

# **Project Management Manual**

## **Operable Unit No. 1 881 Hillside Area**



**Manual No. 21100-PM-OU 01.0**

**881 HILLSIDE IRA  
CONSTRUCTION PHASE 2A  
(TREATMENT FACILITY EQUIPMENT INSTALLATION)  
OPERABLE UNIT NO 1**

**PROJECT MANAGEMENT PLAN,  
WORK PROCEDURES,  
QUALITY ASSURANCE PLAN,  
SITE SPECIFIC HEALTH AND SAFETY PLAN**

**FOR  
CONSTRUCTION**

**JULY 1991**

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ROCKY FLATS PLANT  
EMD PROJECT MANAGEMENT  
MANUAL OPERABLE UNIT NO 1  
881 HILLSIDE AREA

EG&G ROCKY FLATS PLANT  
ENVIRONMENTAL MANAGEMENT DEPARTMENT  
Manual No. 21100 PM OU 01 0  
Procedure No. Table of Contents Rev 1  
Page 1 of 1  
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Organization Environmental Management

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**QUALITY ASSURANCE ADDENDUM**

**QAA 1 2**

**to the**

**ROCKY FLATS PLANT SITE-WIDE QA PROJECT PLAN**

**for the**

**TREATABILITY STUDY**

**for**

**OPERABLE UNIT NO 1,  
881 HILLSIDE GROUNDWATER**

**U S DEPARTMENT OF ENERGY  
Rocky Flats Plant  
Golden Colorado**

**Revision 0**

**ES&S**  
Date 9/5/91

TITLE  
Quality Assurance Addendum for Operable Unit No 1  
Treatability Study for Groundwater

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**ACRONYMS AND ABBREVIATIONS**

<b>ASME</b>	<b>American Society of Mechanical Engineers</b>
<b>CERCLA</b>	<b>Comprehensive Environmental Response Compensation and Liability Act</b>
<b>CLP</b>	<b>Contract Laboratory Program</b>
<b>C O C</b>	<b>Chain-of Custody</b>
<b>COD</b>	<b>Chemical Oxygen Demand</b>
<b>DOE</b>	<b>U S Department of Energy</b>
<b>DOX</b>	<b>Dissolved Organic Halogen</b>
<b>DQO</b>	<b>Data Quality Objective</b>
<b>EM</b>	<b>Environmental Management</b>
<b>EPA</b>	<b>U S Environmental Protection Agency</b>
<b>ER</b>	<b>Environmental Restoration</b>
<b>GRRASP</b>	<b>General Radiochemistry and Routine Analytical Services Protocol</b>
<b>IAG</b>	<b>Federal Facility Agreement and Consent Order (Interagency Agreement)</b>
<b>LCS</b>	<b>Laboratory Control Standard</b>
<b>OU</b>	<b>Operable Unit</b>
<b>PARCC</b>	<b>Precision Accuracy Representativeness Comparability and Completeness</b>
<b>PSI</b>	<b>Peroxidation Systems Inc</b>
<b>QA</b>	<b>Quality Assurance</b>
<b>QAA</b>	<b>Quality Assurance Addendum</b>
<b>QAPjP</b>	<b>Quality Assurance Project Plan</b>
<b>QAPM</b>	<b>Quality Assurance Program Manager</b>
<b>QC</b>	<b>Quality Control</b>
<b>RCRA</b>	<b>Resource Conservation and Recovery Act</b>
<b>RF</b>	<b>Rocky Flats</b>
<b>RFP</b>	<b>Rocky Flats Plant</b>
<b>RI/FS</b>	<b>Remedial Investigation/Feasibility Study</b>
<b>RPD</b>	<b>Relative Percent Difference</b>
<b>SOP</b>	<b>Standard Operating Procedure</b>
<b>SOW</b>	<b>Statement of Work</b>
<b>TDS</b>	<b>Total Dissolved Solids</b>
<b>TOC</b>	<b>Total Organic Carbon</b>
<b>TOX</b>	<b>Total Organic Halogen</b>
<b>TSS</b>	<b>Total Suspended Solids</b>
<b>TCL</b>	<b>Target Compound List</b>
<b>VOC</b>	<b>Volatile Organic Compound</b>

## **INTRODUCTION AND SCOPE**

This Quality Assurance Addendum (QAA) supplements the Rocky Flats Plant Site Wide Quality Assurance Project Plan for CERCLA RI/FS and RCRA RFI/CMS Activities (QAPjP) for the bench scale treatability testing on Operable Unit No 1 (OU 1) 881 Hillside groundwater. This QAA establishes the specific quality assurance (QA) controls applicable to the bench scale perox-pure™ treatability testing.

The perox-pure™ treatability test consists of a laboratory bench scale test that is intended to refine the optimal operating conditions for successful start up of a perox-pure™ water treatment system at the DOE Rocky Flats Plant (RFP). The perox-pure™ treatment system consists of an ultraviolet (UV)/hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) treatment process. The purpose of the perox-pure™ system is to reduce volatile organic contaminants (VOCs) in water to acceptable levels. Groundwater samples will be collected from monitoring wells located within the OU 1 881 Hillside area (see Operable Unit No 1 881 Hillside Area Workplan February 1991) and shipped to an offsite laboratory for testing.

The OU 1 bench scale treatability testing consists of running OU 1 groundwater through the laboratory testing contractor's perox-pure™ bench-scale treatment system in five test runs. Each test run will require approximately 3 gallons of OU 1 groundwater. The first three test runs are considered preliminary where treatment variables will be adjusted to determine the optimal operating conditions. These three test runs are referred to throughout this QAA as optimization test runs.

Following these optimization test runs the laboratory testing contractor will conduct a best treatment condition test run at the system's optimal operating condition which will be determined from the three optimization test runs. A fifth and final test run will then be conducted at the optimal operating condition to confirm the results of the best treatment condition test run. This fifth test run is referred to in this QAA as the confirmation test run. Additional discussion regarding these test runs, the treatment variables to be adjusted during the optimization test runs and the test controls is presented in Section 11.0 Test Control.

In order to evaluate the effectiveness of the perox pure™ bench scale testing water samples will be collected for laboratory analysis prior to and following completion of test runs as described in Section 3 0 Design Control and Control of Scientific Investigations Four separate laboratories will be involved in analyzing water samples The laboratory testing contractor will conduct analytical screening of sample aliquots drawn from the composite water sample prior to running the test and will analyze sample aliquots for VOC concentration after each test run EG&G will select two analytical laboratories that have been selected by the U S Environmental Protection Agency (EPA) to participate in the EPA s Contract Laboratory Program (CLP) to characterize untreated water samples that are drawn from the composite sample prior to shipping to the laboratory testing contractor These two laboratories will also analyze water samples collected prior to and following the confirmation test run These analyses will be conducted following EPA CLP analytical protocols The fourth laboratory that will be involved in analyzing the water samples is the EG&G 881 Laboratory located onsite at RFP which will conduct a radionuclide screen of the composite water sample prior to shipping it offsite to the laboratory testing contractor

When reference is made to the testing laboratory or laboratory testing contractor this QAA is referring to Peroxidation Systems Inc (PSI) which is the laboratory that will be conducting the bench scale testing When reference is made to the analytical laboratories this QAA is referring to the EPA CLP laboratories Reference to 881 Hillside laboratory is self-explanatory

The sampling testing and analytical process for this OU 1 treatability test is summarized and presented graphically in Figure 1

## **1 0 ORGANIZATION AND RESPONSIBILITIES**

The overall organization of EG&G Rocky Flats and the Environmental Management (EM) Department divisions involved in Environmental Restoration (ER) program activities is shown in Section 1 of the QAPjP Specific responsibilities are also described in detail in Section 1 of the QAPjP

**Figure 1 Flow Diagram for Operable Unit No 1 Treatability Sampling Testing and Analyses**

**Step 1**

EG&G Project Manager (see Figure 2) sends request for groundwater sample (see Figure 3) to Field Sampling Contractor directing the contractor to collect the composite sample

**Step 2**

Field Sampling Contractor collects and composites OU 1 groundwater sample for testing

**Step 3**

881 Laboratory screens composite sample for gross alpha and beta radiation according to SOP 1 16 If  $< 50$  pCi/l sample is okay for shipping If  $> 50$  pCi/l sample cannot be shipped to testing contractor

**Step 4**

Field Sampling Contractor draws sample aliquots from composite sample for shipping to Analytical Laboratories for characterization

**Step 5**

Composite sample is shipped to Treatability Testing Contractor (PSI)

**Step 6**

Upon receipt of the composite sample the testing contractor draws a sample aliquot from composite sample for analytical screening

**Step 7**

Testing Contractor (PSI) runs three Optimization tests A sample is collected after each test run and analyzed for VOC concentration by the Testing Contractor

**Step 8**

Testing Contractor runs best treatment condition run at optimum operating condition and collects a sample after the test run for analysis of VOCs

**Step 9**

Testing Contractor runs confirmation test run at optimum operating conditions Three separate sample aliquots are collected following confirmation run

**Step 10**

Testing Contractor keeps one sample for in-house analysis of VOCs The other two samples are sent to the analytical laboratories for post treatment characterization

**Step 11**

Analytical data from the confirmation test run from the two analytical laboratories are verified for precision and accuracy This analytical data is then evaluated by the EG&G Project Manager to determine effectiveness of perox-pure™ system

Contractors will be tasked by EG&G Rocky Flats to implement the OU 1 groundwater treatability study. The specific EM Department personnel who will interface with the contractors and who will be authorized to provide technical direction are shown in Figure 2.

## **2 0 QUALITY ASSURANCE PROGRAM**

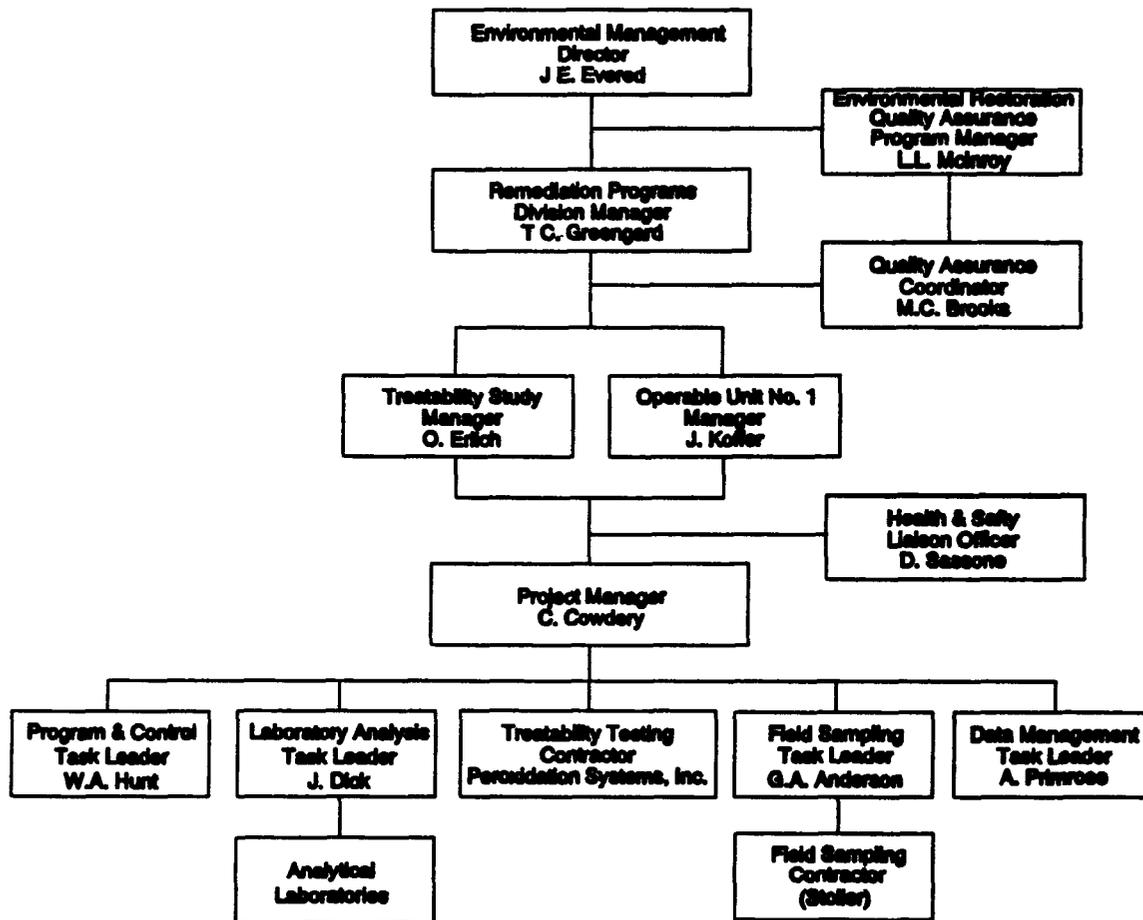
The QAPjP was written to specifically address QA controls for Interagency Agreement (IAG) related activities. The content of the QAPjP was driven by DOE RFP SOP 5700 6B which requires that a QA program be implemented for all RFP activities based on ASME NQA 1 Quality Assurance Requirements for Nuclear Facilities as well as the IAG which specifies that a QAPjP for IAG related activities be developed in accordance with EPA QAMS-005/80 Interim Guidelines and Specifications for Preparing QAPjPs. The 18-element format of NQA 1 was selected as the basis for both the plan and subsequent QAAs with the applicable elements of EPA QAMS-005/80 incorporated where appropriate.

The QA controls and requirements addressed in the QAPjP are applicable to the OU-1 Treatability Study unless otherwise specified in this QAA. As a supplement to the QAPjP this QAA addresses additional and study specific QA controls and requirements that are applicable to the OU-1 treatability testing.

### **2 1 Training**

All personnel (including contractor personnel) working onsite at the RFP shall complete the orientation and personnel training specified in Section 2 of the QAPjP. Additional training is required for all personnel performing activities in accordance with ER Program's Field Operations and Groundwater Sampling Standard Operating Procedures (SOPs) listed in Table 1. These personnel shall receive training in this QAA and the applicable ER Program SOPs prior to performing the work. Offsite laboratory testing personnel shall not be required to complete the training specified in the QAPjP but rather will be required to have completed training that is applicable to their job duties.

**FIGURE 2 PROJECT MANAGEMENT FOR OPERABLE UNIT NO 1  
TREATABILITY STUDY**



**TABLE 1**  
**Standard Operating Procedures and Treatability**  
**Study Activities for Which They are Applicable**

STANDARD OPERATING PROCEDURES	Treatability Testing		
	Groundwater Sampling	Sample Handling	Surface Sampling
12 Field Document Control	•		
13 General Equipment Decontamination	•		
16 Handling of Personal Protective Equipment	•		
17 Handling of Decontamination Water & Wash Water	•		
19 Handling of Residual Samples		•	
110 Receiving Labeling and Handling Waste Containers		•	
111 Field Communications	•		
112 Decontamination Facility Operations	•		
113 Containertizing Preserving Handling and Shipping of Soil and Water Samples		•	•
116 Field Radiological Measurements (Sample and Waste Screening)	•		
2.6 Groundwater Sampling	•		

## **2 2 Quality Assurance Reports to Management**

A QA summary report will be prepared at the conclusion of this testing by the Quality Assurance Program Manager (QAPM) or designee. The QA report will include a summary of laboratory testing and field sampling surveillances, analytical laboratory surveillances and audits, and a summary of data verification results.

## **3 0 DESIGN CONTROL AND CONTROL OF SCIENTIFIC INVESTIGATIONS**

### **3 1 Design Control**

The description of the bench scale perox-pure™ testing project is presented in the Project Plan for Bench Scale perox-pure™ Testing of 881 Hillside Waters from Rocky Flats Plant (E M Froelich PSI to L H Faber EG&G RF dated April 5 1991). This project plan is considered the design control plan for the OU 1 groundwater treatability study. The project plan describes the plan and process for the treatability bench scale testing project.

