

Chevron Chemical Company – Ortho Division
3100 North Orange Blossom Trail
Orlando, Florida
County: Orange
District: Central
Site Lead: EPA
Placed on National Priorities List: May 31, 1994
ERIC ID # 3882

Site Description and History

The Chevron Chemical site is located at 3100 North Orange Blossom Trail (US Highway 441) in Orlando, Orange County, Florida in Township 22S, Range 29E, Section 15 at 28° 34' 46.2923" N, 81° 24' 30.0103" W. The Armstrong Trailer Park, a residential mobile home park, borders the site on the North. The Lake Fairview Commerce Center is directly across the Orange Blossom Trail to the East of the site. The site contains 4.39 acres and is cleared, vegetated with grass, fenced, and unoccupied. Lake Fairview is approximately 1,000 feet northeast of the site. The lake is a remnant karst lake, approximately 400 acres in size. The lake's water table is maintained by a drainage well located on the northwest side of the lake.

Chevron Chemical Company operated the site between 1950 and 1976 as a pesticide processing plant. Important site features included: several above ground storage tanks [xylenes, ethylbenzene, and mineral spirits], three septic tank drain fields and an underground petroleum storage tank. Two unlined rinsate ponds located in the northwestern portion of the site were used for collection and disposal of pesticide formulating rinse water. A warehouse floor drain discharged onto the ground surface near an abandoned rail spur along the southern property boundary. Chevron removed all chemical inventory upon closure, drained equipment lines and backfilled the rinsate ponds prior to the sale of the site.

In 1978, Mr. Uttal purchased the property and operated the site as Central Florida Mack Trucks, a sales and service company. The pesticide formation equipment was removed, the warehouse was washed, and the floor was rinsed with mineral spirits. The mineral spirit rinsate was discharged into the old rinsate ponds area. The truck facility generated waste oil and degreasing solvents. The property has been used for numerous activities including helicopter service, painting, and a variety of undisclosed operations run by tenants of Mr. Uttal. The truck operation was discontinued in November of 1986. Chevron repurchased the property in 1993.

Threat

The primary contaminants of interest identified in both soil and groundwater are chlordane, polychlorinated biphenyls (PCBs), DDD, DDT, lindane, chromium, arsenic, lead, α -BHC, β -BHC and a variety of petroleum hydrocarbons. These substances have a wide range of negative health effects based upon exposure route. Excavation of contaminated soil onsite and at the adjacent Armstrong Trailer Park has reduced the risk of some exposure pathways.

Institutional controls are in place for the onsite property that limit land use to industrial. The property is fenced to prevent trespassing. There is no current exposure to groundwater. Groundwater contamination is limited to the shallow aquifer. There are no potable or irrigation

wells within the footprint to the groundwater plume. An institutional control prohibits potable uses of groundwater on the Chevron property. However, additional institutional controls are needed to restrict water well construction and groundwater use offsite until cleanup goals are attained.

Response Strategy and Status (December 2020)

Chevron hired a consultant to conduct a site investigation in 1981, and the brief report listed pesticide and metal contamination. The EPA contracted with NUS Corporation to conduct a screening investigation in May 1989, and pesticides, metals, and volatile organics were detected in the soils and groundwater. The EPA placed this site into the Superfund Accelerated Cleanup Model (SACM) as a pilot test site. In May 1990, Chevron Chemical Company and Mr. Uttal entered into an Administrative Order on Consent (AOC) with the EPA to conduct a remedial action at the site. The Removal Action Plan (RAP) was approved in August 1991.

Between 1991 and September 1992, soil excavation was conducted at the site. The Agency for Toxic Substances and Disease Registry (ATSDR) defined action goals and cleanup levels for the onsite soils using chlordane as an indicator. 17,000 tons of pesticide-contaminated soils were excavated, 4,900 tons of petroleum-contaminated soils were excavated and treated, and 126,000 gallons of recovered storm water and groundwater were treated. Additional soil and groundwater samples were collected during October 1993, and again in November 1993, at the trailer park located north of the site. Approximately 230 tons of contaminated soil was excavated from the southeast corner of the trailer park in March 1994.

Initiation of a Remedial Investigation and Feasibility Study (RI/FS) was voluntarily entered into with Chevron in January 1993. The RI was completed in April 1994 by TASK Environmental. The site was placed on the NPL in May 1994. The DEP reviewed the May 1994 RI and made several minor comments. Contaminant concentrations in groundwater exceed Florida primary drinking water standards for benzene, ethylbenzene, lead, and lindane.

A Draft Baseline Risk Assessment (BRA) was prepared by Black & Veatch Waste Science and submitted in July 1994. The final BRA was submitted in October 1994. A primary concern expressed by the DEP was that the acceptable carcinogen risk level identified for soils in the BRA did not reflect the more stringent State risk management level.

A Draft Feasibility Study prepared by TASK Environmental, Inc. was submitted in August 1994. DEP provided review comments to the EPA in November 1994. DEP review comments for the Final RI/FS were provided to the EPA in January 1995. The FS projected that the use of natural attenuation to address groundwater contamination would achieve groundwater cleanup within 8 – 10 years.

