

CORRES. CONTROL
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ACTION



Department of Energy

ROCKY FLATS FIELD OFFICE
P.O. BOX 928
GOLDEN, COLORADO 80402-0928

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- REPTS-CC -

DOE-99-03444

AUG 6 2 1999

Mr. Steve Gunderson
Colorado Department of Public Health and Environment
Hazardous Materials and Waste Management Division
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530

Dear Mr. Gunderson:

The purpose of this letter is to provide our response to comments submitted by your agency staff and from the U.S. Environmental Protection Agency, (EPA) Region VIII, regarding the *Sampling and Analysis Plan for the D&D Groundwater Monitoring of Building 444, 771, and 886, dated June 10, 1999*. Enclosed please find our comment responses to both the Colorado Department of Public Health and Environment, and the EPA. Please let us know if these are sufficient for approval of the plan.

If you should have any technical questions related to this document, please contact Norma I. Castaneda at (303)966-4226 or contact me at (303)966-5918.

Sincerely,

Joseph A. Legare
Assistant Manager
for Environment and Infrastructure

Enclosure
cc w/o Enc:
J. Rampe, DAMEI, RFFO
R. Tyler, ERWM, RFFO
N. Castaneda, ERWM, RFFO
C. Dayton, K-H
S. Singer, RMRS



DIST.	LTR	ENC
BENSUSSEN, S.J.		
BOGENBERGER, V.		
BRAILSFORD, M.D.		
CARD, R.G.		
COSGROVE, M.M.		
COX, C.M.		
CRAWFORD, A.C.		
DEJONG, V.J.		
DERBY, S.		
DIETERLE, S.E.		
FERRERA, D.W.		
FERRERA, K.P.		
FULTON, J.C.		
GERMAIN, A.L.		
HARDING, W.A.		
HARROUN, W.P.		
HEDAHL, T.G.		
LEONARD, R.C.		
LEWIS, M.R.		
MARTINEZ, L.A.		
NORTH, K.		
PARKER, A.M.		
PHILLIPS, F.J.	X	X
POLSTON, S.		
RODGERS, A.D.		
SANDLIN, N.B.		
SHELTON, D.C.		
SPEARS, M.		
TUOR, N.R.		
VOORHEIS, G.M.		
WARTHER, R.F.		
Dayton, C	X	X
Singer, S	X	X

COR. CONTROL	X	X
ADMIN RECORD	X	X
PATS/T130G		

Reviewed for Addressee
Corres. Control RFP
8/11/99 [Signature]
Date By

Ref Ltr. #

DOE ORDER # 5400.1

1/7

ADMIN RECCRD

U.S. Department of Energy responses to CDPHE comments on the Sampling and Analysis Plan for the D&D Groundwater Monitoring of Buildings 444, 771, and 886, dated June 10, 1999.

General Comments:

This plan only presents potential sources of ground water contamination exterior to these buildings. No under building contamination issues are raised. Essentially this plan also serves as (partial) characterization for ground water contamination in the industrial area. We do not think the analysis of potential contamination went as far as it could have with the available information. There may be improvements in coordination possible with the Industrial Area Characterization Strategy group. Ground water pathways on site have a tendency to be small, therefore we propose additional sampling due to the rather wide spacing of wells around several buildings. We understand the locations of wells placed on edited versions of figures 1-1 and 1-2 may not be possible because of surface obstructions but are given as illustration.

Response: This Sampling and Analysis Plan is intended to strictly address the potential impacts of D&D activity on groundwater quality to ensure the protection of surface water. Industrial Area (IA) characterization activities involving under building contamination and IHSSs are outside the scope of this plan and will be accomplished, as necessary, by other ER organizations. It is expected that the information generated by this activity will have a benefit to IA characterization efforts, and communication with characterization organizations has been initiated. Although we agree that the width of undisturbed (natural) groundwater pathways have the potential to be relatively small, it is likely that any contamination released from buildings during D&D would be dispersed under the building by foundation bedding and drain materials (which have a higher permeability), thereby causing significant plume spreading. The result would be the release of a wider contaminant plume than otherwise expected from natural flowpath considerations alone.

