US Army Corps of Engineers
Buffalo District

BUILDING STRONG

RECORD OF DECISION FOR THE FORMER GUTERL SPECIALTY STEEL CORPORATION SITE

LOCKPORT, NEW YORK

AUTHORIZED PROJECT UNDER THE
FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM

March 2023

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ACRONYMS, ABBREVIATIONS, AND UNITS OF MEASURE

μg/L	microgram per liter
ac	acre(s)
AEC	Atomic Energy Commission
ALARA	as low as reasonably achievable
ARARs	applicable or relevant and appropriate requirements
ATI	Allegheny Technologies Incorporated Specialty Materials
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
cm^2	square centimeters
COC	constituent(s) of concern
CSM	conceptual site model
DCGL	derived concentration guideline level
DOE	United States Department of Energy
dpm	disintegrations per minute
EPA	United States Environmental Protection Agency
FS	feasibility study
ft	feet
ft^2	square feet
FUSRAP	Formerly Utilized Sites Remedial Action Program
gal	gallon
ha	hectare
HEPA	high efficiency particulate air
HHRA	human health risk assessment
ILCR	incremental lifetime cancer risk
L	liter
LUC	land use controls
m	meter
m^2	square meter
m^3	cubic meter
MCL	maximum contaminant level
MED	Manhattan Engineer District
mg/L	milligram per liter
μg/L	microgram per liter
MNA	monitored natural attenuation
mrem	millirem
mrem/yr	millirem per year
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NRC	Nuclear Regulatory Commission
NYCRR	New York Code of Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
O&M	operation and maintenance

ACRONYMS, ABBREVIATIONS, AND UNITS OF MEASURE (CONTINUED)

PA	preliminary assessment
pCi/g	picocuries per gram
RG	remediation goal(s)
RG-CW	remediation goal - construction worker
RG-GW	remediation goal - groundwater
Ra	radium
RAO	remedial action objective(s)
RCRA	Resource Conservation and Recovery Act
RESRAD	RESidual RADioactivity computer code
RI	remedial investigation
ROD	record of decision
Simonds	Simonds Saw and Steel Company
Guterl Site	Guterl Specialty Steel Corporation Site
SLERA	screening-level ecological risk assessment
Th	thorium
Th-228	thorium-228
Th-232	thorium-232
U	uranium
U-234	uranium-234
U-235	uranium-235
U-238	uranium-238
USACE	U.S. Army Corps of Engineers
UU/UE	unlimited use and unrestricted exposure
yd^3	cubic yards

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PART I: THE DECLARATION

1.0 SITE NAME AND LOCATION

Former Guterl Specialty Steel Corporation
601 Ohio Street
Lockport, New York 14094

2.0 STATEMENT OF BASIS AND PURPOSE

This record of decision (ROD) presents the final selected remedy for the Former Guterl Specialty Steel Corporation Site (hereinafter referred to as Guterl Site) located at 601 Ohio Street in Lockport, New York. This project is authorized under the Formerly Utilized Sites Remedial Action Program (FUSRAP), which was established in 1974 to identify, investigate, and, if necessary, clean up or control sites that were contaminated as a result of activities conducted in support of the Nation's early atomic energy and weapons program. These activities were performed by predecessors to the United States Department of Energy (DOE): the Manhattan Engineer District (MED) from 1942 through 1946 and/or the Atomic Energy Commission (AEC) from 1947 through 1975. In 1977, DOE assumed administration and execution of FUSRAP. In 1997, Congress transferred responsibility to administer and execute FUSRAP cleanups from DOE to the United States Army Corps of Engineers (USACE). As such, USACE is only authorized to address FUSRAP-related contamination from sites in the United States resulting from work performed as part of the Nation's early atomic energy program such as those at the Guterl Site and this ROD only addresses those contaminants.

USACE is the lead agency that chooses a site remedy in accordance with the guidance outlined in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

The information supporting this decision is in the administrative record for the site, located electronically on the project website at:
https://www.lrb.usace.army.mil/Missions/HTRW/FUSRAP/Guterl-Steel-Site/

In accordance with CERCLA and the NCP, USACE prepared a preliminary assessment/site inspection, remedial investigation report, feasibility study (FS), and proposed plan, which support this ROD. Comments on the FS and proposed plan were provided by the New York State Department of Environmental Conservation (NYSDEC), New York State Department of Health (NYSDOH), Allegheny Technologies Incorporated (ATI), City of Lockport, and members of the general public.

3.0 ASSESSMENT OF THE SITE

USACE, as the lead agency, determined that the response actions selected in this ROD are necessary to protect human health and the environment from actual or threatened releases of hazardous substances into the environment.

4.0 DESCRIPTION OF THE SELECTED REMEDY

The remedy selected for the Guterl Site is Site-Wide Alternative 3: Dismantlement and off-site disposal of Buildings 1, 2, 3, 4/9, 5, 6, 8, 24, and 35; complete soil removal to the soil remediation goal for groundwater protection (RG-GW) and off-site disposal; groundwater recovery using extraction wells and a rubblized trench with *ex-situ* treatment, with environmental monitoring. The main components of this remedy include:

- Dismantlement of contaminated buildings related to AEC operations and off-site disposal of building materials at a properly permitted or licensed disposal facility.
- Removal of FUSRAP-related material from across the site and underlying the dismantled buildings that exceeds cleanup goals (developed for protection of groundwater) and off-site disposal of this material at a properly permitted or licensed disposal facility.
- Confirmatory sampling to confirm that cleanup goals have been achieved.
- Site restoration of disturbed areas.
- Extraction of contaminated groundwater using a series of vertical extraction wells and a rubblized trench and *ex situ* treatment.
- Sampling, monitoring, and review of groundwater data to evaluate the effectiveness of the groundwater remediation.

5.0 STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with federal and state requirements applicable or relevant and appropriate to the remedial action, is cost-effective, and utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable.

This remedy satisfies the statutory preference for treatment as a principal element of the remedy (i.e., reduces the toxicity, mobility, or volume of hazardous substances, pollutants, or contaminants as a principal element through treatment). Groundwater remediation includes active extraction and treatment on site.

At the end of the remedial action performance period, the Guterl site achieves unlimited use and unrestricted exposure (UU/UE) conditions.

6.0 RECORD OF DECISION DATA CERTIFICATION CHECKLIST

The following information is included in the decision summary of this ROD. Additional information can be found in the administrative record file for this site.

- Constituents of concern (COCs) and their respective concentrations.
- Baseline risk represented by the constituents of concern.
- Cleanup levels established for the constituents of concern and the basis for these levels.
- How source materials constituting principal threats are addressed.
- Current and reasonably anticipated future land use assumptions.
- Potential land and groundwater use that will be available at the site as a result of the selected remedy.

- Estimated capital, annual operation and maintenance, and total present worth costs, discount rate, and the number of years over which the remedy cost estimates are projected.
- Key factor(s) that led to selecting the remedy.

7.0 AUTHORIZING SIGNATURE

PEEPLES.KIMBERLY.ANNE.1076314485 Digitally signed by PEEPLES.KIMBERLY.ANNE.1076314485 Date: 2023.02.24 08:44:13 -05'00'

Kimberly A. Peeples
Brigadier General, U.S. Army
Commanding

Date

PART II: DECISION SUMMARY

1.0 SITE NAME, LOCATION, AND DESCRIPTION

The Former Guterl Specialty Steel Corporation Site (hereinafter referred to as Guterl Site) is located in the City of Lockport, Niagara County, New York, approximately 32 kilometers (20 miles) northeast of Buffalo, New York (Figure 1). The approximately 28-hectare (ha) (70-acre [ac]) site is bordered by Ohio Street on the south and east, residential, and commercial properties to the north near New York State Route 31 (West Avenue), and New York State Route 93 on the west. The Erie Canal is south-southeast of the Guterl Site boundary. The Guterl Site is currently zoned for industrial use and is anticipated to remain so in the future. The Guterl Site is grouped into two areas (Figure 2):

- The 24.5-ha (60.6-ac) property is currently owned and operated by Allegheny Technologies Incorporated (ATI) (EPA #NYD094174554), where an active specialty steel manufacturing facility operates in the southwest portion of the property. Building 24, currently owned by ATI, was partially constructed during Atomic Energy Commission (AEC) activities. After AEC activities ended, Building 24 was expanded northward. The expansion of Building 24 was at a later time and not related to AEC activities. The northwest part of this property includes a 3.5-ha (8.6-ac) inactive hazardous waste disposal site (New York State Department of Environmental Conservation [NYSDEC] site #932032) owned by ATI, which has not operated as a waste disposal area since 1981.
- The 3.6-ha (9-ac) Excised Area owned by Guterl Specialty Steel, which contains nine abandoned buildings that existed during the AEC activities (Buildings 1, 2, 3, 4/9, 5, 6, 8, and 35).

2.0 SITE HISTORY

From 1910 to 1966, the Simonds Saw and Steel Company (Simonds) owned and operated the Guterl Site to manufacture steel and specialty steel alloys used in the production of saws and other tools. During World War I and World War II, normal plant operations were suspended, and the plant produced armor plating for the U.S. government under various contracts.

From 1948 to 1956, Simonds performed rolling mill operations on uranium metal and, to a much smaller extent, thorium metal. The uranium and thorium metal operations were initially performed from 1948 to 1952 under contracts with the New York Operations Office of the AEC.

Simonds continued the work from 1952 to 1956 under a subcontract to National Lead of Ohio. During AEC operations from 1948 ending in 1956, the AEC was responsible for providing radiological monitoring and safety guidance and assistance. The uranium, thorium, and radium byproduct from manufacturing operations, was collected to the extent possible and returned to AEC or National Lead of Ohio. Simonds was acquired in 1966 by the Wallace-Murray Corporation, who continued to operate as a specialty steel mill until 1978, when the Guterl Specialty Steel Corporation acquired the property.

The Guterl Specialty Steel Corporation filed for Chapter 11 bankruptcy protection in 1982 through the U.S. Bankruptcy Court for the Western District of Pennsylvania. The Allegheny Ludlum Corporation purchased the Guterl Specialty Steel Corporation assets at auction in 1984 using industrial development bonds received through the Niagara County Industrial Development Agency. The purchase included all of the Guterl Specialty Steel Corporation property, with the exception of land that later became known as the Excised Area, and the equipment used during AEC-related operations at the Guterl Site. As a result, the Excised Area and equipment therein remained under ownership of Guterl Specialty Steel Corporation, which underwent bankruptcy in 1990 and is no longer a viable entity.

In 1996, the Allegheny Ludlum Corporation merged with Teledyne Incorporated to form ATI. The Guterl Site, with the exception of the Excised Area, is currently owned and operated by ATI under the name ATI Specialty Materials.

Historical events and previous investigations are discussed in detail in the remedial investigation (RI) and feasibility study (FS). Section 14.0 in this record of decision (ROD) lists the report references from the U.S. Army Corps of Engineers (USACE) and other agencies that present the investigation results and subsequent analyses for decision making.

