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December 5, 1990

Roy Romer
Governor

Thomas M. Vernon M.D.
Executive Director

Mr. Robert M Nelson, Jr., Manager
Department of Energy
Rocky Flats Area Office
P.O. Box 928
Golden, CO 80402-0928

Mr. Phil Warner, Rocky Flats Plant Manager
EG&G, Rocky Flats Plant
P.O. Box 464
Golden, CO 80402-0464

RE: COMMENTS FINAL PHASE III RFI/RI WORKPLAN ROCKY FLATS PLANT 881
HILLSIDE AREA OCTOBER 1990 AND QUALITY ASSURANCE ADDENDUM FOR 881
HILLSIDE PHASE III RFI/RI.

Dear Messrs. Nelson and Warner,

The Colorado Department of Health, Hazardous Materials Waste Management Division, ("The Division"), has reviewed the above documents and grants conditional approval based on the following conditions.

First, the entire Quality Assurance Addendum must be reworked to include a project plan for each of the nine activities scheduled to take place during Phase III of the RFI/RI for 881 Hillside.

Second, the Environmental Evaluation Plan needs to be redesigned using as a starting point available studies already completed, especially from other DOE facilities, for example fish studies in the river around Oak Ridge where plutonium is known to have been 'rivered'. The revised environmental evaluation plan must address all the divisions' comments in Section 6.

ADMIN RECORD

A-0001-000124

Third, technologies identified for treatability studies must include at a minimum, an assessment of innovative technologies currently under review and study by the office of technology assessment at the DOE, especially technologies which have been assessed by EG&G and/or DOE at Rocky Flats. No innovative technologies are currently included in the Draft Treatability Study

If you have any questions regarding our comments, please call Noreen Matsuura at (303) 331-4920.

Sincerely,

A handwritten signature in cursive script that reads "Gary W. Baughman". The signature is written in black ink and is positioned below the word "Sincerely,".

Gary W. Baughman
Unit Leader
Hazardous Waste Facilities
Hazardous Materials and Waste Management Division

cc: Patricia Corbetta, EPA
Martin Hestmark, EPA
Scott Grace, DOE
Tom Olsen, DOE
Tom Greengard, EG&G
Teresa Hampton, AGO
Debbie Mauer, Program Unit

GB/NM/nm enc

COLORADO DEPARTMENT OF HEALTH
HAZARDOUS MATERIALS WASTE MANAGEMENT DIVISION
FINAL PHASE III RFI/RI WORKPLAN
881 HILLSIDE AREA
COMMENTS

Executive Summary

The recurring problem of laboratory contamination of soil samples with methylene chloride, acetone and phthalates needs to be solved. If a different laboratory procedure will correct the problem, submit an addendum to the SOP. Are all of the samples in an identical test run contaminated with acetone, methylene chloride and phthalates or just one and a blank?

Section 2.1 881 Hillside Area Previous Investigations

Where are the results of the geophysical surveys using electromagnetometry, resistivity, magnetometry and metal detection?

Section 2.2.1.1 Surficial Geology

Does the term "artificial fill" refer to fill brought into the plant from an off-site area or is it anthropogenic, manmade material?

Section 2.2.1.1. Unconfined Flow System (Ground-water Flow Rates) pg 2-16

The ground-water velocity measured using actual contaminant movement is 11-13 ft/yr and the calculated ground-water velocity based on geometric mean hydraulic conductivity and assumed effective porosity is between 1035-3100 ft/yr. What does this large difference in ground-water velocity suggest about both techniques used to measure ground-water velocity? What ground-water velocity should be used for design and placement of collection systems?

Section 2.3.3.2 Inorganics (pg 2-62)

Typographical error in "occurrences of tritium above background in wells 52-87 and 69-87." Well 69-87 should be 69-86.

Section 2.3 5 Sediments (pg 2-69)

A sediment sample map should be provided to aid review of the laboratory sediment findings.