It is not clear whether soil samples will be collected from these boreholes for chemical analysis.

Response: No plans exist to collect soil samples for chemical analysis, as this type of characterization activity is outside the scope of the project.

Specific Comments:

- 1) Section 1.3, pages 13-18 – It is appropriate to calculate travel times for contaminants through natural ground water pathways however utility corridors also exist which could shorten those travel time estimates to the stream drainages significantly.

Response: Most, if not all, monitoring wells will be located close to buildings inside the influence of major utility corridors, which typically are associated with roadways. Individual utility lines connecting the buildings are expected to have only a nominal influence, if any, on groundwater flow, especially when compared to building foundation drains.

- 2) Section 4.1.1, page 24 – Due to the potential for environmental contamination at Building 444, the size of the building and area to be monitored, and the uncertainty with the configuration of the groundwater flow field, additional monitoring wells appear to be warranted. Four additional downgradient wells are recommended, one to be located north of

40399, one between 40399 and 40499, one between 40499 and 40299, and one to the west of 40299.

Response: RMRS Groundwater Operations believes that the proposed well network will adequately monitor for groundwater contamination related to D&D activities at Building 444. The proposed network was based on an analysis of building activities, historical releases to the environment, and available groundwater data. Reconsideration of well placement may be warranted in some cases, such as where the proposed SAP wells occur near CDPHE proposed wells, and these decisions can be coordinated with CDPHE. Nonetheless, the addition of one well along the south side of the building would improve the downgradient well coverage. As shown on the attached figure, this proposed change involves shifting the location of wells 40299 and 40499 to provide for the additional well near Building 450.

The effluent from the foundation drains located in the southeast of Building 444 (that go to the process waste lines) should be monitored and analyzed for the contaminants of concern.

The effluent from the storm drains should be monitored and analyzed for the contaminants of concern, especially the storm drains that run along the south side of this area, along the west side, and to the south under building 447, which also collects the foundation drain effluent from Building 447. In addition, the depth of the storm drains, especially the one that connects to the foundation drains under Building 447, should be considered as possible preferential pathways for groundwater migration to the south from this area, and appropriate monitoring (another well) should be installed.

Response: Foundation drain and storm drain effluent monitoring is outside the scope of normal Groundwater Operations activities. In addition, the advantage of such monitoring is questionable because it is expected that the drains will be decommissioned and plugged during the last phase of D&D. The drains may be unavailable for post-D&D monitoring, when the effects of flooded basements on groundwater quality are expected to be most pronounced. Discussion of the data quality objectives associated with these types of drain monitoring activities should be tabled during the next Water Working Group meeting.

- 3) Section 4.1.2, page 25 – The proposed sampling scheme at Building 771/771C/774 should be modified. Another well should be added along the north side of Building 771 between wells 40599 and 40699, and a well needs to be added north of the northern extent of Building 774.

The effluent from the storm drains under Building 771 and the foundation drains should be monitored at Manhole #3, and at outfall #2 (to the west of Building 771). The effluent from the storm drains that go under Building 771C should be monitored at the two outfalls to the north of Building 771C. The foundation drains under Building 774 should be monitored at the outfall north of the building (just south of the pond), and at the outfall of the storm drain to the northeast of Building 774.

Response: See response to specific comment 2) above. One additional downgradient well will be added to improve well coverage on the north side of B771 in the location suggested by CDPHE. We believe that the second proposed CDPHE well location will essentially duplicate the function of existing well P219089, and will not add substantially to the proposed program.