Key historical FUSRAP events for the Guterl Site include:

- 2000 - DOE determined the Guterl Site was potentially eligible for inclusion into the Formerly Utilized Sites Remedial Action Program (FUSRAP)
- 2001 - USACE completed the *Preliminary Assessment/Site Inspection, Former Guterl Specialty Steel Corporation*
- 2001 – USACE designated the Guterl site for inclusion into FUSRAP
- 2010 - USACE completed the *Remedial Investigation Report, Former Guterl Specialty Steel Corporation FUSRAP Site*
- 2012 - USACE completed the *Data Gap Analysis Report, Former Guterl Specialty Steel Corporation FUSRAP Site*
- 2013 - USACE completed the *Final Supplemental Sampling Technical Memorandum, Former Guterl Specialty Steel Corporation Formerly Utilized Sites Remedial Action Program Site*
- 2021 - USACE completed the *Feasibility Study Report, Former Guterl Specialty Steel Corporation Formerly Utilized Sites Remedial Action Program Site*
- 2021 - USACE completed the *Proposed Plan for the Former Guterl Specialty Steel Corporation Site*

3.0 COMMUNITY PARTICIPATION

The Guterl Site FS and proposed plan were made available to the public in July 2021. These documents, as well as other technical and site-related documents, can be found in electronic format in the administrative record file, accessible on the project website at: https://www.lrb.usace.army.mil/Missions/HTRW/FUSRAP/Guterl-Steel-Site/.

On July 8, 2021, the notice announcing the release of the FS and proposed plan, the preferred alternative, the comment period, how to provide comments, and the date of the virtual public meeting was issued to interested citizens, and federal, state, and local elected officials and agency representatives. Notification was emailed to 101 contacts via the *News from the Corps of Engineers* email distribution list, 27 letters were mailed to federal, state, and local elected and agency representatives, and Dear Interested Citizen letters were mailed to 126 citizens in the USACE postal mailing database for the site. An additional *News from the Corps of Engineers* email was distributed July 26, 2021, to remind the community to register for the virtual public meeting. Legal advertisements were sent to the local media July 8, 2021. Newspaper ads were published in the Niagara Gazette and Lockport Union Sun and Journal July 10, 2021, and in the Buffalo News July 11, 2021.

The public comment period for the proposed plan was 60 days from July 12, 2021, to September 10, 2021. USACE conducted a virtual public meeting on July 29, 2021, at 7 p.m. The meeting was conducted virtually due to 2019 Coronavirus Disease (COVID-19) restrictions that were in effect at that time. Representatives from the USACE Buffalo District provided a formal presentation covering a brief history of the site, the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) process, the evaluation of the remedial alternatives, the preferred alternative, and the project schedule.

There were 20 participants present during the virtual public meeting, including local elected officials, federal and state agency representatives, and members of the community. Following the presentation, the public was offered the opportunity to provide oral comments. During the meeting, the public was also invited to submit written comments via the chat function of the platform. A stenographer was present at the meeting to record the proceedings and comments. The meeting transcript is provided in Appendix B.

During the public comment period comments were received by email and postal courier. These written comments are included in Appendix A. USACE's responses to comments received during the public comment period are included in the responsiveness summary (Part III) of this ROD.

4.0 SCOPE AND ROLE OF THE REMEDIAL ACTION

The remedial action for the Guterl Site is developed as an entire site-wide action based on the findings of investigative soil and groundwater sampling and past building use. The response action under FUSRAP will address buildings, soil, and groundwater that are impacted by FUSRAP-related constituents of concern (COCs), which include radioactive residuals only. Constituents that are not FUSRAP-related may be remediated and addressed in terms of proper disposal and treatment, only if mixed with FUSRAP-related COCs. The scope of this response action addresses the following COCs: thorium-232 (Th-232) and total uranium (U) (including isotopes U-234, U-235, and U-238) in buildings and soils, and total U in groundwater.

This ROD sets forth the final selected remedy for the Guterl Site, which includes building dismantlement and off-site disposal of the building materials coupled with soil excavation and off-site disposal of soil above the cleanup goals. Achieving the cleanup goals will remove the soil contamination source that leaches uranium to groundwater. The selected remedy addresses groundwater contamination with active extraction wells and an on-site water treatment facility.

Sections 11 and 12 of this ROD describe the components of the selected remedy and the acceptability and performance of the selected remedy against National Oil and Hazardous Substances Pollution Contingency Plan (NCP) criteria. This ROD will be followed by a remedial design/remedial action phase to develop procedures for dismantlement, decontamination, soil excavation, disposal, construction, environmental monitoring, and maintenance.

5.0 SITE CHARACTERISTICS

The Guterl Site is approximately 28 ha (70 ac); bordered by Ohio Street on the south and east, residential and commercial properties to the north near New York State Route 31 (West Avenue), and New York State Route 93 on the west. The Erie Canal is south-southeast of the Guterl Site boundary. The Guterl Site is grouped into two areas (Figure 2):

- The 24.5-ha (60.6-ac) ATI property, where an active specialty steel manufacturing facility operates in the southwest portion of the property. Building 24, currently owned by ATI, was partially constructed during AEC activities and was expanded northward after AEC activities ended.
- The 3.6-ha (9-ac) Excised Area owned by Guterl Specialty Steel, which includes nine abandoned buildings that existed during the AEC activities (Buildings 1, 2, 3, 4/9, 5, 6, 8, and 35).

The site is relatively flat and includes areas of pavement, broken pavement, non-paved (vegetated, dirt, or gravel) surfaces, and building material (brick, steel, and concrete). During the RI, USACE sampled buildings, soil, and groundwater for contamination over the entire site investigating both the active property and the Excised Area. The Guterl Site was largely characterized during the RI (USACE 2010) and explained in detail in the FS (USACE 2021). The RI and FS fully describe the site's physical characteristics, history, nature and extent of contamination, and human health and ecological risk assessments. Environmental samples collected to determine the nature and extent of contamination focused on on-site buildings including surfaces and contents, on-site soil, on-site groundwater, and seeps in the Erie Canal.

5.1 BUILDINGS

The COCs for buildings determined in the risk assessment are Th-232, total U (including isotopes U-234, U-235, and U-238). Buildings on the Guterl Site are not sequentially numbered and are divided into the Excised Area and the active ATI property. Buildings 1, 2, 3, 4/9, 5, 6, 8, and 35 are located in the Excised Area and are currently abandoned; these buildings are included in the remedial action. Also included in the remedial action is Building 24, which is located on ATI's property and is actively used as a storage facility. Buildings 14, 17, 37, and 47 are part of the ATI property and are not included in this remedial action since these buildings were constructed after AEC activities occurred on the Guterl Site. Exposure to building materials and contaminated soils beneath buildings pose potential human health risks. The radiological survey in the RI included total (static) and removable measurements (swipe samples) on building interior surfaces including floors, walls (above and below 2 meters [m] [6.6 feet (ft)]), ceilings, structural surfaces (i.e., roof truss dust samples), subfloor surfaces, trench side walls and surfaces, manufacturing components, and other overhead surfaces. The vast majority of contamination on interior building surfaces is fixed (non-removable) on typical materials including miscellaneous metal, wood, electrical, machinery, overhead cranes, and other miscellaneous materials and surfaces. Fixed Th-232 contamination exists in all of the buildings included in this remedial action except the exterior of Building 8. Fixed U contamination exists in all of the buildings except the exterior of Building 6. Removable Th-232 contamination exists in Building 3. Contamination in buildings is present at levels above the applicable cleanup criteria for buildings. The cleanup criteria are identified as the derived concentration guideline levels (DCGLs) in Table 2 and discussed in section 8.3.1 of this ROD.

5.2 SOIL AND GEOLOGY

The COCs for soil determined in the risk assessment are Th-232 and total U (including isotopes U-234, U-235, and U-238 in their natural ratios). The COC concentrations are at or near background levels in the active ATI production areas and in historically undisturbed areas of the Guterl Site. The COC contamination was found to be greatest in and around the former AEC support operations handling areas in the Excised Area and in the northern portions of the property where miscellaneous land disposal of AEC-related materials occurred. The COCs were found in elevated concentrations in soils beneath or adjacent to each of the Excised Area buildings and in several localized outdoor areas of the undeveloped parcel (i.e., the area north of Buildings 14, 24, and 37, including the inactive hazardous waste disposal site). Horizontal and vertical distributions of COCs on site vary due to historical site activities involving soil movement and construction.

The subsurface lithology underlying the Guterl Site consists of unconsolidated fill materials mixed with native soil, undisturbed native soil and glacial sediments, shallow weathered and fractured bedrock, and a deeper unweathered bedrock with sparser fracturing as the depth increases. The unconsolidated fill material and native soils become notably thin (<1 m or 3 ft) in the central and southern portions of the site. Figure 3 is a conceptual geologic cross section across site from west to east that displays these features. The stratigraphic order at the site, starting from ground surface is summarized as follows:

- <u>Overburden soil, glacial sediments, native soils, and unconsolidated fill materials</u>: range in thickness from 0.5 to 2.3 m (1.7 to 7.6 ft) across the site. The overburden is 4 to 5 m (13 to 15 ft) thick in the western area of the property. The coarser-grained fill material, where encountered, has been described as coal fragments, apparent ash and coke fragments, and brick or crushed stone. Native soils consist of silts and clays with varying amounts of sand and bedrock fragments.
- <u>Shallow weathered bedrock</u>: Shallow weathered and fractured bedrock below the soils extends to depths approximately 6 to 11 m (20 to 35 ft) below ground surface (bgs). Shallow groundwater wells installed in this layer indicate a permeable transport zone.
- <u>First main fracture zone</u>: The first main fracture zone varies from depths of 8 m (25 ft) bgs to approximately 12 m (40 ft) below the bottom of the shallow weathered bedrock. Deep groundwater wells installed in this layer indicate a less permeable transport zone, as exemplified by lower uranium impacts.

- Shaly dolostone: Underlying the first main fracture zone is a more clay-like dolostone that varies between 6 and 9 m (20 to 30 ft) in thickness. Geologic literature shows this low-permeability layer contains few to no fractures and thus no monitoring wells were installed in this layer.
- Rochester Shale: A claystone shale formation underlying the shaly dolostone to depths beyond 9 m (30 ft). There were no monitoring wells installed in this layer.

In summary, portions of the site exhibit a relatively thin layer of soil with sediment and unconsolidated fill materials over bedrock due to the proximity of the site to the Niagara Escarpment, where glacial sediments are known to be thin above the bedrock.

5.3 GROUNDWATER

The FUSRAP-COC for groundwater is limited to total U since concentrations of total U in site groundwater exceed the EPA maximum contaminant level (MCL) for drinking water. The ground surface elevation and top of bedrock elevation is highest in the north/northwest area of the Guterl Site and slopes unevenly southward towards the Erie Canal. The shallow groundwater plume exhibits U transport from the elevated northwest portion of the Guterl Site to the southeast towards the Erie Canal. The deep groundwater plume follows the same northwest to southeast path towards the Erie Canal, although the deep plume is smaller and contains lower concentrations of total U than the shallow groundwater plume. The groundwater flow directions in western portions of the site are commonly towards the quarry to the west, whereas groundwater in northern and central portions of the site flows southeasterly towards the Erie Canal. The groundwater table in the shallow bedrock ranges from 1 to 3 m (3 to 10.5 ft) in depth. Water levels in the deep bedrock wells (first main fracture zone) are more variable than in the shallow bedrock and range from 0.2 to 10.8 m (0.6 to 35.4 ft) in depth.