The Proposed Plan Fact Sheet and the Draft Record of Decision (ROD) were submitted to DEP in April 1995, revised based upon DEP review comments, and resubmitted in July 1995. The preferred alternative included natural attenuation with a contingency plan. The remedy included quarterly groundwater sampling and additional groundwater assessment. After one year, the

groundwater data would be reviewed to determine if natural attenuation had reduced contaminant levels by a predetermined percentage rate. If the levels were achieved, then natural attenuation and groundwater sampling would continue. If not, then a permeable reactive barrier wall would be implemented along with groundwater recovery and treatment.

The final ROD was signed by the EPA in May 1996. The DEP concurred with the selected remedial alternative for contaminated groundwater. DEP did not concur with the soil cleanup levels and proposed excavation depth. The soil cleanup levels did not provide the appropriate protective exposure risk levels required by the Department. The ROD indicated that groundwater sampling would be conducted on a quarterly time frame. It was agreed that groundwater sampling data would be reviewed by the EPA and DEP in April 1998, after the second year, to determine if natural attenuation was progressing at the required rate.

Quarterly groundwater sampling was conducted in December 1997, and indicated an expansion of the plume down gradient from the site. The EPA and DEP agreed that review of the April 1998 and October 1998 quarterly sampling data would be necessary to substantiate the plume migration. DEP evaluation of the October 1998 and March 1999 sampling data indicated there were several monitoring points that did not appear to meet the projected degradation rates stipulated in the ROD.

A meeting between the EPA, Chevron, and the DEP was held in October 1999, to discuss the status of site remediation. It was agreed between Chevron and DEP that fieldwork activities would be initiated to determine the source and estimate mass near the area of highest groundwater contamination. Data from this fieldwork and other site background research would be incorporated into a natural attenuation conceptual model. The additional data evaluation would provide a better understanding of site specific natural attenuation processes, predict future natural attenuation timeframes, and determine if other remedial measures should be incorporated into the cleanup strategy.

Based on review of the initial and completed excavation analytical data for the adjacent Armstrong Trailer Park, the DEP agreed that the soil excavation conducted by Chevron met the required State cleanup target levels for chlordane.

An ESD was issued by the EPA in July 2000, changing the groundwater cleanup standards specified in the ROD for ethylbenzene from the secondary standard of 30 µg/L to the primary standard of 700 µg/L, and the cleanup standard for xylenes from the secondary standard of 20 µg/L to the primary standard of 10,000 µg/L. The ESD was based upon site-specific documentation illustrating that xylene is not acting as a co-solvent to increase pesticide solubility at the site. The DEP concurred with the change in groundwater cleanup goals, based on groundwater cleanup exemptions authorized under Chapter 62-520, Florida Administrative Code.

A Five-Year Review (FYR) was conducted by Geomega Consultants and approved by the EPA in May 2003. The FYR concluded that the groundwater plume had stabilized onsite and decreased in concentration. However, subsequent semi-annual sampling in April 2004 indicated α-BHC contamination in the down gradient sentinel well, MW15S, located northeast of Orange Blossom Trail and the Chevron property.

Chevron submitted a Sampling and Analysis Plan to further characterize groundwater in the offsite area near the sentinel well to determine if this was the leading edge of an expanding plume. Both EPA and DEP reviewed and approved the plan with minor comments in January 2005. In December 2005, monthly groundwater sampling was initiated at the site.

In April 2006, a meeting was held between the EPA, DEP and Chevron to discuss the status of site remediation. Concerns remained regarding α -BHC found in offsite monitoring wells. DEP was also concerned with increases in BHC levels in monitor well 10D. In May 2006, BHC was also detected in MW11S, located further down gradient of MW15S.

Chevron proposed installing three permeable reactive barriers (PRBs) near monitor wells 11, 15 and 16D as a pilot study. In April 2007, three PRBs were installed as per the November 2006 Pilot Test Work Plan. In November 2007, three additional PRBs were installed with EPA approval. The PRBs are comprised of EHC, a combination of carbon and zero-valent iron particles, which treat the BHC contaminated groundwater in place through reductive dechlorination.

In December 2007, the EPA conducted a Five Year Review site inspection with Chevron and DEP. The second Five Year Review Report was approved in September 2008. The FYR recommended additional data collection to delineate extent of groundwater contamination and to identify any residual source areas remaining onsite that are contributing to groundwater contamination. The FYR also recommended review of the ROD cleanup goals to determine consistency with more recent regulatory revisions and to revise ROD goals if necessary, to be protective.

In March 2008, a meeting was held with the EPA, DEP and Chevron to discuss the status of the site and the effectiveness of the permeable reactive barriers (PRBs). All concurred there may still be another source area requiring further delineation. Chevron immediately began additional soil and groundwater contaminant delineation on- and offsite of the Chevron property. Chevron agreed to consider alternative remedial methods based on their findings from the delineation activities.

In September 2008, a meeting was held with the EPA, DEP and Chevron to discuss the status of the site. All concurred that additional data are needed regarding the effectiveness of the permeable reactive barriers.