The objective of this bench scale treatability testing is to determine the optimal operating conditions for the start up and operation of a perox-pure™ system installed at the RFP, which is intended to reduce (through destruction) the concentration of VOCs in OU-1 groundwater to  $\leq 5 \mu\text{g/l}$ . In order to meet this objective, optimization test runs will be conducted and adjustments will be made in  $\text{H}_2\text{O}_2$  dose concentrations, pH of the water, and oxidation times. These optimization test runs and variable adjustments will determine the optimal operating conditions for the system. Once the optimal operating conditions are determined, a best treatment condition test will be run followed by a confirmation test run.

In order to evaluate the effectiveness of the treatability tests, pre- and post testing sample analyses will be conducted on the OU 1 groundwater collected for the bench scale test. Table 2 summarizes the sampling and analytical events required for the OU 1 treatability testing.

**ENVIRONMENTAL RESTORATION**  
**Quality Assurance Addendum to the Rocky Flats Plant**  
**Quality Assurance Project Plan**

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**Table 2 Summary of Sampling and Analysis Events for Operable Unit No 1 Treatability Testing**

<u>Sampling Event</u>	<u>Sample Collected By</u>	<u>Purpose of Sample</u>	<u>Analysis Required</u>	<u>Analyzed By</u>
1 Composite sample	Field Sampling Contractor	Conduct treatability test	N/A	N/A
2 Field sample	Field Sampling Contractor Sample drawn from composite sample prior to shipping to testing laboratory (PSI) for bench-scale tests	Characterize OU 1 groundwater prior to running treatability tests	VOC TOC DOC TOX and DOX	Analytical Laboratories
3 Radionuclide screen	881 Hillside laboratory Radionuclide screen conducted on composite sample prior to shipment to Testing Laboratory	Determine gross alpha/beta radiation levels If >50 pCi/l composite sample will not be shipped to testing laboratory	Gross alpha/beta	881 Hillside Laboratory
4 Analytical screening sample	Testing laboratory Sample aliquots drawn from composite sample prior to conducting optimization tests	Analytical screen by testing contractor to determine pretreatment concentrations of VOCs and other water quality parameters	VOC Total Iron pH Chloride COD TOC TDS TSS AND Total Alkalinity VOC pH	Testing Laboratory
5 Optimization test samples	Testing laboratory Collected after each optimization test run	Determine optimal operating condition	VOC pH	Testing Laboratory
6 Best Treatment Condition test run sample	Testing laboratory Collected after Best Treatment Condition test run	Determine VOC concentration after operating system under optimal conditions	VOC TOC DOC TOX DOX and pH	Analytical Laboratories
7 Pre-confirmation characterization sample	Testing Laboratory Samples drawn from composite sample just prior to running confirmation test run	Characterize water prior to running confirmation test run and provide estimate of changes in VOCs between time of sampling and running the test	VOC pH	Testing Laboratory
8 Confirmation Run sample aliquots	Testing laboratory Collected after confirmation test run.	Evaluate effectiveness of bench-scale perex-pure™ testing to reduce VOC concentration.	VOC TOC DOC TOX DOX and pH	Analytical Laboratories

Pretreatment sample aliquots for laboratory analysis will be collected at three separate times. The first sample aliquot will be collected in the field immediately after the sample is composited (this sample is referred to in this QAA as the field sample). The second pretreatment sample aliquot will be drawn from the composite sample at the testing contractor's laboratory just prior to running the optimization treatment tests (this sample is referred to in this QAA as the analytical screening sample) and the third sample will be collected just prior to the confirmation run. The field sample will be sent to two separate analytical laboratories for characterization of OU-1 groundwater. This sample and the pre-confirmation characterization sample will be analyzed for the field and confirmation sample analytes listed in Appendix A. The analytical screen sample will be analyzed by the testing contractor for the analytical screening analytes listed in Appendix A. These analytical data will be used to characterize the overall concentration of organics in OU 1 groundwater and to determine if volatilization is occurring during shipping.

Post treatment sample aliquots will be collected immediately following the completion of the test runs. These samples will be analyzed for concentrations of the VOCs listed in Appendix A. This analytical data will be used to determine the optimal operating conditions from optimization test runs. Post treatment sample aliquots will also be collected following the confirmation test run. Duplicate sample aliquots from this sample will be sent to the two EPA CLP analytical laboratories for analyses of the confirmation test run analytes listed in Appendix A. A third sample from the confirmation test run will be analyzed by the testing contractor for the VOCs listed in Appendix A. The data from the EPA CLP analytical laboratories will be used to determine if the objective of reducing VOCs to  $\leq 5 \mu\text{g/l}$  is met during the optimization test run at the optimal operating condition.

### **3.2 Data Quality Objectives**

The process for developing data quality objectives (DQOs) is presented in Appendix A of the QAPjP. The DQOs and the data quality controls required to achieve the appropriate DQOs are dependent on the analytical level used to produce the data, which is determined by the intended use of the data and the type of data generated. Five analytical levels (designated as analytical levels I-V) have been established to assist in establishing appropriate data quality controls and

determining the type of analysis (i.e. analytical method) needed to provide adequate measurements of DQOs. These five analytical levels are defined and discussed in Appendix A of the QAPjP.

DQOs are typically measured in terms of precision, accuracy, representativeness, comparability, and completeness (these are referred to as PARCC parameters). The definitions of and methods for calculating PARCC parameters are presented in Appendix A of the QAPjP.

### 3.2.1 Objectives

The analytical data resulting from analysis of the field sample will be used to characterize the pretreatment OU 1 groundwater. The PARCC parameters for this characterization data are the same as those for data obtained prior to and following the confirmation test run, which are discussed below in subsections 3.2.2 through 3.2.5. The analytical data for VOCs from the field samples will be compared to that of the pre-confirmation characterization sample. The amount of volatilization considered to have occurred will be estimated from this comparison.

The intended use of the analytical data from the analytical screening samples drawn from the composite sample just prior to running the optimization test requires analytical level II or III data. PARCC parameter measurement objectives will not be established for these analyses. Data quality controls shall consist of adhering to standard procedures that are appropriate for the type of sampling and analysis being conducted.

The analytical data from the post-treatment sample aliquots that are collected following the optimization and best treatment condition test runs (test runs 1-4, which will be run to adjust the treatment process variables) also require analytical level II or III data. PARCC parameter measurements will not be established for these data. Appropriate sampling and analytical procedures shall be adhered to.

The duplicate sample aliquots that are collected following the confirmation test run and are sent to the analytical EPA laboratories will be analyzed according to standard EPA analytical methods or methods utilized in EPA's CLP Statement of Work (SOW). DQOs for these analytical data are obtained by following rigorous QA/QC analytical controls and meeting PARCC parameter goals that

are applicable to the method of analysis. The PARCC parameter goals that are applicable to post treatment analytical data used to evaluate the effectiveness of the perox-pure™ system are discussed in the following sections:

### **3.2.2 Precision and Accuracy**

The DQOs for precision and accuracy for the analytical methods referenced in Appendix A, which includes EPA CLP protocols and standard EPA methods, are dependent on the control limits specified in the referenced analytical method, unless otherwise stated in Appendix A.

### **3.2.3 Completeness**

The analytical data generated through the implementation of this treatability study will be used to evaluate the effectiveness of the perox-pure™ system, regardless of whether it is determined to be complete or not (i.e., the data will be used to evaluate the perox-pure™ system regardless of whether or not it meets objectives for precision and accuracy). Therefore, completeness is not applicable.

### **3.2.4 Comparability**

Comparability is a qualitative parameter that is ensured by implementation of standardized analytical protocols and approved field sampling SOPs.

### **3.2.5 Representativeness**

Representativeness is a qualitative parameter that is ensured through the careful development and review of the sampling and analysis strategy outlined in the project plan and this QAA.

### **3 3 Sampling Locations and Sampling Procedures**

Groundwater samples used to conduct this treatability testing shall be collected from water monitoring wells that have been established to characterize the groundwater beneath the OU 1 881 Hillside area. The groundwater samples collected for testing shall be collected according to SOP 2.6 Groundwater Sampling (Table 1). Therefore, approximately 19 gallons of groundwater will be collected and composited.

The EG&G Treatability Project Manager will direct the field sampling Contractor to collect the composite groundwater sample. Direction for collecting the sample may be provided to the Field Sampling Contractor by submitting a sample request, which is shown in Figure 3. A copy of the sample request shall be sent to the EG&G Laboratory Analysis Task Leader, the EG&G Field Sampling Task Leader, the Treatability Study Manager, and the OU 1 Project Manager.

The composite sample for testing will be shipped to the testing contractor's laboratory in a sealed gallon glass bottle or bottles with no headspace. The preservatives and holding times for the composite and field samples shall comply with the parameter specific requirements listed in Table 8.1 of the QAPjP. The composite sample will be screened for radiation contamination to assure that water samples contain less than 50 pCi/l of radiation (total alpha and beta) according to SOP 1.16 Field Radiological Measurements.

Upon receipt of the groundwater sample at the testing contractor's laboratory, sample aliquots for analytical screening will be drawn from the composite sample bottle via a peristaltic pump into appropriate sample containers (appropriate types and volume of containers for water matrix samples are listed in Table 8.1 of the QAPjP).

Following completion of the confirmation test run, three separate samples of the treated product water will be collected one after another. The laboratory testing contractor will retain one of these samples for in-house analysis of VOC concentration. The other two samples will represent duplicate samples of optimal operating conditions and shall be used to validate the performance of the treatment process. The samples will be collected in glass containers with no headspace. The duplicate samples will be shipped to two separate analytical

Figure 3 SAMPLE REQUEST FORM (EXAMPLE)

## EM SAMPLE REQUEST

 <b>ENVIRONMENTAL MANAGEMENT DEPARTMENT</b>	DATE _____
	TO _____ (Field Sampling Task Leader)
	FROM _____ (Project Manager)

PROJECT TITLE _____
TYPE OF SAMPLE _____
VOLUME OF SAMPLE REQUIRED _____
NUMBER OF SAMPLES _____
TYPE OF SAMPLE CONTAINER(S) _____ <i>(If left blank by requestor Field Sampling Task Leader shall provide information )</i>
FIELD OPERATIONS AND FIELD SAMPLING SOPs APPLICABLE TO THIS SAMPLING _____
DATE SAMPLE IS NEEDED ____ / ____ / ____
WILL SAMPLES BE SENT OFFSITE FOR ANALYSIS (Y/N) _____
SPECIFY ANY SPECIAL HANDLING PACKAGING AND SHIPPING REQUIREMENTS _____
TYPE OF ANALYSIS REQUESTED _____ <i>(If multiple samples requiring different analysis attach information )</i>
UNIQUE SAMPLE IDENTIFICATION _____ <i>(If left blank by requestor Field Sampling Task Leader shall provide information )</i>
ADDITIONAL COMMENTS (Provide any additional instructions or information regarding this sample request) _____ _____ _____
cc w/ attachments OU Project Manager Laboratory Analysis Task Leaders Project Manager

laboratories identified by the EG&G Laboratory Analysis Task Leader

### **3 4 Analytical Procedures**

The discussion in this section is limited to the analytical procedures applicable to the laboratory analysis of pre- and post treatment sample aliquots and does not address treatability testing controls and procedures which are discussed later in Section 11 0 Test Control

Appendix A lists the laboratory analytical methods that are applicable to the pretreatment analytical screening and the post treatment VOC analysis Preparation and analysis of samples at the laboratory shall adhere to the procedures applicable to the analytical method being used The analytical laboratories that are selected to conduct the pre-treatment groundwater characterization analysis and the confirmation test run analysis shall submit inter laboratory SOPs to the EG&G Laboratory Analysis Task Leader for review prior to shipping samples as required by the EG&G Rocky Flats General Radiochemistry and Routine Analytical Services Protocol (GRRASP)

### **3 5 Equipment Decontamination**

Groundwater sampling equipment shall be protected from sources of contamination before use and decontaminated between sampling locations in accordance with SOP 1 3 General Equipment Decontamination Liquids and materials from decontamination operations will be handled in accordance with SOP 1 7 Handling of Decontamination Water and Wash Water and SOP 1 8 Handling of Personal Protective Equipment The Field Sampling Task Leader is responsible for ensuring that these SOPs are implemented as required

### **3 6 Quality Control Checks**

In order to assure the quality of the field sampling techniques collection and/or preparation of field quality control (QC) samples are normally incorporated into the sampling scheme However since this is a one-time sampling event where only one composite sample will be collected field QC samples will not be collected Field sampling QA/QC controls for this activity will be limited to

adhering to sampling procedures. The groundwater field sampling process will be observed by an EG&G representative who is independent of the sampling being conducted.

Analytical laboratory QC procedures shall be used to provide measures of internal consistency of analytical and storage procedures. The analytical and testing laboratory contractors will develop internal laboratory procedures to control the implementation of the analytical process. The laboratory QC procedures that will be adhered to are specific to the analytical method and are incorporated into the analytical methods cited in Appendix A. Laboratory QC techniques for ensuring consistency and validity of analytical results (including detecting potential laboratory contamination of samples) include using blank standards, internal or surrogate standard reference materials, and preparing and analyzing laboratory duplicates and matrix spike duplicates. The analytical laboratory contractors will follow the standard evaluation guidelines and QC procedures including frequency of QC checks that are applicable to the particular type of analytical method being used as specified in the GRRASP and Section 3 of the QAPjP. All analytical results will be forwarded to the Laboratory Analysis Task Leader for review and verification.

The post treatment sample aliquots that are collected after the confirmation test run and analyzed by the EPA CLP analytical laboratories will serve as the final analytical and testing QC check. The analytical VOC data of these samples will be evaluated to determine the validity of the performance of the perox-pure™ bench scale treatment process.

### **3.7 Data Reduction, Validation, and Reporting**

The data reduction, validation, and reporting requirements discussed in this section are only applicable to the analytical data produced by the analytical laboratories. The analytical data from the laboratory testing contractor will not be subject to the following requirements:

#### **3.7.1 Analytical Reporting Turnaround Times**

Analytical reporting turnaround times are as specified in the Project Plan for Bench Scale perox pure™ Testing of 881 Hillside Waters from Rocky Flats Plant

### 3 7 2 Data Reduction

The laboratory analytical contractors shall review and verify all analytical results and prepare data report packages for submittal to the EG&G Project Manager. The data report packages shall include a case narrative, QC sample analysis summary, sample data information (including holding times and calibration results), raw QC and sample data, sample tracking documentation, and method references.

### 3 7 3 Data Validation

Data validation activities for this treatability test shall consist of reviewing the analytical data for data quality (i.e., comparison of sample analytical results to DQOs for precision and accuracy). Regardless of the validity of the analytical data, the analytical results from the duplicate samples collected from the confirmation test run will be used to evaluate the performance of the treatability test.

In order to evaluate the effectiveness of the perox-pure™ bench scale test, the relative percent difference (RPD) as defined in Appendix A of the QAPJP will be determined for the duplicate samples from the confirmation test run. If the RPD between the analytical results is less than 20 percent, the analytical results will be considered valid for use in evaluating the effectiveness of the test. If the RPD is greater than 20 percent, the analytical results will not be considered valid, and the effectiveness of the perox-pure™ bench scale testing will not be able to be confirmed. If this occurs, a nonconformance report regarding the lack of analytical validity shall be prepared by the EG&G Project Manager.