Groundwater underlying the Guterl Site is of sufficient quality and quantity to be considered potable for drinking water purposes. There were no functioning groundwater wells (for domestic consumption) identified within a half-mile radius of the Guterl Site and the surrounding community is supplied by a public water utility.

The Guterl Site does not contain surface water bodies such as ponds or streams, and there are no visible surface drainages that connect the site to the Erie Canal. Temporary standing water has been observed due to poor stormwater drainage at the Guterl Site. Rainfall that accumulates on the surface readily infiltrates vertically through the unsaturated overburden soil and into the weathered bedrock, thereby recharging the shallow groundwater.

5.4 GROUNDWATER SEEPS AND THE ERIE CANAL

The Erie Canal is approximately 90 m (300 ft) southeast of Ohio Street at the Guterl Site. The surface water elevation of the Erie Canal immediately south of the Guterl Site fluctuates by several feet due to seasonal control of the navigable water level (i.e., water elevation is lowered in winter and raised in summer). Groundwater discharges into the Erie Canal via seeps on the northern cliff face of the canal. Access to the seeps for sampling is accomplished by boat only during the navigable season. From November through April the canal is not navigable, as the water level is reduced. Pedestrian access to the area is difficult due to the steep terrain. Due to these conditions, there is limited exposure to the seeps.

Seasonal variation in the number of seeps and discharge volume has been observed. The seeps closest to the Guterl Site exhibit low-level total U concentrations that decline in a downstream track along the canal wall to levels well below the MCL. This low-level U seepage does not adversely impact the canal ecologically or recreational users. All surface water samples from the canal have total U concentrations less than the MCL for drinking water, and the FS demonstrated that groundwater seepages will not cause an exceedance of the MCL in surface waters of the Erie Canal. The majority of groundwater seep locations are inaccessible and not anticipated to provide a pathway for current or reasonably anticipated future human or ecological exposure.

Therefore, no FUSRAP-related COCs were identified for seeps or surface water in the Erie Canal immediately downstream from the site.

5.5 CONCEPTUAL SITE MODEL

Given that the current and anticipated future use of the Guterl Site is industrial, the CSM shown on Figure 4 illustrates potential exposure pathways to contaminated media for potential receptors in an industrial use setting, including industrial, maintenance, and construction workers and adult and adolescent trespassers. Exposure pathways to contaminated building materials, soil, and groundwater include ingestion, dermal contact, inhalation, and external radiation.

6.0 CURRENT AND POTENTIAL FUTURE LAND USES

The Guterl Site is currently zoned for industrial use and the reasonable future land use is industrial. The active ATI facility on site and adjacent to the Excised Area (Guterl property) is zoned industrial. This industrial designation is anticipated to remain so in the future due to the active industrial operations and businesses surrounding the site. Land use near the Guterl Site is mixed, consisting of private residences, small farms, light industries, and an active stone quarry. Figure 5 is a Niagara County map representing the diverse land use designations for the site and the surrounding properties. Land use immediately adjacent to the site is as follows.

- To the north of the Excised Area, along Simonds Street, land use includes light industrial/warehouse operations and a former railroad right of way.
- To the east of the former railroad right-of-way is a New York State Department of Transportation maintenance yard (abuts the northern half of the parcel) and private residences (abut the southern half of the parcel).
- To the west of the former railroad right-of-way, land use consists of light industry (concrete batch plant operations and warehousing).
- To the west of the operating facility, west-southwest of the New York State Route 93 bypass, there is an active dolostone quarry.
- To the south-southeast, unused open space and the Erie Canal separate the Guterl Site from private farmlands.

Based on quantity and quality, the groundwater at the Guterl Site can be classified as a potential source of drinking water based on EPA and New York State regulations. However, the site groundwater is degraded by volatile organic compounds (VOCs) detected under the excised portion of the Guterl Site; this is discussed in the Guterl FS (USACE 2021). Based on considerations of other contaminants present, the groundwater at the Guterl Site is not currently a potable source without treatment.

No records indicate that groundwater is currently used in the area downgradient of the site. No functioning groundwater wells were identified within a half-mile radius of the site in a well survey performed by the Niagara County Department of Health, and it was confirmed that the City of Lockport public water supplies the area. City of Lockport personnel also confirmed that when the public water supply was installed, the public was not given the option of retaining well water.

Surface water from the Erie Canal could potentially be used as an emergency back-up drinking water supply by the City of Lockport. The City of Lockport has indicated in recent discussions that water from the canal has not been used as a drinking water supply since 1997, and that its use in the future is very unlikely. Surface water sample results taken from the Erie Canal showed concentrations of total U levels reflect background conditions and are less than the MCL for drinking water.

7.0 SUMMARY OF SITE RISKS

The risk assessment was performed as part of the RI (USACE 2010) to estimate the potential for effects of FUSRAP-related constituents on human health and the environment. It included two components: the baseline human health risk assessment (HHRA) and the screening-level ecological risk assessment (SLERA).

7.1 HUMAN HEALTH RISK ASSESSMENT

The baseline HHRA evaluated human health risks from exposure to radioactive contaminants in the buildings, soils, and groundwater at the site.

7.1.1 IDENTIFICATION OF CONSTITUENTS OF CONCERN

The HHRA identified and evaluated the following FUSRAP-related constituents of potential concern (COPCs): Th-232 (and associated short-lived daughter products Ra-228 and Th-228, which are assumed to be in equilibrium with Th-232) and isotopes of U (including U-234, U-235, and U-238), and Th-230 and Ra-226 as part of the U-238 decay series. These COPCs were identified for building surfaces, soils, and groundwater based on analysis of historic information and comparison to screening levels established by the Nuclear Regulatory Commission (NRC) or the EPA to assist in defining the nature and extent of contamination. During the remedial investigation sampling, no COPCs were identified for surface water or sediment in the Erie Canal because no FUSRAP-related constituents exceeded background concentrations or screening levels and are therefore not evaluated for risk exposure. All COPCs were fully evaluated in the HHRA for radiological dose, cancer risk, and non-cancer hazard, based on the procedures outlined below. Based on the results, the HHRA identified the Guterl Site constituents of concern (COCs) for soil and buildings as Th-232, and total U (including isotopes U-234, U-235, and U-238), while only total U was identified as a COC for groundwater. Th and Ra are not COCs for groundwater as the RI concluded these analytes are at background levels in groundwater and are therefore not evaluated for risk exposure. Table 1 lists the COCs and the concentrations in each exposure unit sampling area.

7.1.2 EXPOSURE ASSESSMENT

The Guterl Site HHRA modeled cancer risks, radiological doses, and non-cancer hazard indices to different potential human receptors from exposure to FUSRAP-related contamination in:

- Building materials within the Excised Area
- Surface and subsurface soil
- Groundwater
- Sediment and surface water within utilities, ditches, trenches, etc.

The potential routes of exposure included ingestion of all media, inhalation of particulates (soil and building dust), and external exposure to gamma radiation. The risk assessment analyzed the following receptors:

- Construction worker
- On-site worker
- Juvenile trespasser
- Hypothetical future on-site resident

Figure 4 presents the Guterl CSM. In order to fully inform the scope of the remedial action being contemplated under FUSRAP, the risk assessment evaluated receptors that allowed USACE to make a full and complete analysis of the site. This full analysis included consideration of potential recreational and hypothetical residential uses. However, the reasonably anticipated future land use was determined to be industrial, and thus further consideration of potential risks and the basis of action was limited to potential receptors under an industrial land use scenario. The receptors that were evaluated and considered complete exposure pathways, based on the reasonably anticipated future land use being industrial, include construction worker, on-site worker, and juvenile trespasser.

Potential exposure routes from contaminated buildings to current and future juvenile trespassers, on-site workers, and to future construction workers, were identified as having exposure to total U and Th-232 through incidental ingestion of building materials, surface soils present within buildings, and surface water and sediment within building utilities, inhalation of dust, and external radiation. Possible ingestion of building materials could occur as building materials are disturbed, especially if particulates become airborne during decontamination activities (power washing, scabbling, etc.), building demolition, and disposal. However, the majority of contamination on interior building surfaces is not easily removed (fixed). Potential exposure routes from contaminated soils to trespassers and on-site workers were identified as having exposure to total U and Th-232 through incidental ingestion of surface soil, inhalation of soil-derived dust, and external radiation. Construction workers were additionally assumed to have exposure to subsurface soils, and to groundwater through incidental ingestion associated with intrusive subsurface activities that may encounter groundwater.

Of the current and future potential receptors analyzed, the group of individuals reasonably expected to receive the greatest exposure to residual radioactivity for the reasonably anticipated future land use is the construction worker. The construction worker was assumed to be exposed to radioactivity in site soils, building materials, surface water, sediment, and groundwater via external gamma, inhalation, and incidental ingestion. Details of the risk assessments are in the HHRA as part of the RI.

7.1.3 TOXICITY ASSESSMENT

The toxicity assessment in the HHRA evaluated potential adverse health effects associated with exposure to the COCs. Internal and external exposure to ionizing radiation from radionuclide contamination, including the COCs identified for the site, increase the risk of carcinogenesis (cancer), mutagenesis (genetic effects), and teratogenesis (birth defects, developmental abnormalities). In addition, internal exposure to uranium presents a chemical hazard potentially leading to kidney toxicity.

The risk of cancer incidence attributable to exposure to COCs was quantified using cancer risk coefficients established for individual radionuclides and specific exposure routes (inhalation, ingestion, and external gamma radiation). Risk coefficients were obtained from the EPA's Federal Guidance Report (FGR) 13 (EPA 1999).

Radiological dose coefficients were similarly used to quantify the biologically effective dose of ionizing radiation experienced by a receptor as a result of exposure to particular radionuclides. Effective radiological dose is a standardized unit (millirem [mrem]) representing the relative potential for the occurrence of any of the suite of human health effects known to be associated with exposure to ionizing radiation, including cancer and mutagenic and teratogenic effects. Dose coefficients were obtained from FGR 11 (EPA 1988) for inhalation and ingestion, and from FGR 12 (EPA 1993) for external gamma exposure.

Non-cancer chemical hazard associated with uranium was quantified by an oral reference dose representing a threshold dose below which would be unlikely to cause kidney toxicity—the critical non-cancer health effect caused by uranium. The reference dose (0.003 mg/kg-d) was obtained from the EPA's (2021) Integrated Risk Information System.

7.1.4 RISK CHARACTERIZATION

The HHRA identified the following radiological dose rates, cancer risks, and non-cancer hazards for potential receptors due to exposures to contaminated site media. Details of the risk assessment are in the HHRA as part of the RI.

