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# Feasibility Study and Proposed Plan – Landfill Operable Unit Tonawanda Landfill Vicinity Property Tonawanda, NY

**U.S. Army Corps of Engineers  
Buffalo District  
September 2015**

**Building Strong®**

## **Formerly Utilized Sites Remedial Action Program**

The Formerly Utilized Sites Remedial Action Program (FUSRAP) was initiated in 1974 to identify, investigate, and clean up or control sites throughout the United States that were contaminated by activities related to the nation's early atomic weapons and energy programs during the 1940s, 1950s, and 1960s. Congress transferred execution of FUSRAP from the U.S. Department of Energy (DOE) to the U.S. Army Corps of Engineers in 1997. When implementing FUSRAP, the Corps of Engineers follows the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

## **Site Description and History**

The Tonawanda Landfill Vicinity Property consists of two parcels owned by the Town of Tonawanda: the Town of Tonawanda Landfill and the mudflats area, now known as the North Youngmann Commerce Center. The Tonawanda Landfill Vicinity Property covers approximately 69 hectares (170 acres) in the Town of Tonawanda, Erie County, New York. The vicinity property is bordered by a residential area within the City of Tonawanda, a railroad line, Interstate 290 and East Park Drive. A National Grid utility corridor separates the landfill and mudflats area.

Waste disposal at the landfill by the Town of Tonawanda began during the 1930s and continued through 1989. Records indicate that the landfill was principally used for the disposal of construction and demolition material, yard waste, incinerator ash, and occasionally municipal waste and wastewater sludge.

As the result of a radiological survey performed in 1991 by the DOE, a portion of the landfill and mudflats area were designated together into FUSRAP as a vicinity property of the Linde FUSRAP Site, which is also located in the Town of Tonawanda.



## **Corps of Engineers Activities**

The Corps of Engineers, Buffalo District, completed a remedial investigation of the Tonawanda Landfill Vicinity Property in 2005. This effort was in addition to previous investigations performed by the DOE in the 1990s. During the remedial investigation, the Corps sampled and tested soil, surface water, sediment, and groundwater of the vicinity property for uranium, radium, and thorium. Small, isolated locations within the vicinity property were found with levels of uranium, radium and thorium above background levels, similar to radioactive material found at other FUSRAP sites in Tonawanda. A baseline risk assessment was conducted as part of the remedial investigation to determine the risk to human health and the environment associated with exposure to these radionuclides.

The baseline risk assessment conducted in 2005, using information available at that time, concluded that risks to human health, for the current and reasonable future site uses in both the landfill and mudflats areas, were within the acceptable limits established in the NCP.

A proposed plan, covering both the Town of Tonawanda Landfill and the mudflats area, was released for public comment in the spring of 2007. The proposed plan recommended no action as the preferred alternative, for both the landfill and the mudflats area, based on the findings of the remedial investigation and the baseline risk assessment.

In response to public comments received on the proposed plan, the Corps of Engineers divided the vicinity property into two operable units (OUs): the Landfill OU and the Mudflats OU. The Corps signed a record of decision for the Mudflats OU of the Tonawanda Landfill Vicinity Property in September 2008. The record of decision states that no action is required for the Mudflats OU because the risks from FUSRAP-related material for all media are within the acceptable risk limits established in the NCP, for the current and reasonable future land use of the Mudflats OU. The Corps decided to conduct additional sampling in the Landfill OU to confirm the nature and extent of FUSRAP-related material, and to update the baseline risk assessment based on the results of the additional sampling and other information provided in the public comments on the proposed plan.

The Corps of Engineers conducted the additional soil, groundwater, sediment, surface water and vegetation sampling on the Landfill OU of the vicinity property in 2009, 2010, and 2011. Data from this sampling was used to update the baseline risk assessment to ensure that it reflects the realistic potential for human exposure in the Landfill OU, given its proximity to residential property.

The updated baseline risk assessment was completed in the spring of 2012. The updated baseline risk assessment concluded the following:

- That for the current use of the Landfill OU, as it is currently configured, risks to human health from potential exposures to FUSRAP-related material are within acceptable limits established in the NCP.
- If the surface of the landfill is not maintained and is allowed to erode over time, exposing FUSRAP-related material that is currently buried, then risks to future recreational users on the site could increase above the NCP acceptable risk range approximately 600 years into the 1,000-year evaluation period.

## **Feasibility Study**

Based on the conclusions in the baseline risk assessment a feasibility study was prepared to identify, develop and provide a detailed analysis of remedial alternatives appropriate to mitigate potential future unacceptable risks from exposure to the buried FUSRAP-related material in the Landfill OU.

