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REMOVAL SITE EVALUATION PLANT 9 FEED MATERIAL PRODUCTION CENTER U.S. DEPARTMENT OF ENERGY

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DOE-FMPC/WMCO

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ENCLOSURE

ENCLOSURE B

REMOVAL SITE EVALUATION - PLANT 9

FEED MATERIALS PRODUCTION CENTER
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Introduction

In the Federal Facilities Consent Agreement, removal action number 1 describes ongoing work to characterize the subsurface of the FMPC buildings. This work, the Facilities Testing Program, in conjunction with the ongoing Remedial Investigation/Feasibility Study (RI/FS), is aimed at investigating the production area by means of installing borings and obtaining soil samples to determine the extent of contamination and the location and extent of any contaminated perched water.

Source Term

As part of the Facilities Testing Program, a water sample taken on January 17, 1990 near Plant 9 was found to contain a total uranium concentration of 696,000 micrograms per liter. The boring is located on the east side of a secondary containment tank enclosure located along the southeast corner of Plant 9. The contaminant enclosure contains two above ground tanks and a below grade 4,700 gallon sump. The sump is an open topped, stainless steel, vessel with a rounded bottom. The sump is 9 feet in diameter and extends 10.5 feet below grade. The enclosure is lined with acid brick which was recently refurbished. The sump receives waste water from Plant 9, direct rainfall, rainfall from the adjacent old dust collector secondary containment, and spent acid from the Zirnlo process (described below). The sump could also have received soluble cutting oils. The sump is emptied periodically but has no high level alarms or other device to prevent overfilling.

Evaluation of the Magnitude of the Potential Threat

Piezometer 1324, which contained the water, is one of three borings placed around the secondary containment enclosure. Boring 1325 was drilled on the south side of the enclosure and was found to be dry. Boring 1323 was drilled on the west side of the enclosure and was also dry. Boring 1324 has a water level that is almost at the ground surface. During the installation of boring 1324 it was noted that there was a void area under the concrete pad where the soil had been washed away or had subsided. The drillers filled this void with sand to support the concrete when they installed the piezometer.

The Zirnlo process includes a nitric acid removal of copper cladding from uranium billets. A copper analysis was performed on the January 17, 1990 sample and results indicated 259 micrograms per liter of copper in the sample.

Table 1 shows the total uranium and total thorium results of soil samples collected from borings 1324 east of the containment enclosure and boring 1325 south of the enclosure. A comparison of the sample results at the same depth indicates that elevated levels of uranium are found over the entire length of boring 1324. In contrast only the samples to a depth of 2 feet show elevated levels of uranium in the soils in boring 1325.

Table 1
Total Uranium and Thorium in Soil

	Boring 1324		Boring 1325	
Depth in Feet	**Total U ppm**	**Total Th pCi/g**	**Total U ppm**	**Total Th pCi/g**
1.0-1.5	239	5.53	133	8.91
1.5-2.0	354	7.97	21.5	8.25
3.0-3.5	238	5.57	5.1	6.44
5.0-5.5	292	4.50	2.8	8.12
10.0-10.5	189	4.74	2.4	4.57
15.0-15.5	*	*	2.5	4.81

* - Boring stopped at 13.5 feet

The presence of water in boring 1324 and dry borings at 1323 and 1325 indicate that perched water has percolated under the east side of the containment area (approximate depth 3 feet). The south containment enclosure wall, which extends down to connect with the sump foundation pad, appears to be preventing the water from moving south.

Assessment of the Need for Removal Action

Consistent with 40 CFR 300.65 and the National Contingency Plan, 40 CFR 300.415, the lead agency (DOE) shall determine the appropriateness of a removal action. The factors to be considered in this determination are listed in 40 CFR 300.65 (b)(2) and the NCP, 40 CFR 300.415 (b)(2). Of the eight factors listed, the following apply to the contamination near Plant 9.

40 CFR 300.65 (b)(2)(ii)

Actual or potential contamination of drinking water supplies or sensitive ecosystems.

40 CFR 300.65 (b)(2)(iv)

High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate.

The soil and water contamination, the potential migration of the contaminants, and high levels of uranium at or near the surface which could migrate are factors supporting the need for a removal action.

Appropriateness of a Response

If it is determined that a response is appropriate due to both the levels of contamination found near Plant 9 and the potential for the contaminants to migrate. A removal action to address the existing contamination and to mitigate the possibility of further release and migration to the environment should be undertaken.

If a planning period of less than six months exists prior to initiation of a response, DOE will prepare an Action Memorandum. The Action Memorandum will describe the selected response and supporting documentation for the decision.