

# Section 7

## PROJECT-SPECIFIC MONITORING PROGRAM

### INTRODUCTION

This section provides information about the Project-Specific Monitoring Program at the Rocky Flats Environmental Technology Site (Rocky Flats or Site). It includes a general description of monitoring procedures, a critical analysis, and recommendations for improvements to the Project-Specific Monitoring Program currently in place at Rocky Flats.

The potential radioactive and chemical contaminant mix at Rocky Flats poses a unique challenge for project activity monitoring, and presents potentially dangerous and variable sources of risk to project staff and the environment.

Project-Specific Monitoring (sometimes called Performance Monitoring) is a subset of the existing Site-wide multi-media compliance and protection environmental monitoring programs in place at Rocky Flats. Project-Specific Monitoring is to be initiated for all major Site activities that pose a potential risk to public health and the environment. This monitoring is typically performed during environmental restoration, decontamination and decommissioning (D&D), remediation, and construction projects. All proposed projects are to be integrated with the Site-wide environmental monitoring programs during initial project planning to evaluate conditions that may require specific environmental monitoring during project activities.

Project-Specific Monitoring is not specified in the Rocky Flats Integrated Monitoring Plan (IMP) for fiscal year 1997 (FY 1997). The IMP describes all of the media-specific environmental monitoring programs implemented at the Site for the specified year. Project-Specific Monitoring is an important part of the integrated monitoring process. Because of the disruptive or intrusive nature of many project activities, there is greater potential for cross-media contaminant transport during project activities.

### REGULATORY DRIVERS

Rocky Flats was placed on the National Priorities List (Superfund) in 1989 for cleanup of the Site-wide radiologic and chemical contamination that occurred during production of nuclear weapons. During subsequent remedial investigations and studies, 173 Individual Hazardous Substance Sites

(IHSSs) were identified for cleanup. IHSSs are defined as individual locations where solid wastes, pollutants, contaminants, or hazardous substances or wastes may have been disposed or released to the environment.

Much of the project work performed at Rocky Flats involves the cleanup and environmental restoration of the Site. Virtually every project has some environmental requirements. The primary regulatory drivers for cleanup and Site restoration activities are the requirements of the Superfund Act, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Superfund Amendment and Reauthorization Act (SARA), in addition to appropriate and applicable sections of the Resource Conservation and Recovery Act (RCRA) and DOE Orders.

Federal and state governments command stringent safety and environmental protection measures at Superfund sites. A summary of some of the primary regulatory drivers for cleanup or restoration activities at Rocky Flats is presented in Table I.

**TABLE I  
REGULATORY DRIVERS FOR ROCKY FLATS PROJECTS**

<b>Agency</b>	<b>Regulation</b>
DOE	DOE Order 5400.1, General Environmental Protection Program
	10 CFR 834, DOE Environmental Radiological Protection Program
	10 CFR 835, Occupational Radiation Protection (ALARA)
	10 CFR 102, DOE's NEPA implementing regulations
	DOE Order 5480.9A, Construction Project Safety and Health Management
	DOE Order 5480.1B, Environmental Safety and Health Program for Department of Energy Operations
	DOE Order 5400.2, Environmental Compliance Issue Coordination
Federal	Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
	Clean Air Act (CAA)
	Clean Water Act (CWA)
	Resource Conservation and Recovery Act (RCRA)
	Hazardous and Solid Waste Amendments of 1994 (HSWA)
	Toxic Substances Control Act (TSCA)
	Federal Facilities Compliance Agreement
	Oil Pollution Prevention Act
	Federal Insecticide, Fungicide, and Rodenticide Act
State of Colorado	Colorado Hazardous Waste Management Act (CHWA)
	Colorado Water Quality Control Commission
	Colorado Air Quality Control Commission Regulations, 5 CCR 1001
	Colorado Air Pollution Control and Prevention Act, 25 CRS, Article 7, Part 1
Health & Safety	OSHA Requirements, 29 CFR 1950-1956 - Provisions for State Safety Plans
	OSHA Requirements, 29 CFR 1910.120 - Protection of Workers in Hazardous Waste Operations
	OSHA Requirements, 29 CFR 1926.5 - Construction Standard for Hazardous Waste Operations and Emergency Response
	10 CFR 835 - Radiation Protection of Occupational Workers
Other	Industrial Area Interim Measures/Interim Remedial Action Decision Document
	Agreement in Principle
	Rocky Flats Cleanup Agreement (RFCA)

## **PROJECT-SPECIFIC MONITORING PROCEDURES AND REQUIREMENTS**

Nonhazardous, hazardous, radioactive, and mixed radioactive waste streams were generated at the Site during past operations. Over the years, air, soil, water, and buildings were contaminated from releases that occurred during routine and non-routine operations, such as onsite waste storage and disposal practices, accidents, and incidental spills. Consequently, there are numerous potential health and safety risks to Site workers, the public, and the environment during any Site project activity.

