U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No.	040-08306(Terminated)
License No.	SMC-01207(Terminated)
Report No.	040-08306/2000001(DNMS)
Licensee:	Engelhard Minerals & Chemicals Currently occupied by Great Lakes Naval Training Center
Location:	Great Lakes, IL
Dates:	January 7-8, 2000 January 20, 2000
Inspectors:	E. L. Kulzer, CSP, CIH, Radiation Specialist P. Lee, Ph.D., CHP, Radiation Specialist
Approved By:	B. L. Jorgensen, Chief Decommissioning Branch Division of Nuclear Materials Safety

EXECUTIVE SUMMARY

Engelhard Minerals & Chemicals
Great Lakes, Illinois
NRC Inspection report 040-08306/00001(DNMS)

This was an NRC survey and inspection of the Defense Reutilization Materials Office supply area at the Great Lakes, Illinois site of the former Engelhard Minerals and Chemicals Company. The property was owned by the Naval Training Center and Engelhard Minerals & Chemicals was licensed to repackage and ship monzanite sand from Great Lakes and Savanna, Illinos and Revenna, Ohio. The license (No. SMC-01207) was issued by the Atomic Energy Commission (AEC) on July 12, 1974, and expired on December 31, 1975.

The NRC inspectors found five elevated areas with radiation levels well above background (see Figure 1). The inspectors collected two soil samples which were analyzed and found to contain licensed material. A characterization survey is needed to accurately define the extent and magnitude of contamination, and to delineate areas which may need to be decontaminated.

Report Details

1.0 Background

In 1974 a license was granted to Engelhard Minerals & Chemicals to repackage monzanite sand at Great Lakes, Illinois, Savanna, Illinois, and Ravenna, Ohio. There were no records to determine if contamination was removed, or final surveys were conducted at any of the three sites. After contacting the U. S. Army, it was determined that both the Ravenna and the Savanna sites were found to be contaminated and were being remediated.

The Great Lakes site, which is now the DRMO supply area, had three tanks which held the monzanite sand (tanks F, I, and J) - see attached Figure 1. These tanks have been removed from the site. No information was available as to where these tanks were sent. It is very probable that the tanks went to a scrap yard years ago and can no longer be traced. There were only a few of the former (10) tanks remaining in this location. The actual site where the loading of the railcars took place is currently a construction area; the perimeter foundation of a new warehouse has been dug down to the frost line in the area. The area has been leveled for this construction, and the surface dirt has been placed in a pile on the west side of the site near the fence line.

2.0 Scoping Survey

2.1 Independent Measurements

The inspectors scanned the pile of dirt that was taken off the surface in the area where the perimeter of the foundation had been poured. There were several feet of gravel inside the perimeter of the building under construction, so no scanning was done within this perimeter. This is an important area because the railcars were loaded there.

The NRC survey included surface scans over approximately fifty percent of the site. The NRC inspectors surveyed the DRMO supply area using Ludlum 2241-2 meters with Ludlum 44-10 NaI probes for surface scans. Ludlum Model 19 exposure meters were used for area dose rates. Five locations along the north fence line, just north of where tank F was located, were identified with elevated readings ranging from 16,000 to 54,000 cpm. Background readings ranged from 5,000 to 6,000 cpm. The radiation levels ranged from 20 uR/hr to 80 ur/hr at contact, and 12 to 15 uR/hr at 1 meter above the surface. Background exposure rates ranged from 4 to 6 uR/hr on contact or 1 meter above the surface. Survey data are contained in the attached Table 1.

The inspectors collected two surface soil samples from the location with the elevated reading of 54,000 cpm. Gamma spectrometry results showed the two soil samples have concentrations of thorium (Th-232 + Th-228) about 3.0 pCi/g. Background concentration of the thorium should be less than 1.0 pCi/g.

Based on the elevated reading of 54,000 cpm, the concentration of the thorium in the soils was expected to be well above the 3.0 pCi/g actually found. This indicated that the soil samples collected were not representative; the contamination is likely located subsurface.

