting column "571597" should have been a 3 or "573597". This distance of exactly 2000m set the point in the exact location depicted in Figure 1 of DOE/RL-92-12. In this case, Alta modified the location of this data point as described above in the geodatabase and the coordinate column of the PP import excel file.

SAMP_NUM/HEIS NUM: B06L88 is listed in the original report under Appendix C, D, and F as a river water sample, but in the HEIS data download, the SAMP_COMMENT field has it listed as a “River Mile 21.6 - spring water” rather than the expected “River Mile 21.6 - river water”. This affected all 18 results for that sample. The sample B06L88 is a dup of B06L86 which is recorded in the original report as a river sample, and in the HEIS download its SAMP_COMMENT is “River Mile 21.6 - river water”. Alta modified the B06L88 sample media type to SW (or surface water) instead of an SE (or seep) based on the evidence in the original report and the recording of its duplicate sample in the HEIS download. This modification is included in the geodatabase and the media column in the PP import excel file.

All spatial coordinates were present in the dataset, and all points within the dataset after the aforementioned alteration fit within the “High-water-mark”. All data were preserved from raw data, with the two exceptions noted above, and submitted in the PP Import file.

All sample numbers present in Appendices C-F were valid in HEIS and are included in the dataset as part of this data package.

Upon reviewing data within the DOE/RL-92-12 versus the data pulled from HEIS, it is clear that some transcription errors or later re-analysis occurred. Many values have different qualifiers from the original report, especially values from Appendix D: Radionuclides.

Also, sample number B06KS1 has discrepancies between the results reported in the original report, and the result values currently listed in the HEIS database. Almost all of these values are significantly different from one another. This sample was the only sample in the Alta QC spot check found to have any mismatched values. This data should be reviewed before use in data analysis or submission to project portal to ascertain the root cause of these discrepancies.

Many analytes were reported in the original report as micrograms per kilogram. These were converted to milligrams per kilogram in HEIS.

Total Uranium reported in the original report does not have a clear equivalent in HEIS. There is an analyte called “Uranium” that is shown in HEIS, but the values in HEIS do not match the values in the original report. (Example B06KS1). There was no mention in the HEIS data dictionary that explained this discrepancy.

Sediment results had some rounding discrepancies for its radionuclide results.

Samples rejected in the original report are available in HEIS with no rejection qualifier present, and vice versa, there are sample results in HEIS for analytes that are not shown in the final report that are rejected.

EXAMPLE

DUA Form No. 0005

HEIS reports values for Arsenic, Lead, Mercury, Selenium, and Thallium. None of these are mentioned in the original report.

In the PP_Import_DOE_92_12.xlsx file and the geodatabase, the SAMP_FROM column had SEEP listed for surface water samples. For clarity, all surface water samples had their SAMP_FROM changed from SEEP to RIVER.

EXAMPLE

APPENDIX B

QA PROJECT PLAN OUTLINE AND REVIEW CHECKLIST FOR SECONDARY DATA

DRAFT

Quality Assurance Project Plan (QAPP) Outline and Review Checklist for Secondary Data

This Appendix provides a Quality Assurance Project Plan (QAPP) example checklist based on the elements identified for secondary data research projects as described in EPA 1999 guidance written by the QA Managers in EPA's National Risk Management Research Laboratory. Natural Resource Damage Assessment analyses relying on historical data shall describe the data review procedures undertaken as part of report development, as well as the results of those efforts (i.e., whether or not specific data sets were included/excluded from use).

The outline and checklist provided in this Appendix can be used to either write or review a QAPP involving the use of secondary data. A secondary data project involves the gathering and/or use of existing environmental data for purposes other than those for which they were originally collected. These secondary data may be obtained from many sources, including literature, compilations from digital databases and information systems, and computerized or mathematical models of environmental processes. For projects using these types of data, a QAPP shall be prepared to include the requirements identified in the checklist table. If primary data will also be generated as part of the project, then the information below can be incorporated into the associated QAPP to address the secondary data.

Not all sections may apply to every study. Other documents may be referenced if the information is supplied elsewhere (e.g., in the Hanford Data Management Plan, project-specific Work Plan, or primary data QAPP).

QA PROJECT PLAN (QAPP) OUTLINE AND REVIEW CHECKLIST FOR SECONDARY (HISTORIC/EXISTING) DATA

Study Title: _____

Preparer:_____**Reviewer:** _____

Date Submitted for Review: _____**Date of Review:**_____

Element	Acceptable (Yes/No)	Page/ Section	Comments
SECTION 1.0, PROJECT OBJECTIVES, ORGANIZATION, AND RESPONSIBILITIES			
1.1 Describes the purpose of study			
1.2 States the project objectives			
1.3 Identifies the secondary data needed/used, including: • type of data • age of data • geographical representation • temporal representation • technological representation 1.4 Explains approach for evaluating project objectives (i.e., data analysis), including formulas, units, definitions of terms, and statistical analysis			
1.5 Defines responsibilities of all project participants. Key personnel and their organizations shall be identified, along with the designation of responsibilities for planning, coordination, data gathering, data analysis, report preparation, and quality assurance, as applicable.			

SECTION 2.0, SOURCES OF SECONDARY DATA			
2.1 Specifies the required source(s) of the secondary data. If a hierarchy of sources exists for the gathering of secondary data, that hierarchy must be specified.			
2.2 Discusses the rationale for selecting the source(s) of secondary data.			
2.3 States requirement that the sources of secondary data gathered will be identified in any project deliverable.			
SECTION 3.0, QUALITY OF SECONDARY DATA			
3.1 Describes the quality requirements of the secondary data appropriate for their intended use, as applicable: • Accuracy • Precision • Representativeness • Completeness (If appropriate, a related QAPP containing this information can be referenced.)			
3.2 Describes procedures for determining the quality of the secondary data.			
3.3 If no quality requirements exist or if the quality of the secondary data cannot be determined, a disclaimer is required for any project deliverable to indicate that the quality of the secondary data is unknown. The wording for the disclaimer shall be included in the QAPP.			
SECTION 4.0, DATA REPORTING, DATA REDUCTION, AND DATA VALIDATION			

4.1 Describes data reduction procedures specific to the project, including calculations and equations.			
4.2 Describes data validation procedures used to ensure the reporting of accurate project data.			
4.3 Identifies the expected product document that will be prepared (e.g., journal article, final report, etc.)			

References:

EPA 1999, *Quality Assurance Project Plan Requirements for Secondary Data Research Projects: Example Guidance by the QA Managers in EPA's National Risk Management Research Laboratory*, U.S. Environmental Protection Agency Office of Research and Development, Washington, DC. URL: https://www.epa.gov/quality/quality-assurance-project-plan-requirements-secondary-data-research-projects

HNRTC 2021, HNRTC *Data Management Plan, Revision 2*, Provisional Draft, Hanford Natural Resource Trustee Council, July 2021.