

EXECUTIVE SUMMARY

This document presents the work plan for the Phase III RCRA Facility Investigation/CERCLA Remedial Investigation (RFI/RI) of the 881 Hillside Area (Operable Unit No. 1) at the Rocky Flats Plant. After an introduction to the site in Section 1.0, the work plan summarizes results of the Phase I and Phase II RIs (Rockwell International, 1987a and 1988a) in Section 2. Section 3 defines Phase III RFI/RI data quality objectives and data needs based on the conclusions from Phases I and II, and Section 4 specifies RFI/RI tasks including a baseline risk assessment and feasibility study. Section 5 is the Field Sampling Plan for soils and water which is designed to meet the RFI/RI objectives. Section 6 presents plans for an environmental evaluation in the 881 Hillside Area.

Sites at the 881 Hillside Area were selected as High Priority Sites as a result of Plant-wide characterization activities which showed elevated concentrations of volatile organic compounds in ground water upgradient from Woman Creek (U.S. DOE, 1987a). The Phase I and Phase II RIs indicated that the unconfined ground-water flow system is contaminated. The most pronounced organic contamination is in the eastern portion of the 881 Hillside Area, with tetrachloroethene, trichloroethene, 1,1-dichloroethene, 1,1-dichloroethane, 1,1,1-trichloroethane, 1,1,2-trichloroethane, and carbon tetrachloride reaching several thousand micrograms per liter in many samples. Organic contamination in the western portion of the 881 Hillside area occurs at much lower concentrations. Concentrations of metals and inorganics above estimated background levels are considered to represent possible contamination for the purposes of planning the Phase III RFI/RI. The eastern portion of the study area showed the highest concentrations of inorganic constituents, with total dissolved solids of approximately 2000 milligrams per liter, and numerous occurrences of nickel, strontium, selenium, zinc, copper, and uranium above background in most wells. Other metals exceeded background less frequently and by a smaller margin in this area and elsewhere at Operable Unit No. 1.

Phase I and Phase II soils investigations indicated tetrachloroethene, trichloroethene, and 1,1,1-trichloroethane contamination in some soil samples. Prevalent occurrences of methylene chloride, acetone, and phthalates in soil samples have raised questions of laboratory contamination which prevent definitive conclusions about the actual presence of these contaminants in soils. Plutonium and americium were detected above background in soil samples that include the ground surface. Windblown radionuclide-bearing dust from

the 903 Pad Area is the suspected source of these radionuclides. Plans for additional characterization of waste sources and soils are described herein.

Tetrachloroethene and trichloroethene are the principal volatile organic compounds which have been detected in surface water samples from a few stations, although the concentrations and frequency of occurrence are low. Low concentrations of methylene chloride, acetone, and toluene in the surface water occur at many sampling stations. The furthest downgradient surface water samples do not show organic contamination. Numerous metals and other inorganic compounds were occasionally above background. Gross alpha, gross beta, uranium, and plutonium exceeded background in many of the samples.

Proposed sampling and analysis for the RFI/RI, presented in Section 5, will support source characterization and better definition of the nature and extent of soil, ground-water, and surface water contamination. Approximately fifty boreholes will be drilled and nineteen monitor wells will be installed for the purposes of source characterization. An additional sixteen monitoring wells will be installed to determine the nature and extent of contamination, and to support hydraulic testing for better characterization and prediction of contaminant movement.

Based on the Phase I and II results, an interim measures/interim remedial action (IM/IRA) is being implemented at OU 1. The IM/IRA focuses on the collection of contaminated alluvial ground water, and treatment of the ground water to remove organic and inorganic contaminants.

Surface soil scrapes, and soil samples for vertical profile analysis will be collected to better characterize the distribution of radionuclides, and to complement an investigation of surface soils over an 800 acre area which is planned for Operable Unit No. 2, east of the 881 Hillside Area. Three new sediment sampling stations will be established to enable characterization of sediments that are more directly associated with the 881 Hillside than sediment samples analyzed in previous investigations.

A baseline risk assessment plan is provided in Sections 4.1.6 and 6. The baseline risk assessment includes both a public health evaluation and environmental evaluation. Section 4.1.6 focuses on the public health evaluation including contaminant identification, exposure assessment, toxicity assessment, and risk

characterization. This section also briefly discusses the environmental evaluation; however, the details are provided in Section 6, the Environmental Evaluation Plan. This plan was prepared to provide a framework for addressing environmental effects as a result of exposure to contaminants from the 881 Hillside Area. The plan presents a three-stage approach for conducting the environmental evaluation. The sequential approach was designed to ensure that all procedures to be performed are appropriate, necessary, and sufficient to adequately characterize the nature and extent of the environmental impacts resulting from contaminants at 881 Hillside.