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Department of Energy
Oak Ridge Operations
Weldon Spring Site
Remedial Action Project Office
Route 2, Highway 94 South
St. Charles, Missouri 63303

October 16, 1987

M-K FERGUSON CO.
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WSSRAP CONTRACT 3589

Ms. Katherine Biggs
United States Environmental
Protection Agency
Region VII
726 Minnesota Avenue
Kansas City, Kansas 66101

Dear Ms. Biggs:

INTERIM RESPONSE ACTIONS (IRA'S)

Enclosed are six (6) copies of the documentation for the following four (4) Interim Response Actions:

1. Dismantling of Building 401
2. Dismantling of Building 409
3. Removal of PCB Transformers
4. Debris Consolidation

In addition, we are sending under separate cover, six (6) copies of the technical specifications and drawings from each of the four (4) proposed bid packages.

It is our intention to have copies of these documents in place in the repositories for public inspection, and to provide public notice of their availability on October 19, 1987. This will initiate the twenty one (21) day comment period.

If you have any questions, please give me a call.

Sincerely,

J H McCracken

Rod Nelson
for Project Manager
Weldon Spring Site
Remedial Action Project

Enclosures:
As stated

cc w/enclosures:
D. Bedan, MDNR

DOCUMENT NUMBER: I-100-103-1.01

REMOVAL OF PCB TRANSFORMERS

Site Background

The Weldon Spring site is located in St. Charles County, Missouri, about 48 km (30 mi) west of St. Louis. From 1941 to 1944, the U.S. Department of the Army operated the Weldon Spring Ordnance Works at the site for production of trinitrotoluene and dinitrotoluene. In the mid 1950s, a portion of the property was transferred to the U.S. Atomic Energy Commission (AEC), a predecessor of the U.S. Department of Energy (DOE).

From 1957 to 1966, the AEC operated a uranium processing facility at the Weldon Spring site. Impure uranium ore concentrates and some scrap uranium metal were processed at the chemical plant, and thorium-containing materials were also processed on an intermittent basis. Following closure by the AEC, the Army reacquired the chemical plant in 1967 and began converting the facilities to produce herbicides. The buildings were partially decontaminated and some equipment was dismantled. In 1969, prior to becoming operational, the herbicide project was canceled. Since that time, the plant has remained essentially unused and in caretaker status. The Army returned a portion of the Ordnance Works property to the AEC in 1971 but retained control of the chemical plant buildings. In 1984, the Army repaired several of these buildings; decontaminated some of the floors, walls, and ceilings; and removed some contaminated equipment to areas outside of the buildings. In 1985, custody of the chemical plant property was transferred to DOE. Currently, more than 70 inactive electrical transformers and switches are located in buildings and on external pads and poles throughout the Weldon Spring site.

Site Characterization

In order to characterize the potential hazards related to contamination by polychlorinated biphenyls (PCBs) at the Weldon Spring site, a sampling effort was conducted during March and April of 1987 to determine the types, locations, capacities, and levels of PCBs associated with transformers and switches. Sampling locations are shown in Fig. 1. Based on the results of this survey, on-site transformers and switches are grouped in Table 1 according to the EPA classification system for PCB-containing articles, as specified in 40 CFR Part 761.

Four on-site transformers were not sampled and therefore were not classified. Two were not sampled because of their proximity to energized electrical lines; the third was not sampled because it belongs to St. Charles County Water and is still in service; and the fourth was overlooked during the survey because it was lying on its side in the grass adjacent to Storage Building 436. Up to 76 liters (20 gallons) of PCB-containing dielectric fluid could be contained in this transformer.

Inspection of 31 other transformers indicated that they are air-cooled models. Follow-up surveys identified a number of additional air-cooled switches and transformers within scattered buildings and on the roof of Laboratory Building 407. These