- **Buildings, Structures, and Site Utilities—** For the radiological survey in the RI, material samples were collected for each building within the Excised Area and for Building 24. Samples included non-removable (fixed) and removable measurements (swipe samples) on building interior surfaces including floors, walls, ceilings, structural surfaces (i.e., roof truss samples), manufacturing components, and other overhead surfaces. The vast majority of contamination on interior building surfaces is fixed (non-removable) on typical materials including metal, wood, electrical, machinery, overhead cranes, and other miscellaneous materials and surfaces. Sample results showed that fixed uranium and fixed thorium concentrations exceeded background values and exceeded the screening levels in all of the buildings included in this remedial action. Thorium removable measurements exceeded the screening levels in Buildings 3 and 24. Roof truss dust sample results for Building 24, show that COC concentrations exceed background levels. Contamination in buildings is present at levels above the applicable cleanup criteria for buildings. The maximum estimated radiological dose rate to a receptor from the building-associated exposure pathways identified above was 765 mrem/year for on-site workers exposed to the interior of Building 8, with an associated maximum incremental lifetime cancer risk (ILCR) of approximately 1 in 100. Incidental ingestion of total U contamination in these building-associated exposure media could also result in a non-cancer hazard index of 20 or greater[1] for construction workers exposed in Building 8, indicating the potential for adverse health effects (i.e., kidney toxicity) for workers who have repeated exposures to building materials. Exposure to the contaminated soils beneath buildings, subfloor surfaces, and sediment in building utilities pose potential human health risks. During the RI, sediment samples were collected from in-building utilities, drains, pits, manholes, catch basins, and utility trenches. The COCs evaluated in sediment samples were the same as COCs for soil. All COCs were detected above background values and in general, the highest concentrations occurred in the same areas as elevated soil concentrations. Evaluation of risk, dose, and hazard in the RI HHRA revealed that COCs in soils beneath the buildings and sediment in utilities exceeded the carcinogenic risk 1 in 10,000, or the radiation dose criterion, 25 mrem/yr, for receptors.

- **Soil**—Exposure to total U and Th-232 in soils, especially contaminated soils beneath or adjacent to each of the buildings in the Excised Area and other localized areas, could pose health risks to workers. The maximum estimated radiological dose rate to a receptor from exposure to contamination in site soils was 6,481 mrem/year for a construction worker from exposure to soils beneath Building 8, with an associated ILCR of approximately 1 in 500. This dose rate and ILCR were estimated to occur 58 years into the 1,000-year evaluation period, due to potential leaching of total U contamination from surface soil to groundwater, which construction workers may encounter and incidentally ingest during intrusive subsurface activities. Construction workers were also estimated to receive the maximum radiological dose rate from exposure to soils outside the footprint of site buildings—653 mrem/year due to exposure to a localized area of surface soil contamination within the former railroad right-of-way, with an associated incremental lifetime cancer risk of approximately 1 in 5,000. On-site workers exposed to soil in this localized area were also estimated to have the maximum ILCR from exposure to soils, approximately 1 in 500, with an associated radiological dose rate of 104 mrem/year. Incidental ingestion of total U contamination in soil could also result in a non-cancer hazard index of 2 or greater for construction workers, with an associated incremental lifetime cancer risk of approximately 1 in 5,000, indicating the potential for adverse health effects (i.e., kidney toxicity) for workers who have repeated exposures to total U contamination in surface soil in this area.

- **Groundwater**—The HHRA considered the groundwater ingestion pathway to be incomplete for the current human receptors (juvenile trespassers, and on-site workers) because there is not currently any use of groundwater from the site and municipal water

[1] The hazard index of 20 reported in the HHRA was from exposure to combined surface and subsurface soils; the surface soils within Building 8 have greater contamination than subsurface soils and exposure to surface soils alone—or future exposure to uranium in groundwater leached from the surface soil—may result in even greater hazard to a construction worker.

is supplied to the site and surrounding community. The ingestion pathway is potentially complete for future construction workers who may encounter and incidentally ingest groundwater during intrusive subsurface activities. The greatest health risks associated with this exposure pathway were reported together with those quantified for soil exposures as described in the text above because the source of contamination in groundwater was the uranium source term in soil. Potential health risks could also occur if the site groundwater were to be used in the future as a source of potable water, as receptors could consume contaminated groundwater with total U concentrations greater than the EPA MCL for total U of 30 μg/L. The groundwater is not contaminated with Th-232.

7.2 SCREENING-LEVEL ECOLOGICAL RISK ASSESSMENT

A SLERA consisted of comparing concentrations of site contaminants to ecological screening values and food web modeling to determine the potential for adverse ecological impacts resulting from exposure to FUSRAP-related constituents at the site and the nearby Erie Canal. The SLERA evaluated both radiological risks and uranium chemical toxicity to potential terrestrial and aquatic ecological receptors by following the methodologies published by DOE (2002) and EPA (1997). The SLERA determined that potential adverse impacts may occur as a result of both radiological dose and uranium chemical toxicity as stressors to populations of biota exposed to contamination in site soils. However, the assessment concluded that further evaluation or considerations of ecological risks are not necessary, due to the localized nature of potential risks and the industrial nature of the site.

Much of the site is actively disturbed, occupied by buildings and paved areas, or otherwise impacted by industrial activities. The site is not currently managed for ecological resources, and is not expected to be in the future, as the land use is expected to remain industrial or commercial. There are no sensitive habitats (such as significant, permanent wetlands) or rare, threatened, or endangered species on the Guterl Site. The SLERA also determined there was no potential for increased risk to receptors associated with the Erie Canal. The SLERA therefore concluded that no further action is warranted with respect to ecological receptors.

8.0 REMEDIAL ACTION OBJECTIVES

Remedial action objectives (RAOs) are specific goals that remedial alternatives must fulfill to be protective of human health and the environment as well as be compliant with identified applicable or relevant and appropriate requirement (ARARs). The RAOs provide the basis for selecting remedial technologies and developing and evaluating remedial alternatives.

8.1 IDENTIFICATION OF REMEDIAL ACTION OBJECTIVES

RAOs are established to: 1) protect human health and the environment, 2) provide the basis for selecting appropriate technologies, and 3) develop and evaluate remedial alternatives against legal requirements. The RAOs for the Guterl Site are:

- Prevent exposure to total U and Th-232 in soil and buildings, and total U in groundwater, such that a construction worker, representative of the critical group, does not receive a total effective dose exceeding 25 mrem/yr above background from all pathways.
- Prevent human ingestion of groundwater that exceeds the total U MCL of 30 μg/L.

8.2 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

The quantitative cleanup levels that would achieve the RAOs are presented in Table 4. These levels are a combination of risk-based values and promulgated regulations of applicable or relevant and appropriate requirements (ARARs). USACE identified the following federal regulations as ARARs for the Guterl Site:

- 10 CFR 20.1402: Radiological Criteria for Unrestricted Use: establishes levels for cleanup required for unrestricted use.
- 40 CFR 141.66(e): Maximum Contaminant Levels (MCLs) for Radionuclides; MCL for Uranium: establishes a primary drinking water MCL for radionuclides in site groundwater; the MCL for total U of 30 µg/L.

Detailed analysis of the ARARs is located in the FS (USACE 2021).

8.3 REMEDIATION GOALS

The remediation goals (RGs) for the Guterl Site were developed to be protective of human health for the current and reasonably anticipated future industrial land use. RGs for building surfaces—referred to as derived concentration guideline levels (DCGLs)—were developed based on direct exposure to the critical group. The critical group is defined as the group of individuals reasonably expected to receive the greatest exposure to residual radioactivity for any applicable set of circumstances. Based on the exposure parameters used in the risk assessment, construction workers were determined to experience the greatest annual radiological dose and were identified as the critical group for this site. Contaminated soil volumes were estimated using the two different remediation goals (RGs) for soil:

- Protection of direct soil exposures (via radiologic dose) to the critical group (a construction worker) for the reasonably anticipated future land use (industrial) (RG-CW).
- Protection of groundwater (i.e., removal of enough uranium in soil to allow reduction of uranium in groundwater to meet the EPA MCL for protection of drinking water) (RG-GW).

8.3.1 BUILDING SURFACE DERIVED CONCENTRATION GUIDELINE LEVELS

USACE developed project-specific derived concentration guideline levels (DCGLs) for the buildings. These DCGLs are the measured surface contamination concentrations in disintegrations per minute (dpm) per 100 square centimeters (cm^2) that will result in a radiological dose of 25 mrem/yr to the critical group, i.e., the construction worker. These project-specific DCGLs are presented in Table 2. As per 10 CFR 20.1402, a site will be considered acceptable for unrestricted use if the residual radioactivity that is distinguishable from background radiation results in a total effective dose equivalent to an average member of the critical group that does not exceed 25 mrem/yr, including that from groundwater sources of drinking water, and that the residual radioactivity has been reduced to levels that are as low as reasonably achievable (ALARA).

8.3.2 SOIL REMEDIATION GOALS - CONSTRUCTION WORKER

The construction worker RG, designated as soil RG-CW, was developed to meet the 25 mrem/year dose limit, considering all exposure pathways, including incidental ingestion of groundwater. As per 10 CFR 20.1402, a site will be considered acceptable for unrestricted use if the residual radioactivity that is distinguishable from background radiation results in a total effective dose equivalent to an average member of the critical group that does not exceed 25 mrem per year, including that from groundwater sources of drinking water, and that the residual radioactivity has been reduced to levels that are ALARA. The soil RG-CW is defined as 23 picocuries per gram (pCi/g) for U-238 and 6.6 pCi/g for Th-232. The isotope U-238 will be used as a surrogate for the total U soil RG-CW because it can be directly measured in the field during remediation efforts. The RG-CW remediation goal does not include background soil levels for U-238 and Th-232. The background soil concentration would be added to the RG-CW goals to verify soil concentration measurements do not exceed the construction worker exposure level. The estimated volume of contaminated soil to be removed under the RG-CW is approximately 3,800 cubic meters (m^3) (5,000 cubic yards [yd^3]).

8.3.3 SOIL REMEDIATION GOALS – GROUNDWATER PROTECTION

The calculation of the groundwater protection RG for soil, designated as soil RG-GW, was performed using groundwater models. These models were used to determine the effect that residual U distributions in soil would have on groundwater concentrations and then "back calculate" a soil RG protective of groundwater (i.e., residual U leachate would be low enough to prevent future MCL exceedances in groundwater). The objective was to develop a soil RG-GW that represents a lower threshold for soil removal when coupled with a separate remedial action for the groundwater plume. The threshold soil value for total U would ensure that future leaching would not result in regrowth of a U plume with concentrations greater than the MCL after 30 years of optimal remedy implementation (e.g., active plume control and removal). Modeling performed to support the development of the soil RG-GW is included in Appendix F of the FS.

