

Florida Petroleum Reprocessors
3211 Southwest 50th Avenue
Davie, Florida
County: Broward
District: Southeast
Site Lead: EPA
Placed on National Priorities List: March 5, 1998
ERIC ID # 3868

Site Description and History

The Florida Petroleum Reprocessors site is a former waste oil recycling facility located at 3211 SW 50th Avenue, Davie in Township 50S, Range 41E, Section 24 at 26° 04' 57.3861" N, 80° 12' 55.0426" W. Throughout its operating history, the facility has been known as Oil Conservationist, Inc. (OCI), LMC Environmental, and Barry's Waste Oil. The principal activity since 1978 had been the temporary storage and reprocessing of used oil. Oil leaked from storage tanks or was spilled onto the ground causing extensive soil contamination and groundwater contamination.

Groundwater contamination was first discovered in 1986 in the southern section of the City of Ft. Lauderdale's Peele-Dixie wellfield. The Peele-Dixie wellfield is situated within a mixed metropolitan residential and industrial area in southeast Broward County. It covers an area roughly 1.6 miles long by one-mile wide bounded by Broward Blvd. at the north, the New River Canal to the south, US Hwy. 441 on the east, and the Florida Turnpike to the west. It consists of 26 production wells equally divided into a northern and southern section by Peters Road.

Investigation efforts initially focused on the 21st Manor Dump, an abandoned Broward County School Board landfill. The dump was originally a borrow pit used in the 1950s and 1960s for disposal of trash and debris. It was an open dump with uncontrolled access that was officially closed in the late 1960s, but illegal dumping may have continued. In the 1980s, the pit was brought up to natural grade level with clean fill material. Following extensive investigation to place the site on the National Priorities List (NPL), the EPA determined that the source of groundwater contamination was not from the Broward County 21st Manor Dump, and continued searching for the source of contamination, ultimately determining that the FPR facility was the primary responsible party.

Threat

It is estimated that a groundwater plume of volatile organic contaminants (VOCs), including: 1,1-dichloroethene (1,1-DCE), *cis*-1,2-dichloroethene (CIS), trichloroethene (TCE) and vinyl chloride (VC), encompasses an area of approximately 200 acres beneath the southern section of the Peele-Dixie wellfield. Private wells located near the wellfield have also been contaminated. Over 150,000 people obtain drinking water from public and private wells within a four-mile radius of the site, the nearest being a private well less than a quarter mile from the site. In Broward County, the Biscayne Aquifer is the sole source of drinking water in the area, and is composed primarily of permeable sand and limestone. Groundwater is shallow at 9 to 10 feet below land surface. These conditions facilitate migration of contaminants in the groundwater.

Response Strategy and Status (December 2020)

Groundwater contamination was first discovered in 1986 in production well PW-18, located near the 21st Manor Dump. Chemical concentrations at the dump site were characterized during a series of studies conducted from 1987 to 1990. In 1987, a groundwater study, conducted by the Florida Department of Environmental Regulation (FDER, now DEP), and a concurrent EPA Site Screening Investigation, uncovered no VOC contamination at the dump and were unable to conclusively identify the source of contamination in the wellfield. A more comprehensive EPA Site Investigation was conducted by the NUS Corporation in 1989, and also detected no VOC contamination at the dump. However, chromium, lead, and zinc were detected in soil and groundwater at levels above background that led to a Hazard Ranking System (HRS) evaluation. The February 1991, HRS evaluation formed the basis for proposing the site to the NPL in July 1991, as the potential source of contamination in the Peele-Dixie wellfield.

The NPL proposal was challenged by Broward County in June 1992, since no conclusive data linked the dump to the wellfield contamination. After evaluating the extensive database developed during previous studies conducted by the EPA, DEP, and the City of Ft. Lauderdale, the EPA tasked Bechtel Environmental Inc. to perform a Baseline Risk Assessment (BRA) of the dump site in 1993. The BRA subsequently confirmed that the dump did not pose a threat to human health or the environment. The EPA concluded through these findings that the dump was not the source of the wellfield contamination and redirected the focus of its investigation to the wellfield groundwater contamination plume.

In August 1994, Bechtel was tasked by the EPA to perform a Phase I Site Characterization Remedial Investigation and Feasibility Study (RI/FS) of the Peele-Dixie wellfield. Monitoring wells sampled during the RI/FS detected 1,1-DCE, CIS, TCE and VC in concentrations exceeding maximum contaminant levels (MCLs) for State drinking water standards. All the affected wells were in the southern part of the wellfield. The primary purpose of the Phase I RI/FS was to further define the southern extent of the contamination plume and identify potential source areas to be investigated during the Phase II RI/FS.

