Alaska Department of Environmental Conservation
Division of Spill Prevention and Response
Contaminated Sites Program

DRINKING WATER WELL SAMPLING RESULTS
BADGER CHEVRON
751 BADGER ROAD

NOVEMBER 2002

This fact sheet addresses recent drinking water well sampling along Badger Road in the vicinity of McPeak's Store (Middleton, Memory, and Runamuck Avenues) (See map, last page). The Alaska Department of Environmental Conservation (DEC) is working to determine the extent of groundwater contamination from the Badger Chevron Station, located just south of McPeak's Store. A corrective action plan is being developed to treat the soil and groundwater contamination at the service station. Some drinking water wells in the area were tested and found to contain small amounts of petroleum-related and other chemical compounds, but at amounts well below state and federal drinking water standards. This fact sheet summarizes the results of groundwater sampling conducted in this area.

Background

A water well survey was conducted in March and April of 2002 by the consulting firm Shannon & Wilson, Inc. This survey was initiated as part of an investigation of a fuel release associated with the former underground storage tank system at the Badger Chevron Station at 751 Badger Road. Petroleum impacts in the groundwater have been found to extend across Badger Road to the northwest, in the direction of groundwater flow (see monitoring points on attached map). The former tank system was removed in 1993 and 1994, and replaced in 1995 by an upgraded system with double-walled tanks and appropriate leak detection equipment. The new system is inspected every three years by a certified tank inspector.

No Contaminants Found During Past Water Well Surveys

In 1995, DEC required testing of private and commercial water wells in this area as part of the Six Mile Richardson Highway groundwater investigation. Drinking water samples were collected at that time from McPeak's Store, Badger Chevron Station, the trailer house across Badger Road from the service station, and several residences along Faultline Drive. The drinking water wells at the Badger Chevron Station and the trailer were retested in November 2001 under the state cleanup grant. No contaminants have been detected in these water wells at any time.

Low Levels of Contaminants Found During Recent Water Well Survey

In 2002, the water well survey was enlarged to include the area bounded by Fort Wainwright to the west, Badger Road to the east, and residences along Runamuck Avenue to the north (see drinking water wells on attached map). Nine drinking water wells were sampled in March and April. Access to three other sites could not be obtained.

Low levels of benzene, methylene chloride, methyl-tert butyl ether (MTBE), and/or styrene were detected in five drinking water wells. *However, the levels of these contaminants were below state and federal safe drinking water standards in all of the wells*. (See table.) The source of the contaminants found in the drinking water wells is not yet clear. All results indicate that the water is safe to drink. The levels are significantly lower than those at homes in the Six Mile Richardson Highway area where filters were installed to remove contamination.

Ranges of levels found in drinking water wells:	State & federal safe drinking water limit
Benzene	
1.1 to 2.4 ppb	**5 ppb**
MTBE	
1.2 ppb	**20 ppb**
Styrene	
0.58 ppb	**100 ppb**
Methylene Chloride*	
0.5 to 0.66 ppb	**5 ppb**

methylene chloride is a common laboratory contaminant and may not actually be present in the well water.

What's Next?

Additional groundwater sampling will be conducted in December 2002 at all of the monitoring wells associated with the Badger Chevron Station. The samples will be tested for the compounds detected in the drinking water wells to obtain more information on the possible source of these contaminants. The Badger Chevron Station is also receiving limited state funding for cleanup. A corrective action plan is in development to treat the soil and groundwater contamination at this site.