The soil RG-GW is 11 milligrams per kilogram (mg/kg) total U (equivalent to 3.66 pCi/g U-238), which is a remedial goal protective of groundwater. Unlike the soil RG-CW, the soil RG-GW is not a dose-based RG and should be addressed as a "not-to-exceed" threshold value throughout the site. Thorium (Th) is not separately defined for the protection of groundwater because Th is not a COC in groundwater. The Th-232 observed in site soils is co-located with U-238, so removal of soil that exceeds the total U RG-GW includes the removal of the Th impacted soil. Workers would also be protected from unacceptable exposure to COCs in soil if the soil RG-GW were used as the cleanup goal. The RG-GW remediation goal values include the background soil levels for U-238; no additional adjustment to the RG-GW will be made based on background concentrations of U because the MCL is inclusive of background. Using the RG-GW cleanup goal, approximately 44,000 m^3 (58,000 yd^3) of contaminated soil would be removed, the majority of which is shallow soils (i.e., less than 45.7 centimeters deep [18 inches]).

8.3.4 GROUNDWATER REMEDIATION GOAL

Although there are no known groundwater users immediately downgradient of the site, groundwater yield and quality represent a potentially viable source of drinking water. Directly southeast of the site, groundwater seeps have been identified discharging into the Erie Canal. Since protection of groundwater is a remedial action objective, the remediation goal applicable to water is the federal MCL of 30 µg/L for total U. As shown in Table 3, the estimated impacted groundwater volumes for shallow and the deep groundwater are 204 and 42 million liters (L) (54 and 11 million gallons [gal]), respectively.

8.3.5 REMEDIATION GOAL SUMMARY

To provide for long-term protection of human health and the environment, the media-specific ARAR-based RGs define acceptable contaminant concentrations based on the media of concern (buildings, soil, groundwater), COCs, exposure routes, and receptors. Table 4 presents the soil remediation RGs.

The estimated volume of contaminated soil to be removed under each RG is shown in Table 5. These soil volume estimates are for FUSRAP-related contaminated soil only, which may contain comingled non-FUSRAP-related material. The estimated volume of contaminated groundwater is shown in Table 3. The estimated volume of contaminated groundwater would be remediated by monitored natural attenuation in Site-Wide Alternatives 2 and 4. Site-Wide Alternative 3 uses extraction and *ex-situ* treatment to remediate contamination in the estimated volume of groundwater. Non-FUSRAP-related COCs may only be remediated by USACE if mixed with FUSRAP-related COCs.

9.0 DESCRIPTION OF REMEDIAL ALTERNATIVES

This section summarizes remedial alternatives developed in the *Former Guterl Specialty Steel Site Feasibility Study Report* (USACE 2021) to address FUSRAP-related COCs in buildings, soil, and groundwater at the Guterl Site. To achieve RAOs and meet quantitative cleanup levels for the protection of human health and the environment, the following four remedial alternatives were developed for evaluation:

- Site-Wide Alternative 1: No Action
- Site-Wide Alternative 2: Dismantlement and Off-Site Disposal of Buildings 1, 2, 3, 4/9, 5, 6, 8, 24, and 35; Complete Soil Removal to the Soil RG-GW and Off-Site Disposal; Monitored Natural Attenuation with Environmental Monitoring
- Site-Wide Alternative 3: Dismantlement and Off-Site Disposal of Buildings 1, 2, 3, 4/9, 5, 6, 8, 24, and 35; Complete Soil Removal to the Soil RG-GW and Off-Site Disposal; Groundwater Recovery Using Extraction Wells and a Rubblized Trench with *Ex Situ* Treatment, with Environmental Monitoring
- Site-Wide Alternative 4: Decontamination of Building 1; Dismantlement and Off-Site Disposal of Buildings 2, 3, 4/9, 5, 6, 8, and 24; Complete Soil Removal to the Soil RG-CW and Off-Site Disposal; Monitored Natural Attenuation with Environmental Monitoring

9.1 SITE-WIDE ALTERNATIVE 1

Evaluation of the no-action alternative is required under CERCLA regulations to provide a baseline to which all other remedial alternatives are compared. Site-Wide Alternative 1 assumes no remedial actions would be implemented to address the FUSRAP-related COCs in soil, groundwater, and building materials and contents. Impacted soil and buildings would remain at current locations. No groundwater remedial systems would be installed or operated. Any access controls currently in place, such as the site security fence, would not be maintained, and annual groundwater monitoring would no longer be performed. Accordingly, there is no time estimated to complete and no cost associated with this alternative. Since no action is taken, Site-Wide Alternative 1 does not meet the threshold criteria of protectiveness of human health and the environment and compliance with ARARs.

9.2 SITE-WIDE ALTERNATIVE 2

Site-Wide Alternative 2 requires the dismantlement and off-site disposal of Buildings 1, 2, 3, 4/9, 5, 6, 8, 24, and 35 (Figure 6), excavation and off-site disposal of soil above the RG-GW remediation goals, with monitored natural attenuation (MNA) to address groundwater.

USACE would dismantle the buildings and excavate the soils to mitigate predicted groundwater impacts.

All impacted soil exceeding the RG-GW would be excavated and disposed in an off-site facility permitted or licensed to receive such materials. The estimated volume of soil removal for this alternative is 44,000 m^3 (58,000 yd^3). Following removal of impacted soils, USACE will conduct confirmatory soil sampling to verify that all the impacted soil above the RG-GW has been removed to the extent practicable. The excavations would be restored with clean backfill and seeded.

Impacted groundwater would be addressed through monitored natural attenuation (MNA). MNA is a systematic approach of modeling, predicting, monitoring, and measuring the rate at which the natural attenuation of contaminants occurs in a groundwater system. This rate is used to determine if RAOs will be achieved according to the ARAR. Uranium in groundwater underlying the Guterl Site is influenced by the MNA processes of dispersion, sorption, intrinsic bioremediation (natural biological activity that degrades or immobilizes contaminants), and chemical transformation (*in situ* chemical reduction to precipitate U as insoluble minerals). These processes regularly reduce COC exposure to acceptable levels over time.

Groundwater modeling predictions may vary from field results due to the significant changes that will occur on site due to remediation (e.g., soil disturbances and building dismantlement). Groundwater monitoring would be conducted in accordance with the monitoring program following the completion of the building and soil removal and after site restoration. This monitoring period will provide a dataset with sufficient statistical power to assess the efficacy of MNA processes to achieve RAOs.

Groundwater modeling predicts it would take approximately 120 years under Site-Wide Alternative 2 for the total U concentrations in groundwater to achieve the MCL. The soil removal action for the RG-GW requires approximately one year to implement and building remedial actions require approximately nine months. The time estimate to implement the soil removal action, building remedial action, implementation and final documentation of the remedy is approximately three years. The entire remedial action including groundwater remediation would take approximately 125 years.

The construction (capital) cost of Site-Wide Alternative 2 is approximately $180.1 million. The present worth cost for operation and maintenance (O&M), assuming a 120-year period, is estimated at $5.2 million. O&M includes MNA groundwater sampling, and environmental sampling. The total present worth cost, assuming a 120-year period, is estimated to be $186.1 million.

9.3 SITE-WIDE ALTERNATIVE 3

Site-Wide Alternative 3 requires the dismantlement and off-site disposal of Buildings 1, 2, 3, 4/9, 5, 6, 8, 24, and 35 (Figure 7), the excavation and off-site disposal of all soil above the RG-GW remediation goals, and groundwater treatment using extraction wells and a rubblized trench with extraction pumps and an on-site treatment facility. O&M includes environmental monitoring of groundwater remediation.

USACE would dismantle the buildings and excavate the soils to mitigate predicted groundwater impacts.

Impacted soil exceeding the RG-GW would be excavated and disposed in an off-site facility permitted or licensed to receive such materials. The estimated volume of soil removal for this alternative is 44,000 m^3 (58,000 yd^3). The excavations would be restored with clean backfill and seeded. Groundwater modeling predictions may vary from field results due to the significant changes that will occur on site due to remediation (e.g., soil disturbances and building dismantlement). Groundwater monitoring would be conducted in accordance with the monitoring program following the completion of the building and soil removal and after site restoration. This monitoring will provide a sufficient dataset to support the design of the groundwater treatment system to achieve RAOs. Groundwater recovery will be implemented using a series of vertical extraction wells and a rubblized trench to extract contaminated groundwater.

The rubblized trench will be placed at the southern boundary of the Excised Area within the total U plume. The trench placement location was selected to preclude the enhanced migration of the non-FUSRAP related volatile organic compound (VOC) plume below Building 17, which may pose an increased risk of vapor intrusion into the owner-occupied building during remediation. Additional information about the non-FUSRAP related VOC plume can be found in the FS. This trench configuration will truncate the U plume and produce an orphaned portion downgradient of the trench, which will be remediated by a small pumping well array installed in the lower bedrock zone for approximately 20 years. The locations of all groundwater extraction locations will be reassessed during the remedial design phase to optimize contaminant capture.

The extracted groundwater would undergo *ex situ* treatment that would first treat the VOC contaminants, and then remove total U. The treatment system would be designed to a contaminant removal level that will allow treated effluent to be discharged to the City of Lockport publicly owned treatment works, in accordance with approved acceptance criteria.

The groundwater model predicts it would take approximately 30 years under Site-Wide Alternative 3 for the total U concentrations in groundwater to achieve the MCL. The soil remedial action for the RG-GW would require approximately one year and the building removal action would require approximately nine months. The actions including building removal, soil excavation, installing the groundwater recovery and treatment system, and final documentation would require approximately three years. The entire remedial action including the groundwater remediation would take approximately 34 years.

The construction (capital) cost of Site-Wide Alternative 3 is approximately $189.3 million. The present worth O&M cost, assuming a 30-year period, is estimated at $16.3 million. O&M include long-term operation of the groundwater recovery and treatment system, groundwater sampling. The total present worth cost, assuming a 30-year period, is estimated at $205.6 million.

9.4 SITE-WIDE ALTERNATIVE 4

Site-Wide Alternative 4 requires the dismantlement and off-site disposal of Buildings 2, 3, 4/9, 5, 6, 8, and 24 (Figure 8), excavation and off-site disposal of contaminated soil above the RG-CW remediation goal, MNA to address groundwater, decontamination of Building 1, and environmental monitoring to monitor the remedial action.

USACE would dismantle Buildings 2, 3, 4/9, 5, 6, 8, and 24 (excluding Buildings 1 and 35) and excavate the soils to remove unacceptable risks to construction workers. Building 1 would be decontaminated and all interior contents and materials above the DCGLs would be disposed off site. The soil underlying Building 1 and Building 35 is not above the soil RG-CW, therefore the buildings would not be dismantled, and no underlying soil will be excavated. Additionally, the contents and surfaces of Building 35 are not above the DCGLs therefore, Building 35 is not addressed under this alternative.

All impacted soil exceeding the RG-CW would be excavated and disposed in an off-site facility permitted or licensed to receive such materials. The estimated volume of soil removal for this alternative is 3,800 m^3 (5,000 yd^3). The excavations would be restored with clean backfill and seeded for vegetative growth.

