



U.S. Army Corps of Engineers
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Proposed Plan Former Atlas S-11 Missile Site Ellenburg, New York

As the lead agency for implementing the environmental response program for the Site, the Corps has prepared this Proposed Plan in accordance with CERCLA Section 117(a) and Section 300.430(f)(2) of the National Contingency Plan (NCP) to continue its community awareness efforts and to encourage public participation. After the public has the opportunity to review and comment on this Proposed Plan, the Corps will summarize and respond to the comments received during the public comment period and at a public meeting. Information on the times and places for public comment and the public meeting are shown in the **Public Comments Are Requested** highlight box below.

Public Comments Are Requested

PUBLIC COMMENT PERIOD
November 29, 2010 – January 3, 2011
Written comments on this Proposed Plan can be submitted to the Corps during this comment period. Comments letters must be postmarked no later than January 3, 2011 and can be sent to Mr. James Kelly, Project Manager, U.S. Army Corps of Engineers, 696 Virginia Road, Concord, MA 01742-2751. Comments can also be sent by e-mail to: James.A.Kelly@usace.army.mil

PUBLIC MEETING

The Corps will host an information session from 6:00 to 7:00 PM to provide information and answer questions in an informal setting. This will include a formal public hearing, which will consist of a brief introduction by the Corps and an opportunity to submit public comments – either verbally or in writing.

The Proposed Plan
This Proposed Plan was prepared by the U.S. Army Corps of Engineers (the Corps), New England District to present the proposed response to groundwater contamination potentially near and at the former Atlas S-11 Missile Site in Ellenburg Depot, New York. This plan summarizes the Corps' rationale for recommending No further Action at the former Atlas S-11 property and other sites in and near Ellenburg Depot.

Introduction

This Proposed Plan provides information to the public on the Corps' recommended response for groundwater contamination at the former Atlas S-11 property and the surrounding area in Ellenburg Depot, New York. The "Site" includes the former Atlas S-11 property and an area to the southeast with groundwater impacted by contaminants originating from the former Atlas S-11 property. This Proposed Plan presents the Corps' rationale for the preferred approach for the Site, and is a tool to encourage and facilitate community participation.

Federal and state environmental laws govern characterization and response activities at federal facilities. The federal statute, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), better known as Superfund, establishes procedures for site investigation, evaluation, and remediation. The Corps has been working within the framework of CERCLA to identify the scope of the problem and appropriate remedial response. The New York State Department of Environmental Conservation (NYSDEC) has been a partner in this process and concurs with the Proposed Plan. A Restoration Advisory Board (RAB) was created in 2000 to advise the Corps about community concerns regarding the Site.

The Corps and the NYSDEC will consider carefully all comments received from the public and provide responses which will be compiled into a Responsiveness Summary. The decision on which action is appropriate for the Site will



Site Background

Where is the former Atlas S-11 property?

The former Atlas S-11 Missile Site is located on Bull Run Road, approximately 1/4 mile north of Route 11, in the hamlet of Ellenburg Depot, Town of Ellenburg, Clinton County, New York, approximately 7 miles south of the Canadian – United States border.

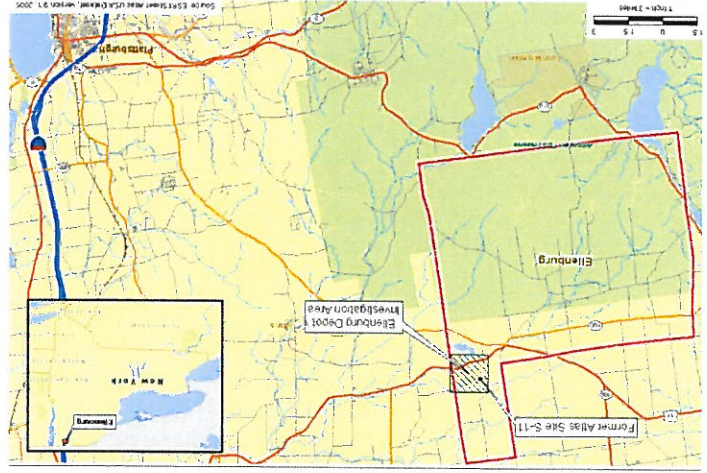
Ellenburg Depot is a small residential and farming community that currently does not have any active industries. Formerly, a tannery (Northland Hides Processing, Inc.) operated in Ellenburg Depot. The area between the former Atlas S-11 property and Ellenburg Depot consists primarily of wooded areas with some agricultural fields.

