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ADMIN RECORD

Assessment Report

Assessment No. 95-002 (RMRS)

**Assessment of the Adequacy of  
Ryan's Pit Soil Sample Analysis Data**

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A M Tyson

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RMRS Records Center

J R Bennett

G M Deters

G D DiGregorio

J M Hernandez

R Z Houk

G M Kelly (Kaiser-Hill)

J A Raulston (Kaiser-Hill)

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## 1 EXECUTIVE SUMMARY

This report provides the results of an independent assessment of the acceptability of Ryan's Pit soil sample data for supporting closure requirements established in the project Data Quality Objectives (DQOs). The fieldwork for the assessment was conducted between October 23, 1995, and January 25, 1996. Issuance of this report was postponed to meet higher priority assessment request.

The primary functional areas reviewed during the evaluation included

- Soil sample analysis methodology
- Program Documents (implementing plans and procedures)

Five improvement items, which were documented during the assessment, are briefly described below. For a complete description of each improvement item, refer to the body of the report.

- Project management should document in the Ryan's Pit project file an explanation of the requirements for metals analysis in the SAP and of the analyses ultimately performed on the soil samples. This explanation should include a justification regarding why the analyses performed were adequate to support the end uses of the resulting analytical data.
- Field duplicates should be documented according to Procedure 4-B29-ER-OPS-FO14, *Field Data Management*, Revision 3, and sent as blind samples to the laboratory.
- The RMRS project management should ensure that all parties involved in a project, including the sampling team and project management, fully understand the end uses of sample data as well as the specific requirements of approved SAPs to help prevent inadvertent exposure to liability.
- Project management should perform a review of the chain-of-custody documents prior to shipping the sample to the lab to ensure the correct type and quantities of analyses are specified.
- Until program and project documentation can be reviewed and revised to account for changes in organizational responsibilities, RMRS project management should ensure that project planning meetings fully address project requirements and expectations and specifically assign and document organizational responsibilities.

In summary, the analysis of Ryan's Pit soil samples provided data that is usable for making environmental decisions regarding the project Data Quality Objectives. However, noted weaknesses in the management of the Ryan's Pit sample data could complicate the traceability and defensibility of the data. These weaknesses result from unclear organizational responsibilities and interfaces, and the lack of aggressive action on the part of the project management to address or resolve data management issues in a timely manner. Until actions are completed to assemble appropriately validated hardcopy data packages, defending decisions to an external organization or auditors will present a significant challenge. Additionally, the data management issues noted in this assessment are similar to issues noted in other Environmental Restoration (ER) projects and documented by the ER Quality Assurance organization. Since 1989, over 500 surveillance and assessment activities by the ER Quality Assurance organization have identified nearly 3000 quality deficiencies within ER projects. Data management problems is the single largest category accounting for over 12 percent of the deficiencies. Work plans, quality records, and procedural violations are the second, third, and eighth largest categories, respectively, accounting for an additional 22 percent of deficiencies.

Given the apparent lack of effective recurrence control, the assessment team recommends that internal ER readiness reviews consider this assessment and past ER project surveillances and program assessments for lessons learned to help prevent similar problems in future remediation projects

**2 PURPOSE****2 1 Subject**

Adequacy of Ryan's Pit Soil Sample Analysis Data

**2 2 Objective**

The objective of this assessment was to determine the acceptability of Ryan's Pit soil samples data for supporting closure requirements established in the project Data Quality Objectives

**2 3 Scope****2 3 1 Assessment Category and Characteristics**

This assessment was a routine scheduled assessment performed according to Procedure 2-B52-ADM -02 01, *Independent Assessment*, Revision 1

**2 3 2 Assessment Functional and Programmatic Areas**

This assessment examined the following activities and functions

- Soil sample analysis methodology
- Program Documents (implementing plans and procedures)

**2 3 3 Physical Boundaries**

Conduct of this assessment was restricted to Data Management in Building 080, and locations providing storage for laboratory and Ryan's Pit project documentation

**3 CONDUCT OF THE ASSESSMENT****3 1 Assessment Schedule**

Entrance Meeting	October 23, 1995
Start of Fieldwork	October 23, 1995
End of Fieldwork	January 25, 1996
Exit Meeting	February 20, 1996

**3 2 Previous Assessment Activities in This Subject Area**

Ryan's Pit Soil Sample Analysis has not been evaluated by RMRS Quality Assurance assessment group. However, numerous Environmental Restoration project surveillances and assessments have been conducted by the ER Quality Assurance group during the past six years related to environmental data generation and control

**3 3 Independent Verification of Previously Identified Deficiencies****3 3 1 Deficiencies Verified Complete by the Assessment Team**

None

**3 3 2 Deficiencies Reopened by the Assessment Team**

None

### **3 4 Assessment Methodology/Performance Criteria**

#### **3 4 1 Assessment Methodology**

The following evaluation methods were used during the performance of this assessment

