C-375-W7 Oil Skimmer Ditch (KPDES 008)
Solid Waste Management Unit (SWMU) Assessment Report

SWMU/AOC NUMBER: 63

REGULATORY STATUS: SWMU

LOCATION: This SWMU is located on the southwest side of the Paducah Gaseous Diffusion Plant (PGDP) outside the controlled access area of the plant.

APPROXIMATE DIMENSION OR CAPACITY: Outfall 008 receives drainage from an area of approximately 36.52 hectares (ha) (90.4 acres). The SWMU itself is approximately 510 feet in length. The internal plant ditch system to Outfall 008 drains the southwestern part of the plant and is approximately 2723 meters (m) (12,215 feet [ft]) in length, unlined, and ranges from approximately 0.15 to 1.2 m (0.5 to 4 ft) deep.

PRESENT FUNCTION: Outfall 008 receives multiple waste streams from the southwest corner of the plant and discharges into Bayou Creek. These sources include storm water runoff from the surrounding area and flow from the C-615 Waste Water Treatment Plant that discharge through Outfall 004 into Outfall 008. Specific facilities that drain into Outfall 008 via the internal plant ditches include the following: the C-615 Sewage Disposal Plant (C-615-A Primary Settling Tank, C-615-B Final Settling Tank, C-615-C Control Building, C-615-D Digester, and C-615-E and C-615-F Trickling Filters) (SWMU 38); the C-747-C Oil Landfarm (SWMU 1); the C-745-A and C-746-H Cylinder Storage Yards; and the C-747 Burial Yard (SWMU 4). Because these waste streams flow to the outfall through the internal plant ditches, contamination from these areas potentially could have been carried via surface water and sediments to the outfall.

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 through Outfall 008 is 4.6 million liters per day (mlpd) (1.22 million gallons per day [mgpd]). The KPDES permit for Outfall 008 is maintained by the United States Enrichment Corporation.

Key Actions

The Commonwealth of Kentucky has issued one Notice of Violation during the past 10 years for this outfall (total chlorine exceedances reported in December 1996 and January 1997) according to the *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.* There have been no previous Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) response actions for the internal plant ditches or the storm sewer system to Outfall 008.

- Construction of an oil containment lagoon and oil control structure at SWMU 63 in the early 1980s to contain discharges of oil released to Outfall 008 from operations in the C-600 Steam Plant.

- An interim action documented in the *Interim Corrective Measures Workplan for Institutional Control of Off-Site Contamination in Surface Water; Outfalls, Creeks, and*

Lagoons. This work plan was implemented by DOE to restrict public access to creeks, outfalls, and lagoons surrounding PGDP and involved the installation of fencing and warning signs at various off-site locations along creeks and ditches to address concerns about the presence of contamination.

No other remedial actions have been taken to address potential contamination at SWMUs contained within the Outfall 008 drainage area.

SITE/PROCESS DESCRIPTION: The storm sewer that discharges to KPDES Outfall 008 drains numerous facilities in the central portion of PGDP and receives storm water runoff. Facilities draining into the storm sewer system to Outfall 008 include the following: the C-310 Purge and Product Building; the C-331 Process Building; the C-400 Cleaning Building; the C-402 Cleaning Building; the C-409 Stabilization Building; the C-410 Feed Plant; the C-411 Cell Maintenance Building; the C-420 Greensalt Plant; the C-600 Steam Plant and Supporting Facilities; the C-615 Sewage Disposal Plant; the C-720 Maintenance and Stores Building; C-721 Gas Manifold Storage; the C-724 Cleaning Facility; the C-729 Acetylene Building; the C-741 Mobile Equipment Building; the C-742 Cylinder Storage Building; the C-743 Office Building, and the C-744 Lubrication Building.

Primarily, the contaminant migration pathway is considered to be sediment and surface water contamination in the ditches to Outfall 008. Releases of any contamination present in the ditches to Outfall 008 likely would occur during high-flow rain events due to the increased volume of surface water runoff present at these times.

SWMU 38, the C-615 Sewage Disposal Plant, is part of the Outfall 008 drainage area and has been in operation since the plant was built in 1951. The facility receives effluent discharges from within PGDP and treats those effluents prior to discharge to Outfall 004. All 004 discharges now go through Outfall 008 prior to release to Bayou Creek. Potential contaminants from this waste source include polychlorinated biphenyls (PCBs) and uranium (from the *Report for Environmental Audit Supporting Transition of the Gaseous Diffusion Plants for the United States Enrichment Corporation*, DOE/OR/1087&D4).