In 1995, Bechtel was tasked by the EPA to perform the Phase II RI/FS. In July 1995, Bechtel installed eight new wells south of the wellfield. The Phase II RI Site Characterization Report was completed in December 1995, and identified the potential source of the Peele-Dixie wellfield groundwater contamination as Florida Petroleum Reprocessors, Inc. (FPR). In March 1996, an investigation was conducted at the FPR site to evaluate the potential impact of abandoned drums and tanks on-site. In August 1996, the EPA issued a draft Field Operations Plan for continuing the remedial investigation at FPR based on data collected during the March investigation.

In August 1996, the EPA was approached by US Sugar, Inc., one of many identified generators, to enter into a cleanup agreement with the EPA. In December 1996, the EPA and US Sugar entered into an Administrative Order that required US Sugar to remove and properly dispose of the onsite drums and tanks. This work was completed in May 1997. In March 1997, the EPA completed the Phase II RI Site Characterization, which concluded that groundwater contamination at the Peele-Dixie wellfield was directly related to the FPR site. Also, in March 1997, the numerous Potentially

Responsible Parties (PRPs) formed the FPR Site PRP Group. In April 1997, the EPA proposed listing the site on the NPL.

In September 1997, a draft Remedial Investigation Report was completed for the FPR site, which supported the EPA's assertion that the Peele-Dixie wellfield is being impacted by contamination from FPR.

The FPR site was placed on the NPL on March 5, 1998. The Preliminary Draft Feasibility Study for the site was completed in March 1998. The EPA released its Proposed Plan in June 1998. Based in part on comments from the community and concerns raised by the PRP Group pertaining to the Proposed Plan, the EPA did not issue a Record of Decision (ROD). The community felt the estimated timeframes for remediation of the site were too long and did not address potential threats to the Peele-Dixie wellfield. The PRP Group contended that the potential threats posed by the site had not been properly characterized and that the corresponding response actions proposed by the EPA were excessive and unwarranted. The EPA then began a process of additional site characterization and evaluation of additional remedial alternatives. In conjunction with the additional site characterization work, the EPA and the PRP Group began an evaluation of emergency removal actions that could mitigate threats to human health and the environment through removal of concentrated sources of contamination.

Prior to developing the ROD for this site, the EPA and the PRP Group agreed to conduct a Shallow Source Removal (SSR) and (Dense Non-Aqueous Phase Liquid (DNAPL) Investigation. In February 1999, a test pit program was conducted to gather additional data needed to develop the SSR work plan. The SSR and DNAPL Investigation both commenced in June 1999 and were completed in August 1999. In January 2000, the EPA and the PRP Group conducted a comprehensive groundwater sampling program of 58 monitoring wells at or near the FPR site and the Peele Dixie wellfield to evaluate groundwater conditions in the area of the site. The groundwater sampling program showed a general decrease in contaminant levels near and north of the FPR site. Contaminant levels south of the site had increased, indicating a continued southward migration of the groundwater contamination. In June 2000, the EPA issued a new Proposed Plan. In September 2000, the EPA and the PRP Group began the process of remediating deep impacted soil and groundwater with a combination of chemical oxidation and pump and treat technologies.

The EPA issued a ROD for the FPR site in March 2001, and the DEP concurred with the ROD. The major components of the remedy are aggressive remediation of onsite soils and groundwater at the FPR facility, treatment of contaminants in the offsite aqueous plume for concentrations greater than 100 times MCL concentrations at the well head, and Monitored Natural Attenuation (MNA) for contaminants in the off-site aqueous plume with concentrations less than 100 times the MCL concentrations.

The City of Ft. Lauderdale's Peele-Dixie wellfield treatment system continued to meet design specifications and was effectively treating recovered groundwater from several production wells. Originally, as part of the selected remedy, a larger groundwater treatment system was to be constructed at the Peele-Dixie wellfield. The larger treatment system was needed because, as

planned pumping at the Peele-Dixie wellfield increased to historical levels, the capacity of the existing system would have been exceeded.

The City of Ft. Lauderdale determined that pumping levels at the Peele-Dixie wellfield could not be increased to historical levels without causing saltwater intrusion within the wellfield. For this reason, the City of Ft. Lauderdale ended negotiations with the PRP Group and the EPA to construct a larger groundwater treatment system at the Peele-Dixie wellfield. In August 2004, the EPA submitted an Explanation of Significant Differences (ESD) for the ROD to explain why construction of the larger groundwater treatment system at the Peele-Dixie wellfield would not be necessary.

In February 2004, during a routine site visit, the consultant for the PRP Group (Golder) noticed the site had been sold to a new owner (Mitch Fleet) and a substantial quantity of fill had been spread over the entire site. The site was also now being used as a parking area for numerous heavy commercial vehicles, and most of the onsite monitoring and injection wells were filled with concrete or buried beneath the fill. The damaged wells were replaced by the EPA in July 2005.