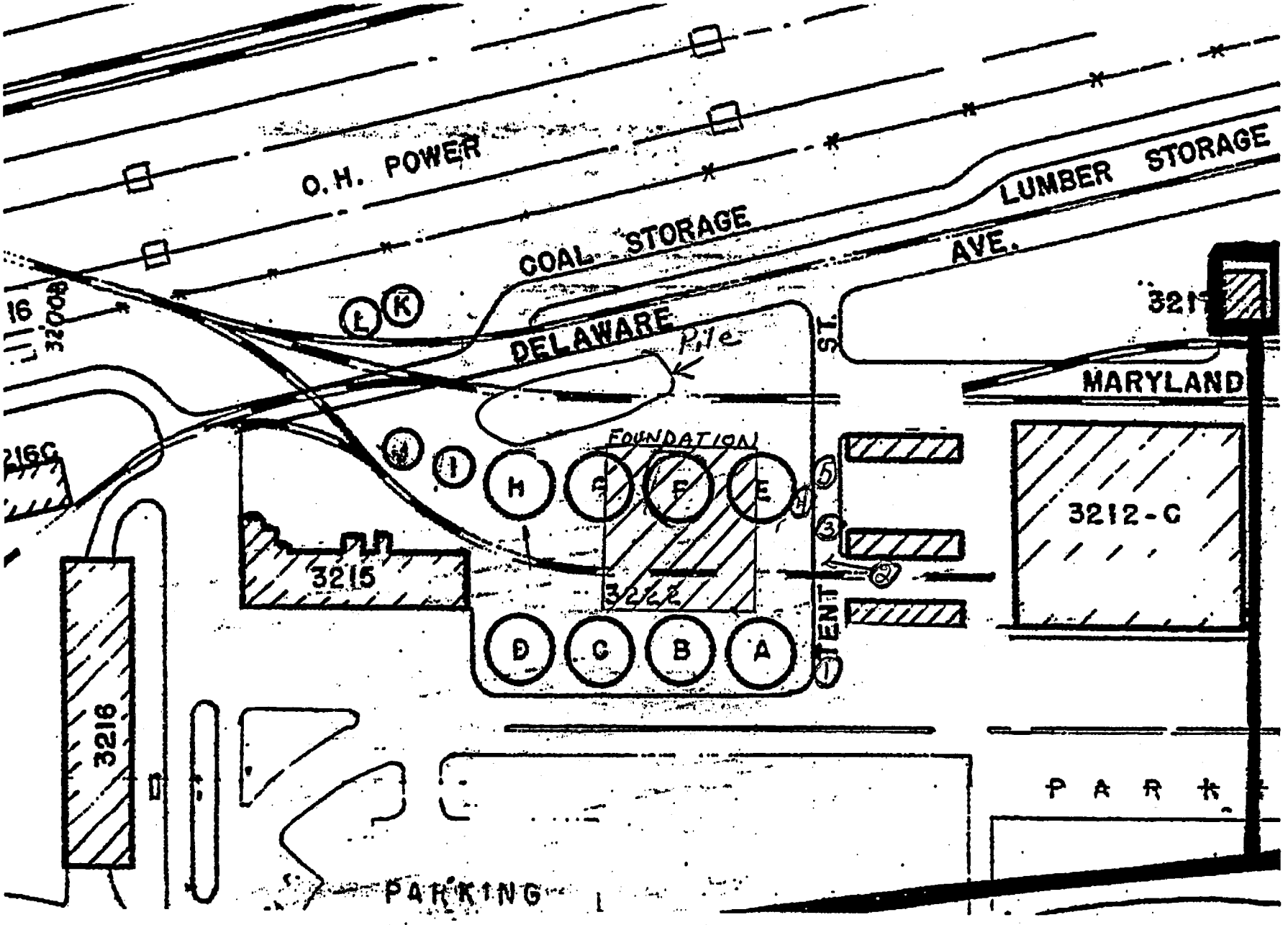
2.2 Conclusion

Based on the results of NRC independent measurements, the site is considered to be contaminated with formerly licensed material. A characterization survey is needed to accurately define the extent and magnitude of the residual contamination, and to delineate areas which may need to be decontaminated.

3.0 Exit Meeting

The NRC inspectors met with Mr. M. Schultz and M. Slack of Great Lakes Environmental Department, Environmental Remediation on January 8, 2000, summarizing the preliminary findings. Subsequently, a telephone discussion on January 20 addressed the discovery and quantification of formerly licensed material at the site.

Attachments: Figure 1
Table 1


O.H. POWER
COAL STORAGE
LUMBER STORAGE
AVE.
DELAWARE
Pile
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MARYLAND
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FIGURE 1

Table 1
Radiation Levels of the Elevated Locations

Location	Exposure Rate(contact) uR/h	Exposure rate(1m) uR/h	2x2 NaI (cpm)
1	25	13	22,000
2	30	15	22,000
3	20	12	16,000
4	80	15	54,000
5	20	12	16,000