With the accelerated pace for cleanup and closure of Rocky Flats, project activities involving environmental restoration, D&D, and construction will increase at the Site. Most of these projects will require site-specific environmental monitoring to supplement the routine Site-wide multi-media monitoring activities, and to prevent endangerment to human health and the environment. Some measure of Project-Specific Monitoring is required for any major new Site activity that has the potential to impact human health and the environment. Because of the variety of different projects and the hazards they may pose, the need for, scope, and type of monitoring is determined on a case-by-case basis.

Project-Specific Monitoring is not presented as a distinct environmental monitoring program at Rocky Flats, and was not addressed in the Integrated Monitoring Plan for FY 1997. Rather, various guidance documents and checklists are used to develop the data quality objectives and monitoring specifications for Project-Specific Monitoring. Some of these guidance documents are summarized later in this section. The Site is currently developing an integrated guidance document to assist project managers in determining the needs and requirements for Project-Specific Monitoring. When completed, this document will hopefully provide a more comprehensive description of Project-Specific Monitoring implementation.

Numerous planning and implementation documents are required to perform Project-Specific Monitoring activities. These document requirements are presented below to help describe the process for Project-Specific Monitoring. Document summaries from the Mound Site (IHSS 113) Source Removal Project are presented along with the document descriptions to help demonstrate the actual implementation of Project-Specific Monitoring. Soils contaminated with chemicals and radionuclides were removed from the Mound Site, decontaminated using a thermal desorption treatment unit, then returned to the excavation area.

## Project Planning

The need for Project-Specific Monitoring is determined on a case-by-case basis during the project planning stage. Typically, a project plan or scoping document that presents a preliminary project-site evaluation is prepared. This document is submitted to Site-wide monitoring management staff to evaluate the need for additional Project-Specific Monitoring. To streamline the evaluation process, the planning document should include the project objectives, proposed activities and key project components, technical approach, a description of the specific project site background and environmental setting, a summary of the existing data, and the prevailing regulatory controls.

Depending upon the nature of the specific project, additional studies are performed during the project planning stage to further characterize the project site and collect strategic information required to define and refine the project scope and approach. Alternatively, baseline monitoring may be conducted for a period of time under a Site-wide monitoring program. This monitoring is performed far in advance of the project activity to help identify the potential contaminant pathways, and to develop control strategies to mitigate impacts on other environmental media.

For other projects, sufficient information is available from the Site-wide environmental monitoring results and data from earlier Site investigations, such as the multi-media Operable Unit Remedial Investigations and Feasibility Studies, and no pre-project activities are performed. All of the relevant project site information necessary for decision-making should be included in the project planning document.

For the Mound Site, a Pre-Remedial Investigation was conducted in August and September of 1996 to “better define the extent of volatile organic compound contamination that was identified during the previous investigations.” During this study, 16 soil boring samples were collected and analyzed at, and downgradient from, the Mound Site. Results from this investigation were compared with data from previous studies and were used to delineate the vertical and lateral extent of the contaminant source and thereby estimate the soil volumes requiring treatment or disposal.

A Mound Site Scoping Meeting was held on November 13, 1996. According to the Meeting agenda, the following items were presented:

- ⊙ A description of the Mound Site, including the location, disposal history, a summary of earlier source removal actions, and the existing project site condition;

- ⊙ A brief description of the hydrogeology in the Mound Site area;
- ⊙ A contamination summary of the analytical results from previous studies performed in the Mound Site area;
- ⊙ An overview of the project approach for the Mound Site source removal action, including the estimated volume of excavated soil, a description of the transport, treatment, and disposition of treated and untreated soil, and project closure;
- ⊙ Guidelines for excavation limits and the cleanup Action Levels during soil excavation;
- ⊙ The required performance standards for soil treatment (thermal desorption technology), determined from RCRA Treatment Standards for Hazardous Waste and the Colorado Code of Regulations (Part 6 CCR 1007.3);
- ⊙ An overview of the sampling procedures and onsite laboratory analyses;
- ⊙ A listing of the “applicable or relevant and appropriate requirements” (ARARs). This listing is a requirement under the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA or Superfund) and represents the federal and state regulations that are designed to protect the environment.