In September 2005, the site was vacated, but a tenant (Signal Technologies, Inc.) moved in and began using the FPR site as an equipment and supplies storage and general materials dumping area. As a result, additional damage was done to the newly replaced wells along with the existing well completions. Signal Technologies moved off the site in October 2006. The actions of both Mitch Fleet and Signal Technologies interfered substantially with the ongoing implementation of the source area remediation portion of the ROD. Remedial action at the site was temporarily suspended until the damage could be repaired.

In early 2007, EPA and the PRP group ceased both pump and treat and chemical oxidation. In June 2007, a biostimulation amendment injection was performed at the site. Down gradient MNA sampling, conducted during late 2007, indicated a reduction in contaminant concentrations and plume size, which necessitated the installation of additional down gradient monitor wells to accurately monitor the plume location and concentration. The EPA and PRP Group began identifying possible monitor well locations, negotiating access, and obtaining permits for well installation in mid-2008.

Since Signal Technologies vacated the site, there have been multiple tenants and intermittent ongoing damage to the site. The EPA and PRP Group continue to restore damaged wells, and concurrently working to prepare an access agreement with the site owner and future tenants to prevent further damage. Onsite activities ceased in June 2008 and remained stopped until an appropriate access agreement could be negotiated. In March 2009, three monitor wells (SB-3 through SB-5) were installed to depths between 127 and 140 feet below ground surface approximately 0.25 to 0.5 miles south of existing monitor wells SB-1 and SB-2. These wells were installed in response to EPA comments that the PRP Group had not fully addressed the areal extent of groundwater contamination south of the FPR site. Groundwater samples collected and analyzed from all the wells showed no contaminants above method detection limits.

In July 2010, the access issues with the owner of the FPR facility were resolved and remediation activities using biostimulation injections of lactate and ethanol were resumed. A bio-injection event was performed in July 2012, and post injection sampling was performed in September 2012. Data indicated VOC levels continued to decline but still exceeded GCTLs and NADCs in some source area wells. This VOC rebound was attributed to contaminant mass remaining in the source area and is expected to re-occur, as the contaminant mass degrades.

Another bio-injection event was performed in late November 2012. Post injection sampling events were performed in January and February 2013. Data indicated VOC levels continued to decline but still exceed GCTLs and NADCs in some source area wells. Post injection VOC concentrations rebounded as expected. Based upon total organic carbon (TOC) concentrations a bio-injection event was performed in April 2013. Analytical data indicated continued chlorinated contaminant degradation and robust biodegradation. Concentrations in some wells continue to exceed GCTLs and NADCs. The July 2013 post injection monitoring event analytical data indicated continued chlorinated contaminant degradation and robust biodegradation. The July 2014 groundwater monitoring event data indicated continued contaminant degradation even though VOC levels still exceeded GCTLs and NADCs

In September 2014, the PRP requested concurrence from EPA that the bio-injection activities could be discontinued. On October 1, 2014, EPA agreed that the Removal Action was complete and that wells and injection infrastructure at the site should be abandoned. The Removal Action Completion Report was submitted in November 2014. EPA approved the December 2014 work plan for decommissioning of wells and infrastructure. EPA specified that 4 onsite wells remain in place for continued MNA monitoring. An additional 10 wells were also not abandoned at the request of Broward County. Abandonment of the remaining 43 onsite monitoring and injection wells was completed as documented in the April 21, 2015 Monitoring and Injection Well Decommissioning Report.

The May 2018 Groundwater Monitoring Report confirmed that groundwater contaminant levels continue to decline, and that the groundwater plume continues to shrink in size. Monitoring included sampling and analysis for 1,4-dioxane in several monitoring wells as requested by DEP. Results indicate that 1,4-dioxane is below the 3.2 µg/L State groundwater cleanup target level (GCTL). DEP has recommended re-sampling within the next year to confirm that 1,4-dioxane continues to meet the GCTL and is not a contaminant of concern at the site. Bioaugmentation may be considered to facilitate complete contaminant breakdown, pending evaluation of 2021 vinyl chloride concentrations and related parameters.

A draft First Five Year Review report was provided to DEP in August 2018. Review and comments were provided by FDEP. The final document indicated the current remedy is protective because contaminated soil has been remediated below residential clean-up goals, and groundwater treatment has reduced concentrations that continue to decrease with MNA. The document also recommended evaluation of institutional controls and the need for further 1,4-dioxane sampling. The next FYR will be in 2023.

Schedule

Groundwater monitoring of the remaining onsite monitoring wells is ongoing and conducted every 3 years, to document the progress of the MNA groundwater remedy.