C-375-E3 Effluent Ditch (KPDES 010)
Solid Waste Management Unit (SWMU) Assessment Report

SWMU/AOC NUMBER: 66

REGULATORY STATUS: SWMU

LOCATION: This SWMU is located on the east side of the Paducah Gaseous Diffusion Plant (PGDP) and originates within the controlled access area of the plant.

APPROXIMATE DIMENSION OR CAPACITY: Outfall 010 receives drainage from an area of about 8.78 hectares (ha) (22 acres). The SWMU itself is approximately 2630 feet in length. The internal plant ditch system to Outfall 010 drains the eastern part of PGDP and is approximately 687 meters (m) (7,400 feet [ft]) in length, unlined, and approximately 0.6 m (2 ft) deep.

PRESENT FUNCTION: Facilities draining into the Outfall 010 drainage area include the C-331 Process Building and the C-531 area (including the C-531-1 Switch House and Appurtenant Structures [C-531-3A and C-531-B Fire Valve Houses] and the C-531-2 Electrical Switchyard [SWMU 82]). Other areas that drain to Outfall 010 include the C-617-B Lagoon, the C-746-D Scrap Yard (SWMU 16), and the C-746-E Cylinder Storage Yard. The C-331 Process Building drains to the outfall via the storm sewer system. Contamination from the C-531 area, the C-745-E Cylinder Storage Yard, and the C-746-D Scrap Yard likely has been carried via surface water and sediments to Outfall 010.

Discharges from internal plant ditches are collected in a sump and pumped to the C-617-B Treatment Lagoon. From C-617-B the wastewater can be directed to either Outfall 010 or 011; however, because of PCB contamination in water and sediment in Outfall 011 that were verified in the mid-1990s, the Department of Energy directed that effluent be directed to Outfall 010 under normal flow condition.

The primary migration pathway into Outfall 010 is considered to be sediment and surface water contaminant migration via the storm sewer system. Release of contaminants to the ditches may occur during rain events that exceed the capacity of the plant lift stations, resulting in potentially untreated discharge.

PRESENT OPERATIONAL STATUS: Active.

DATES OPERATED: 1951 to Present.

BRIEF HISTORY: This ditch system was trenched when PGDP was built in 1951. The reported monthly average flow is 2.11 million liters per day (mlpd) (0.56 million gallons per day [mgpd]). Outfall 010 is equipped with a containment dam that can be used to divert flow to Outfall 011.

There have been no previous response actions and no Notices of Violation in the last ten years for the internal plant ditches to Outfall 010 or for the storm sewer system to Little Bayou Creek Outfalls.

Key Actions

- Issuance of the *Interim Corrective Measures Work Plan for Institutional Control of Off-Site Contamination in Surface Water in 1992.* The plan restricted casual public access to creeks, outfalls (including Outfall 010), and lagoons surrounding PGDP in 10 locations through the installation of fencing and identified the areas of contamination through the posting of warning signs.

SITE/PROCESS DESCRIPTION: Storm drainage ditch.

WASTE DESCRIPTION: Storm water runoff that exceeds the capacity of the storm sewer system flows into the plant ditch system. Runoff from the C-531 area, the C-745-E Cylinder Yard, and the C-746-D Scrap Yard likely has been carried via surface water and sediment to Outfall 010.

WASTE QUANTITY: Unknown.

SUMMARY OF ENVIRONMENTAL SAMPLING DATA: Monitoring results of surface water discharges through Outfall 010 demonstrate that, overall, the quality of the discharge water meets KPDES limits; however, sporadic detections of polychlorinated biphenyls (PCBs) have persisted. The primary investigations that characterized the contaminant levels in sediment and surface water of the effluent ditches are the Phase I and Phase II Site Investigation (SI) of PGDP; a site evaluation of effluent ditches 010, 011, and 012; and a 1996 PCB study of the U.S. Army Corps of Engineers (COE).