It is assumed that the information presented at the Mound Site Scoping Meeting was integrated with the Site-wide monitoring activities during project planning to evaluate and determine the additional environmental monitoring needs before, during, and after the project. As stated earlier, this is an integral part of the project planning process.

### **Proposed Action Memorandum (PAM)**

After the project scope is well defined, the Rocky Flats Cleanup Agreement requires a Proposed Action Memorandum (PAM) to be developed. Once approved, the project activity must be implemented within six months.

The Proposed Action Memorandum outlines the proposed action and applicable requirements for the specific project activity, including any additional monitoring or sampling that may be required.

It incorporates all of the decisions and data quality objectives resolved during the project planning stage. This document is the primary guidance document for implementing the project, and is used to coordinate all other necessary project elements.

The Proposed Action Plan is the framework for the proposed project activity and must receive DOE, EPA, and CDPHE approval prior to implementation of the project. It specifies the purpose and proposed objectives of the project action, details the project approach to meet the project goals, addresses the environmental impacts (pollutant and project), and summarizes the applicable or relevant and appropriate requirements (ARARs) related to the project. The Proposed Action Plan also addresses specific health and safety related issues, environmental monitoring, and provides a project implementation schedule. A revised Proposed Action Memorandum must be submitted and approved if there are any major changes to the proposed project activities.

### **Sampling and Analysis Plan**

An approved Sampling and Analysis Plan (SAP) is required for all environmental sampling conducted at Rocky Flats. If Project-Specific Monitoring includes environmental sampling, a project site Sampling and Analysis Plan is developed to document in detail the sampling and analytical methods, equipment, and techniques to be used during the project sampling activity. Depending upon the nature of the project and sampling requirements, the Sampling and Analysis Plan may be simple or complex.

The project-specific Sampling and Analysis Plan is developed during the planning process and is integrated with the Site-wide environmental monitoring programs to determine the objectives of the sampling activity, identify the analytes of interest, determine the type of sampling required, select the sampling methods, and to establish the minimum number of samples needed. Planning is required to ensure that safety rules are followed and that representative, uncontaminated samples are collected.

The project-specific Sampling and Analysis Plan outlines the sampling objectives, number and type of samples, sampling equipment, and safety procedures. At a minimum, the Sampling and Analysis Plan includes the following elements:

- ⊙ Clearly defined sampling and data quality objectives;
- ⊙ Identification of the known contaminants and location of the contaminated areas is necessary to help identify the sampling parameters. Results from prior sampling and historical data are typically reviewed to identify the contaminants of concern and the contaminated areas;
- ⊙ The sample collection procedures are clearly specified in a step-by-step fashion, including specifications for appropriate sample containers based on the required analysis and type of media sampled, sample preservation methods, sampling devices, etc.;
- ⊙ The number and location of each sample to be collected;
- ⊙ Within the context of the data quality objectives, the required analyses for each sample are detailed;
- ⊙ The Quality Assurance/Quality Control Procedures are defined to validate the field sampling techniques. Quality assurance is the total program designed to ensure the reliability of collected samples and their analytical results. Quality control is the routine application of procedures and methods such as duplicate samples, split samples, blank samples, and spike samples that may be used as appropriate. Both laboratory and sampling operations require quality assurance programs.

### **Health and Safety Plan**

A comprehensive, project-specific approved site Health and Safety Plan (HASP) is required for all Rocky Flats projects involving environmental sampling and during the performance of D&D, remediation, or environmental restoration work. This plan must be kept at the project site when engaging in operations on contaminated portions of the project area, and must be adhered to by all individuals present within the project site boundaries.

A project site-specific Health and Safety Plan is necessary to establish consistent procedures for project staff, contractors, and other outside personnel who may enter contaminated portions of the project site to perform various duties such as sampling, drilling, excavation, demolition, air monitoring, and agency inspection. The primary elements of a project site safety plan address project site control, decontamination, air monitoring, and other health and safety issues.

The project-specific Health and Safety Plan is prepared prior to commencement of the project and is developed in response to the specific dangers potentially present at the project site. All information about the hazards that may be present at the project site are incorporated into the plan.

The Health and Safety Plan is written to ensure the protection of site workers during project activities. By requiring that exposure levels remain below occupational limits, risk of exposure to the public is also reduced. Health and Safety monitoring (usually using hand-held instruments) is often used to provide real-time, onsite screening of contaminant levels or to stop work if predetermined Action Levels are exceeded.

