

THE PINELLAS PLANT RCRA FACILITY INVESTIGATION - A CASE STUDY

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ABSTRACT

Under the direction of the U.S. Department of Energy Albuquerque Field Office Environmental Restoration Program, a Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) was completed at the Pinellas Plant to fulfill requirements of the Hazardous and Solid Waste Amendments of 1984 (HSWA) permit issued on February 9, 1990 by the U.S. Environmental Protection Agency (EPA)(1). This RFI addressed potential contaminant releases and environmental conditions at 15 solid waste management units (SWMUs). The RFI characterization program began in April 1990 and was completed in May 1991. The scope of RFI data collection activities is presented in the Pinellas Plant RFI Workplan issued in May 1990 and approved by EPA on April 16, 1991 (2). An RFI Report was submitted to EPA on September 1, 1991 (3). This paper presents a summary of RFI results and conclusions. Primary environmental concerns at the Pinellas Plant are emphasized.

RFI PROGRAM DESCRIPTION

This RFI addressed potential contaminant releases and environmental conditions at 14 SWMUs identified in the HSWA Permit and at an additional SWMU (PIN16) identified in a RCRA Facility Assessment (RFA) issued in August 1990 (4). Table I summarizes and describes each SWMU; Fig. 1 shows the Pinellas Plant location; Fig. 2 shows SWMU locations. The primary objectives of the RFI were to determine whether historic waste management sites have released contaminants to the environment and whether these sites pose any risk to the public and the environment that may require corrective measures.

The RFI consisted of a sampling program that included the collection of over 380 surface water, sediment, soil, and groundwater samples. Groundwater sampling events were conducted during June 1989; May, June, and November 1990; and during March 1991. Approximately 53 additional wells were installed at the Pinellas Plant as part of the RFI. Environmental samples collected during the RFI were analyzed using EPA Contract Laboratory Program (CLP) and SW-846 methods (5). In addition to determining the nature and extent of any contamination, these data are intended for use in completing risk assessments, modeling studies, Corrective Measure Studies (CMSs), and engineering design. As such, they are classified as EPA Analytical Level IV data (6). Complete CLP data quality packages were not submitted with these data, but if required, they can be produced and submitted.

The RFI Report presents the results of the RFI data collection activities and provides recommendations and justification for completing (or not completing) a CMS for each Pinellas Plant SWMU. The RFI report is a three-volume document that contains eight primary sections and eighteen appendices. Positive results (hits) were included in report appendices for all media and sampling stations. Electronic deliverables from laboratories were used to load all RFI data to Roy F. Weston's PC-based DART database system. A digital record of all data, including negative results, was submitted with the RFI Report to EPA.

PLANT DESCRIPTION

The Pinellas Plant was constructed in the mid-1950s as part of the DOE's nuclear weapons research and development program (Figs. 1 and 2). Administration is the responsibility of DOEAL; management of the Pinellas Plant has been contracted to the General Electric Company Neutron Devices Department. The Pinellas Plant is located in Section 13, Township 30 South, Range 15 East, on a 99.2-acre site in Pinellas County, Florida. The county is situated along the west central coastline of Florida on a peninsula that separates Tampa Bay from the Gulf of Mexico. The city of Tampa is located approximately 30 miles east of the Pinellas Plant, while St. Petersburg is about 6 miles to the south.

The fifteen SWMUs (PIN02 through PIN16) addressed during the RFI are located throughout the plant area, and involve potential surface and subsurface contamination related to past disposal or operational practices that involved