One of the first steps in a feasibility study is to determine the applicable or relevant and appropriate requirements (ARARs), which are standards or requirements under federal environmental or state

environmental or facility siting laws. These standards are designed to be protective and are used to assess whether a particular alternative can meet those standards. The Corps of Engineers identified the following chemical-specific ARAR for the Landfill OU in the feasibility study, which specifies criteria for developing cleanup goals for radionuclides in surface and subsurface soils:

- *10 CFR 40, Appendix A: Criteria Relating to the Operation of Uranium Mills and the Disposition of Tailings or Waste Produced by the Extraction or Concentration of Source Material from Ores Processed Primarily for Their Source Material Content*
  - *Criterion 4, Site and Design Criteria*
  - *Criterion 6(1), 6(5), 6(6) and 6(7), Closure of Waste Disposal Areas*
  - *Criterion 12, Long-term Site Surveillance*

To be in compliance with the cleanup standards contained in the ARAR above, the Corps of Engineers established the following preliminary remediation goals (PRGs) for FUSRAP-related constituents of concern in the soil at the Landfill OU:

<b>FUSRAP-related Contaminants of Concern in Soil</b>	<b>Units</b>	<b>Background<sup>a</sup></b>	<b>Recreational Surface Soil PRG<sup>b</sup></b>	<b>Recreational Subsurface Soil PRG<sup>b</sup></b>
Radium-226	pCi/g <sup>c</sup>	0.95	5	15
Thorium-230	pCi/g	0.92	14	42
Total uranium <sup>d</sup>	pCi/g	1.75	152	457
Uranium-238 as total uranium surrogate	pCi/g	0.86	75	224

- a. Average background values for the Landfill OU (Reference: Table 2-7 of the updated baseline risk assessment).
- b. The depth and area requirements as specified in 10 Code of Federal Regulation Part 40 Criterion 6(6). Surface soil is defined as 0-15 centimeters (0-6 inches) below ground surface. Concentrations of the COCs averaged over a 100 square meter (1,076 square feet) area cannot exceed the PRGs.
- c. pCi/g - picocuries per gram.
- d. Total uranium is a sum of the isotopes uranium-234, uranium-235, and uranium-238.

The following four alternatives were identified for a detailed analysis in the feasibility study:

- Alternative 1 - No Action - is considered in the detailed analysis in accordance with requirements [40 Code of Federal Regulation 300.430(e)(6)] as a baseline against which all other alternatives are compared. Under this alternative, no remedial actions would be undertaken to address radiological FUSRAP-related contaminants of concern in soil at the Landfill OU of the Tonawanda Landfill Vicinity Property. It was assumed in the feasibility study that all activities, including basic site maintenance and environmental monitoring currently performed, would be discontinued under this alternative. Engineering and land-use controls would not be implemented and those currently in place at the site would not be maintained.
- Alternative 2 – Single-layer Capping of FUSRAP-related Material - assumes that the impacted soil exceeding PRGs, outside of the bounds of the capped portions of the Town of Tonawanda municipal landfill, would be capped in place by the Corps of Engineers. Land-use controls, including prohibitions on excavation and building construction, would be implemented as necessary. A 1,000-year post-closure monitoring and maintenance program is also included in this alternative, which includes five-year reviews.
- Alternative 3 - Targeted Shallow Removal and Off-site Disposal of FUSRAP-related Material - consists of the targeted removal of all impacted soil exceeding PRGs at a depth not to exceed 1.5 meters (5 feet) below ground surface and transportation off site for disposal in a facility permitted to receive such materials. Excavations will be restored by backfilling to grade and seeding. Land-use controls, including

prohibitions on excavation and building construction, would be implemented as necessary. A 1,000-year post-closure monitoring period is also included in this alternative, which includes five-year reviews.

- **Alternative 4 - Deep Excavation and Off-site Disposal of FUSRAP-related Material** - consists of the excavation of all impacted soil exceeding PRGs, and transportation off site for disposal in a facility permitted to receive such materials. Excavations will be restored by backfilling to grade and seeding. After a determination has been made, based on post-excavation sampling and analysis, that the PRGs have been attained, land-use controls would not be required for the Landfill OU with respect to the FUSRAP-related contamination.