What was the Atlas S-11 facility used for?

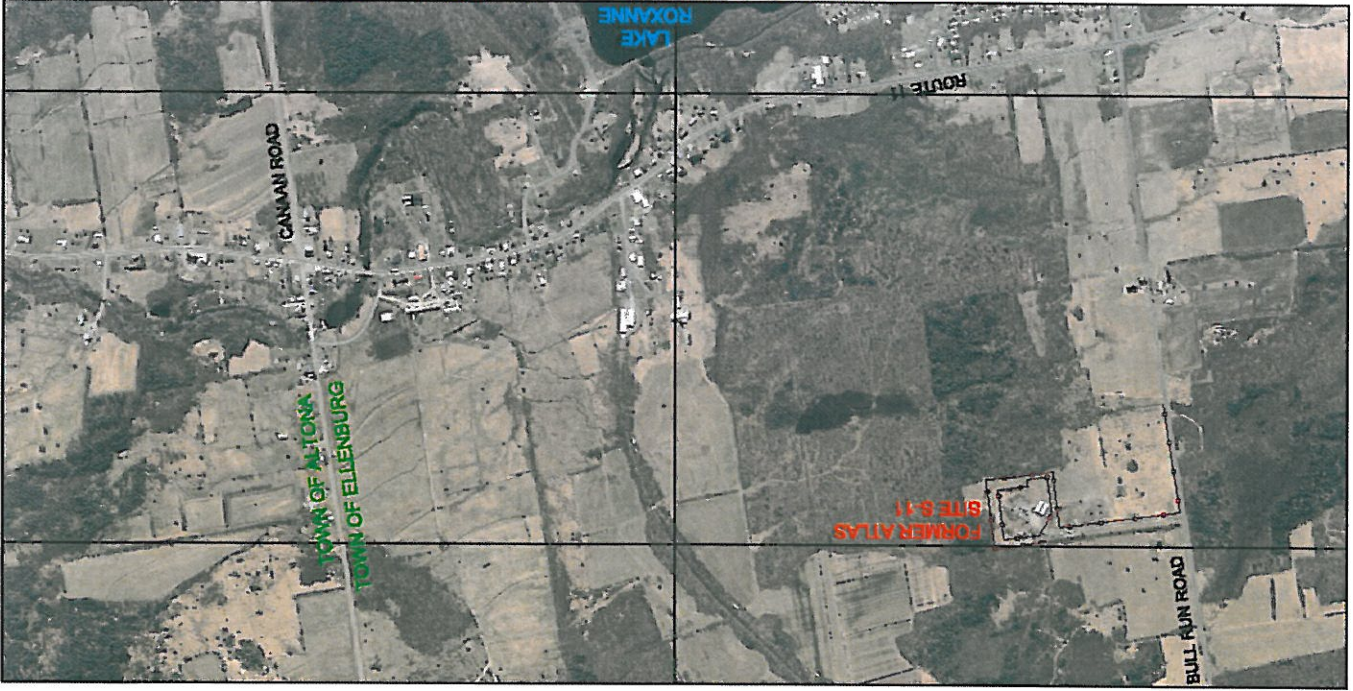
The Department of Defense (DOD) acquired the property in 1960 for an Atlas Intercontinental Ballistic Missile (ICBM) launch site. It was one of twelve sites in the region that formed the Plattsburg Air Force Base. Prior to this acquisition, the land was used for agricultural purposes. The former Atlas S-11 facility was deactivated in 1965 and the

be detailed in a Decision Document, which will include the Responsiveness Summary.

This Proposed Plan highlights key information from previous reports prepared for the Site, including site characterization details for the Site from the Remedial Investigation (RI) report and the rationale for the proposed action as presented in the Feasibility Study (FS) report. These and other documents that support this Proposed Plan are available locally at the Sara A. Munsill Free Library in Ellenburg Depot, New York.



Map showing the location of the former Atlas S-11 property and Ellenburg Depot.