The Phase I and II SIs (1991 and 1992) conducted sampling at several locations within the internal ditches that flow to Outfall 010 in order to characterize the surface water contamination. The samples taken from the internal ditches and the outfall identified contamination as the following: ^{99}Tc has been identified at Outfall 010 surface water as high as 116 pCi/L and TCE at 3 µg/L. PCBs were not detected in the surface water. The primary sediment contaminants found in the 010 effluent ditch were dioxins, PCBs, and metals.

RELEASE SUSPECTED: The unit was used for discharging storm waters, which became contaminated from historical releases at the facility.

DESCRIPTION OF RELEASE AND MEDIA AFFECTED:

GROUNDWATER:	None known.
SURFACE WATER:	Potentially affected due to nature of unit and contaminants present.
SOIL:	Potentially affected due to nature of unit and contaminants present.
ECOLOGY:	Potentially affected due to nature of unit and contaminants present.

DOCUMENTATION OF NO RELEASE: No documented releases from this unit, contamination from upstream sources.

PRG COMPARISON: N/A

IMPACT ON OR BY OTHER SWMUS OR AOCS: SWMU 82 (C-531-2 Electrical Switchyard) and SWMU 16 (C-746 D Scrap Yard) drain into the Outfall 010 drainage area.

WASTE AREA GROUPING ASSIGNMENT: N/A.

OPERABLE UNIT ASSIGNMENT: Surface Water Operable Unit (SWOU)

- This unit has been placed in the SWOU for further evaluation and/or remediation.

REFERENCES:

Results of the Site Investigation, Phase I, at the Paducah Gaseous Diffusion Plant, KY/ER-4, March 1991

Results of the Site Investigation, Phase II, at the Paducah Gaseous Diffusion Plant, KY/SUB/13B-97777C P-03/191/14, April 1992

Interim Corrective Measures Workplan for Institutional Control of Off-Site Contamination in Surface Water; Outfalls, Creeks, and Lagoons, DOE-OR 1030, 1992

Final Site Evaluation Report for the Outfall 010, 011, 012 Areas, Paducah Gaseous Diffusion Plant, Paducah Kentucky, DOE/OR/07-1434&D1, 1995

Paducah Gaseous Diffusion Plant PCB Sediment Survey, Big Bayou Creek and Little Bayou Creek, Paducah, Kentucky, Final Report, United States Army Corps of Engineers, Nashville District, Nashville, TN, December 1996

Sampling and Analysis Plan for Site Investigation and Risk Assessment of the Surface Water Operable Unit (On-Site) at the Paducah Gaseous Diffusion Plant Paducah, Kentucky, DOE/OR/07-2137&D1, April 2004

DATE OF ORIGINAL SAR: Unknown.

DATE OF SAR REVISION: 7/30/04.