Although the Soil RG-CW was developed to be protective of the construction worker, removal of soil above this value would address a portion of the total U present in soils, which acts as a continuing or residual source for groundwater contamination. Impacted groundwater would be addressed through MNA. MNA is a systematic approach of modeling, predicting, monitoring, and measuring the rate at which the natural reduction of contaminants occurs in a groundwater system. Total U in groundwater underlying the Guterl Site is influenced by the MNA processes of dispersion, sorption, intrinsic bioremediation (natural biological activity that degrades or mobilizes contaminants), and chemical transformation (*in situ* chemical reduction to precipitate U as insoluble minerals). These processes regularly reduce COC exposure to acceptable levels over time.

Groundwater monitoring would be conducted, in accordance with a site-wide monitoring program after soil source removal, to document the extent and levels of contamination along with the reduction in total U concentration. This data collection will provide a dataset with sufficient statistical power to assess the efficacy of the MNA process to achieve RAOs. Reviews allow evaluation of the effectiveness of remediation as well as data obtained from ongoing monitoring to assess the presence and behavior of remaining contaminants. If monitoring demonstrates changes to environmental conditions or the attenuation process is not proceeding as expected, then decisions regarding what actions are necessary will be made at that time based on the data and information gathered during the monitoring program.

The groundwater modeling predicts a MNA period will take approximately 660 years under Site-Wide Alternative 4 for the total U concentrations in groundwater to achieve the MCL. The RG-CW soil removal action would take approximately three months to implement, and the building remedial action would require approximately nine months to complete. Soil removal, building remediation and completing the final site documentation would require approximately two years. The entire remedial action, including the groundwater remediation timeframe, is approximately 663 years.

The construction (capital) cost of Site-Wide Alternative 4 is approximately $104.4 million and the O&M cost, over a 660-year period, is estimated at $5.2 million. O&M includes MNA groundwater sampling, environmental sampling. The total present worth cost, assuming a 660-year period, is estimated at $109.7 million.

10.0 COMPARATIVE ANALYSIS OF ALTERNATIVES

Section §300.430 (e) of the NCP lists nine criteria by which each remedial alternative must be assessed. The acceptability and performance of each alternative against the criteria is evaluated individually so that relative strengths and weaknesses may be identified. A comparative analysis among the alternatives is performed to identify the advantages and disadvantages of each alternative relative to one another. Assessments against two of the criteria (overall protection of human health and the environment, and compliance with ARARs) relate directly to statutory findings and therefore are categorized as threshold criteria. These threshold criteria must be satisfied for an alternative to be eligible for selection.

Five of the criteria (long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; and cost) are the balancing criteria, upon which much of the analysis is based. The remaining two criteria, state acceptance and community acceptance, are modifying criteria. The modifying criteria are evaluated following comments on the proposed plan and are addressed in the responsiveness summary presented in Part III of this ROD. The criteria are briefly defined as follows:

OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT
The analysis of each alternative with respect to overall protection of human health and the environment illustrates how the alternative eliminates, reduces, or controls short- and long-term unacceptable risks by controlling exposures to levels at or below the cleanup goals using treatment, engineering controls, or land use controls.

COMPLIANCE WITH APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS
This means that USACE must consider whether a remedy will meet all of the ARARs of federal and state environmental statutes and implementing regulations and/or whether there are grounds for invoking a waiver.

LONG-TERM EFFECTIVENESS AND PERMANENCE

Long-term effectiveness and permanence reflect the magnitude of residual risk remaining at the site after remedial efforts are complete, and the adequacy and reliability of controls to manage the risk over the performance period, if appropriate.

REDUCTION OF TOXICITY, MOBILITY, OR VOLUME THROUGH TREATMENT

This evaluation assesses the performance of the alternative that employs treatment or recycling on site to reduce the toxicity, mobility, and/or volume of the COCs. Relevant factors in this criterion include the quantity of contaminated materials to be treated, destroyed, or recycled; the degree of expected reduction in toxicity, mobility, or volume; the irreversibility of the treatment process; the type and quantity of residuals remaining after the treatment process; and the degree to which treatment is used as the principal element of the alternative.

SHORT-TERM EFFECTIVENESS

The short-term effectiveness criterion addresses how the alternative affects human health and the environment during its implementation. The factors typically assessed include protection of the community during the remedial action, associated environmental impacts, time required until protection is achieved, and protection of workers during the remedial action.

IMPLEMENTABILITY

Implementability analysis examines the technical and administrative feasibility of implementing the alternative, as well as the availability of necessary goods and services. This evaluation includes the feasibility of construction and operation; the reliability of the proposed technology; the ease of undertaking additional remedial action (if necessary); monitoring considerations; activities needed to coordinate with regulatory agencies; availability of adequate equipment, services, and materials; and, if necessary, the availability of off-site treatment, storage, and disposal services.

COST

Cost estimates for each alternative include direct and indirect capital costs, and O&M costs. Costs are based on information obtained from a variety of sources, including quotes from suppliers, published cost information from similar previously completed projects, generic unit costs, vendor information, conventional cost-estimating methods, and prior experiences at similar sites. The actual cost of the project will depend on actual labor and material charges, actual site conditions, competitive market conditions, final project scope, engineering design, the implementation schedule, and other variables. Present worth value calculations are widely used to provide a means to compare cash flows at different times. Cost estimates are expected to be accurate within a range of +50% to –30%.

STATE ACCEPTANCE
State acceptance of the proposed plan and the preferred alternative are assessed following a review of the comments received on the proposed plan. State comments on the proposed plan are formally addressed in the responsiveness summary, which is presented in Part III in this ROD.

COMMUNITY ACCEPTANCE
This is assessed following a review of the public comments received on the proposed plan. Public comments on the proposed plan are formally addressed in the responsiveness summary, which is presented in Part III in this ROD.

A summary of the relative performance of each alternative against the nine criteria, noting how it compares to other options under consideration, is provided in the following sections. A table illustrating the comparative analysis is provided in Table 6. Each alternative is rated based on the individual criterion, where a "High" rating is considered favorable for a specific criterion, "Moderate" represents a midpoint rating, and "Low" represents the least favorable rating.

10.1 OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

All remedial alternatives, except Site-Wide Alternative 1, are protective of human health and the environment. If no action is taken, the risks to construction workers or other users of the Guterl Site would exceed the NCP acceptable risk range within the 1,000-year evaluation period. Site-Wide Alternatives 2, 3, and 4 effectively prevent exposure to FUSRAP-related COCs in buildings and soil above the RGs and prevent exposure to total U in groundwater above the MCL.

10.2 COMPLIANCE WITH ARARS

Site-Wide Alternatives 2, 3, and 4 comply with ARARs since they will meet the ARAR-based performance standards. Site-Wide Alternative 1 does not meet the ARARs.

10.3 LONG-TERM EFFECTIVENESS AND PERMANENCE

Under Site-Wide Alternative 1, the no-action alternative, contaminated buildings, soil, and groundwater would remain in place with no controls to prevent exposure. Based on the groundwater fate and transport model, due to contributions from soil leachate, the existing shallow groundwater plume persists at concentrations above MCL for approximately 780 years and for over 1,000 years, the total duration of modeling simulations, in deep groundwater. Site-Wide Alternative 1 would not be effective in the long term.

The building and soil remedial actions are the same for Site-Wide Alternatives 2 and 3, which are protective of groundwater contamination by reducing the soil-based source of total U to a level that protects groundwater. Residual risk from contamination remaining on site is minimized to as low as reasonably achievable (ALARA) due to the larger volume of contaminated soil being removed under Site-Wide Alternatives 2 and 3 (compared to Alternative 4). The building and soil remedial actions would be considered effective in the long term because they would remove, for permanent off-site disposal, all soils above the RG-GW and all building materials above the project-specific DCGLs.

Preliminary groundwater contaminant transport models for Site-Wide Alternative 2 estimated an extended remedial timeframe of up to 115 years following the completion of the removal of impacted soil exceeding the RG-GW with MNA. Site-Wide Alternative 3 is predicted to last approximately 30 years after the completion of the soils remedy to meet the RG-GW with a groundwater treatment system. For Site-Wide Alternative 3, groundwater recovery would be implemented using a series of vertical extraction wells and a rubblized trench to extract contaminated groundwater.

Site-Wide Alternative 4 (soils are removed to the soil RG-CW) is protective of the critical user group, the construction worker, and the anticipated future industrial use of the Guterl Site. The RG-CW soil remedial goal is based on limiting the radiological dose to the construction worker (which results from direct exposure to contaminated soil and groundwater) to levels specified by the NRC in 10 CFR 20. The RG-CW alternative is not specifically designed to reduce total U groundwater concentrations to the MCL stipulated by the EPA for community drinking water supplies. The residual contamination of groundwater makes Site-Wide Alternative 4 possibly less effective in the long term due to the uncertainty that the MNA groundwater remediation will remain effective over the long timeframe. The time to reach the MCL is significantly longer in Site-Wide Alternative 4 than Alternatives 2 and 3, although Alternative 4 will eventually result in compliance with the MCL after 660 years.

Site-Wide Alternative 4 has greater uncertainty associated with its effectiveness since the 660-year MNA timeframe is dependent upon future site use that may affect groundwater recharge and flow. The groundwater model assumed building removal, the backfill of excavations with like soils, and minimal storm-water management, similar to the conditions currently observed throughout the site. Long-term site transformations may affect the MNA period by enhancing or reducing recharge through the residual U in soils or change the vertical distribution of leachable U in site soils via subsurface construction. Storm-water management collection would affect groundwater recharge and U leaching rates that influence the MNA timeframe. Thus, the 660-year remedial timeframe may shorten or lengthen depending on future site uses, reconfiguration of soils, and building layouts. Consequently, Alternative 4 has the greatest uncertainty in attaining MCLs, and achieving remedial goals.

All remedial alternatives include some decontamination of buildings and contents to provide risk reduction. Since the building materials, contents, and soil are disposed of off site, these actions are considered a permanent reduction in risk. Buildings 1 and 35 remain on site under Site-Wide Alternative 4, as the soils beneath are not above the soil RG-CW; however, Building 1 will undergo some decontamination to achieve building DCGLs.

Both Site-Wide Alternatives 2 and 3 are rated high for long-term effectiveness and permanence and Site-Wide Alternative 4 is rated moderate. Site-Wide Alternative 1 is rated as low.

10.4 REDUCTION OF TOXICITY, MOBILITY, OR VOLUME THROUGH TREATMENT

Site-Wide Alternatives 2, 3, and 4 will achieve some reduction in material volume through limited decontamination of building materials/contents during dismantlement and prior to off-site disposal. Additionally, the treatment of characteristically hazardous waste, as required for disposal purposes, may reduce the toxicity and mobility of these constituents in soils.

Site-Wide Alternatives 2 and 4 include MNA, which is considered a passive groundwater remedy that relies on the natural processes of dispersion, adsorption, and biodegradation. There is no active recovery or active treatment for groundwater. Site-Wide Alternative 3 is more effective at reducing the toxicity, mobility, and volume of the total U in groundwater through extraction (extraction wells and trench) and treatment.