The validated data from the confirmation test run will be compared against the target goal of reducing VOCs to 5 µg/l or less. If the validated data for each of the VOCs listed in Appendix A are ≤ 5 µg/l, the objective of reducing VOCs in OU-1 groundwater to acceptable levels will be considered to have been met. If the concentration of VOCs is > 5 µg/l, the objective of the test

will not have been met and a nonconformance report for the bench scale test shall be prepared by the EG&G Project Manager

### **3 7 4 Data Reporting**

Data reports to be submitted by the testing laboratory will consist of the analytical data for all pre- and post treatment sample analysis plus a bench scale testing report documenting the test procedures followed and the test results including concentration time versus oxidation time UV dosage H<sub>2</sub>O<sub>2</sub> dosage pH of test sample water cooling requirements and recommendations for the treatment system The date the composite sample was received at the testing laboratory and the dates of all testing and analysis shall be reported The test report shall be certified by the testing contractor

Data reports from the analytical laboratories shall consist of hard copies of the analytical data packages as required by the GRRASP

The EG&G Project Manager shall prepare a Bench Scale Treatability Study Report based on the testing report analytical data reports and testing observation report The Bench Scale Treatability Study Report shall include an assessment of the effectiveness of the perox-pure™ treatment system in reducing VOCs

### **4 0 PROCUREMENT DOCUMENT CONTROL**

The laboratory testing contractor will be required to implement all requirements contained in the Statement of Work applicable portions of the QAPJP and this QAA Analytical services will also be contracted for analysis of post treatment samples Appropriate requirements from the QAPJP this QAA and the GRRASP shall be passed on to the analytical laboratories performing these analyses Since the testing laboratory does not participate in the EPA CLP the requirements specified in the GRRASP shall not apply to their analytical laboratory

The laboratory testing contractor will be required to provide the materials necessary for performing the work described in the EG&G Statement of Work and may be required to submit a QA Program that meets the applicable requirements of the QAPjP and this QAA

## **5 0 INSTRUCTIONS PROCEDURES AND DRAWINGS**

The EG&G Statement of Work provides the specifications for the perox-pure™ bench-scale testing to be performed. The Project Plan for Bench Scale perox-pure™ Testing of 881 Hillside water from Rocky Flats Plant is the treatability study control document and should be reviewed and accepted in accordance with the requirements of Section 5 of the QAPjP

## **6 0 DOCUMENT CONTROL**

The following documents will be controlled in accordance with the document control requirements of the QAPjP

- EG&G Statement of Work for Bench Scale perox-pure™ Testing
- Project Plan for Bench Scale perox-pure™ Testing 881 Hillside Waters from Rocky Flats Plant
- RFP Site-Wide Quality Assurance Project Plan for CERCLA RI/FS and RCRA RFI/CMS Activities (QAPjP)
- Quality Assurance Addendum to the Rocky Flats Site-Wide QAPjP for the Treatability Study for Operable Unit No 1 881 Hillside Groundwater
- SOPs specified in Table 1 of this QAA

## **7 0 CONTROL OF PURCHASED ITEMS AND SERVICES**

Contractors that provide services to support the treatability testing shall be evaluated and selected according to the requirements of Section 7 of the QAPjP. This includes pre-award evaluation of proposed contractors as appropriate as well as periodic audit or surveillance of the acceptability of contractor performance during the life of the contract

## 8 0 IDENTIFICATION AND CONTROL OF ITEMS SAMPLES AND DATA

### 8 1 Sample Containers/Preservation

Appropriate volumes containers preservation requirements and holding times for all EM Program water matrix samples are presented in Table 8-1 of the QAPjP. These requirements are applicable to all pre- and post treatment analytical sample aliquots unless otherwise specified herein. Holding times for samples that are collected for laboratory analysis shall start after each sample is taken.

### 8 2 Sample Identification

Prior to sample collection in the field the sample bottles will be labeled by the person collecting the field sample. The sample will be marked with a waterproof pen. The sample labels shall include:

- Activity name and/or number
- Unique sample identification number
- Sampling time and date
- Chemical preservatives used
- Sample type
- Analysis required
- Sampler's initials

This information shall be taken from the sample request submitted to the EG&G Sample Task Leader by the EG&G Project Manager as discussed previously in Section 3.3.

The unique sample identification number for the field samples and for the pre- and post treatment analytical samples shall adhere to the following format:

OU1TS F or T ABC XX

Where *OU1TS* designates the sample as an OU 1 treatability study. The *F* or *T* designates the sample as either a field sample (*F*) or a treatment sample (*T*). The characters shown as *ABC* in the example represent the code for the type of sample as follows:

- PPT = perox-pure™ test run composite sample**  
**FSS = field sample for pre-treatment characterization**  
**PRE = pre-treatment aliquot for analytical screening (sample extracted by the testing contractor prior to running test)**  
**PST = post treatment sample**

The last two characters represent the test run and the sample bottle number. For example the identification number OU1TS T PST 41 would represent post treatment sample bottle No. 1 from the fourth test run (i.e. best treatment condition test run) for the OU 1 groundwater bench scale treatability study.

### **8.3 Chain-of-Custody**

Sample chain-of-custody (C O C) will be maintained through the application of SOP 1.13 Containerizing, Preserving, Handling, and Shipping of Soil and Water Samples, and as illustrated in Figure 8.1 of the QAPjP. The C O C form shown in SOP 1.13 shall be submitted with the sample request (Figure 3). The EG&G Project Manager for this bench scale treatability study shall identify the samples as OU 1 groundwater treatability studies on the C O C form. The individual who collects the samples shall complete the rest of the C O C.

### **9.0 CONTROL OF PROCESSES**

The overall process of collecting samples, performing analysis, and data verification/validation is considered a process that requires control. The process is controlled through a series of procedures that govern and document the work activities. The controls for this process have been addressed in Sections 3 and 8 of this QAA. The overall process is illustrated diagrammatically in Section 8 of the QAPjP.

The perox-pure™ bench scale testing process is described and illustrated in Section II of the Project Plan for Bench Scale perox-pure™ Testing.

## 10 0 INSPECTION

An EG&G representative shall be present during all test runs or at a minimum during test runs 4 and/or 5 (the best treatment conditions and confirmation test runs at optimal operating conditions) This EG&G representative shall observe the testing process to assure that it is conducted as specified in the Project Plan and according to the specifications of the EG&G Statement of Work The EG&G representative shall prepare a report summarizing the test run observations

## 11 0 TEST CONTROL

The bench scale perox-pure™ testing will consist of five test runs through the perox-pure™ bench scale system During the three optimization test runs the H<sub>2</sub>O<sub>2</sub> dosage pH and UV dose (oxidation time) will be adjusted according to the following matrix

<u>Test No.</u>	<u>H<sub>2</sub>O<sub>2</sub> Dose mg/l</u>	<u>pH</u>	<u>Oxidation Times (min.)</u>
1	50	As is	0 2 4 8 16
2	100	As is	0 2 4 8 16
3	100	5	0 2 4 8 16

At each of the oxidation times listed above a sample of treated water will be collected for each test run in 40 ml glass vials with no headspace and analyzed for VOC concentration by the testing contractor using a gas chromatograph (GC) with purge and trap system and ELCD/PID detectors If after 16 minutes the GC indicates that the test requirements have not been met, the oxidation time may be extended This analysis will allow the testing contractor to determine the optimal operating conditions The GC shall be calibrated weekly at a minimum during testing

If pre-treatment analytical screening indicates the need for solids removal or precipitation/removal of iron the following pre-treatment will be done Iron removal will be done by the addition of a stoichiometric amount of H<sub>2</sub>O<sub>2</sub> to each sample bottle followed by slow manual mixing for about 1 minute to prevent volatilization After holding for 10-15 minutes to obtain a floc the samples will be filtered into the testing reservoir as follows suspended solids will be removed by pumping the

samples from the 1 gallon sample bottles via peristaltic pump through a 3  $\mu$  filter cartridge into the testing reservoir. This procedure removes suspended solids and minimizes volatilization during transfer.

The perox-pure™ test unit is charged by pumping or decanting an aliquot of the water into the recycle or feedstock reservoir. This is done to minimize stripping of volatiles during transfer. Once the unit is filled, a pump is started that circulates the solution through the reactor and back into the recycle reservoir providing continued mixing in the closed system. At this time, pH adjustment is performed using sulfuric acid or sodium hydroxide as required. The UV lamp is then illuminated to start a test and H<sub>2</sub>O<sub>2</sub> is added as required via peristaltic pump to maintain a constant concentration in solution. The UV intensity measuring device shall be calibrated prior to testing. The solution temperature is controlled through use of an in line heat exchanger.

Parameters measured during testing include pH, temperature, H<sub>2</sub>O<sub>2</sub> concentration, and oxidation time.

Upon completion of the testing, all treated and untreated water will be returned to RFP as required under 40 CFR 260 and 261 regarding conditions governing laboratory treatability studies on hazardous water samples.

## **12.0 CONTROL OF MEASURING AND TEST EQUIPMENT (M&TE)**

### **12.1 Field Equipment**

Field measurements of the groundwater samples will not be obtained. Therefore, control of field M&TE is not applicable for this bench scale treatability study.

### **12.2 Analytical Laboratory Equipment**

Laboratory analyses will be performed by contracted laboratories. The equipment used to analyze treated and untreated groundwater samples shall be calibrated, maintained, and controlled in accordance with the requirements contained in the specific analytical methods used and the manufacturer's instructions. Analytical laboratories are required to submit calibration procedures to

EG&G for review and approval Initial and continuing calibration data for analytical equipment used will be included in the data packages submitted to EG&G by the laboratories

### **12 3 Testing Equipment**

The control of testing equipment will include documenting calibration of metering pumps (as appropriate) UV light intensity measuring device and analytical instruments used during testing to measure pH temperature H<sub>2</sub>O<sub>2</sub> concentration and oxidation time Calibration of equipment and instrumentation will be according to manufacturer's recommended operating instructions

### **13 0 HANDLING STORAGE AND SHIPPING**

Samples shall be packaged transported and stored in accordance with SOP 1 13 Containerizing Preserving Handling and Shipping of Soil and Water Samples Shipment of all samples will be done by overnight delivery to conserve time between sampling testing and analysis Maximum sample holding times sample preservatives sample volumes and sample containers shall comply with those specified in Table 8-1 of the QAPjP unless specified otherwise in this QAA Shipment, testing and analysis of samples must be completed within the sample holding times for VOCs specified in Table 8 1

### **14 0 STATUS OF INSPECTION TEST AND OPERATIONS**

The requirements for the identification of inspection test and operating status of items products systems or equipment shall be implemented as specified in Section 14 0 of the QAPjP The status of monitoring/test equipment will be maintained in a log directly traceable to the particular piece of equipment and status indicator tags where appropriate shall be attached to equipment where such a tag will not interfere with equipment operation

### **15 0 CONTROL OF NONCONFORMANCES**

The requirements for the identification control evaluation and disposition of nonconforming items samples and data will be implemented as specified in Section 15 0 of the QAPjP Nonconformances identified by EG&G representatives and testing/analytical contractor personnel

shall be submitted to the EM Department QA Program Manager (QAPM) for processing as outlined in the QAPjP

#### **16 0 CORRECTIVE ACTION**

The requirements for the identification documentation and verification of corrective actions for conditions adverse to quality will be implemented as outlined in Section 16 0 of the QAPjP. Conditions adverse to quality identified by the testing contractor shall be documented and submitted to the EM Department QAPM for processing as outlined in the QAPjP.

#### **17 0 QUALITY ASSURANCE RECORDS**

All testing and analytical records are considered QA records. QA records to be generated during OU 1 treatability testing include but are not limited to:

- Sample Request Collection and Chain-of Custody Records
- Project Plan
- Statement of Work
- QAPjP/QAA
- Audit/Surveillance/Inspection Reports
- Bench Scale Treatability Study Report
- Nonconformance Reports
- Corrective Action Documentation
- Testing Validation Results
- Analytical Results
- Procurement/Contracting Documentation
- Training/Qualification Records
- Inspection Records

All QA records generated during the planning and implementation of the treatability testing activities will be submitted to the EM Department Custodian for processing according to the EM Department QA records system described in Section 17 0 of the QAPjP.

## **18 0 QUALITY VERIFICATION**

The requirements for the verification of quality shall be implemented as specified here and in Section 18 0 of the QAPjP. EG&G will conduct surveillances and audits of the testing contractor as specified in Section 10 0 of this document and of analytical laboratories as specified in the GRRASP.

Specific tasks that will be monitored by the surveillance program are as follows (the following are presented as examples)

- Field Sampling
- Confirmation Treatability Testing (i.e. test runs 4 and/or 5)
- Records Management
- Data Verification Validation and Reporting
- Test Validation

## **19 0 SOFTWARE CONTROL**

This bench scale test will not utilize software in conducting or evaluating the tests. The data collected shall not be entered into the RFP database. Therefore the software requirements of Section 19 0 of the QAPjP do not apply.

**APPENDIX A**

**Analytical Methods Detection Limits  
and Data Quality Objectives**

## ANALYTICAL METHODS DETECTION LIMITS AND DATA QUALITY OBJECTIVES OU 1 GROUNDWATER TREATABILITY STUDIES

Analyte	Method	Required Detection Limit	Precision Objective	Accuracy Objective
<b>ANALYTICAL SCREENING PARAMETERS (by PSI)</b>				
Visual color	EPA 110 1	N/A	N/A	N/A
pH	EPA 150 1	0 1 pH units		
Total Iron	EPA 236 2 <sup>a</sup>	5 mg/l		
Chloride	EPA 325 3	5 mg/l		
Chemical Oxygen Demand (COD)	EPA 410 4	5 mg/l		
Total Organic Carbon (TOC)	EPA 415 1	1 mg/l		
Total Dissolved Solids (TDS)	EPA 160 1	5 mg/l		
Total Suspended Solids (TSS)	EPA 160 2 <sup>a</sup>	10 mg/l		
Total Alkalinity	EPA 310 1	10 mg/l		
Purgeable Halocarbons	EPA 601	5 µg/l		
Purgeable Alkenes	EPA 602 <sup>a</sup>	5 µg/l		
<b>VOCs (BY PSI After Test Runs<sup>1</sup>)</b>				
Trichloroethene	EPA 601	5 µg/l		

Tetrachloroethane				
1 1 Dichloroethene				
1 1 Dichloroethane				
1 2 Dichloroethane				
1 1 1 Trichloroethane				
1 1 2 Trichloroethane				
Carbon Tetrachloride				
Methylene Chloride				
Toluene				
<b>FIELD AND CONFIRMATION TEST RUN SAMPLES (by CLP Analytical Laboratories)</b>				
Liquid Phase VOCs	EPA 601	*		
Semi Volatile Compounds	EPA 625			
Total Organic Carbon	EPA 410 4	1 mg/l	20% RPD	**
Dissolved Organic Carbon (DOC) <sup>(2)</sup>	EPA 410 4	1 mg/l	20% RPD	**
Total Organic Halogen (TOX) (TBO)		5 µg/l	**	**
Dissolved Organic Halogen (DOX) <sup>(2)</sup> (TBO)		5 µg/l	*	**
Gas Phase VOCs (sumic canister)	TO 14	0 5 ppb	**	**

**ENVIRONMENTAL RESTORATION**

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## ANALYTICAL METHODS DETECTION LIMITS AND DATA QUALITY OBJECTIVES OU 1 GROUNDWATER TREATABILITY STUDIES

Required detection limit for volatile, semi-volatile compounds is 10 times the method detection limit (5 mg/l whichever is less)  
Precision objective = control limits specified in referenced method and/or Data Validation Guidelines  
Accuracy objective = control limits specified in referenced method (in GRASP for radionuclides)  
Methods refer from Methods to Chemical Analysis of Water and Wastes, U.S. Environmental Protection Agency 1983 unless otherwise indicated

- (1) Measures of Precision and Accuracy are determined only on confirmation test run samples
- (2) DOC is defined as the fraction of TOC that passes through 0.45 micron pore-diameter filter
- (3) DOX is defined by filtering the sample through glass-fiber filter using vacuum. Analytical method is same as for TOX

TSD T be determined by EG&G Laboratory Analytical Task Leader

**Groundwater Composite Sampling for Operational Unit No 1  
Treatability Study**

<b>ENVIRONMENTAL RESTORATION Operating Instructions for Groundwater Composite Sampling for OU-1 Treatability Study</b>	<b>Manual Number 21100-PM-OU01 0 Doc No INS-1 1 Rev 0 Page 1 of 5 Effective Date AUG 26 1991</b>
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Approved By

*Craig Coady*      8/26/91  
Remediation Programs      Date

Concurrence

*Larry Minsky*      8/26/91  
Manager EM Quality Assurance      Date

**1 0 PURPOSE**

This instruction provides basic guidance for the preparation of bulk composite water samples for offsite shipment to analytical and testing laboratories. The composite water samples will be used to conduct offsite laboratory treatability tests for the removal of volatile organic compounds (VOCs) and to provide pretreatment characterization data.