- Personnel interviews
- Record and document reviews
- Facility tours

#### **3 4 2 Assessment Performance Criteria**

The following assessment performance criteria were used to determine compliance and effectiveness

- Soil sample analysis data was delivered to end users as required by appropriate procedures and in a form that facilitates project decision-making
- The process of planning for, obtaining, and analyzing soil samples and processing the resulting data to support decisions regarding closure of Ryan's Pit was performed according to appropriate procedures and practices

## **4 RESULTS**

The analysis of Ryan's Pit soil samples provided data that is usable for making environmental decisions regarding the project Data Quality Objectives. However, noted weaknesses in the management of the Ryan's Pit sample data could complicate the traceability and defensibility of the data. These weaknesses result from unclear organizational responsibilities and interfaces, and the lack of aggressive action on the part of the project management to address or resolve data management issues in a timely manner. Until actions are completed to assemble appropriately validated hardcopy data packages, defending decisions to an external organizations or auditors will present a significant challenge.

Additionally, the data management issues noted in this assessment are similar to issues noted in other Environmental Restoration (ER) projects and documented by the ER Quality Assurance organization. Since 1989, over 500 surveillance and assessment activities by the ER Quality Assurance organization have identified nearly 3000 quality deficiencies within ER projects. Data management problems is the single largest category accounting for over 12 percent of the deficiencies. Work plans, quality records, and procedural violations are the second, third, and eighth largest categories, respectively, accounting for an additional 22 percent of deficiencies. Given the apparent lack of effective recurrence control, the assessment team recommends that internal ER readiness reviews consider this assessment and past ER project surveillances and program assessments for lessons learned to help prevent similar problems in future remediation projects.

#### **4 1 Soil Sample Analysis Methodology**

The analytical data packages indicate that results were reported for some analytes not requested in the SAP. Also, for some analytes the analytical method used did not provide a detection limit low enough to satisfy the CLP requirements specified in the SAP. Specifically, the SAP requested analysis for "TCLP metals". This request refers to analysis for arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. The laboratory performed analysis on a larger list of analytes that contains these elements but which uses a different analytical method than specified in the SAP and which may not provide a detection limit low

enough to satisfy the CLP requirements. Interviews with project management indicated that during discussions between project management, laboratory, and APO personnel the requirements for metals analysis were discussed. Analysis for total metals by ICP may have been suggested because that method covers a broader range of analytes and is cheaper to perform than TCLP metals analysis by CLP protocol. These undocumented discussions may have been interpreted as a consensus to perform total metals analysis by ICP. Subsequently, Sampling and Analysis Request Forms were prepared by the APO for the Ryan's Pit soil samples specifying total metals analysis by ICP. These forms were not reviewed or approved by the project management.

Two potential problems exist with analysis for total metals by ICP. First, the method analyzes for more analytes than specified in the SAP. If the analysis detects one of these other contaminants with a concentration high enough to warrant consideration for clean-up, then project management has exposed both Kaiser-Hill and RMRS to potentially increased liability and responsibility for clean-up. The second potential problem with the analysis for total metals by ICP is that the method does not always provide a detection limit low enough to satisfy CLP contract required detection limits (CRDLs) specified in the SAP. This deviation from the SAP should not effect the usability of the Ryan's Pit sample data, as established clean-up concentrations for contaminants of interest are significantly higher (often two or three orders of magnitude) than the CRDLs and the actual detection limits achieved by the analyses.

#### 4 1 1 Deficiencies

The assessment team did not identify any deficiencies in this area.

#### 4 1 2 Improvement Items

The assessment team identified the following improvement items in this area:

- Project management should document in the Ryan's Pit project file an explanation of the requirements for metals analysis in the SAP and of the analyses ultimately performed on the soil samples. This explanation should include a justification regarding why the analyses performed were adequate to support the end uses of the resulting analytical data.
- One sample was identified as a field duplicate on the Chain-of-Custody (COC) form. Field duplicates should be documented according to Procedure 4-B29-ER-OPS-FO14, *Field Data Management*, Revision 3, and sent as blind samples to the laboratory.
- As a result of analyzing the Ryan's Pit soil samples for analytes not specified in the SAP and finding contaminant levels high enough to warrant consideration for clean-up, project management has exposed both Kaiser-Hill and RMRS to potentially increased liability and responsibility for clean-up. RMRS project management should ensure that all parties involved in a project, including the sampling team and project management, fully understand the end uses of sample data as well as the specific requirements of approved SAPs to help prevent inadvertent exposure to liability.
- Project management should perform a review of the chain-of-custody documents prior to shipping the sample to the lab to ensure the correct type and quantities of analyses are specified.

#### 4 2 Program Documents

Documents in the form of plans and procedures describing the data quality objectives and the sampling and analysis process to support decisions regarding the clean-up and closure of Ryan's Pit were reviewed. In general, adequate documentation is available to describe the

specific processes of soil sampling, handling, analysis and data preparation appropriate for the Ryan's Pit project. However, the plans and procedures used do not take into account the organizational structure changes since the transition to the Integrating Management Contractor (IMC). Consequently, the specific inter-relationships and responsibilities of the Building 881 Laboratories, the APO, RMRS Data Management, and RMRS project management are not clearly defined. For the Ryan's Pit project, this situation was not compensated for either by formal or documented discussion among the affected organizations to ensure responsibilities were understood and properly assumed, or by modifying program documents.