Site-Wide Alternative 1, the no-action alternative, would not reduce contaminant toxicity, mobility, or volume using treatment because no treatment would occur. Site-Wide Alternative 1 is rated low. Site-Wide Alternatives 2 and 4 are rated low. Site-Wide Alternative 3 is rated moderate for this criterion.

10.5 SHORT-TERM EFFECTIVENESS

Short-term effectiveness includes four analysis factors for evaluation: protection of community during remedial action, protection of workers during remedial action, environmental impacts, and time until RAOs are achieved.

Site-Wide Alternatives 2 and 3 have similar short-term risks to site workers and the surrounding community. These short-term risks include the potential for accidents and exposure to contaminated media associated with the excavation/removal and transportation of the larger volume of soil and building material included with the RG-GW. Short-term risks may be mitigated by following proper health and safety procedures. The transportation risks would be mitigated by packaging shipped materials in accordance with Department of Transportation regulations to ensure the contents remain safely enclosed.

Construction equipment would be used to deconstruct and dismantle the buildings. This approach would require standard dismantlement practices with dust suppression to contain any potential airborne activity or visible particulates. Control materials, such as silt fences and straw bales, would be installed to contain material on the ground surface. The safety of remediation workers, on-site employees, and the general public would be addressed, in coordination with the on-site property owner, in a site-specific health and safety plan, which addresses potential exposures and monitoring requirements to ensure protection during remedial action.

There is no impact to human health and the environment during MNA in Site-Wide Alternative 2, as there is currently no exposure pathway to groundwater on site.

Site-Wide Alternative 3 may have additional physical risks associated with installation and maintenance of the rubblized trench and groundwater treatment system. The construction of the trench will require the actuation of highly designed subsurface directional explosives to fracture/rubblize the bedrock aquifer, which creates the high-permeability collection trench within the bedrock. This action, along with subsequent test drilling and extraction well installation, will have safety risks (e.g., utility impacts and building foundation protection) that will be mitigated during the design process. The safety of contractors, ATI employees, and the general public would be addressed in a site-specific health and safety plan, including potential exposures and monitoring requirements to ensure protection. Implementation of the rubblized trench would consider risks to both on- and off-site roads, utilities, buildings; potential disruptions to adjacent property owners, including ATI operations; and potential geotechnical requirements because of the proximity to the Erie Canal. There would be moderate risks, including those related to blasting (e.g., misfires, damage to buildings, and handling of explosive munitions) to the contractors performing the trench installation and neighboring ATI personnel. Rubblized trenches are reliable and have been sufficiently demonstrated to be effective in similar site settings.

Alternative 3 also includes a groundwater treatment plant that would be low risk for contractors to operate; the primary risk would include handling and disposal of spent treatment media high in U concentrations. This alternative would be low risk to site contractors and the surrounding community during well drilling, well installation, and groundwater sampling activities.

Site-Wide Alternative 3 has the potential to enhance the transport of non-FUSRAP volatile organic compounds (VOCs) that are contained in groundwater observed south of the Excised Area. This non-FUSRAP related VOC contamination could pose a short-term risk to human health during the period of active groundwater treatment, if the rubblized trench with extraction wells were placed down gradient of Building 17, which is actively used by ATI. The trench could draw the VOC plume beneath the building. To mitigate this risk, the rubblized trench and associated extraction wells would be installed along the southern boundary of the Excised Area that is north of Building 17. A small array of extraction wells installed in the lower bedrock zone south of Building 17 would capture total U between the Guterl Site and Erie Canal and limit vapor intrusion risks to the actively used building(s). Challenges during the remedial design phase include effectively capturing the U plume in a reasonable timeframe, while minimizing transport of volatiles, especially under any current or future buildings.

Site-Wide Alternative 4 has a greater short-term effectiveness than Site-Wide Alternatives 2 or 3 due to the smaller soil volume being removed to achieve the soil RG-CW, which results in a shorter construction timeframe. The shorter timeframe and smaller soil volume being disturbed decreases the exposure risk of the community, construction workers, and ATI workers and results in less impact to the environment. Short-term risks may be mitigated by following proper health and safety procedures. MNA of the groundwater contamination has no impact to human health and the environment as there is currently no exposure pathway to groundwater on site.

Remedial timeframes to achieve the RAOs are also considered in the short-term effectiveness criterion. There is a large difference in time to achieve RAOs between these remedial alternatives, which influences the rating of each alternative for this individual analysis factor. Site-Wide Alternative 4 has the longest remedial timeframe of approximately 660 years to achieve the RAOs which decreases the rating. Site-Wide Alternative 2 is modeled to achieve the RAOs in approximately 120 years and Site-Wide Alternative 3 will take approximately 30 years, which in comparison would increase the ratings for this analysis factor for this alternative.

Under the no-action alternative, because there is no remediation or treatment being implemented, there would be no associated short-term increase in potential risk to site workers, the community, or the environment. Site-Wide Alternative 1 is rated as high. After weighing the analysis factors, Site-Wide Alternatives 2, 3, and 4 are all rated as moderate overall for short-term effectiveness.

10.6 IMPLEMENTABILITY

Site-Wide Alternatives 2 and 3 have similar implementability risks for the volume of soil to be removed and building remedies. Although the excavation/removal of soils above the RG-GW and building materials above the project DCGL use common equipment, materials, and supplies, there may be technical challenges to detect the low RG-GW (11 mg/kg of total U or 3.66 pCi/g of U-238) using currently available field screening instrumentation (radiation detectors) to guide the soil excavation. Site-Wide Alternative 4 is easier to implement due to the smaller soil volume estimated for removal under the soil RG-CW and the capability of field instruments to guide the excavation and detect 23 pCi/g of U-238.

Groundwater remedies for Site-Wide Alternatives 2 and 4 rely on a passive MNA process, which is easily implemented. Long-term groundwater monitoring is necessary for all alternatives until MCLs are achieved. Site-Wide Alternative 3 uses a rubblized trench and vertical extraction wells to effectively capture the total U in groundwater for *ex situ* treatment. Vertical extraction wells designed to intercept fractures in both the shallow and deep groundwater zones may require multiple borings to optimize the pumping locations. The effectiveness will be governed primarily by the ability to pump sufficient groundwater from the deep zone to reduce concentrations. The highly fractured nature of the bedrock aquifer, diverging groundwater flow under the Guterl Site, and preferential total U transport pathways indicate that Site-Wide Alternative 3 will be more difficult to implement than a passive MNA remedy. Additionally, since the rubblized trench is created by subsurface blasting, the location of on-site and off-site buildings, roadways, and utilities will need to be considered. Therefore, the trench-based extraction system is considered reasonably complex to implement.

Under Site-Wide Alternative 1, there would be no technology or engineering controls to implement. There would be no services required, no permits to obtain, no administrative approvals, and no resources involved. Implementability is rated as high for Site-Wide Alternative 1 due to no actions taken. Site-Wide Alternative 2 is rated moderate for implementability, Site-Wide Alternative 3 is rated low, and Site-Wide Alternative 4 is rated high.

10.7 COST

Site-Wide Alternative 4 has the lowest capital, O&M, and present worth costs over the period of performance. Site-Wide Alternative 2 has the next highest capital and present worth costs. Site-Wide Alternative 3 has the highest capital and present worth costs, due to the installation of a groundwater treatment system and higher O&M costs over the period of performance. Site-Wide Alternative 1 has zero costs.

10.8 FEDERAL AND STATE ACCEPTANCE

The EPA and NYSDEC comments on the proposed plan are formally addressed in the responsiveness summary, which is presented in Part III of this ROD.

The EPA comments indicated an acceptance of the preferred alternative, as the most comprehensive remedy. However, the comments raised questions pertaining to future land use zoning, the risk assessment completed during the RI, RAOs, and long-term stewardship.

The NYSDEC comments included no general statement regarding the acceptance of the preferred alternative. The comments desired restricting access to the inactive hazardous waste area by installing fencing and restricting access to the accessible northern portion of the site, which is ATI-owned property. NYSDEC recommended that an interim action be implemented to mitigate the release of groundwater impacted by chlorinated volatile organic compounds to the waters of New York State.

10.9 COMMUNITY ACCEPTANCE

Several community stakeholders and the public provided comments on the FS and proposed plan including representatives from the City of Lockport, ATI, and members of the public. Comments were provided by email, postal courier, and verbal comments given during the public meeting. The complete set of comments received from community stakeholders and USACE responses are provided in the responsiveness summary Part III of this ROD.

During the public comment period, the community expressed its support for Site-Wide Alternative 3 acknowledging the comprehensive remediation of buildings, soil, and groundwater at the Guterl Site. Specific concerns included the following:

- Compensation for past employees of Simonds Saw and Steel and the Guterl Specialty Steel Site (Department of Labor - Energy Employees Occupational Illness Compensation Program).
- Safety and protection measures for the on-site workers and surrounding community during remedial action.
- Start date for the remedial action for the Guterl Site.

ATI supports the selection of Site-Wide Alternative 3 to address impacted soils, buildings, and groundwater at the Guterl Site. Comments received pertained to the potential of remediation activities, such as excavation and trench construction, impacting ATI site operations. Another concern was the need for temporary storage, since Building 24 is slated for dismantlement.

10.10 SUMMARY OF COMPARATIVE ANALYSIS

Table 6 summarizes the comparative analysis of the four remedial alternatives.

11.0 SELECTED REMEDY: SITE-WIDE ALTERNATIVE 3

<u>Site-Wide Alternative 3</u>: Dismantlement and Off-Site Disposal of Buildings 1, 2, 3, 4/9, 5, 6, 8, 24, and 35; Complete Soil Removal to the Soil RG-GW and Off-Site Disposal; and Groundwater Recovery Using Extraction Wells and a Rubblized Trench with *Ex Situ* Treatment, with Environmental Monitoring

11.1 RATIONALE FOR SELECTING SITE-WIDE ALTERNATIVE 3

Site-Wide Alternative 3 satisfies the CERCLA threshold criteria, reduces risk, and provides long-term protectiveness through excavation and off-site disposal of all impacted media and groundwater treatment. Site-Wide Alternative 3 complies with the identified ARARs and provides the best balance among the five balancing criteria (i.e., long-term effectiveness and permanence; reduction of toxicity, mobility, and volume through treatment; short-term effectiveness; implementability; and cost) and the two modifying criteria (state acceptance and community acceptance).

Site-Wide Alternative 3 is considered protective of human health and the environment by removing all contaminated soils above the RG-GW concentration and disposing off-site, which limits risks from exposure to contaminated soil. The estimated volume of soil removal for this alternative is approximately 44,000 m^3 (58,000 yd^3). Residual risk from contamination remaining on site is minimized due to the larger volume of contaminated soil being removed. Figure 7 indicates the extent of soil excavation areas for Site-Wide Alternative 3. Removal of the soil-based source of total U will then diminish the total U plume in groundwater beneath the site. The excavations would be restored with clean backfill and seeded.