TABLE I

Pinellas Plant SWMUs

SWMU Number	SWMU	Description and Operational History
PIN02	West Pond	A 2.6-million-gallon, man-made pond that was constructed as a borrow pit in 1956 and was enlarged in 1966 to its current surface area of 1.63 acres. Between 1972 and 1982, the pond received tertiary-treated sanitary sewage and pH-neutralized industrial waste.
PIN03	Spray Irrigation Site	This site is a 10-acre tract of land with an underground drainage system. It was a land treatment site for pH-neutralized industrial effluent and tertiary-treated sanitary sewage from 1972 to 1982.
PIN04	Metallic Anomaly	A metallic anomaly was identified during an electromagnetic survey conducted by the USGS in 1985. The anomaly was found to correspond to the location of a utility pipe discovered during the RFI.
PIN05	Trenches	Several trenches thought to have received slurry waste from water softeners in the late 1950s. The trenches are believed to have been excavated west of the West Pond.
PIN06	Old Drum Storage Site	The site of a former storage pad for empty drums that may have contained waste solvents. The pad was steam cleaned and removed in October 1983 in accordance with an FDER closure permit.
PIN07	Pistol Range	A former small-arms firing range for plant guards. The site was located west of the West Pond and operated from 1972 to 1985. Most of the backstop was removed in 1985 and the remaining structures were demolished and removed in 1988.
PIN08	Closed Fire Department Training Tank	A former location of a fire department training tank used by the Pinellas Plant fire department. From the early 1960s to 1973, the Pinellas Plant fire department practiced fire-fighting techniques near Building 400 by extinguishing burning flammable liquids and oil in a 12-ft-diameter tank.
PIN09	Incineration Site	From 1956 to 1982, paper, dried sewage sludge, and flammable liquids were burned in three incinerators. Two of the incinerators were used to burn solid material, while the third was used to burn flammable liquids. The liquids incinerator and the second solids incinerator operated from 1973 to 1982.
PIN10	Incinerator Ditch	A northeast-southwest-trending ditch located north of Building 700 and west of PIN09 that formerly received incinerator scrubber water and suspected disposal location of small quantities of waste solvents. Its primary function was to serve as a channel for stormwater runoff.
PIN11	Diesel Fuel Spill	Between 10,000 and 12,000 gallons of No. 2 diesel fuel leaked from a broken pipe on January 21, 1983, near the northwest corner of the north parking lot. Impregnated soil was excavated; the contaminated area was backfilled.
PIN12	Industrial Drain Leaks Building 100	Areas beneath Building 100 where potential leaks have occurred from the industrial and health physics drainage system. The health physics system was originally composed of two piping systems: standard and chemical. The chemical system handled fluids with the potential for contact with either tritium or hazardous wastes. The industrial system disposes of all non-hazardous liquids such as acids, caustics, and rinses.
PIN13	Southwest Ditch	The locations of former industrial and sanitary effluent outfalls from the Pinellas Plant. From 1957 to 1968, pH-neutralized industrial wastewater, tertiary-treated sewage effluent, low-level tritiated wastewater, and surface runoff flowed into the ditch.
PIN14	Current Fire Department Training Tank	The current department fire training tank used by the plant fire department is located east of the West Pond. From 1972 to 1988, this area was used for fire training exercises involving diesel fuel, used crankcase oil, and other flammable liquids or solvents.
PIN15	Northeast Site Including the East Pond	The Northeast Site is associated with the location of a former waste solvent staging and storage area. The East Pond received pH-neutralized industrial waste and tertiary-treated sanitary waste from 1968 to 1972.
PIN16	Building 500 Spill Site	Former location of an oil drain associated with compressor blowdown north of Building 500. The compressor operated in Building 500 from 1964 to 1981 and was removed in 1981. Approximately 750 cubic ft of stained soils were discovered during excavation of water pipes.

Note: Locations for all SWMUs are shown on Figure 2.