June 2004

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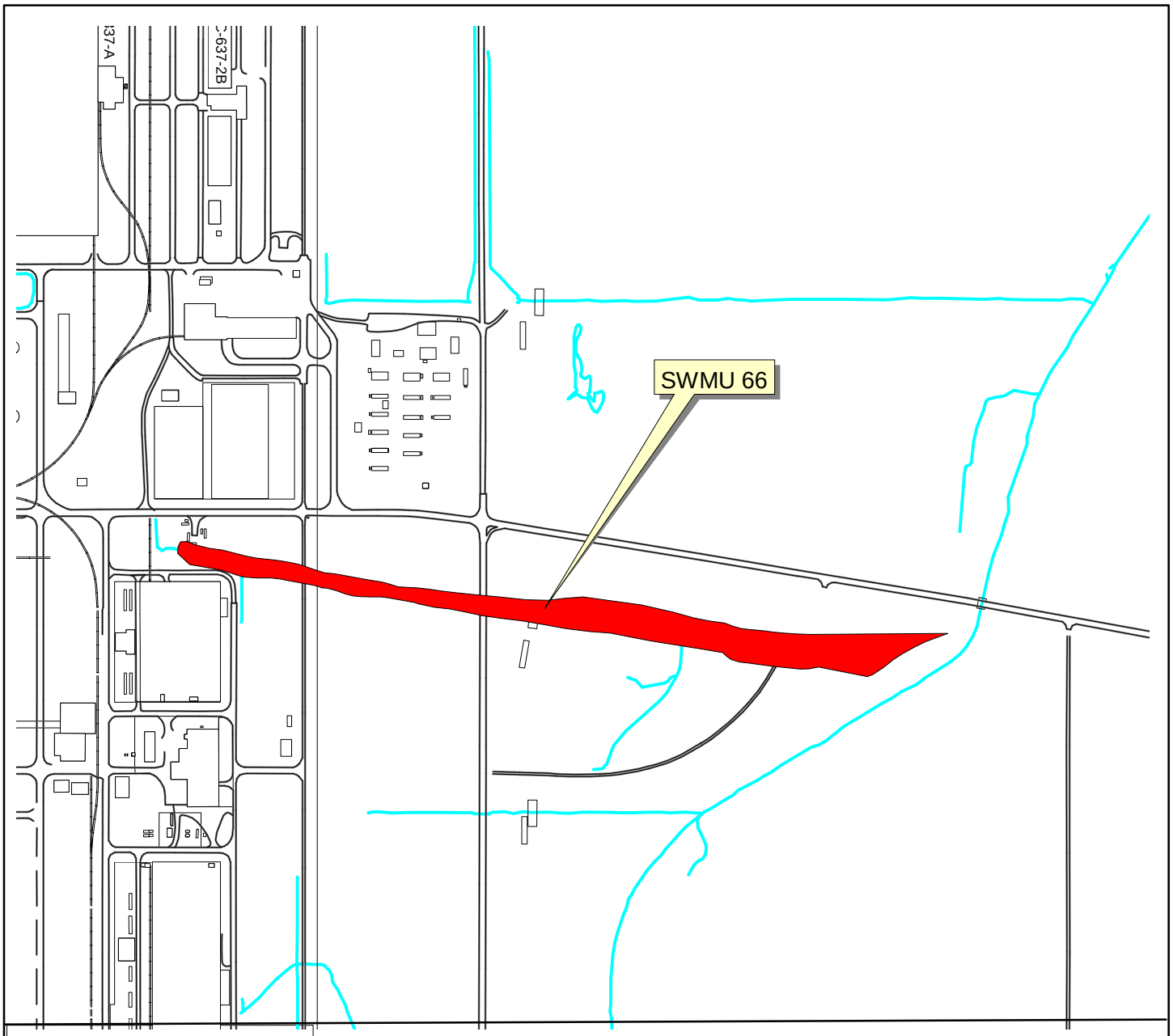
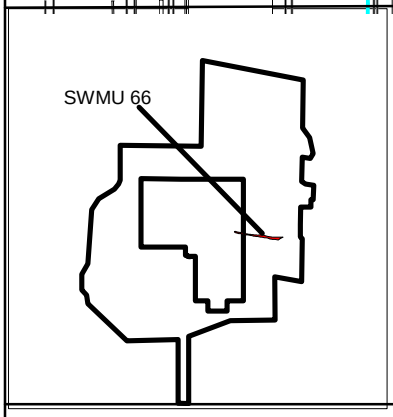
SWMU 66





LEGEND:

SWMU 66 Area
Buildings

0 300 600 900 Feet

TRUE NORTH
20°
PLANT NORTH

U.S. DEPARTMENT OF ENERGY
DOE OAK RIDGE OPERATIONS
PADUCAH GASEOUS DIFFUSION PLANT

BECHTEL JACOBS COMPANY LLC
MANAGED FOR THE US DEPARTMENT OF ENERGY UNDER
US GOVERNMENT CONTRACT DE-AC-05-03OR22980
Oak Ridge, Tennessee • Paducah, Kentucky• Portsmouth, Ohio

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CDM

FIGURE No. c5ac90002sk195.apr
DATE 06-04-04