



Six Mile Richardson Highway Groundwater Investigation

Alaska Department of Environmental Conservation • Division of Spill Prevention and Response

Site Description

The Six-Mile Richardson Highway area is located southeast of Fairbanks along the New Richardson Highway between Milepost 6 and Milepost 7.

The area is a mixture of light industry and residential subdivisions. The New Richardson Highway bisects the area from west to east. North of the highway is the Six-Mile Village Subdivision, other subdivisions, and some light industry. South of the highway is primarily industrial/commercial property with some isolated residences.

The area is not serviced by potable drinking water and sewer systems. Private residences and businesses use the area groundwater from individual on site water wells. Domestic wastewater and sewage is managed by individual on lot disposal systems. The depth to groundwater is shallow, ranging between three to seven feet.

Threats and Contaminants

In 1995/1996, an area-wide groundwater contaminant plume was discovered. The plume is slightly over a mile long, up to 1200 feet wide and over 100 feet deep. The plume originates in an industrial area south of the New Richardson Highway and extends to the northwest to the Six-Mile Village Subdivision.

The area-wide plume is composed primarily of two chlorinated solvents: trichloroethylene (TCE) and trichloroethane (TCA). The safe drinking water standards for TCE and TCA are 5 parts per billion (ppb) and 200 ppb respectively. TCE is the primary constituent of concern since it occupies a greater portion of the area-wide plume at concentration levels above its safe drinking standard.

Within the Six-Mile Village Subdivision, a second and smaller contaminant plume commingles with the larger area-wide plume.

The second plume is composed of soluble gasoline products, in particular the chemical benzene. Benzene has a safe drinking water standard of 5 ppb and is a known human carcinogen.

Public Health and Environmental Concerns

As a result of the area-wide sampling in 1995/1996, TCE was detected in 51 wells; TCA was detected in 40 wells; and benzene was detected in 19 wells. Seventeen residential wells had either TCE or benzene at or above 3.5 ppb (70% of maximum standard). Four residential wells had benzene levels above the safe drinking water standard.

The McCall, Holder, Walsky, and Six-Mile Truck Shop properties have been investigated as possible release areas for the chlorinated solvents since 1996. These properties are adjacent to one another in an industrial area south of the New Richardson Highway.

The Denny Property (Tracts 1 & 2, Groff Subdivision) has been identified as the gasoline release source area. The property consists of two adjacent residential lots (one developed, the other undeveloped).

The McCall Property and the Six-Mile Truck Shop are abandoned properties. Their legal owners either no longer claim ownership or are out of state and unwilling to claim responsibility. The owners of the Holder and Denny properties are unable financially to perform any type of environmental investigations.

The owners of the Walsky property are unwilling to assume responsibility since they are contesting the department's findings, however they have allowed access to their property.

Response Actions

The following, response actions are presented chronologically. Within each time period,

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specific response actions or conclusions are summarized.

1994/1995

A state-led site assessment of the McCall Property identified possible area-wide groundwater contamination. Limited groundwater data suggests that there are TCE source areas on the adjacent Holder Property and close to the McCall/Holder property-line. The data also suggests that there are possible TCE/TCA source areas on the Walsky and Six-Mile Truck Shop properties with the groundwater contamination extending into residential subdivisions.

1995

Area-wide sampling of residential and business water supply wells confirms the extent of TCE/TCA groundwater contamination. The sampling also discovers an unrelated benzene groundwater plume that originates somewhere north of the New Richardson Highway and impacts the Six-Mile Village Subdivision. Additional permanent groundwater monitoring wells are installed in the area.

A series of public meetings are held to inform the public and to address their concerns. The State Epidemiologist concludes there is no significant acute risk for the detected levels of TCE.

ADEC develops an area-wide strategy: for the short term, identify and cleanup site-specific source areas and institute a long-term groundwater monitoring program; for the long term, investigate long-term safe water alternatives in cooperation with local residents under the Village Safe Water Program.

The federal Agency for Toxic Substances and Disease Registry (ATDRS) issues a Health Consultation. The agency reviews the area-wide sampling results and concludes that there are no significant acute or chronic risks from the detected levels of TCE. The detected levels of benzene are of concern. ATDRS concurs with the ADEC strategy.

ADEC provides a \$25,000 grant to the Fairbanks North Star Borough for distribution to 17 residences. These residences have either TCE or benzene in their water at concentration levels at or above 70% of the safe drinking water standard.

1996

A long-term groundwater-monitoring program is developed. Several residential wells located around the perimeter of the plume, and a series of permanent monitoring wells located within the plume, will be sampled at least annually.