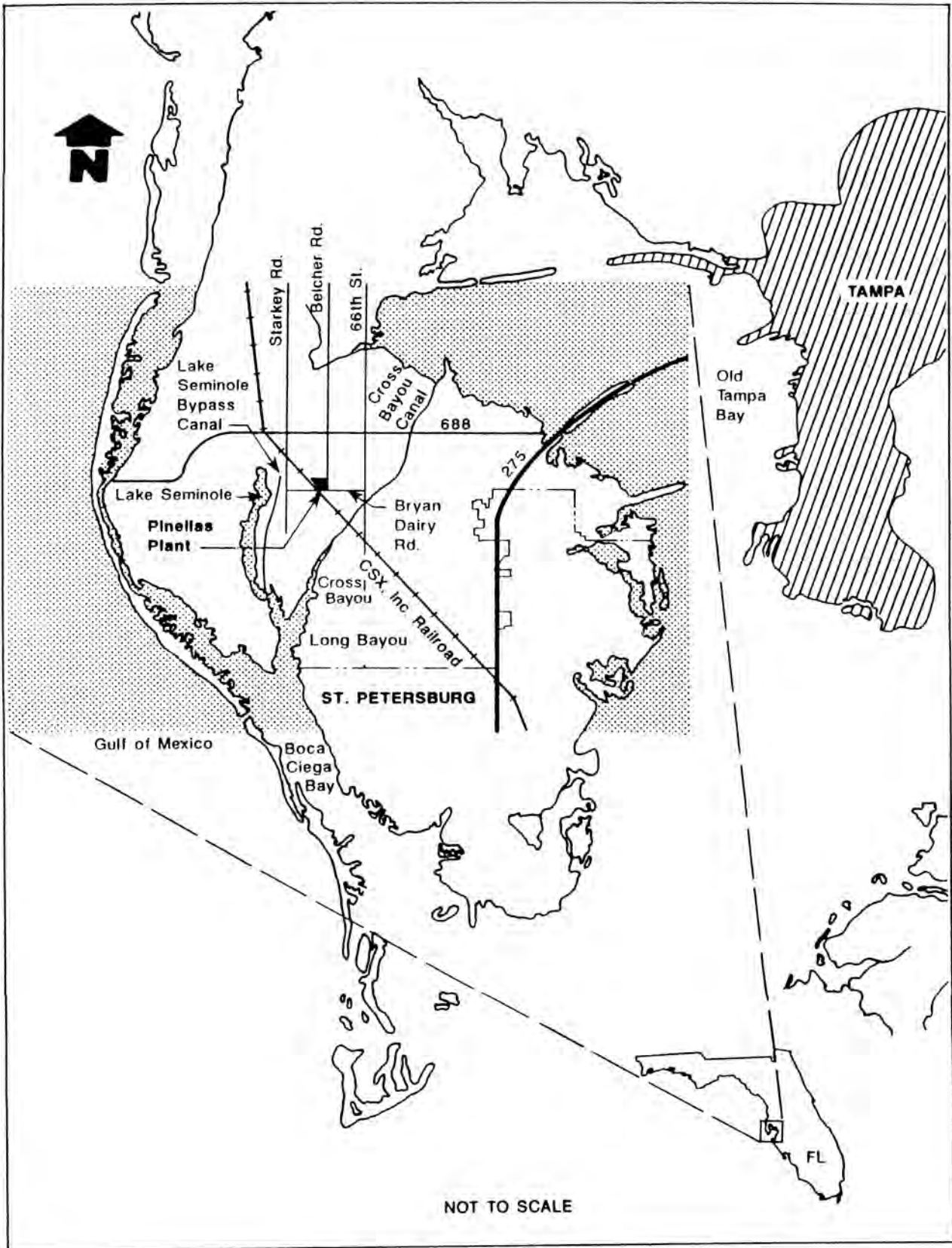


Fig. 1. Pinellas Plant location.