Specific health and safety monitoring is conducted with various instruments, including thermal luminescent detector badges, personal radiation detectors and Geiger counters, adequate and proper respiratory equipment, and thorough decontamination and washing procedures to prevent prolonged contact with the skin or accidental ingestion. Existing data that defines the potential site-specific hazards will be used to the extent possible, or additional sampling will be performed if recommended by the project health and safety officer or project manager.

### **Field Implementation Plan**

A Field Implementation Plan (FIP) is the working document for project activities. It integrates all of the controlling documents, Rocky Flats policies and procedures, and the project activities described in the site-specific Proposed Action Memorandum, Sampling and Analysis Plan, and the Health and Safety Plan, as well as the applicable DOE orders and federal, state and local regulatory requirements.

The FIP is essentially a work plan for all key project activities. This document describes in detail all the necessary tasks and procedures required to complete the project activity. A typical FIP presents the following information:

**Site Layout and Development** - Provides a site location map and details the layout and boundaries of the project work area. It includes principal geographic features, such as drainage ditches and buildings, and the location of site support facilities.

The FIP for the Mound Site included narrative and maps showing the following locations:

- ⊙ Mound Site Location Map showed the geographic features, Thermal Desorption Treatment Area, contaminated and treated soil stockpiles, and project support trailers;
- ⊙ Mound Site Excavation Map depicted the excavation area, soil contamination area (exclusion zone), radiological buffer area, contamination reduction zone, assembly area, and project support zone;
- ⊙ Mound Site Contaminated Soil Feed Stockpile Map;
- ⊙ Mound Site Treatment Map.

**Project Organization and Plant Support** - Identifies project staff and their roles and responsibilities, including all subcontracting firms.

**Site Preparation** - Details all tasks and procedures necessary to prepare the excavation and treatment areas for the project activities. Mound Site preparation included the following tasks:

- ⊙ Installed a culvert to protect groundwater from surface water infiltration and prevent surface water from entering the excavation pit;
- ⊙ Constructed a storage pad to stockpile contaminated soils for treatment and installed a french drain and storm water collection system;
- ⊙ Installed holding tanks for incidental water storage.

**Health and Safety** - Specifies the parties responsible for implementing health and safety measures during project activities and references the Site-Specific Health and Safety Plan (HASp) for the Mound Site. Identifies the personal protection equipment to be used during project work and summarizes the procedures, health and safety monitoring, and project activities within exclusion zone, contamination reduction zone, and project support zone. Lists all of the construction and support equipment used for the project.

**Source Removal Action** - Describes project activities during the excavation, transport, and treatment of contaminated soil and subsequent reclamation of the excavated pit and treatment area. Excavation procedures included radiological and organic compound screening of excavated soils, management of the contaminated soil feed stockpile, management of incidental waters, traffic control during soil transport, and excavation boundary sampling and analyses. Soil treatment procedures included radiological air sampling, process verification sampling, and stack monitoring during treatment.

**Spill Response and Containment Plan** - Presents the required Site procedures for Emergency Response and Spill Procedure and Occurrence Reporting to contain spills of contaminated soil or hazardous material. Details response, monitoring, notification, and reporting process. Specifies visual survey and soil sampling prior to project closure.

**Waste Management** - Identifies the anticipated waste streams generated during project activities and describes the required monitoring, management and disposition of each stream. Primary waste streams included excavation and miscellaneous treatment debris, aqueous condensate from the thermal desorption treatment unit, contaminated personal protection clothing and equipment, and decontamination waters.

**Decontamination** - Summarizes the decontamination procedures for project staff and equipment. References the Mound Site Health and Safety Plan for detailed procedures.

Appendices attached to the FIP included guidance documents and procedures for Conduct of Operations during the Mound Site Source Removal Project, forms and checklists to support the project, dust suppression procedures, and project site reclamation procedures.

### **Project Completion Report**

Following project completion, a closure report is issued and distributed to the stakeholders. The purpose of this report is to highlight the relevant project activities, summarize the project results, and demonstrate compliance with RFCA requirements if applicable. Deviations from the authorized proposed activities are reported and rationalized and a summary of the sampling and analytical results is presented.