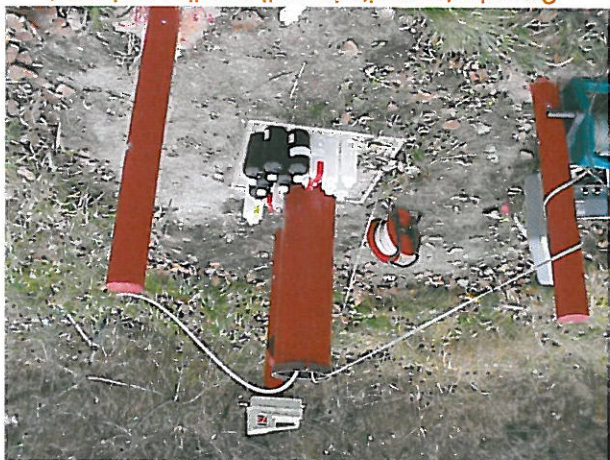


Aerial photograph of the former Atlas S-11 property and Ellenburg Depot.



underground fuel tanks in the hamlet of Ellensburg Depot by the NYSDEC detected TCE at concentrations below MCLs in private drinking water wells. These detections of TCE beyond the boundaries of the former Atlas S-11 property prompted the Corps to expand the Site investigation to include other areas in Ellensburg Depot where groundwater may have been impacted by contaminants migrating from the former Atlas S-11 property.

It appears that some of the drinking water wells in Ellensburg Depot were impacted by contaminants that may have migrated from the former Atlas S-11 property. However, after 20 years of site investigation and groundwater monitoring, the detected concentrations of TCE and *cis*-1,2-DCE in affected drinking water wells are below MCLs and pose no unacceptable risks to human health. Furthermore, the concentrations of these contaminants in monitored wells have declined since 2000 and are expected to decline further due to natural dispersion, dilution, and dissipation as groundwater slowly migrates through the subsurface.



Groundwater monitoring well sampling equipment.

Site Characterization

What kind of information was collected to characterize the area?

Weston Solutions, Inc. conducted the RI between 1998 and 2003 and issued the final RI report in 2005. The RI involved investigation of geology and the distribution of contaminants in the area using a variety of characterization tools

What was the contamination problem and where did it come from?

Property was conveyed to the Town of Ellensburg in 1967. The property contains two Quonset huts and a single former missile silo. The Town of Ellensburg used the property for recreation and the Quonset huts for vehicle storage. The property is now privately owned and is used by a private business for storing architectural stone.

Based on the history of DOD activities, prior investigations, and the results of the RI program, the chemicals of primary concern at the Site were trichloroethene (TCE) and *cis*-1,2-dichloroethene (*cis*-1,2-DCE). TCE is a chlorinated aliphatic volatile organic compound (VOC) that is generally soluble in groundwater at low concentrations. TCE is a potential carcinogen with a federal maximum contaminant level (MCL) of 5 micrograms per liter ($\mu\text{g/L}$) in drinking water.

A preliminary investigation at the former Atlas S-11 property in 1988 detected TCE in groundwater at a concentration of 6 $\mu\text{g/L}$, a concentration that is slightly above the drinking water MCL. TCE was also detected at concentrations below 5 $\mu\text{g/L}$ in water collected from another monitoring well and the missile silo on the former Atlas S-11 property. TCE may decompose slowly in the environment and form breakdown products. One of these breakdown products, *cis*-1,2-DCE, has also been detected in groundwater at the Site at concentrations less than the MCL of 5 $\mu\text{g/L}$.

Detected concentrations of TCE in groundwater at the Site have not exceeded MCLs since 2000, and concentrations have been declining over time. The decline in TCE concentrations is likely a result of natural dispersion, dilution, and dissipation of groundwater contaminants over time as groundwater slowly migrates through the subsurface.

Is our drinking water impacted?

Private domestic well water is the main source of potable water in the area. In 1990, an investigation of suspected leaks from



Why are such sophisticated tools necessary to investigate the groundwater?

The various investigative tools selected for the Site were used to:

- identify potential source areas on the former Atlas S-1 property that may be contributing to contamination in groundwater;
- identify potential migration pathways for groundwater and contaminants in the subsurface (soil and bedrock); and
- characterize the three-dimensional distribution and transport of contaminants in groundwater at the Site.

Groundwater flow and contaminant migration within bedrock, particularly fractured bedrock, can be very complicated. Rather than migrating in a generally downhill direction, as in soil, groundwater in fractured bedrock follows a less direct path through the network of fractures. This path within the bedrock involves repeated turns as the groundwater twists its way through the complex interconnected fracture network.

What did the RI and HHRA conclude?

The RI concluded that:

- due to the length of time since the last DOD activities on the former Atlas S-1 property and the fractured nature of the bedrock, TCE has dispersed and concentrations are lower; and
- a distinct point source for the TCE contamination in groundwater no longer remains at the Site.