The table below compares the alternatives identified in the feasibility study based on seven of the nine evaluation criteria outlined in the NCP. The first two criteria, overall protection of human health and the environment and compliance with ARARs, are threshold criteria and must be met. The next five criteria are considered balancing criteria and represent the primary criteria upon which the detailed analysis and comparison of alternatives are based: long-term effectiveness and permanence; short-term effectiveness; reduction of toxicity, mobility or volume through treatment; implementability; and cost. The remaining two evaluation criteria, state and community acceptance, will be evaluated based on comments received on the proposed plan.

Criteria	Alternative 1: No Action	Alternative 2: Single-layer Capping of FUSRAP-related Material	Alternative 3: Targeted Shallow Removal and Off-site Disposal of FUSRAP-related Material	Alternative 4: Deep Excavation and Off-site Disposal of FUSRAP-related Material
<b>Threshold Criteria</b>				
Overall Protection of Human Health and the Environment	Not Protective	Protective	Protective	Protective
Compliance with ARARs	Not Compliant	Compliant	Compliant	Compliant
<b>Balancing Criteria</b>				
Long-term Effectiveness and Permanence	Low	Low	Moderate	High
Reduction of Toxicity, Mobility, or Volume through Treatment	None	None	None <sup>a</sup>	None <sup>a</sup>
Short-term Effectiveness	High	High	Moderate	Low
Implementability	High	Moderate	High	Low
Capital Cost	\$0	\$8,038,999	\$10,341,038	\$55,400,759
Annual Operation and Maintenance Cost	\$0	\$81,884	\$62,237	\$0
Total Present Worth Cost	\$0	\$10,550,838	\$12,157,626	\$55,400,759

a. Waste minimization practices, such as radiological scanning and soil sorting, and treatment of characteristically hazardous waste for disposal purposes proposed under this alternative may reduce the volume of contaminated soil requiring disposal or mobility of contaminants, respectively.

## **Proposed Plan**

The proposed plan summarizes the evaluation of remedial alternatives conducted in the feasibility study and presents the Corps of Engineers' preferred alternative for the Landfill OU of the Tonawanda Landfill Vicinity Property.

The preferred alternative identified in the proposed plan is Alternative 3, Targeted Shallow Removal and Off-site Disposal of FUSRAP-related Material, to address contaminated soils in the Landfill OU. All on-site soils exceeding PRGs will be excavated to a depth no greater than 1.5 meters (5 feet) below ground surface and shipped off site for disposal at a licensed/permitted disposal facility (or facilities). Alternative 3 will be protective of human health and the environment; complies with ARARs; and is the preferred alternative among those considered, particularly with respect to short-term effectiveness, implementability and cost.

## **Next Step**

The feasibility study and proposed plan are both available on the Tonawanda Landfill Vicinity Property website at: <http://www.lrb.usace.army.mil/Missions/HTRW/FUSRAP/TonawandaLandfill.aspx> at the link to the Administrative Record File, which also contains CERCLA-related documentation used in the decision-making process for the Tonawanda Landfill Vicinity Property. The public is encouraged to review and comment on all the alternatives presented in the proposed plan. The public comment period for the proposed plan begins September 14, 2015, and ends November 14, 2015.

A public meeting to present the proposed plan and preferred alternative will be held on Thursday, October 15, 2015, in the Community Room of the Kenmore-Town of Tonawanda Union Free School District Philip Sheridan Building at 3200 Elmwood Avenue, Kenmore, New York 14217. The Corps' project delivery team will be available to answer questions from the community regarding this project beginning at 6 p.m. before the presentation begins at 7 p.m. A court recorder will be available to record the presentation and verbal comments. Written comments may be provided that evening, emailed to [fusrap@usace.army.mil](mailto:fusrap@usace.army.mil), or mailed before the close of the comment period to:

U.S. Army Corps of Engineers, Buffalo District  
Special Projects Branch, Environmental Project Management Team  
1776 Niagara Street  
Buffalo, NY 14207-3199

The preferred alternative may be modified based on any new information acquired during the designated public comment period. Responses to comments received will be provided in the record of decision, which will identify the selected remedy to be implemented.

Additional information regarding FUSRAP is available on the Buffalo District webpage at <http://www.lrb.usace.army.mil/Missions/HTRW/FUSRAP.aspx>.

## **Administrative Record File**

The administrative record file for the Tonawanda Landfill Vicinity Property contains CERCLA-related documentation used in the decision-making process for the site. Reports and documents in the administrative record file may be viewed on the Tonawanda Landfill website at:

<http://www.lrb.usace.army.mil/Missions/HTRW/FUSRAP/TonawandaLandfill.aspx>

and:

U.S. Army Corps of Engineers  
Buffalo District  
1776 Niagara Street  
Buffalo, New York 14207 (by appointment only)

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