### **ROCKY FLATS PROJECT-SPECIFIC GUIDANCE DOCUMENTS**

Project-Specific Monitoring is complex because it must ensure that the intended action or activity is performed in compliance with all environmental laws and other applicable requirements for all environmental media. A number of existing guidance documents and checklists were developed from regulatory documents to address Project-Specific Monitoring at Rocky Flats. These guidance document/checklists are used to help determine the requirements for the project activity, including any additional environmental monitoring, and to set up the project.

The following section summarizes the guidance documents currently used to define the Project-Specific Monitoring.

### **NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) CHECK LIST**

At a minimum, all projects at Rocky Flats require a National Environmental Policy Act (NEPA) review. Monitoring is required for any action or activity that has potential impact on the environment.

Environmental Restoration activities must comply with the procedures listed in the *Rocky Flats Environmental Technology Site Implementation of NEPA Documentation*. These procedures describe the process for preparing the necessary project documentation in accordance with the following regulatory guidelines:

- ⊙ The National Environmental Policy Act (NEPA);
- ⊙ DOE NEPA Implementing Regulations and Orders;
- ⊙ Rocky Flats Policy 9-12, National Environmental Policy Act.

These procedures apply to all organizations at Rocky Flats. The NEPA compliance methodologies described in these procedures are designed to recognize and initiate all activities required for compliance with environmental laws, by requiring a process that notifies the Site's media-specific compliance specialists about each project during the course of the NEPA review.

The NEPA Documentation includes the key components for meeting the requirements of Project-Specific Monitoring. The documentation components described in this guidance document include the following:

- ⊙ Responsibilities of the NEPA and Project Management groups;
- ⊙ Requirements for the early consideration of environmental factors during the planning process for all projects;
- ⊙ Instructions for properly completing the NEPA process;
- ⊙ References and appendices, including a documentation process, an environmental checklist, a flow chart for the process, and a list of review initiators.

The NEPA process is well described and, if properly followed, should ensure that all project actions or activities that have potential impact on the environment are addressed using either existing or additional (project-specific) environmental monitoring. Existing data will be used to the extent possible or additional sampling will be performed if recommended by the Site's media specific expert checklist reviewer or project manager.

For projects that are not driven by either CERCLA or RCRA but still could have an environmental impact, NEPA becomes the principal environmental directive.

Remediation activities required under RFCA are exempt from NEPA documentation requirements if EPA and CDPHE approve the project activities prior to commencement of the work. As an example, DOE, EPA, and CDPHE must approve the Proposed Action Memorandum prior to project commencement. This document and other project plans that describe the project actions must still be reviewed by the NEPA group for inclusion of appropriate NEPA values before they are considered final. Although some of these projects may be exempt from NEPA documentation requirements, the Health and Safety Plan components, as required by OSHA, are not subject to omission. These considerations embody the overall spirit of a plan that has at its heart the protection of the workers, the surrounding communities, and the general environment.

Other projects not involving remediation activities must also comply with NEPA document requirements. This means that general construction projects at the Site are subject to the same requirements as the cleanup projects. Different types of projects require different levels of monitoring to address protection of project workers, offsite populations, and the environment, and should complement the Site-wide monitoring.

## **PLAN FOR PREVENTION OF CONTAMINANT DISPERSION**

*A Plan for Prevention of Contaminant Dispersion* (DOE, 1991) was prepared to provide a management tool to prevent airborne transport of hazardous or dangerous materials. It was a result of the Interagency Agreement and designed to ensure thorough investigations and appropriate response actions to environmental impacts, and to ensure compliance with RCRA and the Colorado Hazardous Waste Act. Preventive measures and monitoring requirements, based on the evaluation of the potential risk of windblown contaminants from activities at the Site, are presented in this plan.

The plan is applicable to intrusive activities (land or surface disturbances), such as the source removal activities at the T-3 and T-4 Trenches or at the Mound Site, conducted as part of a RCRA Facility Investigation/Remedial Investigation (RFI/RI) or an Interim Measures/Interim Remedial Action (IM/IRA). The document presents criteria for establishing soil threshold levels, assessment and selection of preventive measures, and methodologies for preparing a monitoring plan and for developing an implementation plan.

The *Plan for Prevention of Contaminant Dispersion* is designed to ensure that appropriate procedures and standards are met, establish monitoring programs to verify the effectiveness of implementation procedures, establish decision procedures, and specify actions based on those decisions. Components of the document address emission scenarios, preventive measures, monitoring requirements (including real-time measurement equipment), work start and stop criteria, and a plan implementation process.