Bedrock fractures at the Site are aligned in a variety of directions, with the most common orientations along the southeast, south-southeast, and west-southwest directions. Based on three-dimensional groundwater data, groundwater flow is generally to the south/southeast, towards the Great Chazy River. Although the contaminated groundwater may discharge into the Great Chazy River, TCE and c/s-1,2-DCE were not detected in river water nor in sediment samples.

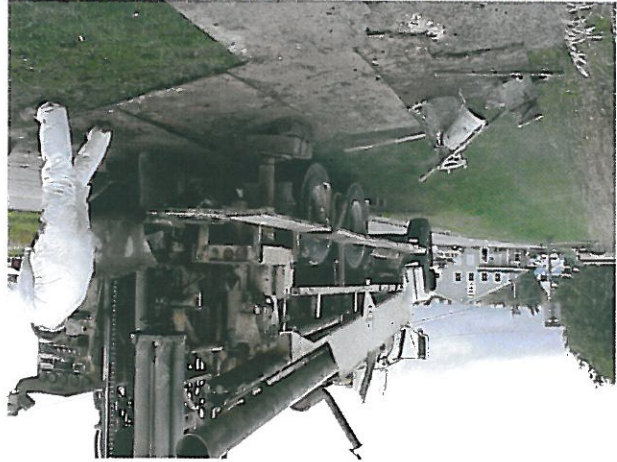
that are highlighted (see the **Characterization Tools** highlight box). The RI included collecting several rounds of groundwater samples from monitoring wells and drinking water wells at the Site.

Characterization Tools

- Geophysical subsurface investigation
- Fracture trace analysis
- Bedrock core sampling
- Test pit investigation
- Soil sampling
- Soil gas survey
- Groundwater monitoring well installation and sampling
- Drinking water well sampling
- Packer test and heat pulse flow meter investigation
- Surface water and sediment sampling
- TCE biodegradation analysis

The data collected during the RI was used to develop a three-dimensional conceptual site model that explains the distribution and migration of TCE within groundwater at the Site. In addition, surface water and sediments were sampled to determine whether TCE in groundwater adversely impacted the Great Chazy River.

The Corps performed a Human Health Risk Assessment (HHRA) in 2009 to evaluate cancer risks and non-cancer hazards associated with potential exposure to TCE and breakdown products at the Site.



Drilling a monitoring well during the Remedial Investigation.



- meet federal and state requirements or risk-based clean-up levels for groundwater.
- The results of the RI and HHRA indicate that all three of these objectives are currently being met at the Site.

What alternatives were considered in the FS?

Since the HHRA indicates that contaminant concentrations in groundwater at the Site pose no unacceptable threat to human health and the environment, the FS only evaluated remedial measures that do not require active remediation. The FS focused on remedial measures that could provide additional protection of human health and/or contribute more data confirming that contaminant concentrations in groundwater continue to remain below human health risk thresholds. Refer to the **Remedial Alternatives** highlight box for the alternatives that were identified and evaluated in the FS for the Site.

Remedial Alternatives

- **Alternative 1 – No Action**
Take no further action at the former Atlas S-11 property or in Ellenburg Depot.
- **Alternative 2 – Institutional Controls**
Place a deed restriction on the former Atlas S-11 property to prevent installation of new drinking water wells. Conduct a five-year review.
- **Alternative 3 – Additional Long-term Groundwater Monitoring**
Complete annual groundwater sampling in seven groundwater wells at the Site for five years to confirm that contaminant concentrations in groundwater are stable or declining, and remain below MCLs. Conduct a five-year review.
- **Alternative 4 – Institutional Controls and Additional Long-term Groundwater Monitoring**
Alternatives 2 and 3 combined.

Most importantly, the HHRA concluded that TCE and *cis*-1,2-DCE detected in groundwater at the Site pose no unacceptable risk to human health. The RI also concluded that the groundwater contamination at the Site poses no significant risk to human health and the environment.

Technology Evaluation

What is a Feasibility Study (FS)?

The FS report for the Site was completed by The Johnson Company, Inc. in 2010. The FS consists of:

- evaluating physical, geological, hydrogeological, and geochemical conditions at the Site;
- identifying Remedial Action Objectives (RAOs); and
- identifying and comparing potential options to achieve RAOs at the Site.

The potential options identified in the FS were screened for technical feasibility and subsequently used to develop comprehensive remedial alternatives for the Site.