Quarterly sampling events are scheduled for the first year.

Potential responsible party (PRPs) searches are initiated. Title searches are conducted for the Denny, Walsky, Holder, and Six-Mile Truck Shop properties. Known PRPs are contacted. The Denny Property is identified as the source of the benzene groundwater plume. The property owner is financially unable to conduct site characterization and cleanup.

A portion of several hundred drums of abandoned waste on Six-Mile Truck Shop is sampled. The sampling reveals evidence of hazardous waste or substance in the drums and some releases from the drums to ground. With state oversight, the federal Environmental Protection Agency (EPA) removes the remnants of more than one thousand 55-gallon drums from a pond on the McCall Property.

1997

State assumes cleanup of Denny Property. A site characterization is performed, and a cleanup plan is developed and selected in consultation with the public. Long-term groundwater monitoring data is collected. ATSDR reviews the accumulated groundwater monitoring data as follow up to their 1995 Health Consultation and their conclusions remain unchanged.

1998

Site characterization workplans for the McCall, Holder, Walsky, and Six-Mile Truck Shop properties are developed. Fieldwork starts in the

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summer and runs through the winter. The main objective is to locate source areas and to assess potential cleanup methods.

The Denny Property cleanup begins in early winter. Contaminated soils are excavated following the seasonal lowering of the water table. The soils are thermally treated at an off site facility. Back filling of the excavation is scheduled for the summer 1999.

Long-term groundwater monitoring data is collected. Analysis suggests that the area-wide plume has remained stable, and there is a slow decrease in concentration levels in some wells, while others have remained steady.

State assumes removal action of abandoned waste at Six-Mile Truck Shop. The contents of 300 drums are characterized. The waste is consolidated and containerized and shipped off site for appropriate disposal.

1999

The active portion of the cleanup of the Denny Property is completed. Follow up groundwater sampling indicates that the majority of the contaminated soil was removed. There is a significant reduction in the benzene levels in all monitoring and residential wells associated with the cleanup. The four residential wells that were above the benzene safe drinking water standard in 1995 now meet the standard. Five out of six monitoring wells now meet the safe drinking water standard. Additional sampling is scheduled for the summer 2000.

TCE and TCA source areas are located on the Walsky Property. There are three separate TCE source areas, one large and two smaller ones. The TCA source area is co-located with the largest TCE source. Minor petroleum soil and groundwater contamination is found on other portions of the property.

Two separate TCE source areas are located on the Holder Property. The smaller one is near the McCall/Holder property line. Minor petroleum soil and groundwater contamination is found in close proximity to the smaller TCE source area and at another location on the property.

Minor TCA groundwater contamination and minor petroleum soil and groundwater contamination is found on the McCall Property. A low-level TCA groundwater plume (i.e., well below drinking water standards) is found emanating from the former pond that was the focus of the 1996 EPA removal action. Minor petroleum soil and groundwater contamination is found associated with an underground storage tank located on the north part of the property beneath a shop building. The tank had leaked its contents some time in the past.

Potential cleanup alternatives using proven state-of-the-practice technologies are evaluated for the TCE/TCA source areas. Cost estimates are made for 10 and 20 years of operations.

A public workshop is held to inform the public and solicit their comments.

Long-term groundwater monitoring data is collected. Twenty-three residences that were initially sampled in 1995 are also re-sampled to supplement the long-term monitoring data, and to assess the efficiency of any treatment systems that were installed after the discovery of the area-wide groundwater plume. Analysis of the data indicates that the plume is stable in size, some wells have concentration levels that continued to decrease, while other wells have concentration levels that have remained essentially steady. Most treatment systems are not functioning properly. A follow up investigation is underway to determine the reasons.

Current Status

The site characterization of Six-Mile Truck Shop is continuing through the winter weather permitting. A floor drain in the shop building and the eastern portion of the property are being investigated as possible TCE/TCA source areas. In order to estimate the future behavior of the area-wide groundwater plume with a higher degree of certainty, computer modeling is being considered. There are multiple source areas on different properties. The spill or release at each source area probably occurred at different times. The individual groundwater plumes (differing in

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age and concentration levels) from each source area are merging together to form a complex area-wide plume.

Cleanup at the individual properties is contingent on future funding.

Assuming continued funding, cleanup at the McCall property can begin in 2000. This will include in-place closure of the UST and long-term groundwater monitoring for at least two years.

Depending on the selection of the remediation alternative by ADEC management, the Holder and Walsky property clean up can begin in 2000.