WASTE DESCRIPTION: Storm water, oil from the C-600 air compressor plant, treated effluent from C-615 sewage treatment plant.

WASTE QUANTITY: Unknown.

SUMMARY OF ENVIRONMENTAL SAMPLING DATA: Previous investigations have been conducted at PGDP to characterize the contamination levels at Outfall 008 and the internal ditches that flow into it. The 1998 Waste Area Grouping 27 investigation provided sampling results. The surface water samples within the ditches of Outfall 008 detected ^{99}Tc at one of the three internal ditches at 8 pCi/L. At the outfall, the following detections were found: ^{99}Tc at 37 pCi/L, ^{234}U at 6.8 pCi/L, and ^{238}U at 7.1 pCi/L. Contaminants in the sediment samples were detected at the outfall in the following levels: ^{239}Pu at 80 pCi/g, ^{99}Tc at 2.3 pCi/g, ^{234}U at 2.14 pCi/g, and ^{238}U at 2.6 pCi/g. Additional sample information, such as surface soil samples associated with the ditches, can be found in the Phase I and II Site Investigation (SI), the WAG 23 Remedial Investigation (RI) Addendum, and the WAG 27 RI.

Two recent risk assessments that are documented in the *Estimates of Risk Posed to Human Health by Contamination Found in Sediment and Soil in Outfalls 001, 008, 010, 011, 015 at the Paducah Gaseous Diffusion Plant,* BJC/PAD-519, have been completed for Outfall 008. These are the screening human health risk assessment (SHHRA) and screening ecological risk assessment (SERA) performed in support of the Site-Wide Sediment Controls Project and a

SHHRA performed to support discussion with the regulators. In the later SHHRA, cumulative hazards and cancer risks to the industrial worker under default exposure were at levels below concern (i.e., less than a Hazard Index of 1 or a cancer risk less than 1×10^{-6}). In the SERA, the concentrations of several metals and organic compounds were detected in sediments and surface water, respectively, at concentrations that exceed the upper screening values (USVs) indicating that these contaminants pose an unacceptable risk to ecological receptors. Over all outfall ditches, contaminants detected at concentrations exceeding USVs included arsenic, chromium, mercury, nickel, PCBs, and polyaromatic hydrocarbons.

During the Phase I SI (1990), TCE and other organic products were detected in sediment collected from Outfall 008. The Phase II SI found no PCBs and no organics in Outfall 008.

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 38, the C-615 Sewage Disposal Plant, is part of the Outfall 008 drainage area and has been in operation since the plant was built in 1951. SWMU 129 (concrete rubble pile) is located within SWMU 63. Other specific facilities that drain into Outfall 008 via the internal plant ditches include the following: C-747-C Oil Landfarm (SWMU 1) and the C-747 Burial Yard (SWMU 4).

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

Remedial Investigation Addendum for WAG 23 at Paducah Gaseous Diffusion Plant, Paducah, Kentucky, September 1994

Remedial Investigation Report for WAG 27 at Paducah Gaseous Diffusion Plant, Paducah, Kentucky, DOE/OR/07-1777&D2, December 1998

Estimates of Risk Posed to Human Health by Contamination Found in Sediment and Soil in Outfalls 001, 008, 010, 011, 015 at the Paducah Gaseous Diffusion Plant, BJC/PAD-519, March 2003

Report for Environmental Audit Supporting Transition of the Gaseous Diffusion Plants to the United States Enrichment Corporation, DOE/OR/1087&D4, June 2003