Based on the results of the RI and the HHRA, CERCLA guidance does not require an FS for the Site. However, the Corps elected to conduct an FS to provide additional documentation for the selection of a recommended remedial alternative.

What are the Remedial Action Objectives (RAOs) for the Site?

The FS presented the following three primary objectives for the Site to ensure protection of human health and the environment, which has been the Corps' primary goal since contamination was first discovered in 1988:

- prevent exposure to contaminants in groundwater at levels that pose an unacceptable risk to human health;
- minimize contaminant-related constraints that restrict groundwater or land use at the Site; and



Recommended Alternative

What is the recommended alternative for the Site?

The recommended alternative is Alternative 1 – No Action. The concentrations of TCE and *cis*-1,2-DCE in groundwater at the Site meet groundwater quality standards and have been below regulatory levels for more than a decade.

Alternatives 2, 3 and 4 were not selected because results from the RI indicated that concentrations of TCE in groundwater at the former Atlas S-11 property had decreased to levels below MCLs during the RI from 2000 through 2003. Furthermore, subsequent groundwater monitoring in Ellenburg Depot from 2006 through 2008 did not detect TCE or *cis*-1,2-DCE at concentrations above MCLs.

Next Steps

What happens next?

The Corps will conduct a public meeting on November 30, 2010, in Ellenburg, New York. Once the community has reviewed the Proposed Plan, the Corps and the NYSDEC will consider all comments received from the public. The Corps will provide written responses to all substantive comments and combine them into a Responsiveness Summary, which will be included in the Decision Document for the Site. The recommended alternative may be revisited if new information becomes available or in response to public comments.

The Decision Document will describe the selected remedy and summarize community participation in the selection process. The Corps and NYSDEC anticipate that the Decision Document will be finalized and signed before the end of Winter 2011, at which time it will be made available to the public at the

- Information Repositories listed at the end of this Proposed Plan.
- Based on the available information, the Corps believes the recommended alternative meets the threshold criteria and provides the best balance of tradeoffs among the other alternatives with respect to the balancing and modifying criteria. The Corps expects the recommended alternative to satisfy the following statutory requirements of CERCLA § 121(b):
- be protective of human health and the environment;
 - comply with ARAR's,
 - be cost effective;
 - utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and
 - satisfy the preference for treatment as a principal element or justify why it does not.



Great Chazy River from Canaan Road in Ellenburg Depot.



Glossary of Terms

Bedrock: The native rock underlying the ground surface at the Site. Bedrock at the Site is the Potsdam Sandstone formation, which primarily consists of quartz sandstone.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA): A federal law passed in 1980 and amended in 1986 by the Superfund Amendments and Reauthorization Act (SARA), commonly known as Superfund. The Corps' characterization and remediation at sites is conducted under the framework of CERCLA/SARA, while funded by the Defense Environmental Restoration Program (DERP).

Corps of Engineers (the Corps): The U.S. Army Corps of Engineers provides comprehensive environmental restoration services for the Army, Department of Defense (DOD), Environmental Protection Agency (EPA), Department of Energy (DOE), and other federal agencies. The DOD has designated the Corps to oversee the environmental program at the Site, under the Formerly Used Defense Site (FUDS) program.

Decision Document: A legal, technical and public document that explains the rationale and remedy decision for a given site. It also summarizes the public's involvement in the decision process.

Feasibility Study (FS): An engineering study of the potential remedies for a site.

Groundwater: Groundwater is the water found beneath the earth's surface that fills pores between such materials as soil and bedrock.

Human Health Risk Assessment: A site-specific assessment used to estimate the nature and probability of potential adverse health effects for humans who may be exposed to site contaminants.

Information Repository: A public file containing site/project information and documents of onsite investigation and remediation activities in either hard copy or electronic form.

Maximum Contaminant Level (MCL): Enforceable drinking water standard developed by EPA based on laboratory research and toxicity data for impacts of specific chemicals. The MCL for TCE and *cis*-1,2-DCE is 5 µg/L.

Natural Attenuation: The natural dispersion, dilution and overall dissipation of groundwater contaminants over time as the groundwater slowly migrates through the subsurface.

Remedial Action Objectives (RAOs): Media-specific or area-specific goals developed for a remedial action to protect human health and the environment.

Remedial Investigation (RI): The collection of data and information necessary to characterize the nature and extent of contamination at a site. The RI also includes information as to whether or not the contamination poses significant risk to human health and/or the environment.



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Information Repositories

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