



## SITE CERTIFICATION SUMMARY

This Site Certification Summary provides information about the **Tonawanda North, New York, Sites, Units 1 and 2**. The U.S. Department of Energy Office of Legacy Management is responsible for long-term stewardship of the site under the **Formerly Utilized Sites Remedial Action Program**.

### Site Description and History

The Tonawanda North, New York, Site Units 1 and 2 are located in Tonawanda, New York, a suburb of Buffalo. The Tonawanda North sites comprise three areas: Unit 1 (Ashland Oil #1, which includes Seaway Area D); Unit 2 (Ashland Oil #2 and Rattlesnake Creek); and Unit 3 (Seaway Area C). This site certification summary discusses only Units 1 and 2, as Unit 3 has not yet transferred to the U.S. Department of Energy (DOE) Office of Legacy Management (LM). Surface water from Units 1 and 2 drains into Rattlesnake Creek and Two Mile Creek to the Niagara River.

From 1944 to 1946, the Linde Air Products Division of Union Carbide Corporation, under contract with the Manhattan Engineer District (MED), transported about 8,000 tons of radioactive waste to a 10-acre area for storage. Then known as the Haist property, this area is now known as Tonawanda North, Unit 1. In 1960, Ashland Oil Company became owners of the property and used it for oil refinement. In 1974, Ashland Oil Company constructed a bermed area for two petroleum product storage tanks and a drainage ditch on the Unit 1 property. Contaminated soil removed during construction was transported to the Seaway Landfill and Unit 2 sites for disposal.

See the [Site Overview Map](#) on page 5 for more details about the site.

### Site Remediation Timeline

**1984** — DOE determined the Tonawanda North, New York, Sites, Units 1 and 2 were eligible for cleanup under the Formerly Utilized Sites Remedial Action Program (FUSRAP).

**April 20, 1998** — The U.S. Army Corps of Engineers (USACE) signed and issued the Record of Decision (ROD) for the Tonawanda Units 1 and 2.

**July 1998 through September 1999** — USACE remediated Unit 2.

**June 1999 through December 2002** — USACE remediated Unit 1, including Seaway Area D.

**September 20, 2004** — USACE issued an Explanation of Significant Differences (ESD) for the Rattlesnake Creek portion of the site.

**May 2005 through September 2005** — USACE remediated Rattlesnake Creek.

**September 14, 2006** — USACE observed and certified work completion at the sites.

**2008** — USACE transferred long-term stewardship responsibility for the Tonawanda North Units 1 and 2 sites to LM.

### Remedial Action Guidelines

Issued by USACE on April 20, 1998, the Tonawanda ROD identified radium-226 (Ra-226), thorium-230 (Th-230), and uranium-238 (U-238) as radiological contaminants of concern (COCs) in soils. The ROD also determined that Title 40, Part 192 of the Code of Federal Regulations (40 CFR Part 192) and Title 10, Part 20 of the Code of Federal Regulations (10 CFR 20) were applicable or relevant and appropriate requirements (ARARs) for the Unit 1 and 2 sites. The Tonawanda ROD determined that if soil containing more than 40 picocuries per gram (pCi/g) of Th-230 was removed, the residual concentrations of other COCs would be:

- Low enough to comply with 40 CFR Part 192 and 10 CFR 20.
- Protective of human health and the environment.

Specific components of the selected alternative that would achieve compliance with the ARARs were:

- Excavate soils exceeding the site-specific derived guideline of 40 pCi/g Th-230.
- Ship all excavated soils that exceed the 40 pCi/g Th-230 guidance to an appropriately licensed or permitted off-site disposal facility.

- Restore the sites with clean backfill from an off-site commercial source and seed to restore vegetative cover at the sites to their original state.

The following statutes and regulations are ARARs for the cleanup of the radionuclides present in soils at the Unit 1 and 2 sites:

- The material will be controlled in a safe and environmentally sound manner (Uranium Mill Tailings Radiation Control Act, 42 United States Code 7901 et. seq.).
- Ra-226 concentrations shall not exceed background levels by more than 5 pCi/g in the top 15 centimeters (cm) or by more than 15 pCi/g in any subsequent 15 cm, averaged over 100 square meters (m<sup>2</sup>) (Subpart B of 40 CFR 192).
- The release of radon-222 and Rn-220 into the atmosphere resulting from the management of uranium and thorium by-product materials shall not exceed an average release rate of 20 pCi/m<sup>2</sup> per second (Subparts D and E of 40 CFR 192).
- The radiological dose to a potential receptor must be equal to or less than 25 millirem per year (mrem/yr) (Subpart E of 10 CFR 20).