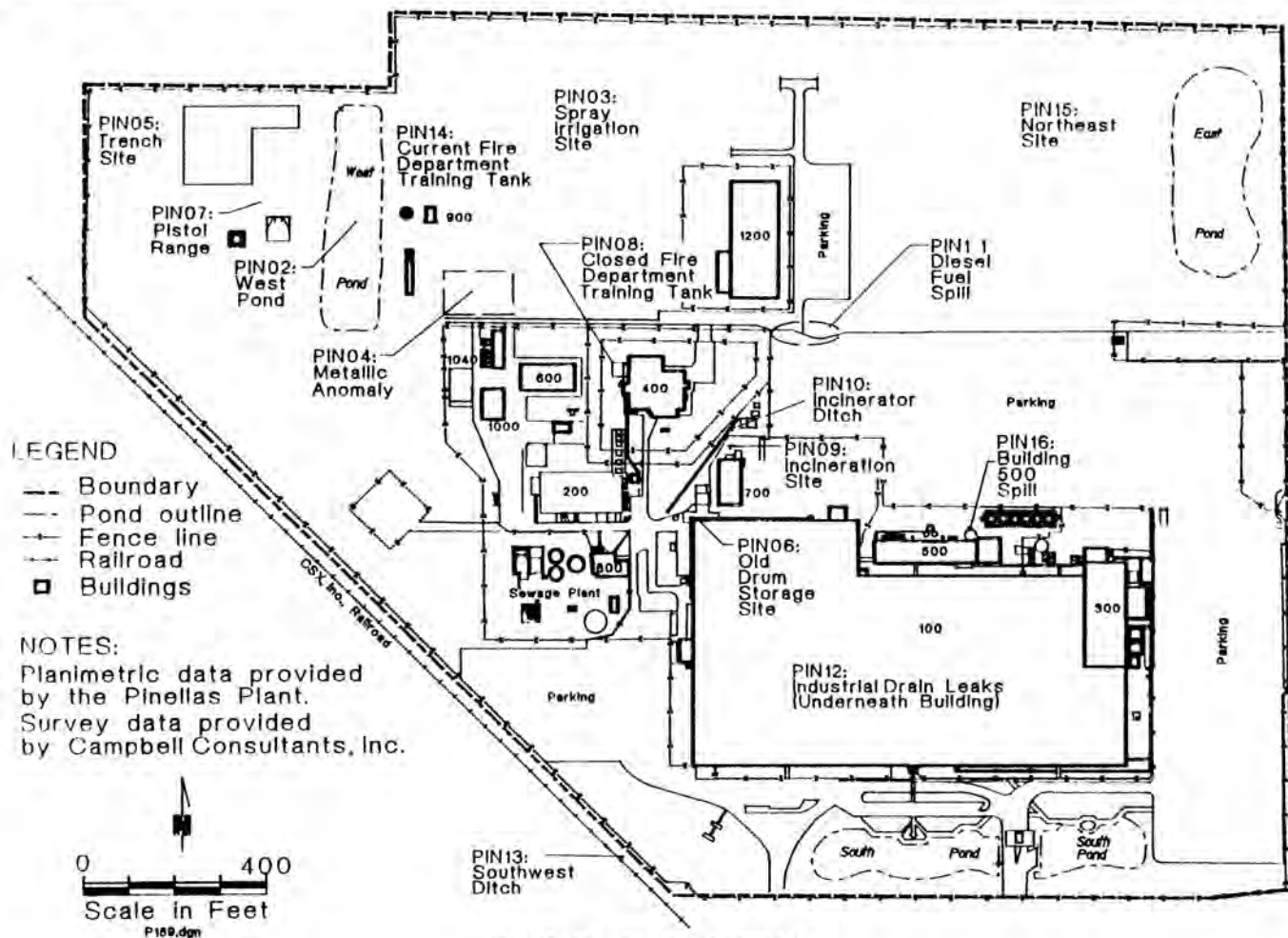


Fig. 2. Pinellas Plant SWMUs.

releases to the land surface (Table I and Fig. 2). The West Pond (PIN02), the Spray Irrigation Site (PIN03), and the East Pond (PIN15) are sites related to past industrial wastewater treatment practices. Other Pinellas Plant SWMUs are related to past solid waste, past incineration of ignitable liquid waste, past fire training practices, a diesel fuel leak, industrial drain leaks, drum storage practices, and trenches used as part of past industrial waste stream handling practices (Table I). No air releases are currently or were in the past related to Pinellas Plant SWMUs. The RFI Report recommends that the air pathway not be considered as part of the RCRA Corrective Action Process (3).

SWMUs RECOMMENDED FOR NO FURTHER ACTION

Based on groundwater and soil sampling results, DOE concluded that no environmental pathways are affected by past waste disposal practices at nine SWMUs. Five of the nine SWMUs recommended for NFA were found to be free of groundwater contamination. These SWMUs are:

- PIN03 - Spray Irrigation Site
- PIN05 - Trench Site
- PIN08 - Closed Fire Department Training Tank
- PIN09 - Incineration Site
- PIN10 - Incineration Ditch

At four of the nine SWMUs listed for NFA, contamination was detected below standards or levels of concern, or the site was found not to be a concern because there was no

releases or former waste disposal activities. These SWMUs are described below.

West Pond (PIN02)

The West Pond is a man-made surface water impoundment that received pH-neutralized industrial effluent and tertiary treated sanitary sewage from 1972 to 1982 (Fig. 2). Surface water, sediment, soil, and groundwater samples collected during the RFI showed that results for surface water samples were well below Florida Department of Regulation (FDER) ecological standards and current Safe Drinking Water Act (SDWA) and FDER Maximum Contaminant Levels (MCLs). Dissolved oxygen profiles measured in the pond during the RFI indicated that the pond is capable of supporting healthy aquatic biota. Groundwater sample results for four wells installed around the perimeter of the pond were below SDWA and FDER MCLs. For the past few years, osprey have nested at the Pinellas Plant, are observed feeding on fish at the West Pond, and have successfully produced offspring. DOE recommended that no further action be required at the West Pond.

Metallic Anomaly (PIN04)

Preliminary geophysical surveys of the Pinellas Plant conducted by the U.S. Geological Survey (USGS) suggested that a metallic mass may be present in the subsurface north of Building 600 at the southwest edge of the Spray Irrigation Site (Fig. 2). It was determined that the anomaly is associated with

a utility line and that no other conductive metal debris or contaminant plumes are present at the Metallic Anomaly Site. An NFA recommendation is expected to be approved for PIN04.