Other evidence exists that indicates some program documents were not rigorously reviewed by project management to ensure that the needs of the project were being met. For example, the SAP specifies three procedures that had been superseded for up to 13 months.

The assessment team briefly reviewed readily available information regarding data management, document control, and procedural compliance deficiencies in past ER projects and concluded that the Ryan's Pit project did not benefit from lessons learned from prior projects.

#### **4 2 1 Deficiencies**

The assessment team did not identify any deficiencies in this area.

#### **4 2 2 Improvement Items**

The assessment team identified the following improvement item in this area:

- Procedures used by RMRS project management do not reflect current organizational responsibilities and interfaces, program and project documentation should be reviewed and revised to account for the changes. In the meantime, these organizations should ensure that planning meetings fully address project requirements and expectations and specifically assign and document organizational responsibilities.

5 REPORT REVIEW AND APPROVAL

Prepared By *J R Massie*  
J R Massie, Lead Assessor  
RMRS ESH&Q

7-30-96  
Date

Reviewed By *John R Bennett*  
J R Bennett, Program Manager  
RMRS QATQM

7-30-96  
Date

Approved By *Juan M Hernandez*  
J M Hernandez, Manager  
RMRS Quality Assurance

31 Jul 96  
Date

**APPENDIX A**  
**DOCUMENTS REVIEWED**

The following documents were reviewed to determine compliance with applicable requirements

- Environmental Management Department Procedures Manual, Field Operations, Procedure 4-B29-ER-OPS-FO14, *Field Data Management*, Revision 3, dated October 27, 1994
- Rocky Flats Environmental Technology Site, *Data Management Plan for the Environmental Restoration Program*, dated April 1995
- Rocky Flats Environmental Technology Site, *General Radiochemistry and Routine Analytical Services Protocol (GRRASP)*, Version 3 0, dated February 1994
- Rocky Flats Environmental Technology Site, *Sampling and Analysis Plan for the Remediation of Ryan's Pit, Operable Unit 2*, dated August 28, 1995
- USEPA, *Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 1*, dated July 1992
- USEPA-CLP, *Statement of Work for Organics Analysis, Multi-Media, Multi-Concentration, Document Number OLMO1 0 (Revision OLMO1 9)*, dated July 1993
- USEPA-CLP, *Statement of Work for Inorganics Analysis, Multi-Media, Multi-Concentration, Document Number ILMO3 0*, dated 1993

## APPENDIX B

## ASSESSMENT TEAM MEMBERS AND PERSONNEL CONTACTED

Assessment Team Members

The following personnel conducted this assessment

	<u>Name</u>	<u>Assessment Group</u>
Lead Assessor	E A Larson *	RMRS ESH&Q
Lead Assessor	J R Massie	RMRS ESH&Q

\* J R Massie replaced E A Larson in the development and issuance of this assessment report

Personnel Contacted

The following personnel provided significant contributions to the conduct of the assessment

<u>Name</u>	<u>Organization</u>	<u>Participation *</u>
J R Bray	RMRS, Accelerated Actions	2, 4
E A Brovsky	K-H, Analytical Services	3
G D DiGregorio	RMRS, ESH&Q	3
T H Elmont	K-H, Analytical Services	1
C E Gies	K-H, Analytical Services	1, 3
P C Gomez	K-H, Performance Assurance	1, 3
K M Hagglund	K-H, Analytical Services	1, 3
N K Harward	K-H, Analytical Services	1
R Z Houk	RMRS, Accelerated Actions	2
M W Hume	K-H, Analytical Services	1
V Ideker	K-H, Analytical Projects Office	3
L B Johnson	K-H, Analytical Projects Office	3
L Martin	RMRS, Data Management	2
R D Plappert	K-H, Program Oversight	3
T M Prochazka	RMRS, ESH&Q	1
E M Simmons	K-H, Analytical Services	4
N C Stoner	K-H, Analytical Services	1
A M Tyson	RMRS, Accelerated Actions	3

- \* 1 Entrance Meeting  
 2 Evaluation Contributor  
 3 Formal Exit Meeting  
 4 Informal Exit Meeting conducted in person or by telephone

**APPENDIX C**

**DEFINITIONS**

*The following definitions are samples and may be deleted*

**DEFICIENCY**

An identified item or process that does not or will not meet an applicable requirement, standard, or policy. Examples of these requirements are found in, but are not limited to, existing and pending Federal or State regulations or statutes, DOE orders, contractor, or Site operational procedures, administrative instructions, legally enforceable agreements, consensus or industry standards

**IMPROVEMENT ITEMS**

A technical opinion from a reviewer which is not definitive, quantifiable, or tied to an applicable requirement