During remedial operations at Unit 2, USACE discovered MED-related contamination in Rattlesnake Creek. Further investigations revealed that the COC distribution in the sediment of the creek was different than that measured in the soils at the Unit 1 and 2 sites. In order to achieve residual radiation values and doses for Rattlesnake Creek that were consistent with the values obtained for Units 1 and 2, USACE developed site-specific derived concentration guideline levels (DCGLs) for use in the field during the remediation of the Rattlesnake Creek area. On September 20, 2004, USACE issued an ESD for the Rattlesnake Creek portion of the sites. DCGLs for Rattlesnake Creek for the three radionuclides of concern (Ra-226, Th-230, and U-238) are listed in the [Data Summary Worksheet](#) on pages 4. DCGLs were concentrations above background and represent average concentration guidelines for specific size areas. General remediation goals and ARARs remained the same as for Unit 2.

## Remedial Action

There were three separate remedial actions at the Tonawanda North sites:

- Unit 2 – July 1998 through September 1999.
- Unit 1 (including Seaway Area D) – June 1999 through December 2002.
- Rattlesnake Creek – May 2005 through September 2005.

USACE excavated all three areas but to different depths. At Units 1 and 2, the depth of excavation was generally between 4 and 7 feet below ground surface; excavations at Unit 1 were slightly deeper than Unit 2. Rattlesnake Creek was a shallower

dig since the material was deposited by sedimentation, with the vast majority of excavations being less than 3 feet below ground surface. After completing the Final Status Surveys (FSSs), USACE backfilled and seeded the excavated areas.

## Post-Remediation Sampling

USACE conducted dose assessments for the Unit 1 site as well as a combined effort for the Rattlesnake Creek and Unit 2 sites. The annual residual dose to an urban resident after post-remedial action were 7.1 mrem/yr for Unit 1 and 4.7 mrem/yr for Rattlesnake Creek and Unit 2 combined. These residual doses met the ESD and ROD requirements.

The average residual concentrations for the Unit 2 site (alone) for Ra-226, Th-230, and U-238 were 0.85, 5.17, and 2.71 pCi/g, respectively. The average residual concentrations for the Rattlesnake Creek site (alone) for Ra-226, Th-230, and U-238 were 1.26, 1.84, and 4.49 pCi/g, respectively. The average residual concentrations for the Unit 1 site (alone) for Ra-226, Th-230, and U-238 were 0.63, 2.91, and 3.15 pCi/g, respectively. The average residual soil concentrations for Units 1 and 2 and Rattlesnake Creek were lower than the projected residual values presented at the time of the ROD. See Table 4 in the Data Summary Worksheet for the dose and residual concentration values for Unit 2 and Rattlesnake Creek combined.

In the *Site Closeout Report for the Ashland 1 (Including Seaway Area D), Ashland 2, and Rattlesnake Creek FUSRAP Sites (Site Closeout Report)*, USACE stated that, as part of the FSS closeout process, the following activities were performed for all areas of the sites:

- Gamma walkover scans to measure surface gamma radiation (see Table 5 in the Data Summary Worksheet for the number of gamma scan points at each site).
- Quality assurance (QA) checks of the walkover scans by USACE.
- Sampling in a randomized pattern within individual survey units (see Table 5 in the Data Summary Worksheet for the number of FSS samples taken at each site).
- Analysis of samples at an off-site USACE-approved laboratory.
- Collection of split samples for USACE QA analysis.
- Validation of laboratory data.
- Technical data packages that concluded that contamination at each survey unit did not exceed the site cleanup criteria. USACE wrote the packages and submitted them to the New York State Department of Environmental Conservation (NYSDEC). Both parties approved the data packages.
- Oversight and random checks by NYSDEC.

Most of these data were not available in the Site Closeout Report.

