

Port Orange K-Mart Store No. 7268
3813 South Nova Road
Port Orange, FL
County: Volusia
District: Central
Site Lead: Bureau of Waste Cleanup
Approved for Cleanup: April 30, 2010
ERIC ID # 3949

Site Description and History

The former Port Orange K-Mart Store No. 7268 is located on the southeast corner of the intersection of Nova Road and Dunlawton Avenue, Port Orange, FL in Township 16S, Range 33E, Section 09 at 29° 07' 39.3618" N, 81° 00' 12.0422" W. The store occupies a 7.6-acre parcel in a strip mall with commercial (retail) properties to the north, west and south; however, properties to the east of the strip mall are single family residences and a former farm.

During 1979, the K-Mart store was built upon previously undeveloped wooded property and pastureland, possibly used for grazing cattle. A 1,000-gallon underground storage tank (UST) for waste oil storage at the K-Mart automotive service center was installed in 1979 and taken out of service in 1986. Equipped with five service bays and hydraulic lifts, surficial leakage from the lifts resulted in their removal and replacement with electric lifts in 1984. Prior to closure in 1990, the UST was replaced with two 100-gallon above ground tanks (ASTs). However, the former UST was not inspected before removal and details about the removal of the UST and the lifts were not fully documented. No ASTs remain onsite.

During an ensuing store expansion, the automotive service center was replaced by a garden center that has operated at the north end of the store, since 1990. Indoor and outdoor garden shops were each equipped with two floor drains, washed nightly with detergents and discharging to the sanitary sewer.

In consideration of a pending real estate transaction, Karabi Construction hired Levine Fricke (LFR) to conduct a limited Phase I Environmental Site Assessment (ESA). The ESA documented use of ammonia-containing floor cleaning products throughout the store and retail quantities of ammonia-containing fertilizers, stored in the outdoor garden center. Also, investigators noted that an overhead sprinkling system was watering pallets of nitrogen- containing fertilizers.

During June 2003, Levine Fricke (LFR) conducted a follow-up limited Phase II ESA to test for petroleum contamination, related to the former automotive service center. Twenty-two soil samples and one ground water sample were collected from the former UST area. Weak petroleum odors were noted in soil boring B-13 and OVA/PID screening revealed organic vapors in most soil samples. However, the soil samples, exhibiting the highest OVA readings (>500 ppm in B-20 and >600 ppm in B-22) did not display a petroleum odor, but rather an ammonia- like odor. Subsequent laboratory analyses of a soil sample, collected from B-13, revealed a low concentration of petroleum, but no petroleum constituent concentrations in any soil samples exceeded Soil Cleanup Target Levels (SCTLs). An ammonia concentration of 271 mg/kg was detected in a soil sample collected from B-14, but the applicable SCTLs for ammonia (550 mg/kg residential direct exposure & 570 mg/kg groundwater leachability) were not exceeded.

No petroleum constituents were detected in a ground water sample, collected on June 13, 2003 from a temporary monitoring well in the former UST pit (TW-1). However, an ammonia concentration of 5,720 micrograms per liter ($\mu\text{g/L}$) – exceeding the 2,800 $\mu\text{g/L}$ groundwater cleanup target level (GCTL) for ammonia – was detected in a ground water sample, collected from TW-1. Ammonia odors were noted in several of the soil borings, so six more temporary monitoring wells (TW2, TW3, TW-4, TW-5, TW-6, & TW-7) were installed around the former automotive service center area.

On June 26, 2003, ground water samples were collected from all six of the most recently- installed wells. Subsequent analyses of the samples, collected from the wells, exhibited ammonia concentrations of: 3,120 $\mu\text{g/L}$ in TW-2; 4,740 $\mu\text{g/L}$ in TW-3; 3,090 $\mu\text{g/L}$ in TW-4; 3,190 $\mu\text{g/L}$ in TW-5; 4,480 $\mu\text{g/L}$ in TW-6; and 7,030 $\mu\text{g/L}$ in TW-7, exceeding the corresponding 2,800 $\mu\text{g/L}$ GCTL.

On August 26, 2003, LFR installed twelve additional temporary monitoring wells (TW-8, TW-9, TW-10, TW-11, TW-12, TW-13, TW-14, TW-15, TW-16, TW-17, TW-18, & TW-19) and one deep monitoring well (DW-1) in the parking area to delineate the horizontal and vertical extent of the ammonia plume in groundwater. Analyses of ground water samples, collected on August 26, revealed ammonia concentrations, exceeding GCTLs, in samples collected from TW-8 (5,550 $\mu\text{g/L}$), TW-10 (3,090 $\mu\text{g/L}$), TW-11 (4,740 $\mu\text{g/L}$), TW-12 (3,630 $\mu\text{g/L}$) and TW-15 (6,480 $\mu\text{g/L}$).

Based upon the results from the Phase I & Limited Phase II Investigations, as well as a meeting with the DEP Central District, on September 4, 2003, LFR prepared a Contamination Assessment Report (CAR) to document site assessment activities and results, and to determine the extent of ammonia contamination at the site.

Threat

Analyses of ground water samples, collected by LFR on September 6th, revealed ammonia concentrations, exceeding GCTLs, in samples collected from TW-8 (3,960 $\mu\text{g/L}$), TW-12 (4,040 $\mu\text{g/L}$), TW-15 (7,100 $\mu\text{g/L}$), and TW-20 (3,600 $\mu\text{g/L}$). Ammonia (2,220 $\mu\text{g/L}$) was also detected below GCTLs in a sample collected from TW-10. Analyses of ground water samples, collected on September 18th, revealed ammonia concentrations, exceeding GCTLs in samples collected from TW-8 (5,160 $\mu\text{g/L}$) and TW-21 (7,990 $\mu\text{g/L}$). Contamination was also detected offsite in a monitoring well installed in the Firestone Tire Store located west of the K-Mart site across Nova Road which is hydraulically upgradient from the K-Mart site, albeit at lower concentrations than on the K-Mart property. Consequently, no definitive source has been identified for the ammonia contamination. Currently, the site has been redeveloped as a restaurant and office space.

Response Strategy and Status (December 2020)

The site was accepted into the State-funded cleanup program on April 30, 2010, with a low priority for cleanup. A project manager for the site was assigned in May 2012, and a site assessment work

plan was tasked to Tetra Tech EC, Inc. The site assessment work plan was received by DEP on June 18, 2012. The main feature of the work plan is to sample the several existing on- and offsite monitoring wells, which have not been sampled in five years or more. In addition to the K-Mart, it was noted that a large sewer line parallels the contaminated wells along Dunlawton Avenue and could be a possible source of ammonia. Therefore, in addition to the normal analyses, the wells will be sampled for constituents that would be present if the contamination was caused by a leaking sewer main. The site assessment work plan has been approved by DEP; however, field work has been delayed due to site access issues with the current property owner. In May 2018, the Department received limited site access to conduct groundwater monitoring and evaluate the extent and source of ammonia. The data from this sampling event indicates that ammonia levels remain at the same approximate levels as a decade ago.

Since the last event, the EPA has downgraded the toxicity values for ammonia, with the consequence that calculations of an Alternative Groundwater Cleanup Target Level by the University of Florida now indicate that the levels at the K-Mart property are not a human health concern. However, since the concentrations exceed the published GCTLs of Chapter 62-777, FAC, a Conditional Site Rehabilitation Order is the best alternative to close this site and is under preparation.

Schedule

The DEP Waste Site Cleanup Section is preparing a conditional site rehabilitation completion order for the site.