**2 0 SCOPE**

This instruction applies to the compositing of Operable Unit No 1 (OU-1) groundwater samples that will be collected for conducting the OU-1 treatability study involving the perox-pure™ treatment system. This instruction applies to EG&G Rocky Flats EMAD and contractor personnel involved in collecting and preparing these composite groundwater samples.

**3 0 REFERENCES**

**3 1 Source Requirements Documents**

3 1 1 U S Department of Energy Rocky Flats Plant,  
"Project Plan for Bench-Scale perox-pure™  
Testing 881 Hillside Waters from Rocky Flats  
Plant "

**3 2 Internal References**

3 2 1 U S Department of Energy Rocky Flats Plant,  
"Quality Assurance Addendum QAA 1 2 to the  
Rocky Flats Plant Site-Wide QA Project Plan  
for the Treatability Study for Operable Unit

REVIEWED FOR CLASSIFICATION  
By *AJ Kullback*  
Date 8/5/91

**Groundwater Composite Sampling for Operational Unit No 1  
Treatability Study**

<b>ENVIRONMENTAL RESTORATION</b>	<b>Manual Number</b>	<b>21100-PM-OU01 0</b>
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Rocky Flats Plant Site-Wide QA Project Plan for the Treatability Study for Operable Unit No 1, 881 Hillside Groundwater," EG&G Rocky Flats Plant Environmental Management Manual 21100-QAA-1 2

- 3 2 2 EG&G Rocky Flats Plant EMAD Operating Procedure 5-21200-OPS-GN 09, "General Equipment Decontamination," EG&G Rocky Flats Environmental Management Procedures Manual 5-21200-OPS
- 3 2 3 EG&G Rocky Flats Plant EMAD Operating Procedure 5-21200-OPS-GN 11, "Handling of Decontamination Water and Wash Water," EG&G Rocky Flats Environmental Management Procedures Manual 5-21200-OPS
- 3 2 4 EG&G Rocky Flats Plant EMAD Operating Procedure 5-21200-OPS-GN 02, "Containerizing, Preserving, Handling, and Shipping of Soil and Water Samples," EG&G Rocky Flats Environmental Management Procedures Manual 5-21200-OPS
- 3 2 5 EG&G Rocky Flats Plant EMAD Operating Procedure 5-21200-OPS-GN 04, "Handling of Purge and Development Water," EG&G Rocky Flats Environmental Management Procedures Manual 5-21200-OPS
- 3 2 6 EG&G Rocky Flats Plant EMAD Operating Procedure 5-21200-OPS-GN 16, "Radioactive Sample Screening Criteria," EG&G Rocky Flats Environmental Management Procedures Manual 5-21200-OPS
- 3 2 7 EG&G Rocky Flats Plant EMAD Operating Procedure 5-21200-OPS-GW 01, "Water Level Measurements in Wells and Piezometers," EG&G Rocky Flats Environmental Management Procedures Manual 5-21200-OPS
- 3 2 8 EG&G Rocky Flats Plant EMAD Operating Procedure 5-21200-OPS-GW 05, "Groundwater Sampling," EG&G Rocky Flats Environmental Management Procedures Manual 5-21200-OPS

**Groundwater Composite Sampling for Operational Unit No 1  
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**4 0 PREREQUISITES**

- 4 1 Prior to implementing this procedure, the OU-1 Treatability Study Project Manager will submit a Sample Request to the field sampling contractor (see Figure 2 of QAA 1 2) requesting collection and preparation of the composite sample, as required in Section 3 of 21100-QAA-1 2

**5 0 LIMITATIONS AND PRECAUTIONS**

- 5 1 Water samples containing greater than 50 pCi/l of radiation (gross alpha/beta) cannot be shipped offsite to the laboratory testing contractor. Therefore, the composited groundwater samples prepared according to this procedure must be screened for radiation contamination according to EMAD Operating Procedure 5-21200-OPS-GN 16

**6 0 INSTRUCTION**

- 6 1 The EG&G OU-1 Treatability Study Project Manager shall designate the OU-1 groundwater wells to be sampled and the amount of water to be sampled from each well, in order to prepare the composite sample for testing. This information should be included as additional information on the sample request.
- 6 2 After receiving a copy of the sample request and a copy of this instruction from the OU-1 Treatability Study Project Manager, the field sampling contractor shall collect the groundwater samples as requested.
- 6 3 The equipment required for measuring the depth to water and total well depth of wells to be sampled and for purging and collecting water samples shall be supplied by the sampling contractor. The necessary equipment is listed in EMAD Operating Procedure 5-21200-OPS-GN 02. Sample bottles for collecting the samples shall also be supplied by the contractor and shall meet the requirements for water sample bottles contained in EMAD Operating Procedure 5-21200-OPS-GN 02.
- 6 4 Prior to sampling the wells, the field sampling contractor shall determine the depth to water and total well depth according to EMAD Operating Procedure 5-21200-OPS-GW 01.

**Groundwater Composite Sampling for Operational Unit No 1  
Treatability Study**

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- 6 5 The field sampling contractor shall collect groundwater samples from the wells designated for sampling, according to EMAD Operating Procedure 5-21200-OPS-GW 05
- 6 5 1 The wells shall be purged prior to sampling. Purging shall consist of withdrawing a minimum of three casing volumes or dewatering the well. The purged well water shall be handled according to EMAD Operating Procedure 5-21200-OPS-GN 04.
- 6 5 2 The groundwater samples shall be collected using a teflon bailer equipped with a bottom decanting control valve. The samples shall be composited in a 20-gallon Nalgene container equipped with a bottom emptying spigot.
- 6 6 From the composite sample container, 1-gallon samples shall be extracted via the bottom spigot. Prior to drawing the 1-gallon samples from the composite sample, the composite sample should be mixed by rocking the container back and forth with the lid on. The one-gallon samples shall be collected in one-gallon glass bottles with no headspace. The OU-1 Treatability Study Project Manager shall specify the number of individual one-gallon samples that are required for testing and pretreatment laboratory analysis. If sampling cannot be completed in a single day, the groundwater samples should be stored overnight at 4°C.
- 6 7 The EG&G 881 Laboratory shall screen a 1-gallon sample from the composite sample for radiation contamination according to EMAD Operating Procedure 5-21200-OPS-GN 16.
- 6 8 The 1-gallon samples shall be cooled to 4°C, ±2°C, for transport to the testing and analytical laboratories. Transport of samples shall be in accordance with EMAD Operating Procedure 5-21200-OPS-GN 02.
- 6 9 The sampling contractor shall complete a Chain-of-Custody form to accompany samples to the testing and analytical laboratories. The sample chain-of-custody form shall be completed and used as specified in EMAD Operating Procedure 5-21200-OPS-GN 02.

**Groundwater Composite Sampling for Operational Unit No 1  
Treatability Study**

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**7 0 AUTHENTICATION**

- 7 1 All field activities associated with this procedure shall be recorded on the Field Activity Daily Log form and the Groundwater Sample Collection Log form, as required by EMAD Operating Procedure 5-21200-OPS-GW 05 The EG&G Field Sampling Task Leader shall provide copies of these forms Completion of a Well Status Form is not required by this procedure
  
- 7 2 A Chain-of-Custody (C-O-C) form shall be completed and accompany all samples prepared in accordance with this procedure for transport offsite to testing and analytical laboratories The C-O-C form shall be completed according to instructions provided in EMAD Operating Procedure 5-21200-OPS-GN 02 The EG&G Field Sampling Task Leader shall provide the C-O-C forms

**Quality Assurance Addendum  
Operable Unit No. 1  
Phase IIA Construction  
881 Hillside  
(QAA 1.3)  
Manual No. 21100-PM-  
OU 01.0**

 **EG&G ROCKY FLATS**

REVIEWED FOR CLASSIFICATION/UCM  
By George H. Lockwood  
Date \_\_\_\_\_

**QUALITY ASSURANCE ADDENDUM**

**QAA 1 3**

**to the**

**ROCKY FLATS PLANT SITE-WIDE QA PROJECT PLAN  
FOR CERCLA RI/FS AND RCRA RFI/CMS ACTIVITIES**

**FOR**

**PHASE IIA CONSTRUCTION  
881 HILLSIDE (OPERABLE UNIT NO 1)  
REMEDIAL ACTION, PROCESS TREATMENT SYSTEM**

**U S DEPARTMENT OF ENERGY  
ROCKY FLATS PLANT  
GOLDEN, COLORADO**

**ENVIRONMENTAL RESTORATION PROGRAM  
ROCKY FLATS PLANT**

**Revision 1**

**ENVIRONMENTAL RESTORATION PROGRAM**  
Quality Assurance Addendum to the  
Rocky Flats Site-Wide QAPJP for  
Operable Unit No 1 Phase IIA  
Construction

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Effective Date 9/10/91

**TITLE**  
Quality Assurance Addendum for  
Phase IIA Construction 881 Hillside  
(OU 1) Remedial Action Process  
Treatment System

Approved by

*McBumester* 9/10/91  
Manager Remediation Programs

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**LIST OF FIGURES**

**Figure 1**      **881 Hillside (OU 1) Phase IIA Construction Project Management**      **7**

**LIST OF ACRONYMS**

<b>ASME</b>	<b>American Society of Mechanical Engineers</b>
<b>AWWA</b>	<b>American Water Work Association</b>
<b>CARs</b>	<b>Corrective Action Reports</b>
<b>CC</b>	<b>Construction Coordinator</b>
<b>CDH</b>	<b>Colorado Department of Health</b>
<b>CERCLA</b>	<b>Comprehensive Environmental Response Compensation and Liability Act</b>
<b>DOE</b>	<b>U S Department of Energy</b>
<b>EM</b>	<b>Environmental Management</b>
<b>EPA</b>	<b>U S Environmental Protection Agency</b>
<b>ER</b>	<b>Environmental Restoration</b>
<b>E/WE</b>	<b>EG&amp;G Rocky Flats Environmental and Waste Engineering</b>
<b>FI</b>	<b>EG&amp;G Rocky Flats Facilities Inspection</b>
<b>HSC</b>	<b>Health and Safety Coordinator</b>
<b>HSO</b>	<b>Health and Safety Officer</b>
<b>IAG</b>	<b>Interagency Agreement</b>
<b>IM</b>	<b>Interim Measure</b>
<b>IRA</b>	<b>Interim Remedial Action</b>
<b>NCRs</b>	<b>Nonconformance Reports</b>
<b>OSHA</b>	<b>Occupational Safety and Health Administration</b>
<b>OU</b>	<b>Operable Unit</b>
<b>PA</b>	<b>Project Administrator</b>
<b>PE</b>	<b>Project Engineer</b>
<b>PM</b>	<b>Project Manager</b>
<b>QA</b>	<b>Quality Assurance</b>
<b>QAA</b>	<b>Quality Assurance Addendum</b>
<b>QAPjP</b>	<b>Rocky Flats Plant Site-Wide Quality Assurance Project Plan for CERCLA Remedial Investigations/Feasibility Studies and RCRA Facility Investigations/Corrective Measures Studies</b>
<b>QAPM</b>	<b>EM Department Quality Assurance Program Manager</b>
<b>RCRA</b>	<b>Resource Conservation and Recovery Act</b>
<b>RFP</b>	<b>Rocky Flats Plant</b>
<b>RPD</b>	<b>Remediation Programs Division</b>
<b>UV</b>	<b>Ultraviolet</b>

## **INTRODUCTION AND SCOPE**

This Quality Assurance Addendum (QAA) supplements the Rocky Flats Plant Site-Wide Quality Assurance Project Plan for CERCLA Remedial Investigations/Feasibility Studies and RCRA Facility Investigations/Corrective Measures Studies Activities (QAPjP) for the Remedial Action of 881 Hillside Phase IIA Construction Process Treatment System. The 881 Hillside Process Treatment System is located within the area designated as Operable Unit No 1 (OU 1) by the Interagency Agreement (IAG). This is the third QAA prepared for OU 1 activities and is therefore designated as QAA 1 3.

The OU 1 process treatment system is considered an interim measure/interim remedial action (IM/IRA) and consists of a groundwater collection treatment and infiltration system that, when constructed, will collect contaminated groundwater from the Building 881 Hillside area and treat it with an ultraviolet light hydrogen peroxide (UV/Peroxide) and ion exchange treatment process. The system will consist of the following components:

- A french drain groundwater collection system
- Two sump pumps installed in the french drain to deliver water to the treatment unit storage tanks
- A well that intercepts shallow contaminated water and delivers it to the treatment unit storage tanks
- A pre-engineered ultraviolet light hydrogen peroxide and ion exchange treatment system housed in a pre-engineered building (Building 891)
- A drain sump pump that intercepts foundation drainage around Building 891 and delivers it to the treatment storage tanks
- Four 15 000-gallon influent storage tanks with level measurement and freezing protection
- Three 144 000-gallon effluent storage tanks and
- A discharge system

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Construction and installation of Building 891 and the influent storage tanks were completed during 881 Hillside Phase 1B construction Phase IIA construction which is covered by this QAA involves all labor material equipment and supplies to construct and install the following

- Indoor and outdoor transfer piping
- Electrical components and controls for the influent tanks
- Chemical storage and transfer facilities
- Completion of Building 891 electrical and outdoor lighting
- Installation of UV/Peroxide treatment unit and ion exchange treatment system which are government furnished equipment including installation of electrical components and controls
- Three welded steel double wall 159 000 gallon effluent storage tanks and their foundations

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## **1 0 ORGANIZATION AND RESPONSIBILITIES**

The overall organization of EG&G Rocky Flats and the Environmental Management (EM) Department divisions involved in Rocky Flats Plant (RFP) environmental restoration (ER) program activities are shown in Section 1 of the QAPjP ER program management responsibilities are also discussed in the QAPjP The organization for Hillside 881 Phase IIA construction activities is shown in Figure 1 Organizational responsibilities for EG&G Rocky Flats personnel involved in Phase IIA construction that were not described in the QAPjP are discussed here Contractors will be tasked by EG&G Rocky Flats to complete the 881 Hillside Phase IIA construction The EG&G Rocky Flats personnel who will interface with the construction contractor are also shown in Figure 1