Southwest Ditch (PIN13)

A vegetated ditch, located along the southwest property boundary of the Pinellas Plant, is referred to as the Southwest Ditch (Fig. 2). Employee interviews indicate that from 1957 to 1968 pH-neutralized industrial wastewater, tertiary treated sewage effluent, health physics effluent (low-level tritiated wastewater), and surface water runoff flowed into the Southwest Ditch. Runoff from the ditch proceeds south to Cross Bayou Canal.

Groundwater was sampled at PIN13 in June 1989, May 1990, and March 1991. No VOCs or pesticides/PCBs were detected in groundwater. In June 1989, Bis(2-ethylhexyl)phthalate was detected at 10 $\mu\text{g/L}$. Four subsequent RFI events showed bis(2-ethylhexyl)phthalate as a laboratory blank. DOE recommended no further action for PIN13.

Current Fire Department Training Tank (PIN14)

From 1972 to 1988, this site was used for fire training exercises. Training practices involved the use of diesel fuel, used crankcase oil, and possibly other flammable liquids or solvents. Past sampling activities at the tank showed that sludge from the fire training tank exceeded the former EP Toxicity criteria for lead and chromium. Soil in the vicinity of this area is discolored by oil stains.

RFI soil samples were analyzed for VOCs, semivolatile organic compounds, metals, and pesticides/PCBs. Toluene was detected in soils at concentrations of up to 6 $\mu\text{g/kg}$, well below the proposed RCRA action level. 2-Methylnaphthalene was detected at concentrations up to 9,600 $\mu\text{g/kg}$. Phenanthrene was detected at concentrations of up to 720 $\mu\text{g/kg}$. No metals were detected at levels considered to pose any environmental threat. No pesticides/PCBs were detected.

As part of the RFI, a single monitoring well was located between the fire training tank and the thermal treatment pad, near visible soil staining. Groundwater was sampled in this well in May, June, and November 1990, and in March 1991. Samples were analyzed for VOCs, semivolatile organic compounds, metals, pesticides/PCBs, nitrate/nitrite, tritium, and major ions. Acetone concentrations detected in groundwater (up to 66 $\mu\text{g/L}$) were below the proposed RCRA action level of 4,000 $\mu\text{g/L}$. No semivolatile organic compounds were detected. Heptachlor epoxide, a pesticide, was detected in groundwater at concentrations up to 0.084 $\mu\text{g/L}$. The FDER and SDWA MCL is 0.2 $\mu\text{g/L}$. Because no contaminants were detected above current standards in soil or groundwater at PIN14, DOE recommended no further action.

SWMUs RECOMMENDED FOR CORRECTIVE MEASURE STUDIES

Pistol Range (PIN07)

The former Pistol Range (PIN07) was located west of the West Pond in the northern section of the Pinellas Plant (Fig. 2). The Pistol Range consisted of a covered firing area with an earthen backstop behind the target area, and operated from 1972 to 1985 as the primary location for target practice for plant guards. The backstop material was removed and dis-

posed of offsite in 1985 at a hazardous waste disposal facility. The remaining structures at the Pistol Range were demolished and removed in 1988.

RFI results confirmed elevated levels of lead measured in surface soil samples. EP Toxicity leachate results ranged up to 8,030 $\mu\text{g/L}$; current Toxic Characteristic Leaching Procedure (TCLP) standards are expected to be elevated. Metal results for groundwater were below SDWA MCLs. Previous results and RFI results indicate that the extent of contamination at PIN07 is generally confined to the former Pistol Range area. The debris piles and former backstop area did not reveal levels of contaminants that exceed standards or are of concern. The DOE recommended that a CMS be completed for the Pistol Range that will focus on shallow surface soil contamination within the area of the former Pistol Range. The goal is to remove lead from the area before this metal leaches to groundwater. Because corrective action at the Pistol Range is likely to consist of the removal and disposal of a relatively small volume of surface soil, the DOE anticipates that this action can be implemented as an interim remedial action.

The Northeast Site Including the East Pond (PIN15)

The Northeast Site has been designated by EPA Region IV to include all of the northeast section of the Pinellas Plant located within the perimeter fence and bounded by the Spray Irrigation Site on the west and the parking lot to the south (Fig. 2). Concern associated with this site is from former drum storage and disposal activities conducted at the site and the past discharge of industrial wastes to the East Pond (Table I).

VOCs detected in East Pond sediments were acetone, 2-butanone, benzene, and xylenes up to 460 mg/kg. Semivolatile compounds were measured in concentrations up to 30,000 $\mu\text{g/kg}$. None of these results exceeded proposed RCRA action limits for soils.