- 4) Section 4.1.3, page 26 – Sampling activities should take into account the possible effects to groundwater flow due to inground utilities, especially the septic lines which are about 14 feet below ground surface. The septic lines have been shown to be leaking in the IA. The septic lines are of specific concern in the area adjacent to Building 886, where they appear to be located below the groundwater level in this area, and groundwater is probably flowing into them in the area around Building 886. Septic lines appear to run along the north and east side of Building 886 and connect with 886 at the NW corner of the Building. Since the septic lines appear to be below the top of groundwater, groundwater may be flowing into the septic lines around Building 886, possibly depressing groundwater levels, which may be affecting groundwater flow patterns in this area.

In addition the foundation drains collect groundwater, which is pumped (2 times/week) from a sump located between Buildings 886 and 875, from the west side of Building 886 and north side of Building 875. Because of concerns with high uranium counts this water is trucked to Building 374 for treatment. The foundation drains may create a groundwater depression along the west side of Building 886, centered between Building 886 and 875. This depression in the groundwater will continue as long as the foundation drains are active, and as long as the foundation drains are active, the proposed monitoring wells will possibly be in upgradient locations, and will not be located appropriately to identify possible effects of D&D.

Upon termination of the pumping of the pumping actions, it may take a while for the groundwater flow patterns to re-establish a “normal” gradient, which may be to the NE. If the NE flow direction is re-established, then the proposed monitoring well locations may be appropriate. However, prior to sending the water to Building 374, the foundation drains discharged to a ditch SE of the sump. If the discharge line to this ditch was deep enough, it could create an avenue for groundwater to move to the SE rather than to the NE, and another monitoring well may be necessary to monitor this potential groundwater pathway.

Response: The extent of septic lines appear to be limited at B886. Monitoring objectives require that wells should be located close to the building to provide early detection of contaminant releases. Efforts will be made to located wells between the building and septic lines to avoid flow path interruptions.

The B886/875 foundation drain has a small footprint and is expected to result in localized flow distortions only. The proposed well locations surround B886 and should be capable of detecting contaminant migration during all phases of D&D.

The effluent from the foundation drains should be monitored for the analytes of concern.

Response: See response to specific comment 2) above concerning foundation drain monitoring.

- 5) Section 4.2.1, page 27 – The need for monitoring wells, to be installed during D&D, may extend beyond the completion of D&D activities. Considering the extremely slow calculated groundwater velocities, contamination that may be released during the D&D activities, or that may have been contained by the active drains, may not be seen in these monitoring wells for some time after the D&D activities are completed. Also, since the D&D activities may not include removal of the cement floor, continual monitoring of these wells should continue for an extended period of time to determine the effects of possible flooding of the floor and any rubble that may remain. As such, these monitoring wells should be constructed to have more than a serviceable life of only five years.

Response: The proposed monitoring wells are constructed of the same materials as larger diameter wells and should have an equivalent serviceable life. Most Geoprobe wells are now installed with flush-mount protective casing which will ensure their durability during D&D activities. Should a well become unserviceable, an offset replacement well will be installed to ensure monitoring continuity.

These monitoring wells should be of sufficient diameter to allow collection of appropriate sample volumes. As indicated, the saturated thickness is often a concern, with less than 1 foot of saturation a possibility. As such, .75-inch ID wells may be too small to allow for the collection of a sufficient quantity of water. It is recommended that these wells should be at least 2-inch ID wells.

Due to the depths and possible bedrock completions that may be necessary, it is recommended that these wells should be installed using standard augering techniques, rather than as driven well points (Geoprobe).

Response: Larger-diameter wells would provide more casing storage capacity, but would do little to improve well yield, the most critical parameter involved in obtaining an adequate sample volume. Additional well storage capacity is an advantageous insomuch that it will reduce the number of sampling visits required to collect a sample. Recent changes to the groundwater sampling procedure has increased the number of sample crew visits per well, which is expected to result in greater sample volumes for analysis. To further ensure the success of groundwater sampling, the monitoring well designs will be modified to extend the well screen five feet into weathered bedrock. This modification offers the advantage of increased well storage which will help improve the chances of sampling success.