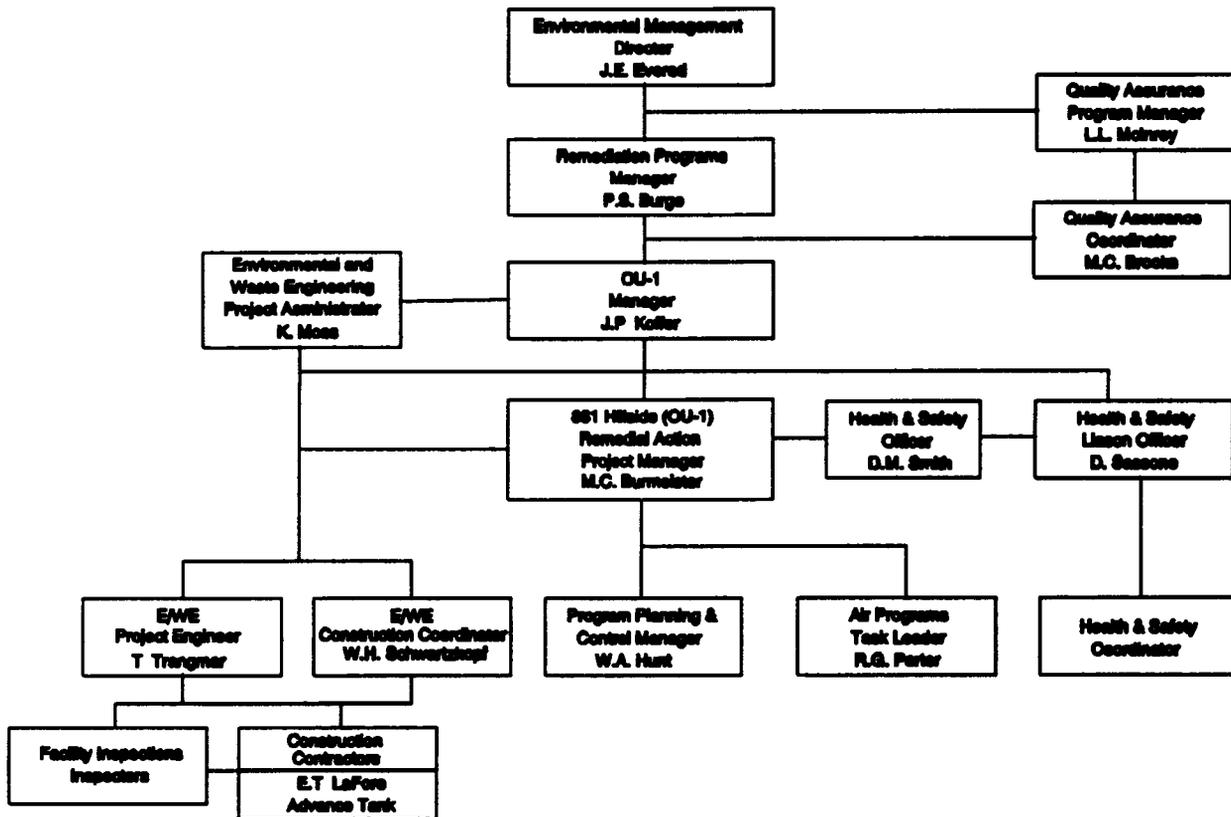
### Project Manager

The Remedial Action Project Manager (PM) is assigned from the EG&G Remediation Programs Division (RPD) The PM reports to the OU 1 Project Manager and is responsible for interfacing with and communicating project requirements and modifications to support staff from other departments and divisions The PM is also responsible for preparing project plans and procedures directing and controlling project activities maintaining construction health and safety documents measuring project progress monitoring the project budget evaluating and reporting project performance and serving as liaison with the U S Department of Energy (DOE) the U S Environmental Protection Agency (EPA) and the Colorado Department of Health (CDH) All work will be performed under the oversight of the PM who also has stop work authority

### Project Administrator

The Project Administrator (PA) is assigned to the project by EG&G Rocky Flats Environmental and Waste Engineering (E/WE) The PA serves as liaison between the Remediation Program s Project Manager and E/WE The PA assists in the design and construction phases of the project budgeting

**FIGURE 1 881 Hillside (OU 1) Phase IIA Construction Project Management**



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and administration scoping and scheduling activities The PA provides guidance and coordinates tasks assigned to the E/WE Project Engineer and Construction Coordinator (CC)

#### **Environmental and Waste Engineering Project Engineer**

The E/WE Project Engineer (PE) is assigned to the project by E/WE and reports to the Project Administrator as well as the Project Manager During the design and construction phases of the project the PE is responsible for procuring the services of an engineering design firm reviewing contractor prepared engineering design plans preparing construction and performance specifications providing as built construction drawings and overseeing the activities of the engineering design firm and any associated plans and specifications as directed by the Project Manager

#### **Construction Coordinator**

The CC is assigned to the project by EG&G Rocky Flats Construction Services and reports to the Project Administrator All construction activities by the Construction Contractor and its subcontractors will be conducted in accordance with EG&G approved engineering drawings and performance specifications Statements of Work Construction Work Procedures the QAPjP and this QAA The CC is a point-of-contact in the field for the contractor and its subcontractors The CC coordinates and/or schedules any required utility outages street closures plant access requirements provides technical inspections of completed work, and obtains all necessary plant construction work permits The CC coordinates any required safety training of contractors and ensures work is conducted in accordance with all project safety regulations The CC ensures that radiological and industrial hygiene measurements are taken and coordinates these activities with the Radiation Protection Technologists and Industrial Hygienists The CC records all work progress and prepares punch lists and other reports on contractor/subcontractor performance The Facilities Engineering and Facilities Project Management Manual outlines any other duties of the CC The CC has stop work authority if project construction health and safety or quality criteria are not met

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### Health and Safety Officer

The Health and Safety Officer (HSO) is assigned from the EG&G RPD and reports to the Project Manager. The HSO is responsible for interfacing with the Occupational Safety Organization regarding Health and Safety related activities for the project.

### Health & Safety Coordinator

The Health and Safety Coordinator (HSC) is assigned to the project by the Occupational Safety Manager and reports to the Health and Safety Liaison Officer and the Project Manager. The HSC is responsible for coordinating all health and safety-related activities for the project, including securing the services of Health Physicists, Industrial Hygienists, and Safety Engineers as necessary. The HSC will monitor the OU 1 Phase IIA construction requirements as outlined in the Contractor's Site-Specific Health and Safety Plan for 881 Hillside Construction. The HSC monitors construction for personnel protection and industrial safety considerations, conducts health and safety worksite inspections, documents health and safety audits, and reviews all health and safety-related submittals prior to issuance. The Contractor shall develop, implement, and monitor a site-specific health and safety plan.

## **2.0 QUALITY ASSURANCE PROGRAM**

The QAPjP was written to specifically address QA controls for IAG related activities. The content of the QAPjP was driven by DOE RFP SOP 5700.6B, which requires that a QA program be implemented for all RFP activities based on American Society of Mechanical Engineers (ASME) NQA-1, Quality Assurance Requirements for Nuclear Facilities, as well as the IAG, which specifies that a QAPjP for IAG related activities be developed in accordance with EPA QAMS-005/80, Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans. The 18-element format of NQA-1 was selected as the basis for both the plan and subsequent QAAs, with the applicable elements of EPA QAMS-005/80 incorporated where appropriate.

The QAA controls and requirements addressed in the QAPjP are applicable to the Phase IIA construction activities for 881 Hillside unless otherwise specified in this QAA. As a supplement to the QAPjP, this QAA adds site-specific QA controls and requirements that are applicable to 881 Hillside Phase IIA construction.

### **2.1 Training, Qualification, and Certification**

All personnel (including contractor/subcontractor personnel) shall complete the RFP orientation and personnel training specified in Section No. 2 of the QAPjP. This required personnel training includes site-specific and site-wide health and safety training and Radiation Safety Training. The Occupational Safety and Health Administration (OSHA) 40-hour Hazardous Waste Site Worker Safety Training and the OSHA 8 Hour Hazardous Waste Site Worker Safety Refresher course required in the QAPjP are applicable only to individuals who work in controlled areas of the site.

The construction contractor shall be responsible for ensuring that construction personnel are properly qualified and certified as identified in job descriptions. The construction contractor's project manager will furnish the EG&G Rocky Flats CC (see Figure 1) with evidence of certification for those positions requiring certified personnel.

EG&G Rocky Flats Facilities Inspection (FI) Department shall provide trained and qualified inspectors for inspecting construction electrical wiring, piping, process system controls, and installation of the water treatment process system (i.e., the UV/Peroxide treatment unit) and the effluent storage tanks plus their foundations. These inspectors shall meet the minimum qualifications for inspectors as specified in the RFP Site-wide Quality Assurance Manual.

### **3.0 DESIGN CONTROL AND CONTROL OF SCIENTIFIC INVESTIGATIONS**

This activity consists of constructing/installing a plant facility for which the design control methods are addressed in the RFP Facilities Engineering and Project Management Manual used to

satisfy DOE Order 6430 1A Specific design control requirements that are applicable to 881 Hillside Phase IIA construction are included in the Specifications and Drawings for the Phase IIA Construction (Process Treatment System) Remedial Action 881 Hillside dated December 1990 and the Specifications and Drawings for the Remedial Action 881 Hillside 881 Effluent Storage Tanks dated November 1990 The EG&G E/WE Project Engineer (see Figure 1) shall be responsible for reviewing and approving any changes to approved specifications and drawings

A Quality Acceptance Criteria Checklist has been developed for documenting the acceptance (i.e. pass/fail) of the various items involved in the Phase IIA construction/installation of the process treatment system A component checkout form has been developed which will be used to document the satisfactory or unsatisfactory testing of the various components (e.g. pumps mixers ball valves tanks and UV/Peroxide unit) of the process system A system operations test will be conducted to test the operation of the entire process treatment system The Project Engineer or designee will witness the system operation test and shall be responsible for issuing appropriate engineering orders or field change orders in accordance with RFP E/WE procedures

### **3 1 Data Quality Objectives**

No measurement data will be collected as a result of the construction activities addressed by this QAA Therefore data quality objectives discussed in the QAPjP are not applicable

### **4 0 PROCUREMENT DOCUMENT CONTROL**

The procurement document control requirements specified in Section No 4 of the QAPjP are applicable to all Phase IIA 881 Hillside procurement packages

Contractors will construct and install the 881 Hillside groundwater treatment system The contractors will be required to adhere to all requirements in the specifications and drawings for the Phase IIA Construction Remedial Action 881 Hillside

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The construction contractor will be required to provide the materials necessary for completing the Phase IIA 881 Hillside construction with the exception of the UV/Peroxide Unit and the ion exchange regeneration system which will be purchased separately by the Department of Energy and will therefore be considered government furnished equipment not subject to procurement control requirements (Note evaluation and purchase of the UV/Peroxide Unit and ion exchange units are not part of the scope of this QAA )

Procurement of equipment and materials necessary to complete Phase IIA 881 Hillside construction will be controlled by E/WE in accordance with procurement document control requirements specified in the RFP Site-wide Quality Assurance Manual Procurement packages for Phase IIA 881 Hillside contracted and subcontracted services will be reviewed and approved by E/WE and EG&G RFP Site Quality Assurance

## **5 0 INSTRUCTIONS PROCEDURES AND DRAWINGS**

The Specifications and Drawings for the Phase IIA Construction (Process Treatment System) Remedial Action 881 Hillside and the Specifications and Drawings for Remedial Action 881 Hillside 881 Effluent Storage Tanks include the instructions and drawings for completing the construction activities addressed by this QAA Those specifications and drawings were developed for and reviewed and approved by E/WE in a manner that satisfies the requirements of Section No 5 of the QAPjP Any changes or revisions to those specifications and drawings shall also be reviewed and approved

The Construction Management Package for the Phase IIA Construction (Remedial Action 881 Process Treatment System) contains the general procedures for checking the process system components and testing the operational system These procedures were developed for and reviewed and approved by E/WE Any changes or revisions to these procedures will also be reviewed and approved by E/WE

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The EG&G Environmental Monitoring and Assessment Division (EMAD) Operating Procedures listed in the QAPjP that are applicable to remedial investigations are not applicable to these construction and installation activities

## **6 0 DOCUMENT CONTROL**

The following documents will be controlled in accordance with the document control requirements of Section No 5 of the QAPjP

- **Project Management Plan for Phase IIA Construction 881 Hillside Remedial Action Process Treatment System**
- **Specifications and Drawings for the Phase IIA Construction (Process Treatment System) Remedial Action 881 Hillside**
- **Specifications and Drawings for Remedial Action 881 Hillside 881 Effluent Storage tanks**
- **Construction Management Package for the Phase IIA Construction (Remedial Action 881 Process Treatment System)**
- **Quality Assurance Addendum (QAA 1 3) to the Site Wide QAPjP for Phase IIA Construction 881 Hillside Remedial Action Process Treatment System**

## **7 0 CONTROL OF PURCHASED ITEMS AND SERVICES**

The contractor that will provide construction services for the Phase IIA 881 Hillside construction has been selected and evaluated in a manner that meets the requirements of Section No 7 of the QAPjP The construction contractor(s) shall furnish parts components and construction materials

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that meet the requirements specified in the Specifications and Drawings for the Phase IIA Construction (Process Treatment System) Remedial Action 881 Hillside and all labor and materials specified in the Specifications and Drawings for Remedial Action 881 Hillside 881 Effluent Storage Tanks Any deviations to those requirements shall be reviewed and approved by E/WE prior to acceptance

## **8 0 IDENTIFICATION AND CONTROL OF ITEMS SAMPLES AND DATA**

The specifications and drawings for Phase IIA construction contain the required specifications for the construction materials items parts and components for the 881 Hillside process treatment system Any incorrect and defective items and materials that are noted during construction installation or system operational testing will be identified tagged and documented to preclude inadvertent use according to the requirements of Section No 8 of the QAPjP

The requirements for the control of samples and data discussed in the QAPjP are not applicable to these construction and installation activities

## **9 0 CONTROL OF PROCESSES**

The requirements for the control of processes are not applicable to the Phase IIA 881 Hillside construction activities Construction activities and installation of the process treatment system will be controlled through inspections and tests

## **10 0 INSPECTION**

Procured items parts and components and construction activities and materials shall be inspected (as applicable) by trained and qualified inspectors provided by FI in a manner that meets the requirements of Section No 10 of the QAPjP The acceptance criteria for construction items and activities that will be inspected are included in the Quality Acceptance Criteria Checklist (Section 1

of the Construction Management Package for the Phase IIA Construction Remedial Action 881 Process Treatment System) Nondestructive examination methods shall be performed on the effluent storage tanks per American Water Works Association (AWWA) Standard D-100 Section 11 After the tanks have been erected but prior to painting selected weld areas shall be spot radiographed per AWWA Standard D-100 Section 11 All non fluid containment welds shall be visually inspected prior to installation

### **11 0 TEST CONTROL**

The operability of the various items/components used to install the process treatment system will be tested according to the generic component checkout procedures presented in Section 2 of the Construction Management Package for the Phase IIA Construction Remedial Action 881 Process Treatment System A system operational test will be completed according to the system operational test procedures included in Section 3 of the Construction Management Package The following system operational components will be tested during the system operational testing

- Building 891 Sump Pump Operation and Instrumentation
- Influent Storage Tanks
- UV/Peroxide Unit Feed Pumps
- UV/Peroxide Unit
- Ion Exchange Surge Tank
- Ion Exchange System
- Chemical Storage and Feed System
- Clean Water Storage Tank,
- Effluent Storage Tanks
- Neutralization Tank,
- Emergency Eye Wash and
- Programmable Logic Controller Operation and Master Control Panel Instrumentation

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Both inner and outer tanks of the effluent storage tanks shall be tested prior to painting by filling with potable water to the overflow level. Testing duration shall be 24 hours. Any additional testing of individual items, parts, components, or construction materials will be conducted as specified in the specification and drawing requirements and/or the specific acceptance criteria referenced in the Quality Acceptance Criteria Checklist. Testing will be conducted or observed by qualified test inspectors provided by FI.

#### **12 0 CONTROL OF MEASURING AND TEST EQUIPMENT**

Measuring and testing equipment that are used to test the components of the process treatment system will be controlled, calibrated, and maintained according to the manufacturers specifications.

#### **13 0 HANDLING, STORAGE, AND SHIPPING**

The items, parts, and components used during the construction and installation of the 881 Hillside groundwater process treatment system shall be shipped, handled, and stored according to instructions provided in procurement packages and in accordance with manufacturer's instructions.

#### **14 0 STATUS OF INSPECTION, TEST, AND OPERATIONS**

The Quality Acceptance Criteria Checklist provided in the Construction Management Package will provide documentation as to whether or not the item/activity met the specified acceptance criteria. These checklists shall be initialed and dated by the responsible inspector.