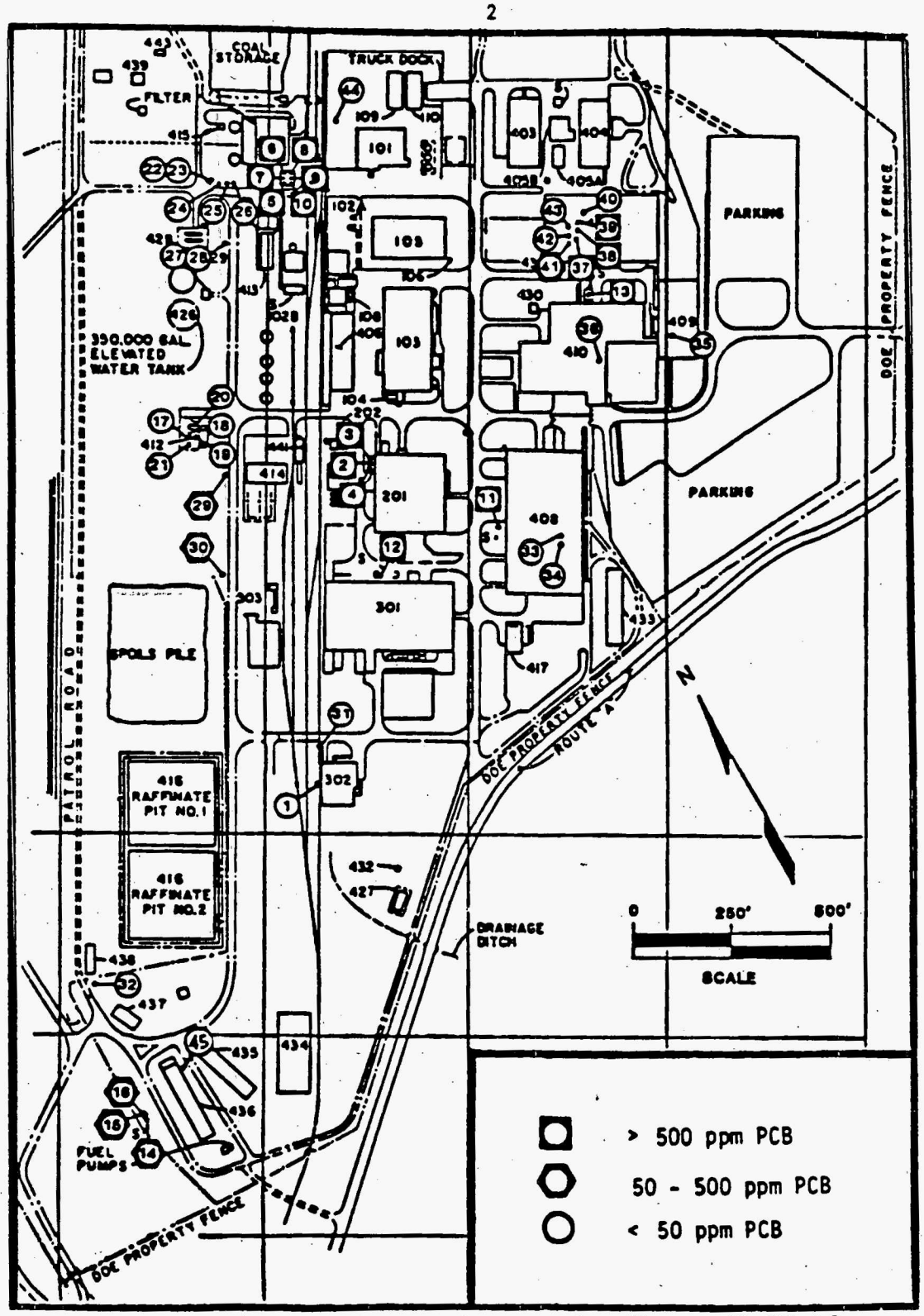

FIGURE 1 PCB Sampling Locations and Concentrations (Source: Modified from MK-Ferguson and Jacobs 1987)

TABLE 1 Summary of PCB Classification for Oil-Cooled Transformers and Switches at the Weldon Spring Site

Equipment	PCB Level (ppm)	Number	Estimated Volume Liters	Estimated Volume Gallons	Type of Mounting
PCB transformer	>500	12	20,810	5,370	Pad
PCB switch	>500	3	2,910	750	Pad
PCB-contaminated transformer	50-500	5	1,290	334[a]	Pad(3), pole(2)
PCB-contaminated switch	50-500	1			Wall
Non-PCB transformer	<50	12	29,740	7,675[a]	Pad(5), pole(7)
Non-PCB switch	<50	2			Wall

[a]Represents combined volume from transformers and switches.

Source: Data from Meyer (1987).

transformers contain no dielectric fluids and therefore do not contribute to the potential PCB hazard on-site. In addition, none of the transformers recently installed to support the remedial action program contain PCBs because they were installed after PCB control regulations became effective.

As part of the effort to characterize on-site electrical equipment, an extensive radiological survey was conducted to determine whether the transformers and switches would meet residual surface contamination guidelines for unrestricted off-site disposal. Results of the survey indicate that all equipment meets DOE criteria for unrestricted release (MK-Ferguson and Jacobs 1987).

Threat to Public Health and the Environment

A public health and environmental hazard exists at the site due to the presence of abandoned electrical transformers and switches. The equipment has begun to show signs of deterioration that could result in leakage of PCB-containing oils. If this equipment remains on-site, its continued deterioration could result in a significant exposure hazard to site personnel. In addition, the safety of workers could be threatened by the deterioration of associated structural equipment (e.g., mounting supports).