As part of the RFI, 20 wells were sampled at PIN15 in November 1990 and March 1991. Methylene chloride was identified as a valid field contaminant in wells PIN15-0502, PIN15-0503, PIN15-0514, and PIN15-0517 in concentrations up to 670,000 $\mu\text{g/L}$. Contaminants that exceed drinking water standards at PIN15 include benzene, TCE, and vinyl chloride. Other detected VOCs include dichloromethane (methylene chloride), ethylbenzene, toluene, 1,2-DCE, 1,1-DCA, and total xylenes.

Surface water samples were collected from three East Pond locations in March 1991. Samples were analyzed for VOCs, metals, ions, and nitrate/nitrite. 1,2-DCE was detected at sampling station 0102 at 6 $\mu\text{g/L}$. RFI results for groundwater at PIN15 show elevated levels of VOCs. Surface water samples collected from the East Pond show concentrations of mercury slightly above SDWA MCLs and FDER drinking water standards. Soil results showed measured concentrations of VOCs, including low levels of vinyl chloride. DOE recommended that a CMS be completed for PIN15 (3). The impact of and risk posed by contaminated soils, surface water, and groundwater will be addressed as part of the CMS. Because it is located adjacent to the Pinellas Plant property boundary, the DOE has completed a design for an interim remedial action (IRM). This IRM consists of four groundwater extraction wells that will create a capture zone and provide hydraulic containment until a final corrective action is approved by EPA.

Old Drum Storage Site (PIN06) and the Building 100 Drain Leaks (PIN12)

The Old Drum Storage Site and the Building 100 drain leaks are presented together because contaminated PIN06 and PIN12 wells were found in the same vicinity at the northern perimeter of Building 100 (Fig. 2). The Old Drum Storage Site was located near the northwest corner of Building 100 at the Pinellas Plant. An 18-by-18-ft concrete storage pad, equipped with a drain and containment system, was present for an unknown period of time. The pad was used to store hazardous waste, including methylene chloride, ignitable liquids, arsenic, and calcium chromate solids. The drum storage pad was steam-cleaned and removed in October 1983. PIN12 consists of the liquid waste system serving Building 100 at the Pinellas Plant that is comprised of health physics, chemical, sanitary, and storm drainage systems. Over the years, as a result of pipe corrosion, a number of leaks may have occurred in these systems.

PIN06 and PIN12 groundwater samples collected in May, June, and November 1990, and March 1991 were analyzed for VOCs, semivolatile organic compounds, metals, pesticides/PCBs, nitrate/nitrite, tritium, and major ions. 1,1-Dichloroethane (1,1-DCA) was measured in four of eight groundwater samples at concentrations up to 290 $\mu\text{g/L}$ in well PIN06-0501. 1,1-dichloroethene (1,1-DCE) was measured up to 140 $\mu\text{g/L}$. The SDWA MCL for 1,1-DCE is 7 $\mu\text{g/L}$. 1,1,1-trichloroethane (1,1,1-TCA) was measured up to 510 $\mu\text{g/L}$. The SDWA MCL for 1,1,1-TCA is 200 $\mu\text{g/L}$. Vinyl chloride was measured in four of eight PIN06 samples from 11 to 67 $\mu\text{g/L}$. The FDER drinking water standard for vinyl chloride is 1 $\mu\text{g/L}$. TCE was measured in well PIN06-0501 up to 9 $\mu\text{g/L}$.

Three PIN12 wells showed levels of 1,2-DCE up to 7 $\mu\text{g/L}$; the SDWA MCL is 70 $\mu\text{g/L}$. Benzene was measured in one well up to 28 $\mu\text{g/L}$ in three of the four sampling events; the SDWA MCL is 5 $\mu\text{g/L}$. Vinyl chloride was measured in well PIN12-0508 in three of four sampling events up to 11 $\mu\text{g/L}$. The extent of groundwater contamination at PIN12 is confined to wells PIN12-0508 and PIN12-0510. DOE recommended that a CMS be completed for PIN06 and PIN12 (3). Because contaminated wells for these SWMUs are adjacent to each other along the northern perimeter of Building 100, and because the contamination is similar in nature, CMSs for these SWMUs will be completed concurrently as a single corrective action management unit (CAMU).

SWMUs RECOMMENDED FOR CONTINUED MONITORING

The DOE recommended that the Diesel Fuel Spill (PIN11) and the Building 500 Spill Site (PIN16) undergo additional groundwater monitoring before a decision is made regarding the need to complete a CMS for these SWMUs.