The Component Checkout forms presented in the Construction Management Package will document the status of the individual components of the process treatment system based on the results of the generic component testing. All test data from the system operational testing shall be recorded on System Operational test sheets during the equipment testing. The record of this test

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data shall provide evidence regarding the operational status of the 881 Hillside groundwater process treatment system

#### **15 0 CONTROL OF NONCONFORMANCES**

The requirements for the identification control evaluation and disposition of nonconforming items will be implemented to meet the requirements of Section No 15 of the QAPjP Nonconformances identified by the construction contractor and subcontractors shall be reported to the EG&G CC Copies of nonconformance reports (NCRs) prepared as a result of these nonconformances and nonconformances observed by FI Inspectors during inspections and testing will be submitted to the Project Manager who will in turn submit a copy of all NCRs to the EM Department Quality Assurance Program Manager (QAPM) The QAPM will tract the processing of all NCRs

#### **16 0 CORRECTIVE ACTION**

The identification documentation and verification of corrective actions for conditions adverse to quality will be implemented such that the requirements of Section No 16 of the QAPjP are met Conditions adverse to quality identified by the construction contractor and Inspectors that result in the preparation of Corrective Action Reports (CARs) shall be forwarded to the Project Manager and the EM Department (QAPM) for tracking The processing of CARs shall be handled by the FI Department

#### **17 0 QUALITY ASSURANCE RECORDS**

All construction and installation records are considered Quality Assurance (QA) records and shall be processed in accordance with the requirements of Section No 17 of the QAPjP QA records to be generated during Phase IIA Construction for 881 Hillside remedial action include but are not necessarily limited to

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- The QAPjP/QAA
- Inspection and Testing Records
- Audit/Surveillance/Inspection Reports
- Nonconformance Reports
- Corrective Action Reports
- Procurement/Contracting Documentation
- Training/Qualification Records

All Phase IIA construction records designated as QA records will be submitted to the ER Department Document Custodian for processing according to the EM Department QA records system described in Section No 17 of the QAPjP

#### **18 0 QUALITY VERIFICATION**

The requirements for the verification of quality shall be implemented as specified in Section No 18 of the QAPjP. Audits and/or surveillances of the construction and installation activities performed by the construction contractor and of the inspections and tests performed by FE will be scheduled by the EM Department QAPM or designee in consultation and concurrence with the Construction Coordinator. The Construction Coordinator may schedule inspections independently from the QAPM. The QAPM or designee may witness inspections schedule by the QAPM. Inspection and test records and documentation will be audited as deemed necessary by the EM Department QAPM.

#### **19 0 SOFTWARE CONTROL**

The use of software for the construction and installation activities associated with Phase IIA 881 Hillside remedial action construction is not anticipated. Therefore the software control requirements discussed in Section No 19 of the QAPjP are not applicable.

**CONSTRUCTION WORK INSTRUCTIONS  
FOR INTERIM REMEDIAL ACTION  
881 HILLSIDE (OPERABLE UNIT NO 1)  
PROCESS TREATMENT SYSTEM**

**ENVIRONMENTAL RESTORATION PROGRAM  
ROCKY FLATS PLANT  
GOLDEN COLORADO**

REVIEWED FOR CLASSIFICATION/USE  
By Gene # Letlock  
Date 9/13/91 UNU

**ENVIRONMENTAL RESTORATION**  
**Construction Work Instruction for Interim Remedial**  
**Action at 881 Hillside (operable Unit No 1)**  
**Process Treatment System**

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1 2	OU 1 881 Hillside Phase 2A Construction Effluent Tank Erection	0	9/10/91

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**TITLE**  
OU 1 881 Hillside Phase 2A Construction

Approved by

*M C Burmeister 9/10/01*  
Manager Remediation Program

## 1 0 PREREQUISITES

1 1

All construction personnel must have completed the 881 Hillside PH 2A site-specific Health and Safety Plan training. In addition, all personnel must have 8 hour Radiation Safety Training and wear a personal dosimeter. All training and medical requirements are to be complied with as outlined in the site specific health and safety plan prepared by E T LaFore.

1 2

Daily Safety and Plan-of-the-Day Meetings shall be held between the EG&G Construction Coordinator, EG&G RP Project Manager, and E T LaFore Project Manager, or the respective designers.

1 4

The following Contractor personnel are required as needed for construction and equipment installation activities:

- field engineer
- health and safety representative
- construction foreman
- electrician
- plumber
- carpenter

**OU 1 881 HILLSIDE PHASE 2A CONSTRUCTION**

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- heavy equipment operator
- laborers
- millwright
- welder

**1 5**

The following materials are required for construction and equipment installation activities

- electrical/instrumentation supplies
- plumbing/piping supplies
- lumber
- telephone service supplies
- insulation materials
- aggregate
- berm materials
- paint/protective coatings
- concrete/cement

**1 6**

The following documents are required for construction and equipment installation activities

- daily log in
- weekly work permit
- excavation permit
- contractor health and safety plan
- approved contractor construction schedule
- radiation safety training records
- site indoctrination site specific H & S plan training records

**OU 1 881 HILLSIDE PHASE 2A CONSTRUCTION**

<b>ENVIRONMENTAL RESTORATION</b>	<b>Manual</b>	<b>21100 PM OU01 0</b>
<b>Construction Work Instruction for Interim Remedial</b>	<b>Instr No</b>	<b>CWI 1 1 Rev 0</b>
<b>Action at 881 Hillside (Operable Unit No 1)</b>	<b>Page</b>	<b>3 of 7</b>
<b>Process Treatment System</b>	<b>Effective Date</b>	<b>9/10/91</b>

**1 7**

The following safety equipment is required for construction and equipment installation activities

- hard hats**
- **safety shoes or protectors**
- **electrical safety gear**
- eye/ear protection**
- PPE (as needed)**
- **other physical equipment as required (ladders scaffolding harnesses etc )**

**1 8**

An approved Contractor work schedule shall be itemized as a checklist for the Project Manager and Construction Coordinator reference This checklist shall include the work procedure description the necessary reference document and applicable prerequisite activities and safety precautions

**OU 1 881 HILLSIDE PHASE 2A CONSTRUCTION**

<b>ENVIRONMENTAL RESTORATION</b>	<b>Manual</b>	<b>21100 PM OU01 0</b>
<b>Construction Work Instruction for Interim Remedial</b>	<b>Instr No</b>	<b>CWI 1 1 Rev 0</b>
<b>Action at 881 Hillside (Operable Unit No 1)</b>	<b>Page</b>	<b>4 of 7</b>
<b>Process Treatment System</b>	<b>Effective Date</b>	<b>9/10/91</b>

**CONSTRUCTION WORK INSTRUCTIONS**

<b>Task</b>	<b>Reference Document</b>	<b>Prerequisites and Cautions</b>
Monitoring E T LaFore personnel monitor respective systems	EG&G Health and Safety Practices Manual	Hi and lo vol air monitoring samplers will be in place and functional Anemometers will be used to measure wind speed (not to exceed 15 mph for excavation work) Personal radiation dosimeters to be worn by all construction personnel
Install treatment process unit	881 Hillside Phase 2 A Construction Specs Rocky Flats Plant Standards	Weekly work permit signed and in place Excavation permit signed and in place Health and Safety plan approved by E T LaFore and EG&G Radiation Safety training Welding permits PPE (Including hard hats steel toed boots and safety glasses with side shields) All lifting and rigging equipment to be tested per DOE/Rocky Flats plant standards
Install Concrete Pads	881 Hillside Phase 2 A Construction specs Sections 3100 Concrete Formwork 3200 Conc Reinforcement 3300 Cast in place concrete 3600 Grout 3601 Non-shrink grout Rocky Flats Plant Standards	Weather must be at least 40 F and rising Avoid concrete burns by wearing proper PPE Formwork must be approved by buyer before concrete is to be poured
Framework	881 Hillside Phase 2 A Construction specs Sections 5400 Lightgage Framing 5500 Structural and Misc Steel	Welding Permit PPE.
Overkote plus	881 Hillside Phase 2 A Construction specs Sections 9900 Painting Paint System 13	Adequate ventilation Make sure excessive dust is not in air Fire retardant coverings (unless otherwise given permission)

**OU 1 881 HILLSIDE PHASE 2A CONSTRUCTION**

**ENVIRONMENTAL RESTORATION  
Construction Work Instruction for Interim Remedial  
Action at 881 Hillside (Operable Unit No 1)  
Process Treatment System**

**Manual  
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Task	Reference Document	Prerequisites and Cautions
Double Walled Polypropylene Piping	881 Hillside Phase 2 A Construction specs Sections 15060 Piping and appurtenances Rocky Flats Plant Standards SP 211 SP 220 SP 301 SC 107	Excavation permit signed and in place for underground work. (Have shoring materials available per DOE/OSHA shoring requirements Have warning tape for buried lines available )
Electrical	881 Hillside Phase 2 A Construction specs Sections 16010 Electrical 16050 Basic Materials and Methods 16140 Wiring devices 16150 Electrical power equipment 16160 Panelboards 16402 Underground electric service 16450 Grounding 16460 Transformers 16510 Lighting fixtures Rocky Flats Plant Standards SE 103 SE 104 SE 112 SE 114 SC 107	Contractor should submit an electrical safety program Non-conducting hard-hats ladders and tools PPE Excavation permit for underground work. Have shoring materials available per DOE/OSHA shoring requirements Have warning tape for buried lines available Observe proper lockout/tagout procedures
Dry wall	881 Hillside Phase 2 A Construction specs Sections 9250 Gypsum Drywall	Proper ventilation to avoid excessive moisture Temperatures above 55 F Proper PPE.
Set pumps	881 Hillside Phase 2 A Construction specs Sections 15140 Pumps 15060 Piping 15099 Process valves 16010 16460 Electrical Rocky Flats Plant Standards for electrical and pumps	Non-conducting hard-hats ladders and tools when doing electrical work Proper PPE
Pipe insulation	881 Hillside Phase 2 A Construction specs Sections 15180 Pipe insulation Rocky Flats Plant Standards SP-401	No asbestos insulation shall be allowed for pipe insulation PPE

**OU 1 881 HILLSIDE PHASE 2A CONSTRUCTION**

**ENVIRONMENTAL RESTORATION**  
**Construction Work Instruction for Interim Remedial**  
**Action at 881 Hillside (Operable Unit No 1)**  
**Process Treatment System**

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Task	Reference Document	Prerequisites and Cautions
Instrumentation	881 Hillside Phase 2 A Construction specs Sections 17000 General instrumentation and monitoring requirements 17050 Instrumentation control & monitoring system description 17100 Primary elements 17200 Panel mounted instrumentation 17300 Panels and control room hardware 17550 Automatic telephone dialer 16010 Electrical Rocky Flats Plant Standards SE 550	Non-conducting hard-hats ladders and tools PPE
Heat tracing	881 Hillside Phase 2 A Construction specs Sections 16010 Electrical 16700 Heat tracing	Non-conducting hard-hats ladders and tools PPE
Lightning protection	881 Hillside Phase 2 A Construction specs Sections 16601 Lightning protection	PPE Excavation permit
Sound system	881 Hillside Phase 2 A Construction specs Sections 16770 Life safety disaster warning systems Rocky Flats Plant Standards SE 501 SE 701	PPE
Chlorinated PVC piping	15060 Piping and appurtenances Rocky Flats Plant Standards	PPE. Excavation Permit for underground work. Have shoring materials available per DOE/OSHA shoring requirements Have warning tape for buried lines available for installation

**OU 1 881 HILLSIDE PHASE 2A CONSTRUCTION**

**ENVIRONMENTAL RESTORATION**  
**Construction Work Instruction for Interim Remedial**  
**Action at 881 Hillside (Operable Unit No 1)**  
**Process Treatment System**

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Task	Reference Document	Prerequisites and Cautions
Set tanks	881 Hillside Phase 2 A Construction specs Sections 15150 Neutralization and chemical storage tanks 15060 Piping 15099 Process valves	PPE All lifting and rigging equipment to be tested per DOE/OSHA RFP standards
Painting	881 Hillside Phase 2 A Construction specs Sections 9900 Painting	PPE Adequate ventilation Make sure excessive dust is not in the air Fire retardant coverings (unless permission otherwise given)
Cathodic protection	881 Hillside Phase 2 A Construction specs Sections 16610 Cathodic protection	PPE.
Project closeout	881 Hillside Phase 2 A Construction specs Construction Management Package including Quality Acceptance Criteria Checklist Component Checkout and Systems Operational Test	Final Closeout checklist and punchlist items must be completed

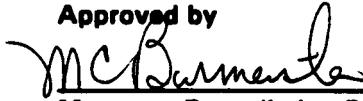
**ENVIRONMENTAL RESTORATION PROGRAM**  
**Construction Work Instruction for**  
**Interim Remedial Action at 881 Hillside**  
**(Operable Unit No 1) Process Treatment System**

**Manual**  
**Inst No**  
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**CWI 1 2 Rev 0**  
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**9/10/91**

**TITLE**  
**OU 1 881 Hillside Phase 2A Construction**  
**Effluent Tank Erection**

**Approved by**



**Manager Remediation Programs**

9/10/91

**1 0 PREREQUISITES**

**1 1**

All construction personnel must have completed the 881 Hillside PH 2A site-specific Health and Safety Plan training. In addition, all personnel must have 8 hour Radiation Safety Training and wear a personal dosimeter (Bioassay s are also required prior to construction and at the termination of the job). All training and medical requirements are to be complied with as outlined in the site-specific health and safety plan prepared by Advance Tank and Construction Co. All construction personnel that will be involved in confined space or respirator work will be required to have the appropriate training.

**1 2**

Weekly Safety and Plan-of-the-Day Meetings shall be held between the EG&G Construction Coordinator, EG&G RP Project Manager, and Advance Tank and Construction Co. Project Manager or the respective designers.

**1 3**

The following Contractor personnel are required as needed for construction and tank installation activities:

- field engineer
- health and safety representative

**OU 1 881 HILLSIDE PHASE 2A CONSTRUCTION EFFLUENT TANK ERECTION**

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<b>ENVIRONMENTAL RESTORATION PROGRAM</b>	<b>Manual</b>	<b>21100 PM-OU1 0</b>
<b>Construction Work Instruction for</b>	<b>Inst No</b>	<b>CWI 1 2 Rev 0</b>
<b>Interim Remedial Action at 881 Hillside</b>	<b>Page</b>	<b>2 of 5</b>
<b>(Operable Unit No 1) Process Treatment System</b>	<b>Effective Date</b>	<b>9/10/91</b>

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construction foreman

heavy equipment operator

laborers

- firewatch personnel
- welders

**1 4**

The following materials are required for construction and tank installation activities

electrical/instrumentation supplies

lumber

- steel plating

aggregate

berm materials

paint/protective coatings

concrete/cement

**1 5**

The following documents are required for construction and equipment installation activities

daily log in

- weekly work permit

excavation permit

contractor health and safety plan

approved contractor construction schedule

radiation safety training records

site indoctrination site specific H & S plan training records

**1 6**

The following safety equipment is required for construction and equipment installation activities

hard hats

safety shoes or protectors

- electrical safety gear (Ground Fault Interruptors)

eye/ear protection

personal protective equipment (as needed)

other physical equipment as required (ladders scaffolding harnesses etc )

welding safety equipment/firewatch personnel

**1 7**

An approved Contractor work schedule shall be itemized as a checklist for the Project Manager s and Construction Coordinator s reference This checklist shall include the work procedure description the necessary reference document and applicable prerequisite activities and safety precautions

**CONSTRUCTION WORK INSTRUCTIONS**

Task	Reference Document	Prerequisites and Cautions
Build effluent storage tank	EG&G Health and Safety Practices Manual	Weekly work permit signed and in place Excavation permit signed and in place High and low volume air samplers functional Anemometer will be used to verify that wind speed is under 15 mph Radiation dosimeters will be worn by each individual (Pre-construction and termination bioassay may be required ) Radiation Safety Training Site-Specific Training will be required for each individual Respirator and Confined Space Training will be required for this type of work PPE including safety shoes hard hats safety glasses with side shields (additional equipment will be needed for some work) Lifting and rigging equipment must be inspected before use and accompanied by annual inspection papers Material Safety Data Sheets must be present with any materials being used on the project
Excavation fill and compaction	881 Hillside Effluent Storage Tank Construction Specs Section 02200 Earthwork OSHA 29 CFR 1926P OSHA Pamphlet 2226	Excavation Permit must be signed and in place Notify buyer when utilities or other unusual situations are encountered Equipment must be inspected before work begins Work permit must be signed and in place Locator must be notified
Tank construction welding	881 Hillside Effluent Storage Tank Construction Specs Section 13208 Welded Steel Effluent Storage Tanks and Foundations	Welding permit and work permit must be signed and in place All welders must be certified All firewatch personnel must have training Documentation of training and certification must be provided to EG&G construction personnel working on the job site All welding activities require that a firewatch be present When confined space conditions exist only personnel with the proper training will be allowed to work or serve as a watch Any confined space entry requires the use of a second person to serve solely as a watch Harnesses/life line and tri-gas meter are required during confined space work

Task	Reference Document	Prerequisites and Cautions
Tank construction lifting and rigging	881 Hillside Effluent Storage Tank Construction Specs Section 13208 Welded Steel Effluent Storage Tanks and Foundations	Lifting and rigging equipment must be inspected by EG&G inspectors to verify that all necessary safety standards are met. Equipment must be accompanied with annual inspection papers. Operators must be certified and documentation of this fact provided to EG&G construction personnel.
Storage preparation	881 Hillside Effluent Storage Tank Construction Specs Section 09900 Painting	Approval of preparation material must be given by Industrial Hygiene. Certain materials may not be acceptable. If respirators are necessary, personnel must be properly trained and documentation must be provided to EG&G construction personnel. MSDS sheets must be provided for any materials used. When confined space conditions exist, only trained personnel will be allowed to work or serve as a watch. Any confined space entry requires the use of a second person to serve solely as a watch. Harnesses/life line and tri gas meter will be required for confined space entry.
Painting	881 Hillside Effluent Storage Tank Construction Specs Section 09900 Painting	MSDS sheets must be provided for any materials used. All containers must be properly labeled. Ensure adequate ventilation for painting. If respirators are necessary, personnel must be properly trained and documentation provided to EG&G construction personnel. When confined space exists, only trained personnel will be allowed to work or serve as a watch. Any confined entry requires the use of a second person to serve solely as a watch. Harnesses/life line and a tri gas meter will be required for confined space areas.