Table 2-13 Remedial Technology Data Requirements (pg 2-83)

At the recent conference of "Remediation of Radioactive/Mixed Waste Sites" in Scottsdale, AZ, Dr. Gloria Patton, and Dr. James Epler with the USDOE Office of Technology Development, Office of Environmental Restoration and Waste Management presented several innovative technologies dealing with radioactive/mixed waste which are under study for use at various DOE facilities. One of the technologies which has been studied at Rocky Flats by Jack Blakslee, involves ferrate ions (Fe^{+6}), to complex radionuclides. The trade name of this process is TRU-CLEAR. All of the innovative technologies dealing with radioactive/mixed waste currently under review by DOE should be included in the remedial technology assessment.

Table 3-1 Phase III RFI/RI Objectives and Activities (pg 3-4)

Identification of the source of the plutonium in sediment and surface water in Woman Creek, should be included on this table of objectives, under "Characterize the Nature and Extent of Contamination."

Section 4.1.3. Task 3-Field Investigation (pg 4-3)

Section 1.4.3 IHSS Ref No 104 states there were 'empty drums' disposed of in IHSS 104. A survey to verify the location and presence or absence of the drums should be included in the list of Field Investigational Activities.

Section 4.1.6 Task 6 Baseline Risk Assessment (pg 4-5)

A complete literature search including DOE studies of the effects of individual and combinations of contaminants of concern should be done prior to entering the field to collect specimens. Have similar risk assessments been performed at the Oak Ridge and Hanford DOE facilities?

Section 4.1.6.1 Public Health Evaluation, Exposure Assessment (pg 4-9)

The on-site workers should not be regarded as a "potential exposure population". At the present moment the on-site workers are the most likely exposure candidates next to the actual remediation workers.

Section 4.1.6.2 Environmental Evaluation (pg 4-13)

At the top of the page the workplan states that aquatic invertebrates and terrestrial organisms will be used to determine whether or not they have been adversely affected by contaminants. The bottom paragraph states that biomarkers for sublethal stress include skeletal abnormalities such as lordosis and scoliosis. Assuming a "terrestrial organism" refers to small lower order animals without vertebrates, how does DOE intend to diagnose scoliosis in aquatic invertebrates?

Section 4.1.7 Task 7 Treatability Studies/Pilot Testing (pg 4-14)

The Draft Treatability Studies Plan submitted September 21, 1990 does not address any innovative technologies, only conventional technologies.

Table 4-2 Technologies Identified for Treatability Studies (pg 4-15)

The list of technologies is too short and should include many of the innovative technologies under study by DOE Office of Technology Assessment.

Section 5.3.1 Borehole Locations (pg 5-37)

On two different occasions during 881 inspections of the borehole drilling, "Division" personnel were informed by Greg Litus, that there had been several toluene hits of unknown origin. What are the results of the lab tests and DOE's conclusions about the source and extent of the toluene? We were also informed that some of the boreholes were redrilled because the first boreholes caved in during the 881 Construction shutdown while air monitors were installed.

Section 6.1.2 881 Hillside Contamination (pg 6-3)

The radionuclides listing under Groundwater should include plutonium.

Section 6 1.2 (pg 6-5)

Copper, Mercury, Tin, Cobalt and Nickel act as biocides to "certain species" at low concentrations. Are any of the "certain species" present at Rocky Flats? If so, please identify them.

Before actual field sampling is done it would be worthwhile to identify four parameters for each species to be sampled.

- 1) Identify the contaminant to be studied.
- 2) Identify an appropriate group of receptors which suffer some documented quantifiable detrimental effects from exposure to the contaminant chosen.
- 3) Pick a specific species from the list of receptors which is known to exist at Rocky Flats.
- 4) Have an experimental laboratory procedure in place ready to receive specimens and measure the deleterious effects of the identified contaminant.

If no receptor which exists at Rocky Flats Plant can be identified and exhibits documented quantifiable detrimental effects from exposure to the contaminants in question, then risk assessments will have to be made from the best available data found from extensive well-documented literature search. It is unacceptable to conduct experimental research for a risk assessment without the above parameters.

Section 6.3.5.1 Vegetation (pg 6-16)

Are any of the species of grasses or wetlands vegetation listed in this section known to be sensitive to or suffer measurable detrimental effects on exposure to the contaminants present at Rocky Flats?

