US Army Corps of Engineers

LOOW Background Sampling Fact Sheet

Former Lake Ontario Ordnance Works
Niagara County, New York

Defense Environmental Restoration Program for Formerly Used Defense Sites • August 2001

This fact sheet has been prepared to address community outreach needs and is consistent with provisions of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Fact sheets are one part of an effort to provide public information on environmental restoration and waste management.

Introduction

The U.S. Army Corps of Engineers is conducting a remedial investigation of the former Lake Ontario Ordnance Works (LOOW) Site located in Lewiston-Porter, New York. The purpose of the investigation is to determine whether past Department of Defense (DoD) activities resulted in contamination of the LOOW property and to determine the nature and extent of any contamination found. Using the data from the investigation, the Buffalo District will then conduct risk assessments to quantify whether human health and the environment are at risk. If an unacceptable risk is found, then a remedial action will be implemented to address the risk.

The Corps needed to determine the levels of metals that would normally be found in soils in the Lewiston-Porter area. To do this, samples that are called background samples were taken from the soil in an area where it had been confirmed that there were no DoD activities. A thorough review of historical records from the area indicates that no activities took place on the Lewiston Porter School Property, so background samples were taken from that property.

Location of Background Sampling

The school property is located on Route 18 (Creek Road) between Pletcher and Balmer Roads. The current school property was once part of a 5,000 acre buffer zone which surrounded a 2,500 acre parcel of the LOOW site which was used by the DoD and other parties. The buffer zone was not actively used by DoD and consisted of farmland and wooded areas left intact during the construction and early operation of the LOOW. This property was sold to private and public parties soon after the closure of the LOOW.

Background Sampling

The selection of background sampling locations is based upon review of historical records. Background results are then compared to sample results from areas of known DoD activity to evaluate the relative level of contamination. At each sampling location on the school property one sample was collected at the ground surface and one was collected from soils approximately 15-20 feet below ground. The samples were analyzed in a laboratory to detect the presence of naturally occurring metals and other chemicals which are so widely used that they are now found extensively throughout the environment. These other chemicals are known as polynuclear aromatic hydrocarbons (PAH), which are commonly found in asphalt products and wood preservatives.

As part of the LOOW investigation, sets of surface and sub-surface soil samples were taken at four locations on school property (see attached figure) as part of the background sampling. Two sets of samples (sample #1 location and sample #5 location) were taken during Phase I Remedial Investigation, and two additional sets of samples (sample #16 location and sample #17 location) were taken during Phase II Remedial Investigation.

Results of the Lewiston-Porter School Property Background Sampling

There is no immediate threat to human health or the environment indicated by the results of the background sampling on school property.

(a) Phase I background samples: Sample #1 is located on the southwestern boundary of the school property approximately 600 feet east of Creek road. Sample #5 is located on the south-central boundary of the school property, approximately 1800 feet east of sample #1. (See attached Figure) Results from these two samples indicate that levels of several metals in both surface and subsurface soils are slightly above their average background concentrations. All of these metals are naturally occurring. The levels of these metals can vary significantly from location to location, based on underlying soil and rock formations. Since we are comparing sample results to average background concentrations, rather than the maximum background concentration, samples which contain metal concentrations just above the average concentration may still be considered a naturally occuring concentration of that metal. If a metal concentration in a given soil sample is slightly above the average background metal concentration for the site, it does not necessarily mean that the metal concentration is due to man-made contamination. PAHs were not detected in elevated concentrations.

(b) Phase II background samples: Sample #16 is located on the southeastern boundary of the school property approximately 4,000 feet west of the developed portion of the LOOW. Results indicate levels of mercury and selenium in surface soils slightly above background levels for the area. It also showed slightly elevated levels of boron in soils below the ground surface. PAHs were not detected in elevated concentrations.

Sample #17 is located on the northern boundary of the school property approximately 6,000 feet west of the developed portion of the LOOW (approximately 200 feet north of the northernmost school building). Results indicated elevated levels of arsenic, copper, lead, and selenium in surface soils and copper and manganese in soils below the ground surface. PAHs were not detected in these samples.

Significance

Only elevated results from samples taken in the surface soil are considered significant in terms of potential risk to human health, since students, teachers, and staff at Lewiston-Porter schools are not exposed to soils below the ground surface.

The concentrations of metals in samples #1 and #5 are all well below health-based screening criteria used by the U.S. EPA Region IX These screening levels may be used to determine if contaminants have the potential to pose unacceptable risks to human health. Therefore, the concentrations of metals in samples #1 and #5 are not considered a threat to human health.

The mercury and selenium found above background concentrations in Sample #16 are below health-based screening levels established by USEPA Region IX. The mercury and selenium in this sample are therefore not considered a threat to human health.

In Sample #17, the copper, selenium, and the lead are also all below health-based screening levels established by USEPA Region IX to determine if contaminants have the potential to pose unacceptable risks to human health. Therefore, they are also not considered a threat to human health.

The level of lead found in the surface soil of sample #17 (209 parts per million) is less than the health based standard for lead in soils, which was promulgated by the USEPA on January 5, 2001. In 40 CFR Part 745 (Lead; Identification of Dangerous Levels of Lead; Final Rule) the following health based standards for bare residential soil are established at 400 parts per million by weight in play areas based on the play area bare soil sample and an average of 1,200 parts per million in bare soil in the remainder of the yard. Therefore, we do not believe that the level of lead in this sample is indicative of a health risk to children at Lewiston-Porter Schools.

