



# Alaska Department of Environmental Conservation Spill Prevention and Response

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DEC State of Alaska

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## STERLING ZIPMART



Location

[View detailed information from database on this site.](#)

Status: Open

Database Name: ZipMart Store - Sterling

Location: Sterling, Alaska

Latitude/Longitude: See database entry

DEC Contaminated Sites contact: [Linda Nuechterlein](#), Project Manager, 907-269-7530 (Anchorage)

Contacts updated: Dec. 30, 2013

[PDF Version](#)

Summary updated: January 2009

[Quick recap of recent events - Dec. 30, 2013](#)

Maps at bottom updated: Dec. 30, 2013

## DESCRIPTION

The Sterling ZipMart site was formerly operated as a fueling station beginning in 1985. Whittier Properties, Inc. owned and operated the station from April 1990 to December 2000. During a 1995 upgrade of the underground fuel storage tank system, contaminated soil and [groundwater](#) were encountered, but evidence indicated to DEC that the impact was minor and did not warrant cleanup action.

The ZipMart station was closed for business in December 2000. During the closure assessment, a significant amount of fuel product was detected on the groundwater, and Whittier Properties began to investigate the extent of contamination. Due to the extent of the problem, they were unable or unwilling to continue and in 2002, DEC assumed the lead role in the site investigation and cleanup activities.



This aerial photo shows the former Zipmart gas station circled in yellow. Contamination from gasoline has spread underground to areas to the right and down (southeast). For a diagram of the estimated plume size and information from sampling wells, see the downloadable file under "More Information" at the bottom of the page. (Photo courtesy of the Kenai Peninsula Borough, 4/03) View more at The [Kenai Peninsula Borough GIS Web page](#).

DEC conducted a review of fuel inventory records and estimated that 53,000 gallons of gasoline were released to the environment. As part of the initial response actions, DEC implemented a product recovery system that brought back approximately 15,000 gallons of gasoline by pumping the fuel ("free product") directly from the groundwater. The ability to recover gasoline product has diminished to a point that direct pumping is no longer feasible. A system to extract soil vapors has been installed and as of September 2006, recovered an additional 2,750 gallons of gasoline vapor from the ground. For information on more recent activities, see [status](#), below.

## PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

The primary health concern is the possibility of an existing or future drinking water well drawing groundwater contaminated with [gasoline](#).

Gasoline has many components, but when released to soil and water, it is typically measured as total gasoline range organics (GRO) and as a selected group of four compounds: [benzene](#), toluene, ethylbenzene and xylenes. These four compounds are collectively termed "[BTEX](#)". Of the four, benzene is

most soluble in water and moves very rapidly).

Over 70 groundwater monitoring wells provide sample points to observe and track plume conditions. The data to date indicates that the groundwater has been contaminated over a broad area, but it has not migrated to surface water. You can download a diagram of the extent of the plume in the "[More Information](#)" section. There are several drinking water wells in the area but to date only one has been impacted above the State's safe drinking water levels.

Due to the hydrogeologic conditions of this area and the nature of petroleum hydrocarbons in groundwater, the drinking water wells drawing from deeper points in the groundwater [aquifer](#) have not been impacted. The one well that is impacted is located in the shallower groundwater. Therefore, DEC recommends caution be employed when installing new drinking water wells in the area and recommends that property owners have water sampled for petroleum hydrocarbons, if you feel there may be a risk.

## STATUS

Natural groundwater systems are dynamic moving systems, with chemical, biological and physical activities working in concert. Introduction of gasoline to a groundwater system can disrupt these activities, but often times, the system can recover and natural breakdown ("[attenuation](#)") can act to maintain aquifer stability. To evaluate the natural system, information on the geochemical makeup of the groundwater is being collected and evaluated along with gasoline concentrations. Evaluation of these processes can help to determine the "health" of the groundwater system and monitor progress.

DEC will continue to monitor groundwater quality and sample the drinking water wells potentially at risk. Evaluation of future groundwater data will continue to guide decisions for future actions that may be required. Property owners in the area can pursue various options to respond to the possibility of contamination in existing wells. Available options include the use of a filtration system for their drinking water system and/or installing a replacement well that draws water from deeper in the aquifer.

DEC, working through contractors, continues its investigation to identify the nature and extent of the groundwater [contaminant plume](#). Numerous monitoring wells were installed at the site and on properties adjacent to, and in the direction of groundwater flow (down-gradient) of the Sterling ZipMart. The contamination has moved southeasterly, approximately 2,400 feet from the source area. Since the 40-foot (approximately) [unconfined aquifer](#) is used by many of the water wells in the immediate area, the contaminants dissolved in the groundwater pose a risk to local drinking water wells. In 2007, we expanded the Soil Vapor Extraction System to the east of the existing one. This allowed for treatment and cleanup of the secondary source area on the Sterling Baptist Church property. The system operated throughout the winter of 2006-2007 and removed an additional 750 gallons of gasoline.

The extent of the free product and groundwater contaminant plume has been reasonably well defined, and a soil vapor extraction system continues to operate near the area where the gasoline was released. Biannual groundwater monitoring and sampling of target drinking water wells is on-going.

Groundwater monitoring suggests that the contaminant plume with dissolved gasoline may still be advancing. Therefore, we intend to conduct a pilot study in 2009 to evaluate the effectiveness of treating the plume's down-gradient portion by injecting an oxygen source into the aquifer. This would enhance natural breakdown and slow the advance of the plume.

There are also plans to decommission the Underground Storage Tank and stockpile up to 500 cubic yards of petroleum contaminated soil. Through contractor, we are conducting a feasibility study to evaluate various treatment options for the contaminated stockpiled soil.

## MORE INFORMATION

- ▶ Maps of the estimated petroleum plume that show benzene concentrations, well locations and groundwater levels.
- ▶ [October 2013 map with a landscape photo background](#)
- ▶ [October 2013 map without the landscape photo background](#)
- ▶ [January 2012 map with a landscape photo background](#)
- ▶ [January 2012 map without the landscape photo background](#)
- ▶ Archive
- ▶ Press Release ([PDF 15K](#)), Jan. 30, 2002
- ▶ Press Release ([PDF 15K](#)), Jan. 18, 2002

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