Diesel Fuel Spill (PIN11)

A diesel fuel spill was discovered on January 21, 1983, near the northwest corner of the north parking lot at Pinellas Plant and was reported to EPA and FDER. The spill of No. 2 diesel fuel was estimated at between 10,000 and 12,000 gallons and was due to a broken pipe. Contaminated soil was removed from the spill site and spread adjacent to the current fire training ground to allow for evaporation. The contaminated area was backfilled following excavation. The closure of this spill was documented by a closure report (7). Investiga-

tion activities conducted as part of this RFI focused on evaluating the effectiveness of cleanup activities conducted following the spill.

The extent of groundwater contamination at PIN11 is probably confined to the former spill area. With the exception of estimated levels of vinyl chloride that range up to 5 $\mu\text{g/L}$, no contaminants exceed protection standards in groundwater at PIN11. In addition, vinyl chloride was undetected in three of the five RFI sampling events. DOE recommended that additional groundwater data be collected at PIN11 to confirm or refute the presence of groundwater contamination, and that four additional quarterly samples be collected and sampled from all PIN11 wells as part of the Pinellas Plant's ongoing groundwater monitoring program.

Building 500 Spill Site (PIN16)

In a memorandum dated June 12, 1990, DOE advised EPA that an additional SWMU had been identified at the Pinellas Plant. The site consists of soil contamination discovered north and adjacent to Building 500 (Fig. 2). In accordance with the Pinellas Plant HSWA Permit, in August 1990 an RFA Plan was submitted to EPA for the investigation of this site.

Well PIN16-0500 was installed and sampled in March 1991. Total petroleum hydrocarbon levels in soil that range up to 2,300 mg/kg indicate that there may be a potential for future migration of contaminants to groundwater. Currently, groundwater at PIN16 is free of organic contamination. Because well PIN16-0500 has been sampled only once, the DOE recommended that a decision to conduct a CMS at PIN16 be deferred until more data are available. It was recommended that the well be sampled a minimum of three more times to confirm observed trends.

FLORIDAN AQUIFER

The Surficial aquifer that is contaminated at some sites at the Pinellas Plant is underlain by the Hawthorn Formation that extends from an approximate depth of 30 to 90 feet below ground surface. Pinellas Plant drilling logs for wells that extend through the Hawthorn Formation show a range of thickness from 55 to 78 feet. The Hawthorn is described as a greenish gray calcareous clay or marl, and is regarded to be an aquitard in the Pinellas County area. The Floridan aquifer lies below the Hawthorn Formation and is the primary source for municipal and industrial water supply in Pinellas County. Municipal well fields are located approximately 5 miles north of the Pinellas Plant.

During the early planning stages of the RFI, EPA expressed concern that all steps must be taken to evaluate any potential effects on the Floridan aquifer from past Pinellas Plant operations. The RFI Workplan contained various types of data collection activities including conducting aquifer tests, sampling Floridan aquifer wells, and conducting permeability tests to determine if the Floridan aquifer has been, or will be in the future, affected by past plant operations. All results from these RFI data collection activities showed that the Floridan aquifer is unaffected by past plant operations, and it is unlikely that the aquifer will be affected in the foreseeable future. Presented below is a brief summary of RFI activities completed to characterize the Hawthorn Formation.

Floridan Aquifer Groundwater Quality: Groundwater quality of the Floridan aquifer measured at three wells during

the RFI shows that the Floridan is free of contamination below and down gradient from the PIN15 groundwater plume. The three Floridan aquifer wells are located in the area that is most likely to have been affected by past plant operations, but consistently measured as free of contamination.

Permeabilities: Measured permeabilities of the Hawthorn Formation are orders of magnitude less than those measured for the surficial aquifer, ranging from 1.5E-08 to 2.4E-05 cm/sec.

Vertical Flow: Vertical gradients and flow velocities through the Hawthorn are small. Vertical travel times calculated through the Hawthorn Formation range from 540 to 788 years. USGS estimates are relatively slower.

Sinkholes: Sinkhole occurrence in Pinellas County is not common. Based on data reported by the Southwest Florida Water Management District (SWFWMD), one will occur at the Pinellas Plant every 1,340 years. SWFWMD reports only five sinkholes within a five-mile radius of the Pinellas Plant.