Response Objectives

The objectives of this response action are as follows:

1. Reduction of the potential health hazard due to the presence of PCB-containing oils in electrical equipment on the Weldon Spring site; and

2. Removal of the potential safety hazard associated with structural deterioration of the equipment.

Proposed Response Action Alternatives

Interim response actions are designed to ensure the health and safety of on-site personnel and to minimize or preclude off-site releases of contamination. These actions are limited to those that can be performed under the Comprehensive Environmental Response, Compensation, and Liability Act/Superfund Amendments and Reauthorization Act and remain within the constraints of the Council on Environmental Quality's regulations for the National Environmental Policy Act (i.e., actions will be limited to those that do not have an adverse environmental impact nor limit the choice of reasonable alternatives).

Alternative response actions identified for inactive electrical equipment on the Weldon Spring site are:

1. No action;

2. Transport of intact switches and transformers off-site to a licensed treatment/disposal facility;

3. Draining and flushing of switches and transformers, and on-site storage of the empty units, PCB-containing oils, and flushing solutions;

4. Draining and flushing of switches and transformers, on-site storage of the empty units, and transport of PCB-containing oils and solutions off-site to a licensed treatment/disposal facility; or

5. Draining and flushing of switches and transformers, transport of the empty units off-site to a licensed landfill, and transport of PCB-containing oils and solutions off-site to a licensed treatment/disposal facility.

Analysis of Alternatives

Alternative 1 affords no reduction in potential threats to the health and safety of on-site personnel posed by PCB-containing electrical equipment at the Weldon Spring

site. There would be no improvement in environmental conditions at the site if no action were taken. This alternative presents no technical barriers and costs nothing in the short term. However, the equipment is scheduled for eventual disposal. The costs associated with deferred disposal would be higher than those for disposal at the current time, due to monitoring and maintenance activities required until future disposal. Most importantly, Alternative 1 is effectively precluded by institutional factors related to the community's strong desire for timely response actions at the Weldon Spring site.

Alternatives 2 through 5 are all technically feasible. Alternative 2 would be neither environmentally desirable nor cost-effective. Not only would there be an increase in costs related to the receiving facility, but bulk transport of the full containers would be less environmentally efficient than separation of hazardous from nonhazardous materials prior to treatment/disposal. In addition, the packaging, loading, transport, and unloading of the deteriorating equipment would entail considerable expense and effort to ensure minimization of the exposure threat to workers and the potential for PCB releases to the environment. Although the costs associated with Alternative 3 would be lower in the short term, this alternative would prove more expensive than Alternative 4 or 5 in the long term due to the monitoring and maintenance activities necessitated by controlled on-site storage of PCB-containing material. More importantly, Alternative 3 would be less desirable with regard to potential health and environmental effects than Alternative 4 or 5 because the PCB-containing fluids would remain on-site. Alternatives 4 and 5 are both environmentally effective because each would involve the off-site transport of these fluids. Even though Alternative 4 would be less expensive than Alternative 5, it is not consistent with DOE's intention to dispose of all nonradioactive waste off-site. In addition, Alternative 4 does not fully address the public sentiment for expedited response action at the Weldon Spring site. Therefore, following the screening and analysis process for interim response action alternatives, Alternative 5 has been identified as the preferred alternative.

Description of Proposed Action

The proposed interim response action involves the following operations.

1. Draining PCB-containing oils from on-site switches and transformers;

2. Flushing switches and transformers with an equal volume of a kerosene (or equivalent) solution;

3. Transporting the cleaned switch and transformer units off-site to a licensed facility; and

4. Transporting the PCB fluids and flushing solutions off-site to a licensed treatment/disposal facility.

The flushing and removal of PCB-containing electrical equipment from the Weldon Spring site will be performed in compliance with all applicable regulations and

procedures. This compliance will minimize the potential health threat to on-site personnel associated with exposure to PCBs and will also remove the safety hazards associated with the deteriorating electrical equipment. In addition, removal of the equipment will preclude the potential release of PCBs and will thus improve environmental conditions at the site. Finally, the proposed response action is consistent with DOE's goal to remove hazardous waste from the site.

The waste volumes associated with this effort are estimated to be 400 m^3 (500 yd^3) of rinsed equipment and a combined volume of 109,500 liters (28,260 gallons) of PCB-containing oils and flushing solutions.

References

Meyer, K., 1987, *Transformer Sampling for PCB Fluids*, prepared for MK-Ferguson Company, Weldon Spring, Mo. (April).

MK-Ferguson Company and Jacobs Engineering Group, 1987, *Radiological Survey Report for the Transformers at the WSS*, prepared for U.S. Department of Energy, Oak Ridge Operations Office, Oak Ridge, Tenn. (Sept.).

U.S. Atomic Energy Commission, 1960, *Expansion Program at St. Louis Area - Project No. 224-5066A - Project History and Completion Report*, Oak Ridge Operations Office, Oak Ridge, Tenn. (Oct.).