

Department of Environmental Conservation
Division of Environmental Remediation

**Trends of Groundwater Samples
Monitored from North Lawrence Oil
Dump, Project #623012**

Prepared for:

Susan Lasdin, P.E.

Prepared by:

Carrie Wilsey, E.E.T.1
&
Jillian Oldoerp, E.E.T.1

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Overview:

North Lawrence Oil Dump is a former waste disposal lagoon in the Township of Lawrence, St. Lawrence County, NY. NYSDEC found the top 2 to 4 ft of soils in the lagoon to be contaminated with oil, PCBs, lead, and VOCs. NYSDEC also found significant levels of PCBs, mercury, and lead on-site in the top 6 to 12 inches of wetland sediments, which were later excavated. To mitigate these problems, the site was put on the Registry of Hazardous Waste Sites and remedial actions were undertaken, including on-site solidification / stabilization and long-term monitoring of biota, surface water, and groundwater.

Long-term Groundwater sampling occurs annually, and tests for the presence of PCBs, VOCs, and inorganic metals by EPA Method 624.

Three rounds of groundwater sampling since 1999 show total levels of PCBs, VOCs, and metals to be below the detection limit of the instruments.

Problem Statement:

Are the hazardous compounds of concern diminishing in the monitoring wells? Historical sampling results from the past 3 rounds of sampling were graphed and analyzed for each well, with the goal of showing whether or not the hazardous compounds of concern are diminishing. Additionally, the results for all sampling dates were compared to New York State Part 703 Groundwater Standards in order to determine whether or not the contaminant levels are below these standards.

Assumptions:

- Only the contaminants detected during remedial investigation are included in this study, although EPA Method 624 tests for more VOCs (including semi-VOCs) and metals than were found on-site. The contaminants of concern that were detected on-site during the remedial investigation include:

Aroclor-1016	Lead
Aroclor-1221	Mercury
Aroclor-1232	Trichloroethene (TCE)
Aroclor-1242	Tetrachloroethene (PCE)
Aroclor-1248	Toluene
Aroclor-1254	Naphalene
Aroclor-1260	M&P-Xylenes and O-Xylene

-Any hazardous compounds of concern that are listed in the lab reports as undetected (denoted by a "U") have concentrations that are below the detection limit of the instrument with use of EPA Method 624. The "undetected" concentrations are

immeasurable by the testing method used and are to be graphed as the same value as the instrument detection limit, as this is the only known measurement for the compound.

- Contaminants of concern that have been consistently below the New York State Part 703 Groundwater Standards are not plotted, as the remedial goals for these contaminants have been met, and thus the compounds no longer present a reason for concern. Compounds that fit this description, will be listed in this section of the report. (As of 1/7/03, there are no compounds that have been consistently below the New York State Part 703 Groundwater Standards.)

Procedure:

The graphs were created from lab reports provided by ChemTech Consulting Group, Columbia Analytical Service and the DEC lab. The data was divided up by contaminant type, and the compound concentrations were entered by well number into spreadsheets. This information was then graphed. Results from the sampling events were compared to the New York State Part 703 Groundwater Standards.

Results:

In comparing the sampling results from 8/16/99, 10/18/01, and 8/29/02, it was found that the majority of concentrations of PCBs, VOCs, and inorganic metals at the North Lawrence Oil Dump site are currently below the instrument detection limit associated with EPA Method 624.

Any contaminant not detected was plotted at the instrument Detection Limit. Based on this graphing technique, the results from all monitoring wells show decreasing trends in PCBs and Mercury. Lead also appears to be decreasing in concentration over time in three of the wells. Monitoring wells, MW-301 and MW-302, however, show increasing concentrations of Lead. Additionally, VOC concentrations appear to be remaining constant in all of the monitoring wells.

It is important to note however, that the apparent diminishing trends of the PCBs, Mercury, and Lead, as well as the constant VOC trends may not be accurate. Because there were undetected concentrations of these compounds in the samples, the concentrations are graphically represented as equaling the instrument Detection Limits even though they are actually below these limits. There is no way to determine how far below the detection limits the concentrations actually are, and thus the graphs may show exaggerated or inaccurate trends.

Comparison of PCB concentration to the New York State Part 703 Groundwater Standards shows that 2001 and 2002 PCB concentrations in all monitoring wells are below groundwater standards for total PCBs. Both Lead and Mercury concentrations in all monitoring wells, for all sampling dates, are also below their perspective groundwater standards. Concentrations of all VOCs of concern (except Napthalene), however, appear to be above the groundwater standards due to the fact that the instrument Detection Limit is higher than the groundwater standard. It is important to note that again, this could be a false representation of the VOC concentrations. The concentrations may be below the groundwater standards, but with use of EPA Method 624, there is no way to measure a more accurate concentration.

Conclusions/Recommendations:

Although the concentrations of PCBs, VOCs, and inorganic metals of concern appear to

be generally decreasing, most of the concentrations are below the detection limit of the instruments. The results, therefore, are inconclusive. EPA Method 524 is recommended for future sampling, rather than EPA Method 624. By using this more precise analysis method, it will lower the instrument Detection Limit, providing more accurate data for comparison with New York State Groundwater Standards.

It is recommended that different test methods be used for future sampling events to yield more accurate results. At this particular site, VOC's have been analyzed under DEC method 624, which has been proven inconclusive. DEC method 524 is another option for analyzing volatiles; under this method the detection limit is 0.5 ug/L, which should yield more detailed results than method 624. Another option we recommend is A.S.P. 10/95 method 8260-B; this method has a large target compound list ("TCL"), and denotes test results for volatiles with the option of indicating the presence of TIC's. Other methods are available, however those mentioned above are recommended since other methods are newer and less familiar.

There are no test methods that simultaneously account for volatiles, PCB's, and metals. For metal detection, there are several methods available, depending on the level of deliverables (i.e., simple, or complex). The most current method (under Category B—i.e., complex—deliverables) is the ICP method that is able to test for 23 metals simultaneously; the preferred method is 200.7 CLP-*M (where "*M" stands for "modified").

Testing for PCB's is also dependent on the level of deliverables (categorized into the "A" and "B" levels, depending on complexity). Both methods undergo the same test, however, the "B" protocol is recommended since it denotes more detailed results; neither method, however, accounts for TIC's. The recommended test method is 8082 (under SW 846, a solid waste test method). Again, this method does not account for TIC's, however it is deemed the most accurate method available for PCB analysis.

Appendix A:
A1- Well Location Map
A2- Boring Logs

A1- Well Location Map

A2- Boring Logs

Appendix B:
Health and Safety Plan