## Current Site Conditions

The implemented remedy achieved the degree of cleanup and protection specified in the Unit 1 ROD (including Seaway Area D) and ESD for the Rattlesnake Creek portion of the sites for all pathways of exposure. No further response was needed to protect human health and the environment from the project COCs. All areas of concern were addressed. All ROD remedial action goals were achieved, and all ARARs were met. Residual concentrations have been found to be suitable for unrestricted use. Several properties around Rattlesnake Creek were purchased in 2005 to build the Riverview Industrial Center. Construction began in September 2005.

In 2008, USACE transferred responsibility for long-term stewardship of the Tonawanda North sites to LM. No monitoring, maintenance, or site inspections are required. The stewardship requirements and protocols are captured in the Long-Term Stewardship Plan for Completed FUSRAP Sites, which is available on the DOE Office of Legacy Management website ([www.energy.gov/lm/tonawanda-north-new-york-site-unit-1](http://www.energy.gov/lm/tonawanda-north-new-york-site-unit-1) and [www.energy.gov/lm/tonawanda-north-new-york-site-unit-2](http://www.energy.gov/lm/tonawanda-north-new-york-site-unit-2)).



## ADDITIONAL INFORMATION

Documents related to FUSRAP activities at the Tonawanda North sites are available on the LM website at [lmpublicsearch.lm.doe.gov/SitePages/default.aspx?sitename=Tonawanda1](http://lmpublicsearch.lm.doe.gov/SitePages/default.aspx?sitename=Tonawanda1).

For other information on site history or current long-term stewardship activities, please contact us at:

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# Tonawanda North, New York, Sites, Units 1 and 2 Site Certification Data Summary Worksheet

Three tables referenced in the Tonawanda North Units 1 and 2 Site Closeout Report provide the evidence used to certify the site as clean.

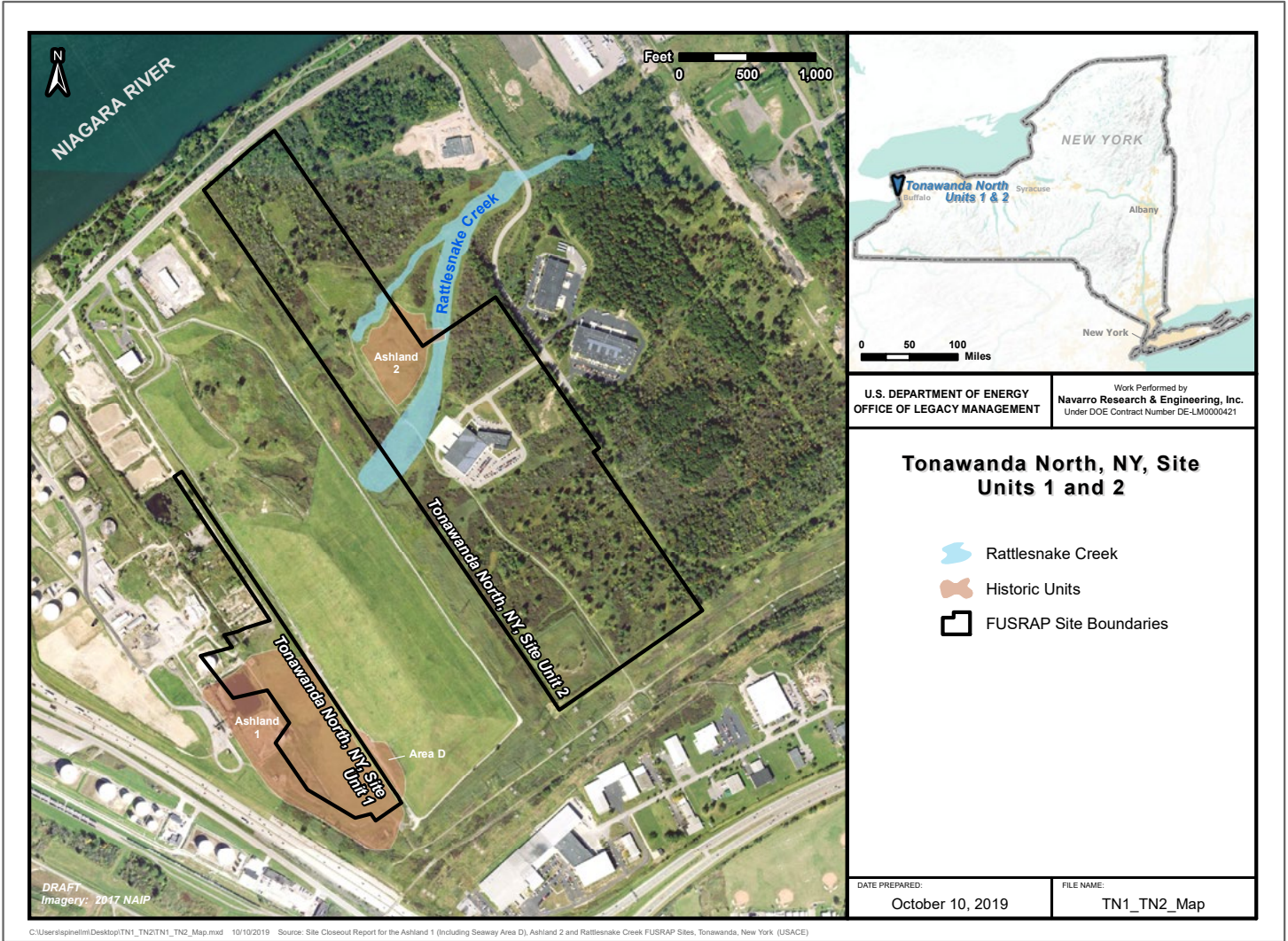
When the tables refer to the "Site Closeout Report," that is the "Site Closeout Report for the Ashland 1 (Including Seaway Area D), Ashland 2, and Rattlesnake Creek FUSRAP Sites, Tonawanda, New York" (dated October 2006).