Arsenic was found at 60.4 parts per million in the Sample #17. This concentration exceeds the NY State background concentration of arsenic in residential soils (which is 6.7 parts per million). This concentration of arsenic is greater than the health-based screening criteria of 22 parts per million established by USEPA Region IX. Concentrations greater than the EPA standard of 22 parts per million may be indicative of a potential health risk due to long term exposure (greater than 30 years).

Soil samples taken by the USACE in other areas on and off the former LOOW site do not show elevated levels of arsenic. This suggests that the elevated arsenic level in Sample #17 is localized and not associated with migration of arsenic from LOOW. Possible sources for the elevated arsenic level include the application of pesticides, treated wood, or other common materials containing arsenic. More information on arsenic may be found at the following website: http://www.atsdr.cdc.gov/ToxProfiles/phs8802.html

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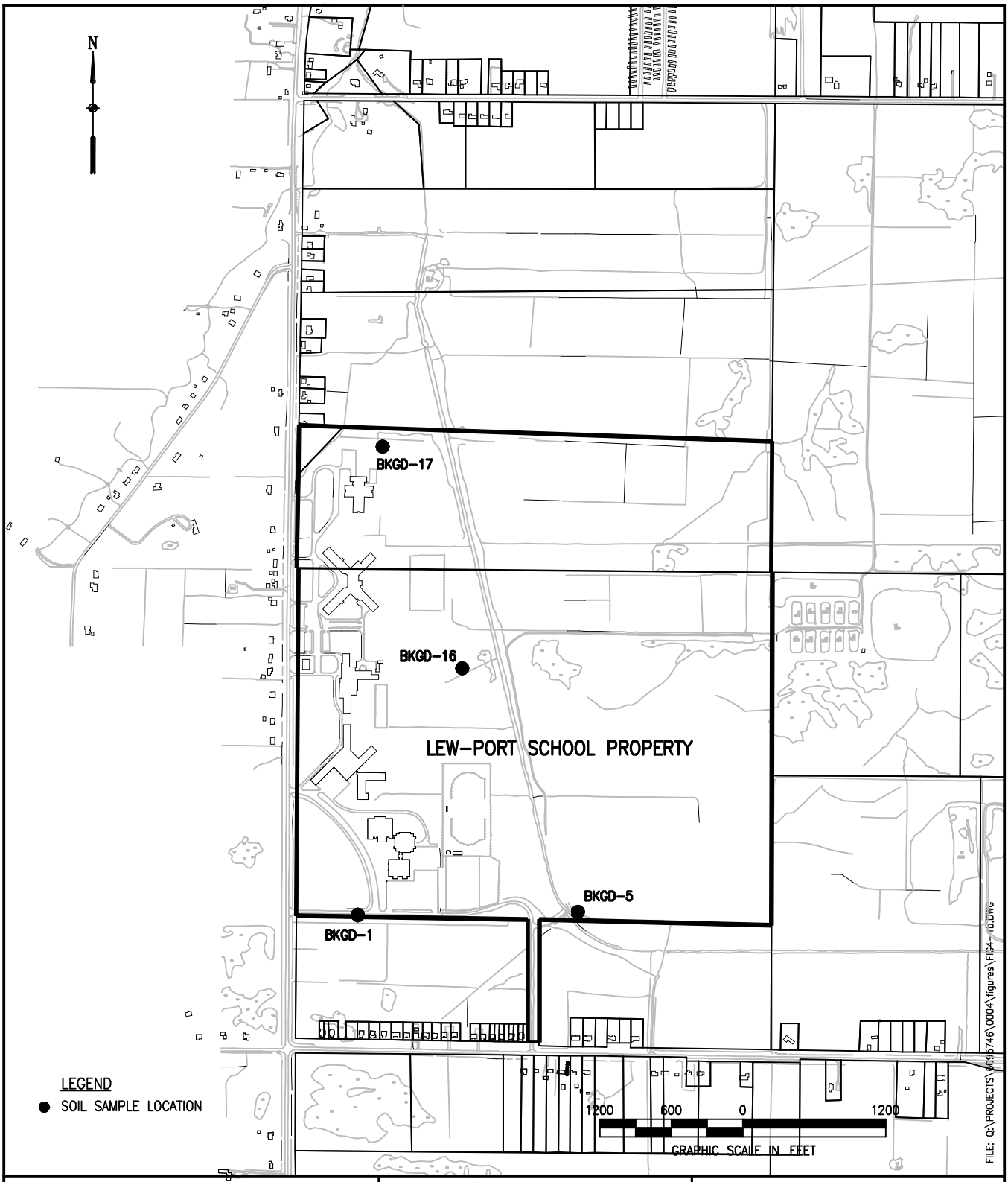

EA ENGINEERING, SCIENCE, AND TECHNOLOGY

BASEWIDE RI/FS
LAKE ONTARIO ORDNANCE WORKS
NIAGARA COUNTY, NEW YORK

BACKGROUND SOIL SAMPLING LOCATIONS ON LEW-PORT SCHOOL PROPERTY

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BACKGROUND SOIL SAMPLING LOCATIONS ON LEW-PORT SCHOOL PROPERTY