Background on the Contaminants Tested

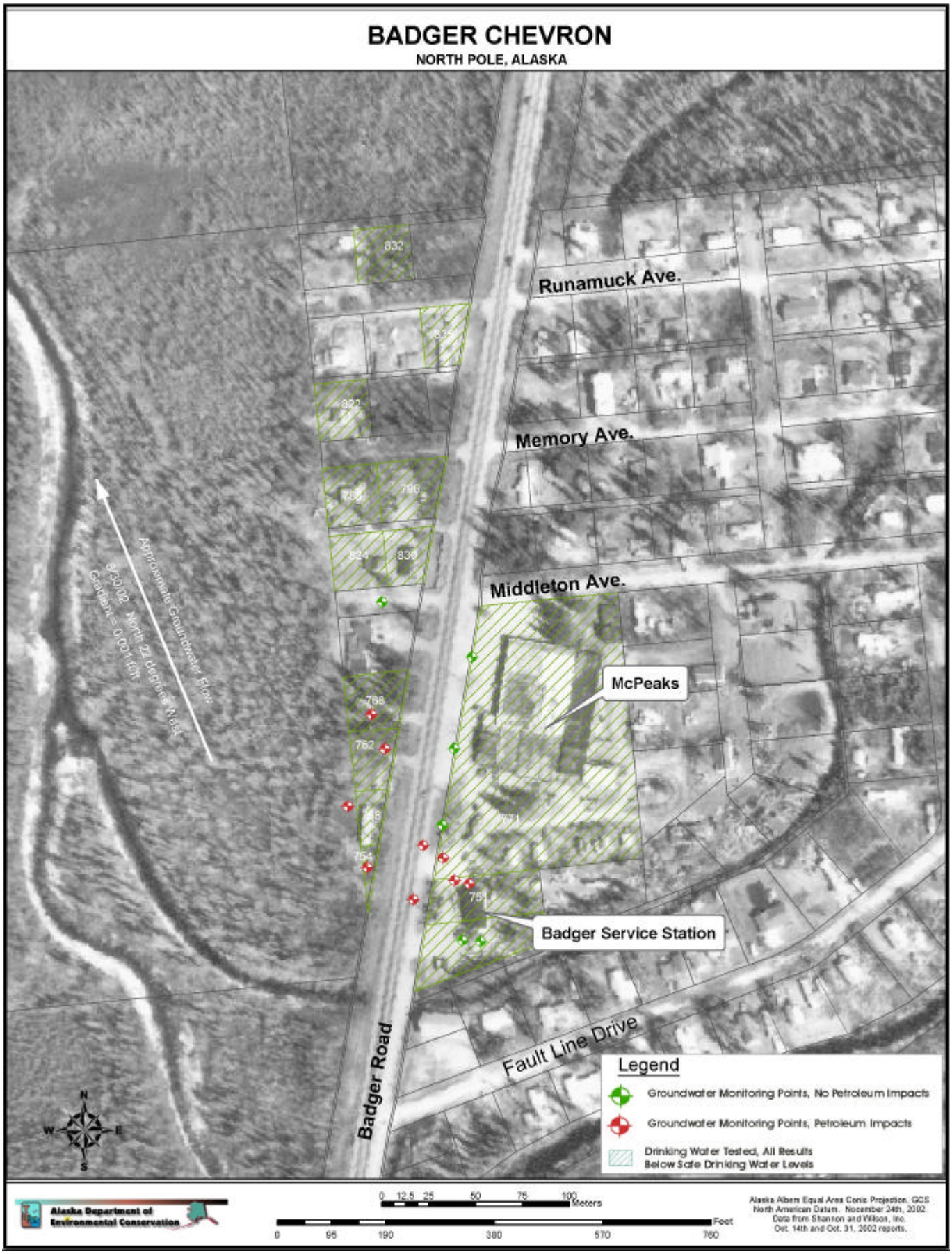
Benzene is a colorless liquid with a sweet odor. It evaporates into the air very quickly and dissolves slightly in water. It is highly flammable and is formed from both natural processes and human activities. Benzene is widely used in the United States; it ranks in the top 20 chemicals for production volume. Benzene is a natural part of crude oil and gasoline, and also cigarette smoke. More information is available at http://www.atsdr.cdc.gov/tfacts3.html.

Methylene chloride is a colorless liquid with a mild, sweet odor. Methylene chloride does not occur naturally in the environment. It is used as an industrial solvent and as a paint stripper. It may also be found in some aerosol and pesticide products and is used in the manufacture of photographic film. Methylene chloride is also commonly used in laboratories. Methylene chloride found in water samples is often the result of contamination at the laboratory, and may not represent a contaminant in the groundwater. More information is available at http://www.atsdr.cdc.gov/tfacts14.html.

Methyl *tert*-butyl ether (MTBE) is a flammable liquid with a distinctive, disagreeable odor. It is made from blending chemicals such as isobutylene and methanol, and has been used since the 1980s as an additive for unleaded gasolines to achieve more efficient burning. It was used briefly in the Fairbanks area in 1992. More information is available at http://www.atsdr.cdc.gov/tfacts91.html.

Styrene is primarily a synthetic chemical. It is a colorless liquid that evaporates easily and has a sweet smell. It often contains other chemicals that give it a sharp, unpleasant smell. It dissolves in some liquids but does not dissolve easily in water. Billions of pounds are produced each year to make products such as rubber, plastic, insulation, fiberglass, pipes, automobile parts, food containers, and carpet backing. Low levels of styrene also occur naturally in a variety of foods such as fruits, vegetables, nuts, beverages, and meats. More information is available at http://www.atsdr.cdc.gov/tfacts53.html.

For more information contact Janice Wiegers at DEC's Contaminated Sites Program, in Fairbanks at (907) 451-2127.


BADGER CHEVRON
NORTH POLE, ALASKA
Runamuck Ave.
Memory Ave.
Middleton Ave.
McPeaks
Badger Service Station
Badger Road
Fault Line Drive
Approximate Groundwater Flow
3/30/02 North 22 degrees West
Gradient = 0.001 ft/ft
832
822
796
824
830
788
782
771
754
751
Legend
Groundwater Monitoring Points, No Petroleum Impacts
Groundwater Monitoring Points, Petroleum Impacts
Drinking Water Tested, All Results Below Safe Drinking Water Levels
N
S
E
W
Alaska Department of Environmental Conservation
0 12.5 25 50 75 100 Meters
0 95 190 380 570 760 Feet
Alaska Albers Equal Area Conic Projection, GCS North American Datum. November 24th, 2002.
Data from Shannon and Wilson, Inc.
Oct. 14th and Oct. 31, 2002 reports.