Section 6.8.4.5 Fish (pg 6-40)

Does any historical data exist on the fish populations in Woman Creek? What is to be gained by doing population studies on the fish presently in Woman Creek if there is no background or historical data to compare it to? How many of the fish are likely to be killed? The procedure makes no mention of whether or not the fish will be returned to the waters of Woman Creek. We do not recommend that fish studies or any other ecological studies on plants and animals be conducted without a well designed experimental and laboratory procedure in place before any sampling is done

COLORADO DEPARTMENT OF HEALTH
HAZARDOUS MATERIALS WASTE MANAGEMENT DIVISION
QUALITY ASSURANCE ADDENDUM TO THE
ROCKY FLATS SITE-WIDE QA PROJECT PLAN
FOR CERCLA RI/FS AND RCRA RFI/CMS ACTIVITIES
FOR OPERABLE UNIT 1, 881 HILLSIDE AREA
PHASE III RFI/RI
COMMENTS

General

There are major portions of the QA plan missing entirely and many others which are indeterminate. The final version of the Quality Assurance Project Plan for the Interim Remedial Action Operable Unit 1, Phase I-A, did an adequate job for the construction, drilling and air monitoring activities which Phase I-A covered. All of the appropriate parts of the Final Version Quality Assurance Project Plan Phase I-A for drilling and air monitoring activities should be lifted in its entirety with appropriate revisions and included in the Phase III RI/RFI Quality Assurance, since additional drilling activities, boreholes and soil sampling, and air monitoring are continued activities in Phase III.

Section 1.2 Objectives lists nine activities to be performed as part of the field investigation. Five of the nine activities do not have any project plans, one or two pages of incoherent fragmented material does not constitute a project plan for performance of aquatic and terrestrial field surveys for example.

Each of the nine activities should have a QA Project Plan associated with it.

- 1) Drill and sample soils and wastes within IHSSs.
Major portions of the QA Phase I-A IM/IRA project plan for drilling can be adopted with appropriate revisions, and deletions for example, references to the french drain line.
- 2) Install and sample ground-water monitoring wells.
Again the format for drilling boreholes can be adjusted for installation of ground-water monitoring wells.
- 3) Determine sediment composition and quality, grain sizes and total organic carbon.
The sole reference to sediment sampling consists of two whole lines on page 28, and a list of three sediment stations to be sampled. Where is the project plan for determination of sediment composition, quality, grain size and total organic carbon?
- 4) Perform aquifer tests and geotechnical tests.
We were unable to locate a single reference to these activities in the QA. What aquifer and geotechnical tests are to be performed at 881? What sites are the aquifer and geotechnical tests to be performed on? What pieces of information are expected to be gained from the aquifer and geotechnical tests? A project plan for aquifer and geotechnical tests must be included in the QA Phase III RI/RFI.
- 5) Assess Air quality.
The project plan for assessment of air quality can be taken with few modifications from the Final Version Phase I-A IM/IRA

- 6) Perform aquatic and terrestrial field surveys.
This is the most incoherent ill designed project plan in the QA. What species are being sampled? How are they being sampled? What are they being sampled for? Is there a laboratory protocol in place to receive the samples? Tissue samples cannot be treated in the same manner as soil and rock samples. The project plan for aquatic and terrestrial field survey must be rewritten.
- 7) Collect Surface water and sediment samples.
An eight line reference to surface water sampling locations does not constitute a project plan for surface water sampling. The project plan for collection of sediment samples could be included in the third activity project plan. The absence of a surface water project plan needs to be addressed.
- 8) Collect and analyze terrestrial and aquatic vegetation and animals.
One project plan could conceivably cover activities six, eight and nine. If scientific substantiated documented literature searches cannot identify a plant or animal species living at Rocky Flats with a quantifiable biomarker, or other measurable indicator of contaminant effects then a baseline risk assessment should be performed using environmental evidence gathered from other studies of both real life data and experimental studies of contaminants done in academic settings.
- 9) Perform toxicity tests to measure the effects of contaminated environmental media on representative species.
We are unable to find a single reference to any toxicity test in the QA. The project plan for toxicity tests should include species, test, and laboratory procedures.

The SOP reference chart sandwiched in the middle of the environmental evaluation does not have any key associated with it. What do the black dots indicate?