**PROJECT MANAGEMENT PLAN  
FOR THE 881 HILLSIDE IRA  
CONSTRUCTION PHASE 2A  
WATER TREATMENT FACILITY EQUIPMENT INSTALLATION  
OPERABLE UNIT NO 1**

**U S DEPARTMENT OF ENERGY  
ROCKY FLATS PLANT  
GOLDEN, COLORADO**

**ENVIRONMENTAL RESTORATION PROGRAM  
ROCKY FLATS PLANT**

**Revision 0**

**July 1991**

**REVIEWED FOR CLASSIFICATION**  
By George H. Schrock  
Date 9/13/91 ANU

ENVIRONMENTAL RESTORATION PROGRAM  
Project Management Plan

Manual  
Issue No  
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21100 PM OU01 0  
PMP 1 3 Rev 0  
1 of 18  
9/10/91

TITLE

Approved by

Project Management Plan for the 881 Hillside IRA  
Construction Phase 2A Water Treatment Facility  
Equipment Installation Operable Unit No 1

  
9/10/91  
Manager Remediation Programs

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**LIST OF ACRONYMS**

<b>CAR</b>	<b>Corrective Action Report</b>
<b>CC</b>	<b>Construction Coordinator</b>
<b>CDH</b>	<b>Colorado Department of Health</b>
<b>DOE/RFO</b>	<b>Department of Energy/Rocky Flats Office</b>
<b>EMA</b>	<b>Environmental Monitoring and Assessment</b>
<b>EPA</b>	<b>Environmental Protection Agency</b>
<b>EM</b>	<b>Environmental Management</b>
<b>FE</b>	<b>Facilities Engineering</b>
<b>FPM</b>	<b>Facilities Project Management</b>
<b>FTU</b>	<b>Field Treatment Unit</b>
<b>GFE</b>	<b>Government Furnished Equipment</b>
<b>H&amp;S</b>	<b>Health and Safety</b>
<b>HSC</b>	<b>Health and Safety Coordinator</b>
<b>IAG</b>	<b>Interagency Agreement</b>
<b>IM</b>	<b>Interim Measure</b>
<b>IRA</b>	<b>Interim Remedial Action</b>
<b>NCR</b>	<b>Nonconformance Report</b>
<b>OU 1</b>	<b>Operable Unit Number 1</b>
<b>OUM</b>	<b>Operable Unit Manager</b>
<b>PM</b>	<b>Project Manager</b>
<b>PMP</b>	<b>Project Management Plan</b>
<b>QA</b>	<b>Quality Assurance</b>
<b>QAPjP</b>	<b>Quality Assurance Project Plan</b>
<b>QAPP</b>	<b>Quality Assurance Program Plan</b>
<b>QAO</b>	<b>Quality Assurance Officer</b>
<b>RFP</b>	<b>Rocky Flats Plant</b>
<b>RP</b>	<b>Remediation Projects</b>
<b>RPT</b>	<b>Radiation Protection Technologist</b>
<b>WBS</b>	<b>Work Breakdown Structure</b>

## 1 0 PROJECT BACKGROUND AND SCOPE

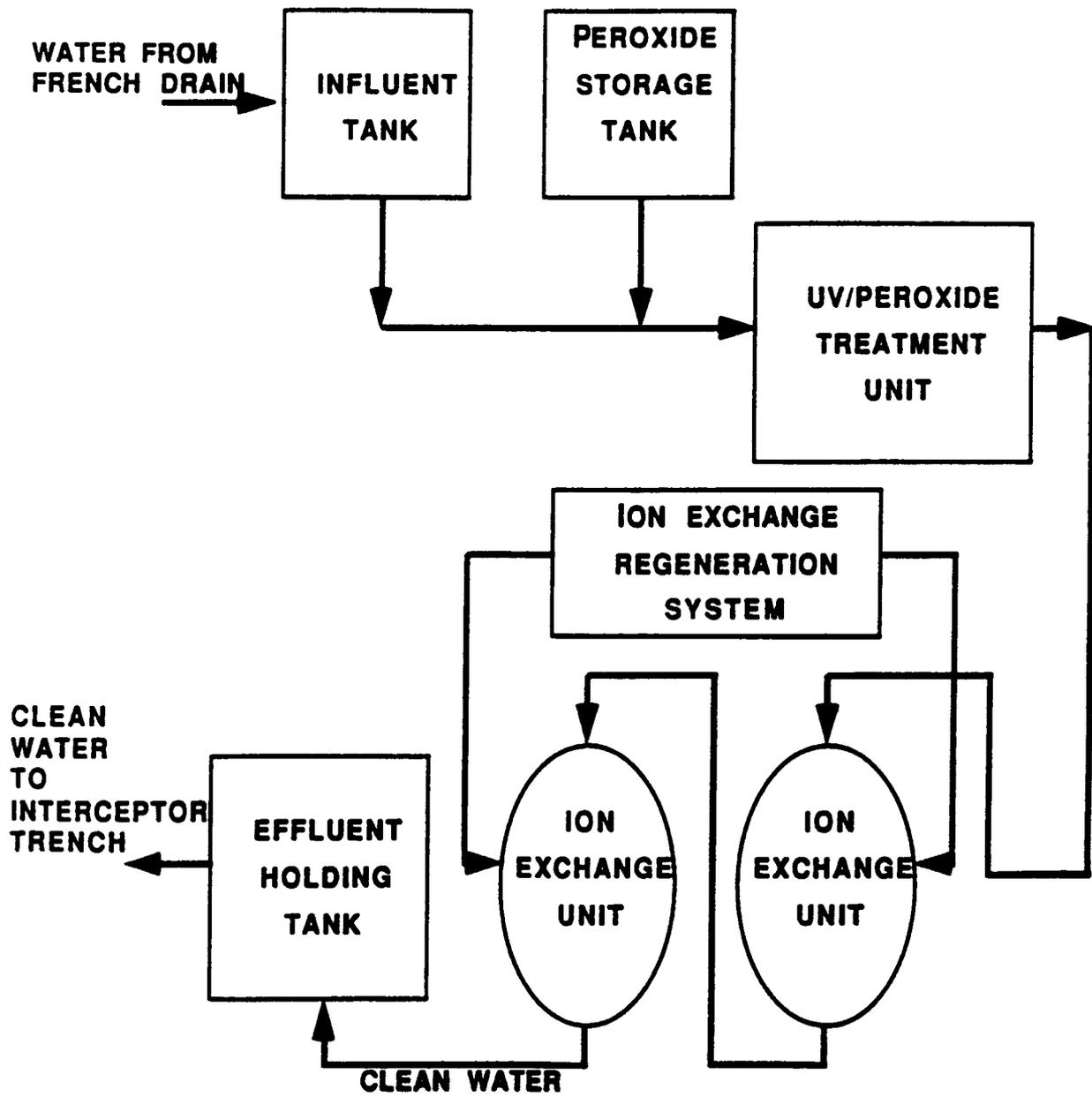
This document is the project Management Plan (PMP) for Phase 2 A Interim Remedial Action (IRA) at the 881 Hillside Area of the Rocky Flats Plant (RFP) Golden Colorado This PMP is intended to define the project scope major milestones organizational structure reporting requirements project documents and key project personnel This PMP will be revised when significant changes occur

The RFP operated by EG&G Rocky Flats Inc is a government owned contractor operated facility that began operations in 1951 The RFP is part of the U S Department of Energy s (DOE) nationwide nuclear weapons research development and production complex In the past both storage and disposal of hazardous and radioactive waste occurred at on site locations at the RFP The 881 Hillside Area has been designated Operable Unit 1 and includes twelve (12) waste sites These sites were selected for investigation because of the known or suspected soil or groundwater contamination by volatile organic compounds radioactive elements heavy metals and other inorganic compounds A remedial investigation identified contamination in alluvial groundwater at the 881 Hillside Area

DOE initiated a multi phased Interim Measures/Interim Remedial Action (IM/IRA) at the 881 Hillside Area to minimize the release of hazardous substances The IM/IRA includes design and construction of an interceptor trench to collect the contaminated groundwater and a treatment plant to remove the

Figure 1 1

Proposed Water Treatment Facility Flow Sheet



hazardous substances prior to release or reuse of the treated water Please refer to the IRA Plan for specific technical and location information The IRA required for Phase 2A includes

Installation of UV/peroxide and ion exchange water treatment equipment in building  
891 IRA water treatment facility

Installation of three treatment effluent holding tanks

## **2 0 PROJECT MILESTONES**

Completion of the major elements of work for Phase 2A OU 1 881 Hillside IRA are termed milestones Milestones serve as the basic management tool to monitor the project progress

Table 2 1 presents the milestones that correspond to defined portions of the project schedule

## **3 0 WORK BREAKDOWN STRUCTURE**

The Work Breakdown Structure (WBS) is divided into six (6) major work scope activities Project Management Engineering Construction Health and Safety Air Monitoring and Quality Assurance The key individuals contributing to the work scope activities are summarized below

### **3 1 PROJECT MANAGEMENT**

#### **3 1 1 REMEDIAL ACTION PROJECT MANAGER**

The Project Manager (PM) is assigned from the EG&G RPD and reports to the Manager of Remedial Action and the OU 1 Manager The PM is responsible for preparing project plans and procedures directing controlling and reporting project activities maintaining construction health and safety documents and communicating project requirements including any modifications to the project scope

Table 2 1  
Milestones for OU 2 Surface Water IRA

Milestone	Date
Complete UV peroxide system procurement	July 20 1990
Complete Ion exchange system design	October 5 1990
Complete effluent tank design	October 19 1990
Complete Phase 2A construction contract	April 1 1991
Begin Phase 2A construction	April 2 1991
Complete effluent storage tank procurement	May 3 1991
Complete Ion exchange system procurement	May 31 1991
Complete Phase 2A construction	August 2 1991
Begin treatment system testing	August 5 1991
Complete system testing	April 3 1992

to the support organizations Support groups include Environmental Monitoring and Assessment (EMA) Environmental/Waste Engineering (E/WPE) Project Health and Safety (H&S) Remediation Programs (RP) the contractor and its subcontractors The PM will also measure project progress monitor the project budget evaluate project performance ensure compliance to health and safety issues and serve as liaison with DOE/RFO EPA and CDH The PM has stop work authority The PM will have daily contact and interaction with the appointed DOE Site Manager in accordance with the Interagency Agreement (IAG) All work will be performed under the day to-day oversight of the EG&G PM according to the project schedule and applicable health and safety requirements

### **3 1 2 PROJECT ADMINISTRATOR**

The Project Administrator is assigned to the project and reports to the Environmental Restoration Engineering Manager The Project Administrator (PA) serves as liaison between the RP Project Manager and the Project Engineer The Project Administrator assists in the project budgeting scoping and scheduling The Project Administrator provides guidance and coordinates activities assigned to the Project Engineer and Construction Coordinator Other duties are outlined in the FE and FPM manual

### **3 2 ENGINEERING**

The Project Engineer (PE) is assigned to the project and reports to the Environmental Restoration Engineering Manager in Environmental/Waste Project Engineering The PE is responsible for procuring the services of an engineering design firm preparing engineering design plans construction specifications and as built construction drawings and overseeing the activities of the engineering design firm and any associated plans and specifications as directed by the PM Refer to the FE and PM Manual for a complete narrative of responsibilities other than those listed above

### **3 3 CONSTRUCTION**

The Construction Coordinator (CC) is assigned to the project by the Area Construction Manager and reports to the Facilities Project Administrator. Additionally, the CC takes direction from the Remedial Action Project Manager in the field as necessary when approved by the Project Administrator.

All construction activities by the Contractor and its subcontractors will be conducted in accordance with EG&G provided engineering drawings and specifications, Statements of Work, Construction Work Procedures, and the Quality Assurance Addendum for 881 Hillside Phase IIA Construction.

The CC is the single point of contact in the field for construction subcontractors. The CC coordinates and/or schedules any required utility outages, street closures, plant access requirements, technical inspections of completed work, and obtains all necessary plant construction work permits. The CC coordinates any required safety training of contractors and ensures work is conducted in accordance with all project safety regulations. The CC records all work progress, prepares punch lists, and other reports on subcontractor performance. Other duties are outlined in the FE and FPM Manual. The CC has stop work authority if project construction health and safety or quality criteria are not met.

### **3 4 HEALTH AND SAFETY**

The Health and Safety Coordinator (HSC) is assigned to the project by the Occupational Safety Manager and reports to the PM. The HSC is responsible for coordinating all health and safety related activities for the project, including securing the services of health physicists, industrial hygienists, radiation protection technologists (RPTs), and safety engineers as necessary. The HSC monitors the OU 1 Treatment Facility requirements as outlined in the Construction QAPjP work procedures and the Contractor's OU 1 Construction Phase 2A site specific Health and Safety Plan. The HSC ensures that radiologic and industrial hygiene measurements are taken and monitors construction for personnel protection and industrial safety considerations, conducts health and safety work site inspections, documents health and safety audits, and reviews all health and safety related submittals prior to issuance. The Contractor shall develop, implement, and monitor a site specific health and safety plan.

according to the outline in the Environmental Management Department s site wide health and safety plan

All EG&G employees subcontractors and their personnel who are assigned to this project are required to have all of the requisite training satisfying 29 CFR 1910 and 1926 The HSC or designees have stop work authority for all safety related criteria

### **3 5 AIR MONITORING**

The Air Programs Representative is assigned to the project by EMA (Air Programs) and reports to the PM The Air Programs group monitors meteorology and air quality for the Environmental Management (EM) Department The Air Programs Representative is responsible for operation of high volume air samplers and reporting of air monitoring data All analyzed air monitoring samples shall be reported immediately to the PM Wind conditions will be reported to the PM CC and HSC as specified in the work procedures

### **3 6 QUALITY ASSURANCE**

#### **Quality Assurance Officer**

The Quality Assurance Officer (QAO) is assigned to the project by and reports to the EM Department Director The QAO

Is responsible for approving the QAPjP and other internal project related plans procedures and instructions which affect quality

Is responsible for the review of and tracking of matters involving nonconformances and those requiring corrective action

- Is responsible for the approval of nonconformance and corrective action resolution
- Is responsible for the approval of the Contractor QA plans and procedures
- Is responsible for supporting the RP Division Quality Coordinator as appropriate

Is responsible for reporting issues involving matters adverse to quality to the EM Department Director  
Has stop work authority in matters adverse to quality

**Quality Coordinator**

The Quality Coordinator (QC) is assigned to the project by the RP Manager and reports to the RP Manager The QC

Is responsible for incorporating quality inspection and records requirements into EG&G internal OU 1 Construction Phase 2A project related plans procedures and instructions which affect quality

Is responsible for performing surveillance activities of the work being performed

Is responsible for recommending corrective action on matters requiring corrective action resolution

Is responsible for ensuring that quality records of the project are forwarded to the Records file

Is responsible for reporting issues involving matters adverse to quality to the RP Division Manager

- Is responsible for compiling a final OU 1 Construction Phase 2A Project Quality Report to be submitted to the RP Division Manager the EM Department Director the EM Department QAO and the Records file upon completion of the project  
Shall coordinate quality matters with the EM Department QAO

**4 0 PROJECT BUDGET**

The budget for the OU 1 Construction Phase 2A will be tracked by the Program Planning and Control Manager The Program Planning and Control Manager is assigned to the project by the manager of the RP Division and reports to the PM Additionally all contract and procurement budgets being

administered by E/W PE will be tracked by the Project Administrator who will coordinate with the EM program planning and control manager

## **5 0 ORGANIZATIONAL STRUCTURE AND KEY PERSONNEL**

Figure 5 1 presents the EG&G functional organizational structure and Figure 5 2 illustrates the EG&G project management structure for OU 1 Construction Phase 2A remedial action work

## **6 0 PROJECT REPORTS**

Progress and cost reporting of activities relating to the OU 1 Construction Phase 2A are the responsibility of the EG&G PM. However, each EG&G functional organization will be responsible for its own internal tracking and reporting. Reporting requirements may include

- **Construction Report including results of quality control tests and as built drawings**
- **Health and Safety Reports**
- **Quality Assurance Reports**

## **7 0 PROJECT CHANGE CONTROL**

A change control methodology will be utilized for the OU 1 Construction Phase 2A to allow the orderly handling of project changes. All design changes will be controlled by change orders handled by the PE and Project Administrator and issued by the Construction Coordinator

## **8 0 PERSONNEL CHANGES**

If key personnel changes are made, the effect of the change on the project deliverable dates and quality will be assessed by the PM. If a significant impact on the project is anticipated, the PM will notify the RP Manager so that EG&G management can take corrective action.