In February 2009, the PRPs submitted the Pilot Test Work Plan Addendum to the EPA for review. The Work Plan recommended an additional PRB installation. In April 2009, Chevron installed an additional PRB at the Lake Fairview Commerce Center, located east of the site.

Chevron conducted assessment activities at the Chevron property and the Lake Fairview Commerce Center property from February 2007 to November 2009. Field activities included collection and analysis of soil samples from multiple depth intervals at 179 locations and collection of 230 groundwater samples at discrete depths from 66 locations.

In January 2010, a site meeting was conducted by the EPA, DEP and Chevron to evaluate the status of the site. Groundwater contaminants of concern continue to decline in response to the in

situ groundwater treatment provided by the PRBs. Chevron submitted a soil excavation work plan to EPA, recommending further source reduction.

In September 2010, an Explanation of Significant Differences (ESD) was issued by the EPA, revising the original 50 µg/L arsenic groundwater cleanup standard to meet the current EPA and DEP drinking water standard of 10 µg/L. The ESD also invoked the contingency requirements in the 1996 ROD for implementation of additional remedies to address the groundwater contamination and included EPA approval of the excavation of additional contaminated soils for the protection of groundwater.

In February 2011, Chevron submitted Pilot Test Work Plan Addendum No. III, which recommended additional soil removal and the installation of two additional PRBs. Additional source removal was conducted by Chevron between January and April 2012 in accordance with the approved October 2011 Revised Source Reduction Work Plan. Over 4000 tons of BHC contaminated soils were excavated. Prior to backfilling, over 8,000 pounds of EHC were placed inside the excavated areas at the top of the water table to treat contaminated groundwater. Two additional permeable reactive barriers (PRBs) were installed upon completion of the excavation activities.

In November 2012, a meeting was held with the PRPs, EPA and DEP to discuss the remediation activities at the site. Between September 2007 and February 2012, Chevron installed 42 groundwater monitoring wells (MW23D through MW52S) at the Chevron and the Lake Fairview Commerce Center properties. Groundwater monitoring results showed a separate plume southeast of the Chevron property, suggesting a separate offsite source. Chevron is conducting assessment activities on the Tropical Plant Products property to determine if another source is present in that area.

A site review meeting was held in May 2013 with the PRPs, EPA and DEP to discuss remediation activities at the site. Groundwater contamination continues to decline on the Chevron property. Chevron reported that assessment was ongoing to delineate contamination on the Tropical Plant Products (TPP) property. Initial lab analyses indicate pesticide contamination is present in soils beneath the TPP building. Further sampling is required to identify the extent of the contamination.

EPA approved the third Five Year Review Report September 11, 2013. Recommendations included ensuring remedy prevents further offsite migration of contaminated groundwater and that concentrations continue to decline; implementing additional groundwater use institutional controls to address all areas affected by the plume; and development of an operation and maintenance plan.

A site review meeting was held in November 2013 with the PRPs, EPA and DEP to discuss the status of remediation activities at the site. Delineation is ongoing at the Tropical Plant Products property. Chevron is also evaluating an area south of Tropical Plant Products Property.

A site review meeting was held in May 2014 with the PRPs, EPA and DEP to discuss the status of remediation activities at the site. Installation of an additional PRB on the Lake Fairview Commerce Center property was ongoing and observed to be in accordance with the March 2014

PRB Installation work plan. A summary of assessment activities completed between June 2012 and April 2013 at the TPP property was presented, which included collection of groundwater samples at discrete depth intervals in 18 locations and 139 soil samples from multiple depths and 95 locations. Results confirmed BHC contamination in soil and groundwater this area.

Additional groundwater assessment was completed on the McDonalds property south of Silver Star Road using direct push sampling in May 2014. Organochlorine pesticides were detected in groundwater samples, including dieldrin and toxaphene which are not identified as site-related contaminants in the EPA Record of Decision for the Chevron site.

A human health risk assessment was provided to EPA and DEP for review in November 2014, which evaluated potential risk from exposure to pesticides and/or arsenic in soils, indoor surfaces and indoor air on the TTP property. DEP provided review comments to EPA on the draft risk assessment. Results of the risk assessment indicated that contaminants are present in soils at concentrations that exceed the Florida one in one million cancer risk threshold for a site worker and a utility/maintenance worker on the TTP property.

In 2017, Chevron proposed additional in situ groundwater treatment using a permeable reactive barrier (PRB #12) in an offsite area based on an evaluation of groundwater contaminant trends. The final PRB Installation Work Plan with proposed Underground Injection Control (UIC) compliance monitoring documentation was approved by EPA and DEP in 2019.

Schedule

Quarterly groundwater monitoring is ongoing to track the progress of groundwater remediation, in accordance with the revised October 2012 groundwater monitoring plan.

Review of the assessment results in areas south of the Lake Fairview Commerce Center including Tropical Plant Products property and properties south of Tropical Plant Products is ongoing to evaluate potential offsite source areas contributing to groundwater contamination in that area.