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NEWSLETTER

## Garrison, North Dakota - AML Project Ends With A Surprise

A 2005 abandoned mine reclamation project near Garrison, North Dakota ended with an unexpected turn of events when fresh gasoline was discovered in an underground mine void. This gasoline was traced to a leak of approximately 30,000 gallons from an underground storage tank at a gas station located about 900 feet away.

Dangerous sinkholes have been a frequent problem for the residents of Garrison (population 1318) as shallow abandoned underground coal mines have deteriorated with time and collapsed. At least two major highways and three residential and commercial subdivisions at Garrison are underlain by relatively shallow abandoned underground coal mines. The North Dakota Public Service Commission has conducted reclamation projects since 1983 to repair sinkholes and inject cementitious grout to fill underground mine voids and prevent mine collapse.

The 2005 Garrison Phase IV project was the last phase of drilling and pressurized grout remote backfilling to address the highest priority AML problems at Garrison. In this four-year project series, approximately 1400 holes were drilled and 4800 cubic yards (8400 tons) of grout were pumped into collapsing underground mines beneath homes, streets and highways.

The final work in the 2005 Garrison project included drilling exploratory holes to determine the location of underground mine workings beneath a vacant lot near South Garrison Addition. The owner of this lot had intended to build a house on it. Drilling confirmed the presence of shallow underground mines and also revealed that these mine voids were filled with gasoline. Drilling was halted because of the danger of ignition and samples were collected from the hole, confirming the presence of gasoline.

This finding was turned over to the North Dakota Department of Health. The Health Department's investigation revealed that gasoline had leaked from a ruptured line between a storage tank and dispenser at a nearby gas station. About the

same time gasoline was discovered in the mine, Garrison city workers began noticing the smell of gasoline in storm sewers and at a municipal lift station. Unfortunately, leak detection equipment at the gas station failed to detect this leak. It's possible that the gasoline seeped to a shallow coal seam and into the mine and sewer system without pooling at the surface or moving laterally.

The Health Department is using drilling and monitoring data collected in the Garrison AML projects to aid its investigation. An environmental consultant has also been contracted by the gas station to investigate and remediate the leak. One domestic water well has already been affected and several others are being monitored.

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*Drilling on Garrison Project*