The document includes specific selections of methodologies, controls, and the requisite monitoring equipment necessary for each of the environmental media detailed for the Site. Some examples of the methodologies and controls are presented below:

- ⊙ Control of fugitive dust emissions by wetting the soil;
- ⊙ Use of a berm to trap surface water runoff thereby preventing release to the general environment;
- ⊙ Use of groundwater wells to keep the water table below the bottom of an excavation;
- ⊙ Use of portable monitoring stations to measure the levels of air emissions of particles and volatile organic compounds.

The *Plan for Prevention of Contaminant Dispersion* also presents criteria for designating intrusive activities as either Stage 1 or Stage 2. Stage 1 (low risk) control measures include establishing wind speed thresholds for work conditions, water spray soil applications, waste pile covering, and general administrative control measures, such as vehicular speed limitations. Activities conducted under Stage 2 (high risk) are performed at locations where intrusive activities require additional preventive measures and air sampling for wind borne contaminants. Site-specific implementation plans and monitoring programs are developed to verify proper execution and effectiveness of applied control measures.

Risk-based soil thresholds for contaminants are derived as a function of the activity to be conducted and the distance to the project site boundary. The application of risk-based soil thresholds for specific contaminants is based on public protection criteria. However, implementation of required control measures and air monitoring is also expected to ensure worker protection. Protection of onsite populations, such as plantsite personnel and remediation workers, is addressed under the Health and Safety Program.

### **INTERIM MEASURES/INTERIM REMEDIAL ACTION/DECISION DOCUMENT**

An Interim Measures/Interim Remedial Action Decision Document (IM/IRA/DD) for the Rocky Flats Industrial Area (DOE 1994) was prepared to reflect the change in mission from nuclear weapons production to environmental remediation and restoration. The intent of this document was to re-evaluate the various environmental monitoring programs in place at the Site and begin the modification process of developing monitoring programs that address the future requirements for the new mission. This approach was intended to facilitate current as well as future environmental monitoring programs for all environmental media at Rocky Flats.

The IM/IRA/DD document was designed to protect the public and the environment, using multi-media environmental monitoring during all remediation activities occurring within the Industrial Area. Numerous suggestions for the enhancement for groundwater, surface water, incidental water, and air monitoring programs are presented in the IM/IRA/DD document.

These monitoring programs, in conjunction with emergency response procedures, work control procedures, potential release mitigation procedures, and employee awareness, are expected to provide a comprehensive, interim protection system for the Industrial Area. This integrated system was designed to protect the public and the environment throughout transition and decontamination and decommissioning (D&D) activities. D&D is generally defined as deactivation activities and primarily entails the decontamination, dismantling, and removal or entombment of former nuclear production facility buildings at Rocky Flats.

All D&D activities fall under the IM/IRA/DD. D&D projects are treated like all other cleanup projects. As for projects that could potentially impact the environment, decommissioning projects that are addressed under the *Decommissioning Program Plan* require a NEPA environmental checklist review and concurrence. Media-specific experts have the opportunity to view the prepared decision document for the specific project, including the required monitoring, and determine whether

to use existing monitoring capabilities or require additional monitoring. The need for, and types of, Project-Specific monitoring (including monitoring equipment requirements) for D&D projects are determined on a case-by-case basis and are included in the decision document for the specific project under consideration.

### **OVERVIEW TO QUALITY, ENVIRONMENTAL, DAVIS-BACON, SECURITY, AND SAFETY AND HEALTH REQUIREMENTS FOR PROJECT MANAGERS**

This document was prepared to assist Site Project Managers in identifying, documenting, and fulfilling project requirements that fall outside of the traditional Construction Project Management System. (Davis-Bacon requirements include the application of labor laws to government acquisitions. Security involves classified information and restricted access to classified materials and locations at Rocky Flats.) The documented procedures are applicable to all contractor and subcontractor personnel. The procedures cover all activities that will develop new facilities or modify the technical basis configuration of existing facilities, systems, processes, or Site lands. It is intended to help the project managers for all types of projects to comply with environmental (and other) requirements.

This guidance document contains sections describing responsibilities, instructions, records and documentation requirements, references, and appendices, including environmental topics, screening, a NEPA checklist, a project security checklist, and required documentation (such as Project Safety & Health Management). Construction projects must also comply with all “Overview to Quality, Environmental, Davis-Bacon, Security, and Safety and Health Requirements for Project Managers” requirements.