Continuous Groundwater Surface: No consistent or prevalent groundwater depressions exist at the Plant that would indicate active downward hydraulic flow through the Hawthorn Formation. If a hydraulic connection did exist between the surficial aquifer and the Floridan, a groundwater depression would be apparent.

Stratigraphic Continuity: All wellbores located at the Pinellas Plant that are drilled deep enough to tag the Hawthorn Formation did encounter the Hawthorn Formation. This indicates that the Hawthorn is continuous across the plant.

Chemical characteristics: Chemical characteristics of the Hawthorn Formation measured during the RFI indicate that chemical adsorptive potential is high compared to the surficial aquifer. Measured cation exchange capacity ranges from 14.9 to 25.6 milliequivalents/100 grams. This characteristic indicates that adsorption would play a significant role in retardation of organic compounds in the Hawthorn Formation.

The DOE concluded that all data collected to date indicate that the Floridan aquifer has not been affected by past plant operational activities (3). With the exception of data from groundwater monitoring activities conducted as part of the long-term groundwater monitoring program, DOE concludes that no further action is required for the Floridan aquifer.

CORRECTIVE MEASURE STUDIES

The RFI Report recommended that CMSs be completed for four of the fifteen Pinellas Plant SWMUs. Currently, a Corrective Measure Study Plan is being prepared in partial satisfaction of HSWA Permit conditions. This plan will present the scope and schedule for all data collection activities and other activities that will be defined as part of CMSs for the Pinellas Plant. CAMUs are operable units that will be addressed under a single CMS. These are defined as:

- CAMU 1: VOC contaminated groundwater at SWMUs PIN06 and PIN12;
- CAMU 2: SWMU PIN07 lead contaminated soils; and
- CAMU 3: SWMU PIN15 groundwater, surface water, and soils.

The CMS Plan will provide the technical approach and milestones for the corrective action selection process for each

CAMU, including the technical approach that will be used for:

- defining corrective action objectives;
- identifying preliminary corrective measure technologies;
- screening corrective measure technologies; and
- completing the final alternative evaluation and selecting the preferred corrective measure.

CMS report delivery schedules will be included in the CMS Plan with a proposed CMS report format.

PROGRAM SUMMARY

The Pinellas Plant RFI is considered a success by both EPA and DOE. The success of this program is directly related to the mutual cooperation of EPA Region IV staff and DOE Pinellas Area Office staff. The RFI was a dynamic and flexible process; subsequent sampling programs sometimes deviated from the RFI Workplan when previous results indicated a need to collect more data or different types of data at specific locations. The EPA was consulted early and frequently regarding important issues that surfaced during various stages of the RFI. In this manner, both EPA and DOE functioned as active participants in the RFI process. This relationship proved valuable during the RFI and will continue to provide benefits and momentum during the remainder of the RCRA corrective action process at the Pinellas Plant.

REFERENCES

1. EPA, 1990, RCRA Hazardous and Solid Waste Amendments Permit, U.S. DOE Pinellas Plant, Largo, Florida, (EPA ID No. FL6-890-090-008), (February 9, 1990).
2. DOE, 1990, "RCRA Facility Investigation - Pinellas Plant, Task 4, Miscellaneous Sites Work Plan [DRAFT]," Environmental Restoration Program, U.S. Department of Energy, Albuquerque Operations Office, Albuquerque, New Mexico, (May 1990).
3. DOE, 1991, "RCRA Facility Investigation Report, Pinellas Plant," Environmental Restoration Program, U.S. Department of Energy, Albuquerque Operations Field Office, Albuquerque, New Mexico, (September 1991).
4. DOE, 1990, "RCRA Facility Assessment Plan SWMU No. 16 (New) U.S. DOE Pinellas Plant," Environmental Restoration Program, U.S. Department of Energy, Albuquerque Operations Office, Albuquerque, New Mexico, (August 1990).
5. EPA, 1986, "Test Methods For Evaluation of Solid Waste," U.S. Environmental Protection Agency Report SW-846, Third Edition, U.S. Environmental Protection Agency, Washington, D.C.
6. EPA, 1987, "Data Quality Objectives for Remedial Response Activities Development Process," U.S. Environmental Protection Agency, Office of Emergency and Remedial Response and Office of Waste Programs Enforcement, Washington, D.C., OSWER Directive 9355.0-7B, (March 1987).
7. GE, 1983, Report of the Investigation of the No. 2 Diesel Fuel Oil Leak, prepared by the Diesel Fuel Spill Investigation Board, General Electric Company, Pinellas Plant, Largo, Florida, (March 1983).