Please identify the distance these wells will be placed from the buildings. Since neither a distance nor rationale has been presented, it is assumed these wells will be placed a minimum of 10 feet from the edge of any building.

Response: Agreed. Wells will be placed a minimum distance of 10 feet from the buildings. This distance will also depend on other access considerations, but the goal is minimizing the distance for early contaminant detection.

- 6) Section 4.5, page 30 – Since the groundwater levels may change over time, especially as the drainage systems are shut down, please indicate if future water level measurements will be collected in these wells as a part of D&D activities to confirm the directions of groundwater movement in these areas.

All groundwater levels for the wells associated with each building (as indicated in Section 4.5) should be collected on the same day.

Response: Agreed. Future water level measurements of surrounding wells will be integrated with the water flow monitoring program described in the IMP to assess the impacts of D&D activity on groundwater flow patterns. All water levels will be collected on the same day to improve the accuracy of the maps and flow direction interpretations.

- 7) Section 4.6, page 32 – What analysis method will be used for uranium isotopes? If it is alpha spectroscopy, can it be done with a longer count time to improve precision and accuracy? If

the alpha spectroscopy results indicate totaled concentrations greater than 10 pCi/l these wells should be added to the HR-ICP/MS characterization.

Response: The ICP/MS characterization has a defined well list at present and will be completed as scoped. To increase scope to the ICP/MS project involves extra cost to both CDPHE and DOE. It would be prudent to wait until uranium analyses are back from these samples to see what the data will show. Additionally, the location of ICP/MS samples is based on areas of anomalous concentrations of uranium based on the 1996 Annual Groundwater report. As such the current program is not predicated on exceedance of Tier II action levels, which are unreasonably low given the assumed contribution from natural sources. It is suggested that if samples associated with a particular building are anomalously high in uranium, then a decision would be made to analyze uranium by ICP/MS. As far as requesting a longer count time for alpha spec. uranium samples, this is being done on select samples associated the ICP/MS project. Decisions with respect to longer count times for samples from the D&D project should wait until the results from the ICP/MS project are evaluated.

- 8) The Site should plan on entering geologic data into the EquisGeo database.

Response: The Site will begin entering geologic information into EquisGeo beginning October 1, 1999, due to the fact that the project is unfunded this fiscal year. Should completed logs be ready before this time, CDPHE may consider adding these to the EquisGeo system earlier.

Figure 1-1

**Building 444 Site Location
Existing and Proposed Monitoring Wells**

EXPLANATION

- Program Wells
- ◆ All Other Wells (Monitoring Wells Not Included)
- ▲ Location of Proposed Monitoring Wells

Industrial Area Operable Units

- Permitt 8444 H55a

Standard Map Features

- ▭ Buildings and other structures
- ▨ Solar evaporation ponds
- ▩ Lakes and ponds
- ▧ Streams, ditches, or other drainage features
- ▬ Fences and other barriers
- ⋯ Contour (20-foot)
- ⋯ Paved roads
- ⋯ Dirt roads

Map Scale: 1 inch = 100 feet. This map is a plan view of the site and does not show elevation. The map is based on aerial photography and ground truthing. The map is not to scale and is for informational purposes only. The map is not a legal document and should not be used for legal purposes. The map is not a warranty of any kind and the user assumes all responsibility for its use. The map is not a representation of any kind and the user assumes all responsibility for its use. The map is not a representation of any kind and the user assumes all responsibility for its use.

Scale: 1" = 100'
1 inch represents approximately 101 feet



State Plane Coordinate System
Colorado Central Zone
Datum: NAD83

U.S. Department of Energy
Rocky Flats Environmental Technology Site



Rocky Mountain
Remediation Services, LLC
10000 North Lincoln Avenue
Denver, Colorado 80231
(303) 751-1000

MAP ID: 84.0163

April 22, 1993