The guidance reiterates the national commitment of the DOE for the implementation of directives for Environmental Safety and Health protection objectives. It provides a listing of the primary DOE Orders applicable to environmental compliance and protection and states that proper and adequate environmental planning is critical to the project management process. However, the document does not indicate how it relates to the overall management strategy for Rocky Flats that should have been expressed in a governing document before work began at the Site.

## **ROCKY FLATS CLEANUP AGREEMENT IMPLEMENTATION GUIDANCE DOCUMENT**

A *Rocky Flats Cleanup Agreement Implementation Guidance Document* is currently under preparation. Reportedly, this new guidance document is intended to provide guidelines for determining the need and requirements for Project-Specific performance monitoring for all planned cleanup activities at Rocky Flats. It will represent the overall Site guidance document for the completion of the work plans required by federal regulations for all individual environmental project plans.

### **EMERGENCY RESPONSE AT ROCKY FLATS**

Emergencies at hazardous waste sites are more likely to occur and are more difficult to manage than those at conventional industrial or construction sites. Well-defined procedures and well-trained personnel ensure that such emergencies are supervised correctly. Emergency response activities are addressed by Site personnel and in documentation separate from environmental monitoring at Rocky Flats. Emergency response monitoring needs to be planned for, so that it can be properly performed when it is needed. It should be noted that most monitoring activities related to emergencies are conducted after the immediate emergency has been brought under control.

Decontamination procedures are carried out to the fullest extent practicable, but they are not permitted to interfere with the safe egress of all personnel from the immediate area of danger. A properly designed program will also include provisions to notify authorities in the area and the public if an emergency threatens the health or safety of a community near the Site. The program plan will also include provisions for investigation and reporting of circumstances and responses to determine the efficacy of project policies and procedures and for tools in the safety training of the Site workers.

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## **CRITICAL ANALYSIS AND RECOMMENDED IMPROVEMENTS**

### **ANALYSIS AND RECOMMENDATIONS**

Rocky Flats has a duty to the public and the environment to reduce the risk of exposure from the extensive radiological and chemical contamination at the Site. Rocky Flats' mission to cleanup, decontaminate and decommission the Site's facilities drives the majority of project activities. Cleanup and remediation activities are by necessity intrusive and disturb the contaminant source, thereby increasing the potential for contaminants to mobilize, disperse, and migrate from their source to the environment.

The Project-Specific Monitoring Program is a critical component of the environmental protection program at the Site. Stringent environmental controls and monitoring must be carefully planned and strictly implemented for all project activities in order to minimize contaminant impacts to the project site workers, and to safeguard the public and the environment.

Unlike typical industrial waste sites, the ubiquitous mix of radioactive and hazardous wastes in the Rocky Flats' environs poses greater risks if released to the environment. Well-coordinated, integrated project planning is of primary importance to minimize these risks.

The decision process, requirements, and implementation of Project-Specific Monitoring at Rocky Flats is poorly described and inadequately integrated. Various guidance documents and checklists are provided to assist project managers through the identification, preparation, review, and approval process for developing projects to comply with prevailing regulatory requirements. Consequently, project managers must wade through these scattered documents for every planned project and attempt to coordinate specific project needs with an uncoordinated set of generalized, possibly outdated guidance documents. This is an inefficient, time-consuming project planning process.

The different guidance documents are well-written, but are cumbersome, repetitious in content, and lack coordination. Some of these guidance documents were developed several years ago and may not sufficiently address the different environmental and protection measures needed during current cleanup, decontamination and decommissioning activities. There is no indication that changes in successor documents supersede the older, previously approved guidance documents. Moreover, the stand-alone guidance document/check-list process is not integrated with the Site-wide environmental monitoring programs.

Rocky Flats has been described by some as “an accident waiting to happen.” The current Project-Specific Monitoring planning process lends credence to this perception. Although many appropriate project planning and implementation documents are developed, reviewed, and approved prior to project commencement, there is significant potential for omissions and errors early in the project planning process using the Site’s arbitrary guidance document/checklist approach. These exclusions might be overlooked during subsequent reviews and may result in unanticipated problems and uncontrolled contaminant releases during project inception.

For example, ambient air sampling for volatile organic compounds was not proposed or performed to support the source removal activities at the Mound Site, even though the reason for the cleanup was to remediate soils contaminated with these compounds. Volatile organic compounds are readily released to the environment when disturbed, such as during soil excavation, handling and dumping, and while exposed to air during stockpiling. This omission should not have occurred.