| DCGLs for Rattlesnake Creek     |                      |                   |                |
|---------------------------------|----------------------|-------------------|----------------|
| Table 1 in Site Closeout Report |                      |                   |                |
| DCGLs for Area Size (pCi/g)     |                      |                   |                |
|                                 | 10,000 square meters | 100 square meters | 1 square meter |
| Ra-226                          | 4.3                  | 5                 | 16             |
| Th-230                          | 12                   | 14                | 46             |
| U-238                           | 350                  | 450               | 2000           |

| Residual Soil Concentrations and Doses   |                             |            |            |  |
|--|-----------------------------|------------|------------|--|
| Table 4 in Site Closeout Report  |                             |            |            |  |
| Value/Location   | Soil Concentrations (pCi/g) |            |            | Annual Residual Dose to Urban Resident (mrem)* |
|  | Ra-226                      | Th-230     | U-238      |  |
| <b>Average Residual Values</b>   |                             |            |            |  |
| Unit 1   | 0.63                        | 2.91       | 3.15       | 7.1  |
| Unit 2 & Rattlesnake Creek   | 1.04                        | 3.62       | 3.60       | 4.7  |
| Original Projected Residual Values**   | <b>2</b>                    | <b>12</b>  | <b>5</b>   | -  |
| Background Concentrations  | <b>1.1</b>                  | <b>1.4</b> | <b>1.2</b> | -  |
| * The Unit 2/Rattlesnake dose is independent of background concentrations; the Unit 1 dose includes background concentrations. |                             |            |            |  |
| **At the time of the ROD, these were the residual projected concentrations.  |                             |            |            |  |

| Summary of FSS                  |                     |                      |                       |               |                     |
|---------------------------------|---------------------|----------------------|-----------------------|---------------|---------------------|
| Table 5 in Site Closeout Report |                     |                      |                       |               |                     |
| Location                        | # Class I FSS Units | # Class II FSS Units | # Class III FSS Units | # FSS Samples | # Gamma Scan Points |
| Unit 1                          | 32                  | 4                    | 1                     | 569           | 601,258             |
| Unit 2                          | 21                  | 4                    | 1                     | 537           | 220,239             |
| Rattlesnake Creek               | 24                  | 1                    | 1                     | 749           | 177,329             |
| <b>Total</b>                    | <b>77</b>           | <b>9</b>             | <b>3</b>              | <b>1,855</b>  | <b>998,826</b>      |

# Tonawanda North, New York, Sites, Units 1 and 2 Map



C:\Users\epnelmi\Desktop\TN1\_TN2\TN1\_TN2\_Map.mxd 10/10/2019 Source: Site Closeout Report for the Ashland 1 (Including Seaway Area D), Ashland 2 and Rattlesnake Creek FUSRAP Sites, Tonawanda, New York (USACE)