Figure 5 1

### Rocky Flats Organization Involved with 881 Hillside Restoration

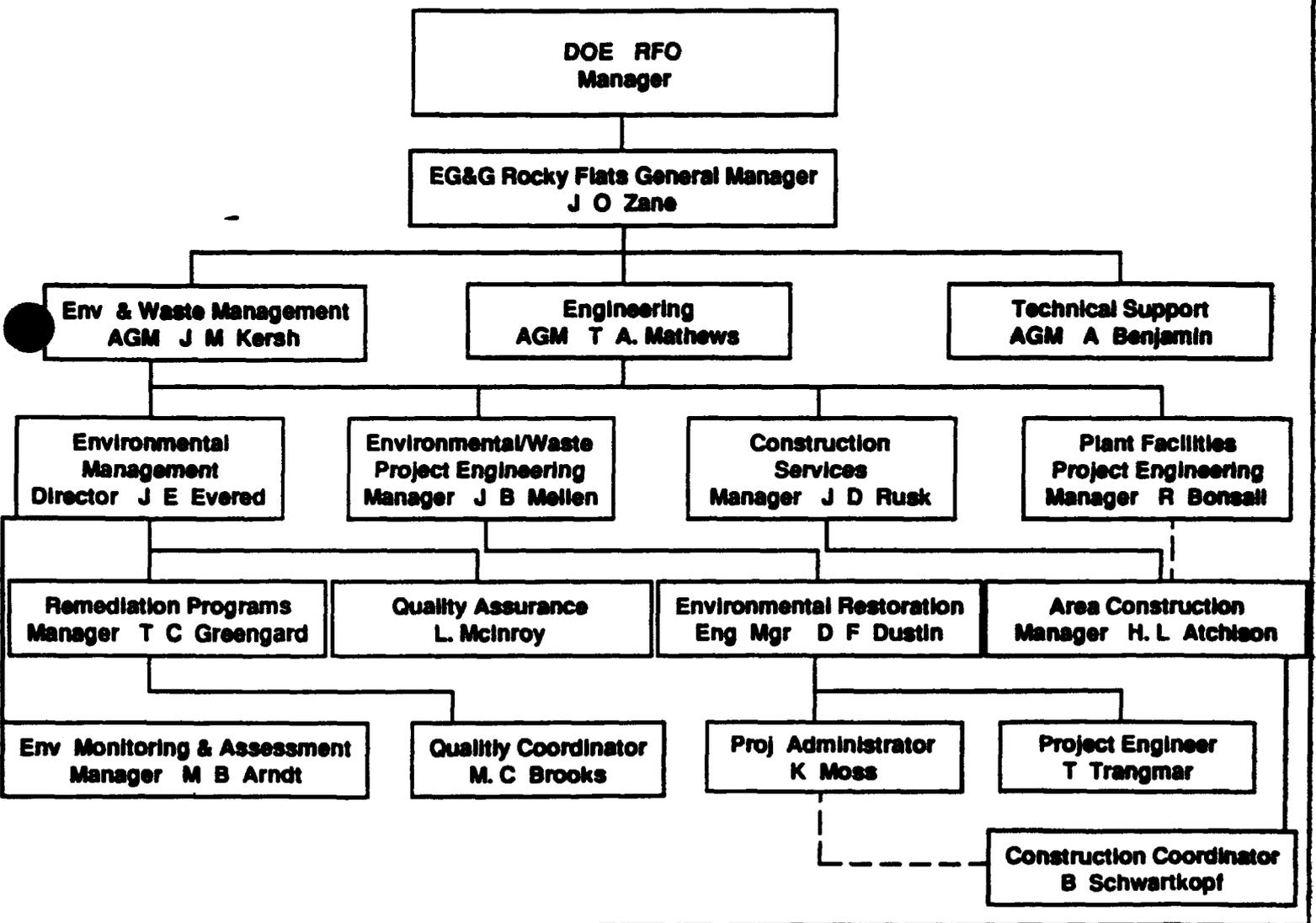
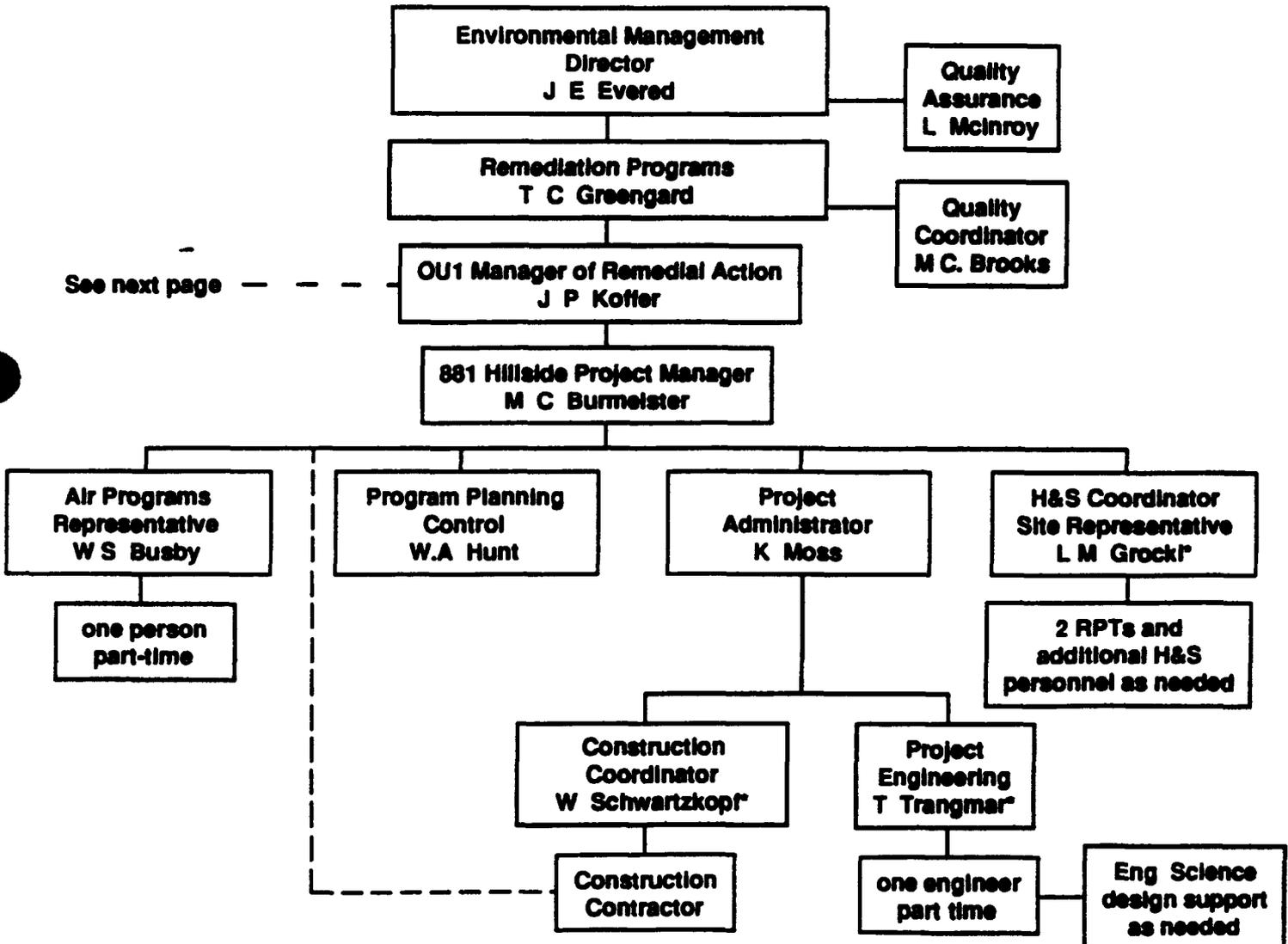


Figure 5 2

### Management System 881 Hillside IRA - Phase 2A

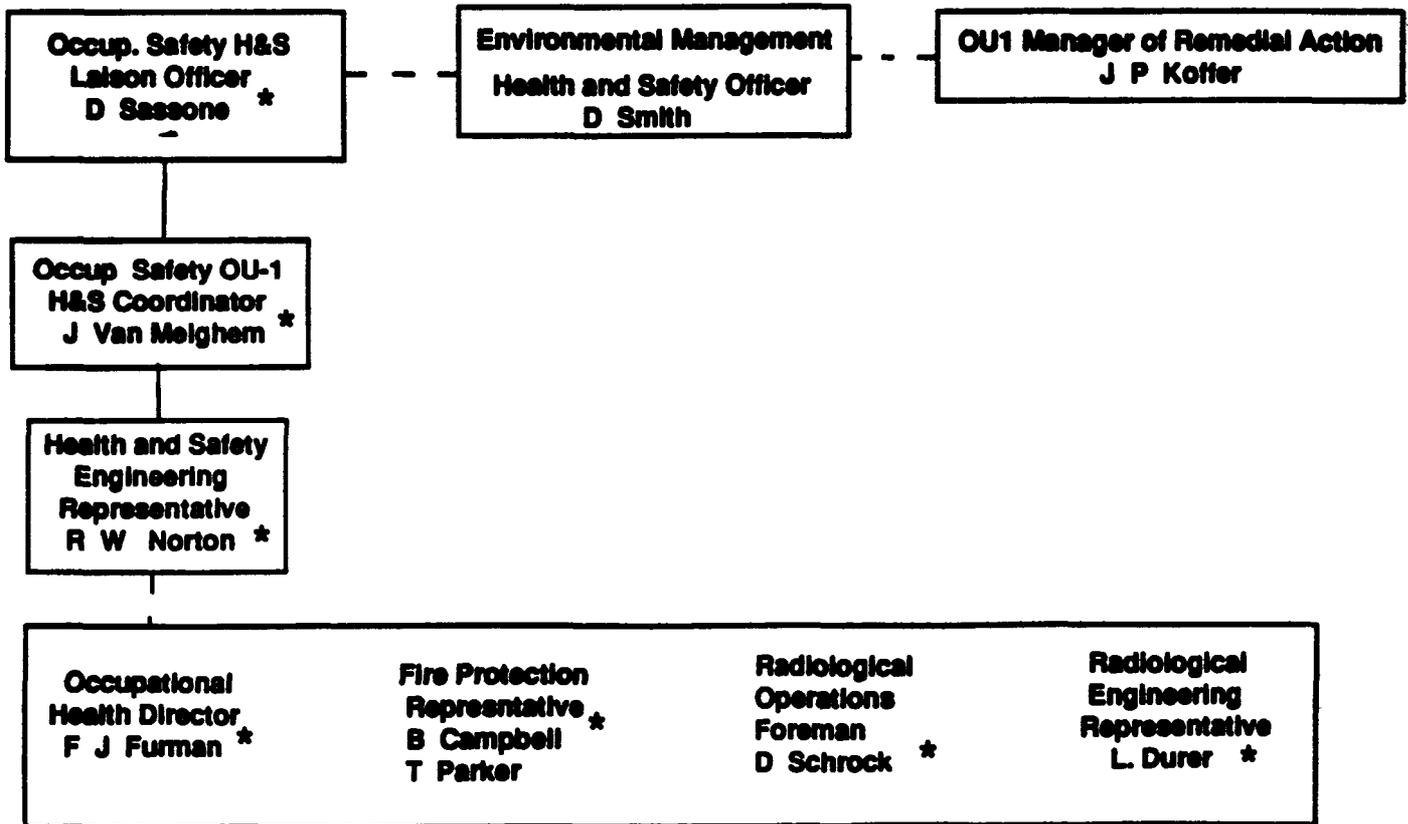


Denotes persons matrixed to this project from various other directorates

Figure 5 2 (continued)

### Management System

881 Hillside IRA Phase 2A



Denotes persons matrixed to the project from various other directorates

## **9 0 PROJECT CONTROL DOCUMENTS**

The documents that control project activities are listed below

- Interim Remedial Action Plan
- Project Management Plan
- Work Procedures for Construction
- Plans and Specifications for Equipment Installation and Site Preparation
- EM Site Wide Health and Safety Plan
- EM Standard Operating Procedures
- Quality Assurance Project Plans for Construction
- Health and Safety Plan
- Contractor s Plan
- Work Permit
- Excavation Permit
- Facilities Engineering and Project Management Manual

These documents are located in T130B Building 130 and at the job site Construction quality assurance and health and safety records also will be maintained at T130B and at the job site Records will be maintained by the respective document custodian identified in Table 9 1

Table 9 2 presents the responsible personnel and the appropriate backups of the project management structure

**Table 9 1**  
**Project Records and Custodians**

<b>Record</b>	<b>Custodian</b>
Project Specifications and Drawings Addenda and Change Orders	Todd Trangmar PE Bldg 130
Construction Coordinator s Log	W Schwartzkopf CS Construction Site
Project Manager s Log	Mark Burmeister EM Bldg T130B
QA Audits and Records	Mark Brooks EM Bldg T130B
Health and Safety Documentation (Documentation kept at site)	Mark Burmeister EM Construction Site
Site Entry Log (Log kept at site)	Mark Burmeister EM Construction Site

**Table 9 2**

**Project Management Backup Listing**

<b>Title</b>	<b>Name</b>	<b>Backup</b>
<b>Project Manager</b>	<b>Mark Burmeister ext 5744</b>	<b>Jim Koffer ext 5949</b>
<b>Project Administrator</b>	<b>Ken Moss ext 3827</b>	<b>Bill Bruninga ext 5017</b>
<b>Construction Coordinator</b>	<b>Bill Schwartzkopf Page 1228</b>	<b>Norm Pieta ext 4330</b>
<b>Project Engineer</b>	<b>Todd Trangmar ext 5048</b>	<b>Don Dustin ext</b>
<b>HS Engr Site Rep</b>	<b>Larry Grocki ext 2190</b>	<b>Larry Ross ext 2190</b>
<b>Air Programs Rep</b>	<b>Wanda Busby ext 5603</b>	<b>Mike Arndt ext 4294</b>
<b>QA Officer</b>	<b>Mark Brooks ext 3048</b>	<b>Larry McInroy ext 2941 or 279 7242</b>
<b>Security Shift Supt</b>	<b>ext 2914</b>	