Project-Specific Monitoring and the associated project planning process is too important for the health and safety of the public and environment to be left to an arbitrary guidance review process. With the inherent uncertainties for any cleanup or remediation project, a definitive program with numerous checks and balances needs to be firmly in place to plan for and mitigate unanticipated events during project activities.

Failures in the current guidance document process for planning and implementing projects are evidenced by some of the violation notices the Site has received. For example, the Site received a Preliminary Notice of Violation letter, (DOE, June 6, 1997) for two cases.

Both violations were discovered during the Site’s self-assessment process and represented infractions of applicable nuclear safety requirements. In both cases, the existing nuclear safety safeguards were not sufficient. Despite the availability of guidance documents for meeting federal requirements, proper compliance with these requirements was not implemented. More recently, radioactively-contaminated soils previously determined “clean” may have been deposited in the Mound Site excavation pit due to a calculation error. Confirmatory analyses are currently being performed.

Although these violations and errors did not pose an imminent or immediate public health hazard, any violation that suggests there is a lack of proper control in administering a cleanup project is unacceptable.

An inherent assumption in many cleanup projects is that uncertainties can be reduced early in the life of the project because of the time and resources invested in investigations and studies. However, significant technical uncertainties exist in all of the key components of cleanup projects.

A so-called “observational approach” is one method that has been used to address the uncertainties inherent in cleanup projects. The process relies on a flexible project design that can be modified during project implementation to meet whatever conditions are found. It is far safer to accept uncertainty and plan for it than to assume that “state-of-the-art” technology will provide accurate predictions and all the necessary answers.

To determine the most probable project site conditions and account for reasonable deviations, the following activities should be incorporated into the project:

- ⊙ Conduct planning sessions to sort through all issues, review existing data, and screen potential project site conditions;
- ⊙ Gather information and refine knowledge of the nature and extent of contamination and general project site conditions. Identify the probable conditions, including associated risk, set monitoring requirements, and identify the reasonable deviations from the expected project site condition;
- ⊙ Establish the most likely project site conditions and the reasonable deviations. Through this identification, it is important to design the base action for project implementation and a contingent action;
- ⊙ Produce a detailed project design that is based on the most probable project site conditions plus designs to cover the contingencies for the reasonable deviations identified earlier in the process;
- ⊙ Select items to observe during implementation of the cleanup project to detect the deviations from the expected project site conditions. Key indications (chemical, physical, and others) can be selected for observation during the cleanup activity for both expected and deviant conditions;
- ⊙ Implement the project. Measure the selected parameters during the cleanup activity and make necessary modifications if the deviation occurs. The modifications to the project activity should be based on pre-planned responses to deviant project site conditions.

In using the observational approach, the Site would recognize that complete characterization of the project site is not possible and therefore the uncertainties must be managed. The process provides a framework for conceptualizing general response actions for expected site conditions as well as the uncertainties. This planning for the uncertainties should be incorporated into the project planning process at the Site.

As discussed earlier, the Site is currently developing another guidance document called the *Rocky Flats Cleanup Agreement Implementation Guidance Document*, which will reportedly provide comprehensive guidance for planning project activities to comply with the regulatory requirements. This guidance document needs to be completed immediately and extensively peer reviewed before any additional project activities are undertaken.

The Project-Specific Monitoring guidelines document should present a clearly defined process for determining the need for and type of monitoring required for all Site-wide project classes on a project-specific basis. It should also identify a reporting process so the public is notified when a specific project will occur, what the objectives are, and the final outcome of the activity.

The Project-Specific Monitoring process should also be addressed in the annual Integrated Monitoring Plan and reconciled with the other Site-wide environmental monitoring programs. The data quality objectives for determining the additional project monitoring needs must be explicitly identified, as well as an appropriate mechanism for early and ongoing consultation with media-specific specialists during the planning process.

In addition, the Site should consider forming a Project-Specific Advisory Board to peer review various stages of the project planning process. The Advisory Board should include the environmental media specialists as well as representatives from the regulatory agencies and the public. Early consultation with the Advisory Board would provide an opportunity for stakeholders to review the project implementation plans and allows time to incorporate their concerns into the data quality objective and project planning process. The project-specific plans would be reviewed carefully by all Board members to learn about and respond to any potential risks or hazards to the public and environment during project activities.

Because of the unique nature of the Site's potential contaminants, the lack of clearly defined procedures for Project-Specific Monitoring is a major deficiency and suggests the Site's commitment to environmental protection is in default. The Site must be diligently proactive in planning and implementing all the appropriate measures necessary to avoid that "accident waiting to happen."