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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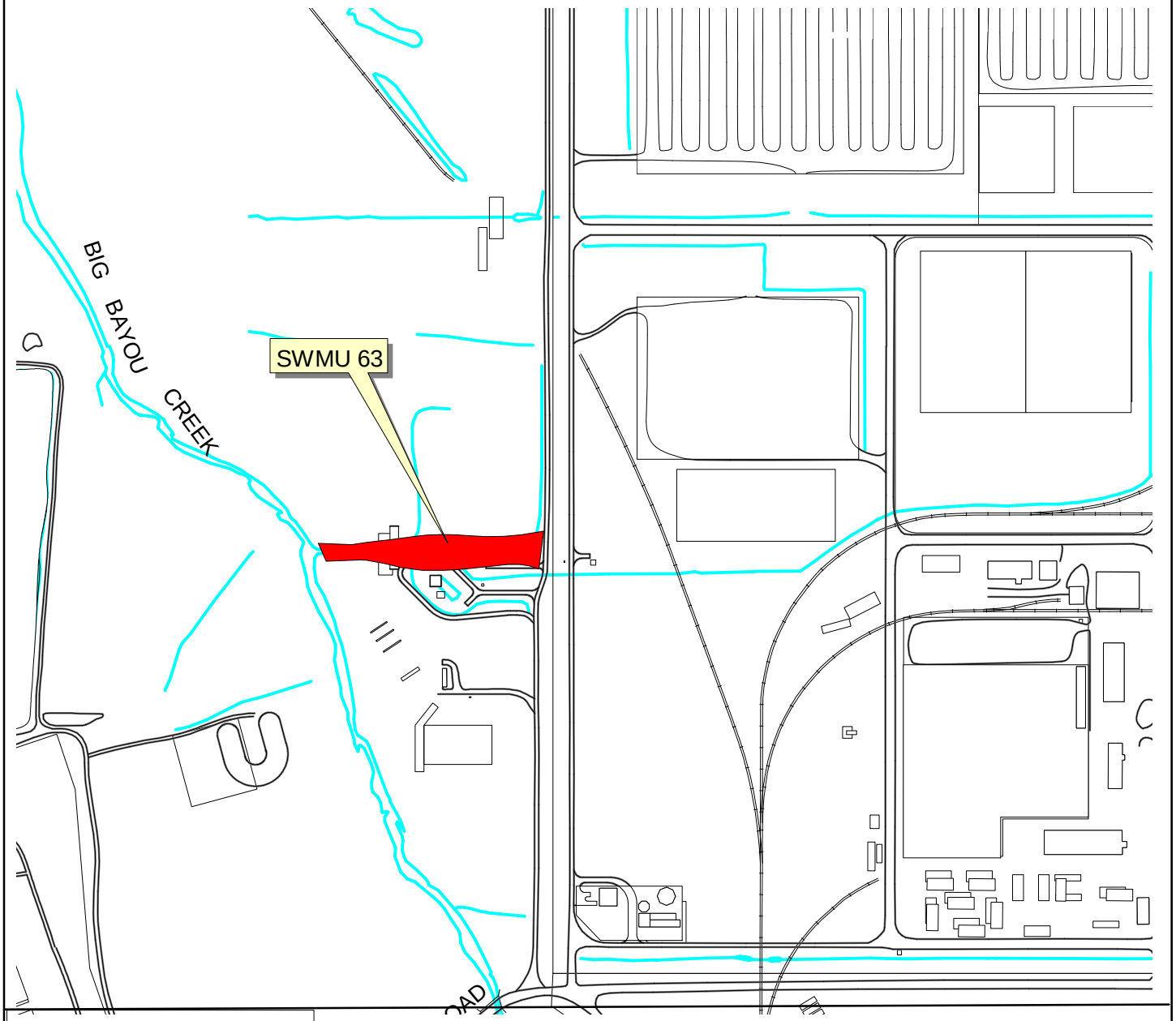
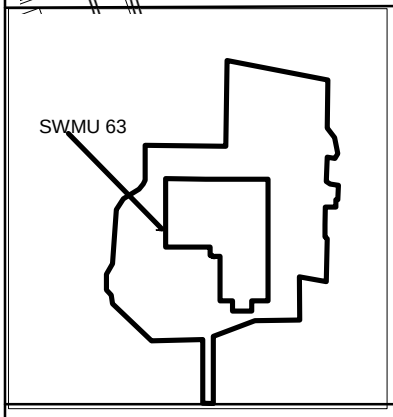
SWMU 63





LEGEND:

SWMU 63 Area
Buildings

0 200 400 600 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

SWMU 63 C-375-W7 Oil Skimmer Ditch (KPDES 008)

CDM

FIGURE No. c5ac90002sk194.apr
DATE 06-04-04