Dismantling buildings and removing materials exceeding project specific DCGLs, then shipping for disposal at a permitted or licensed disposal facility will remove the contaminated building materials from the site. Since the building materials, contents, and soil will be disposed of off-site, these actions are considered a permanent reduction in risk. Site-Wide Alternative 3 will achieve some reduction in contaminated materials volume through decontamination of building materials/contents during dismantlement and prior to off-site disposal; as well as reduction in contaminant volume through groundwater treatment and achieves the statutory preference for remedies employing treatment which permanently and significantly reduces contaminants.

Site-Wide Alternative 3 provides long-term effectiveness through the use of extraction and treatment of groundwater using a series of vertical extraction wells and a rubblized trench; in addition, portions of the plume will naturally attenuate during the 30-year operational period. By extracting and treating contaminated groundwater, groundwater total U concentrations would be reduced to below the RAO in a shorter timeframe than any of the other alternatives. Based on modeling, the U plume ceases to exist above the MCL in approximately 30 years, both on site and off site.

There is a large difference in remedial timeframes to achieve RAOs between the remedial alternatives, which influences the rating of each alternative for short-term effectiveness. Site-Wide Alternative 3 will take approximately 30 years which is the shortest remedial timeframe of all the alternatives.

Site-Wide Alternative 3 provides the best balance among the comparative analysis criteria. This alternative reduces risk by removing all contaminated buildings, removing contaminated soils above the RG-GW which benefits soil and groundwater remediation, and the groundwater treatment system addresses the site groundwater in the shortest remedial timeframe of all the alternatives.

11.2 DESCRIPTION OF SELECTED REMEDY

Site-Wide Alternative 3 was selected to address soils, buildings, and groundwater at the Guterl Site. The major components of Site-Wide Alternative 3 include:

- Dismantlement and off-site disposal of Buildings 1, 2, 3, 4/9, 5, 6, 8, 24, and 35.
- Complete soil removal to the soil RG-GW and off-site disposal.

- Following completion of soil and building remediation, initiate a groundwater monitoring program to assist in the design of the groundwater recovery and treatment system and monitoring of the remediation progress. Construction of the groundwater recovery and treatment system will include a rubblized trench with extraction wells and a treatment facility. Maintenance of the system will occur throughout the remediation timeframe.

11.2.1 BUILDING DISMANTLEMENT AND DISPOSAL

Site-Wide Alternative 3 includes the dismantlement and off-site disposal of Buildings 1, 2, 3, 4/9, 5, 6, 8, 24, and 35.

11.2.2 REMOVAL OF IMPACTED SOIL

All impacted soil exceeding the RG-GW would be excavated and disposed in an off-site facility permitted or licensed to receive such materials. The estimated volume of soil removal for this alternative is 44,000 m^3 (58,000 yd^3) as shown on Figure 7. Standard construction equipment would be used to remove contaminated material. Achievement of RGs will be documented using confirmatory sampling results.

11.2.3 GROUNDWATER TREATMENT

Groundwater recovery will be implemented using a series of vertical extraction wells and a rubblized trench to extract contaminated groundwater and reduce contaminants through groundwater treatment. Table 3 indicates the estimated volume of contaminated groundwater to be extracted and treated. The overall groundwater extraction and treatment system will be designed around several broadly described components that are discussed in greater detail in the FS report. Components of the extraction system may be modified during remedial design to optimize contaminant capture. These components include the following:

- Rubblized Trench: A linear subsurface feature constructed with directional blasting explosives designed to highly fracture or rubblize the bedrock in a controlled manner.
- Vertical Extraction Wells: Extraction wells screened within the upper and lower water-bearing zones and large extraction wells (or sumps) screened within the rubblized trench were simulated in the groundwater model.
- Utility Piping and Treatment System Concept: The predicted extraction wells will contain *in situ* pumps that will be regulated to optimize plume capture. The system would be designed to remove total U to a level that allows the effluent to be discharged to the local municipal sewerage system under permit.

The concentrations in the U plume will be determined via a site-wide groundwater monitoring program intended to assess changes to the attenuation characteristics of the groundwater in post-remedial site conditions (e.g., soil removal and building dismantlement). Groundwater sampling will occur following the completion of the soil removal. This data collection will provide a robust dataset that may indicate attenuation characteristics of the U plume with sufficient statistical power to assess the efficacy of the remediation processes to achieve RAOs and support groundwater remedy design. If the attenuation rates reflect modeled predictions, then the groundwater recovery remedy will be implemented using a series of vertical extraction wells and a rubblized trench to extract contaminated groundwater. Assessments of historical and postremedy data will be coupled to assist in the design and placement of the groundwater treatment system.

11.2.4 TRANSPORTATION AND OFF-SITE DISPOSAL

Impacted soil and other media will be hauled to a permitted or licensed disposal facility. The exact location(s) where the material will be disposed will be dependent upon several factors, including waste classification, the facility's waste acceptance criteria, and the facility's available capacity at the time of remediation. A regulated and licensed mode of transportation will be used to transport soil and other media.

11.3 SUMMARY OF THE ESTIMATED COST

The construction (capital) cost of Site-Wide Alternative 3 is $189.3 million. The capital costs include preparation of a remedial design work plan, building dismantlement, soil excavation, confirmatory sampling, transportation, off-site disposal, site restoration, and preparation of a remedial action completion report and long-term management plan. The present worth O&M cost, assuming a 30-year period, is estimated at $16.3 million. O&M includes long-term operation of the groundwater recovery and treatment system, and groundwater sampling until RAOs are achieved. The total present worth cost, assuming a 30-year operational period, is estimated at $205.6 million. The cost estimate for Site-Wide Alternative 3 is available in Appendix J of the FS.

These cost estimates are based on the best available information regarding the anticipated scope of the remedial alternative. Changes in the cost elements are likely to occur as a result of new information and data collected during the design of the remedial alternative. It should be noted that these cost estimates are order-of-magnitude engineering cost estimates that are expected to be within +50% to –30% of the actual project cost. In simple terms, contingency is an amount added to an estimate (cost or schedule) to allow for items, conditions, or events for which the occurrence or impact is uncertain and that experience suggests may result in additional costs being incurred or additional time being required.

11.4 EXPECTED OUTCOMES OF SELECTED REMEDY

This section presents the expected outcomes of the selected remedy in terms of resulting land uses and risk reduction achieved as a result of the selected response action.

- Following completion of the remedial action, the Guterl Site would be protective for long-term use under the most reasonable future land use assumption of industrial use. The remedy does not require land use controls or periodic monitoring after the remedial timeframe is complete.
- Future residential use of the ATI property is not anticipated based on information from available Niagara Country planning and zoning information and the active industrial use of the property.
- After completion of the building removal action and off-site disposal, the human health risks and hazards posed by the contaminated materials and degrading structures at the site will be significantly reduced.
- After completion of the soil removal action to the RG-GW cleanup goals, human health risks posed by soil at the site will be significantly reduced and the total U source contamination to groundwater will be removed from the site. Remediation to the

RG-GW cleanup goal will remove contaminated site soils that contain the FUSRAP-related COCs and will concurrently remove comingled non-FUSRAP-related contaminants at the site. Using the RG-GW will achieve UU/UE for soil within the performance period.

- The groundwater remediation involves a rubblized trench, extraction wells and a treatment facility to shorten the timeframe to remediate groundwater in 30 years. There is potential for the remedial timeframe to be less than 30 years due to the large-scale site changes of removing the contaminated buildings and soil that affect the contamination of groundwater. Groundwater monitoring would be conducted in accordance with a site-wide monitoring program after soil-source removal. Groundwater data will be assessed following the completion of the soil removal to determine the reaction of the plume and support further remedial design components (e.g., pump and treat system). After completion of groundwater remediation, human health risks posed by total U contaminated groundwater at the site will be significantly reduced.

12.0 STATUTORY DETERMINATIONS

The selected remedy satisfies the following statutory requirements of Section 121 (b) of CERCLA:

- The remedy is protective of human health and the environment.
- The remedy complies with ARARs.
- The remedy is cost-effective.
- The remedy uses permanent solutions and alternative treatment technologies to the maximum extent practicable.

The manner in which the selected remedy satisfies each of these requirements is discussed in the following sections.

12.1 PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

Site-Wide Alternative 3 is protective of human health and the environment and achieves RAOs since the remedial action removes contaminated buildings and soil posing a risk to current and anticipated future site uses and prevents exposure to total U in groundwater above the MCL.

12.2 COMPLIANCE WITH ARARS

The remedial actions under Site-Wide Alternative 3 will comply with ARARs as follows:

- 10 CFR 20.1402: Radiological Criteria for Unrestricted Use
- 40 CFR 141.66: Maximum Contaminant Levels (MCLs) for Radionuclides

12.3 COST EFFECTIVENESS

A cost-effective remedy is one whose costs are proportional to its overall effectiveness. The selected remedy meets the two CERCLA threshold criteria, and then has the best balance of the five balancing criteria and the two modifying criteria. Site-Wide Alternative 3 is considered cost effective as it provides the best balance of long-term effectiveness and permanence (shortest remediation timeframe); reduction in toxicity, mobility, and volume of contaminants through treatment; and short-term effectiveness, for the cost of the remedial alternatives evaluated.

12.4 UTILIZATION OF PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES

The selected remedy represents the maximum extent to which permanent solutions and treatment are practicable. Off-site disposal of contaminated buildings, materials, and soil, and ex-situ treatment of groundwater are considered permanent solutions.

12.5 PREFERENCE FOR TREATMENT AS A PRINCIPAL ELEMENT

The selected remedy does satisfy the statutory preference for treatment as a principal element of the remedy (NCP §300.430[f][5][ii][F]). Treatment of groundwater is completed using extraction wells, a rubblized trench and a groundwater treatment facility.

13.0 DOCUMENTATION OF SIGNIFICANT CHANGES

There are no changes from the preferred alternative identified in the proposed plan.

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PART III: RESPONSIVENESS SUMMARY

INTRODUCTION

The responsiveness summary serves the dual purpose of (1) presenting stakeholder concerns about the site and preferences regarding remedial alternatives, and (2) explaining how those concerns were addressed and how stakeholder preferences were factored into the remedy selection process.

During the 60-day comment period that ran from July 12, 2021, through September 10, 2021, the public and stakeholders were offered the opportunity to provide comments on the proposed plan. Some comments were received at the virtual public meeting conducted on July 29, 2021. USACE also received several written comments via email and courier mail from a variety of stakeholders. This responsiveness summary addresses all the comments received during the public meeting and the comment period. The responsiveness summary includes the original comments (identified by how they were received) followed by the USACE response to comments presented in table form for each submission.

Copies of the written comments are provided in Appendix A.

The proposed plan public meeting transcript is in Appendix B.

Comment No.	Comment	Response
Comments from Public Meeting		
Jean Kiene, City of Lockport Resident (Public Meeting)		
1	My father was the eye physician for Simonds Saw and Steel during the period of time when they were working with the uranium and as a small child I recall them coming into the waiting room absolutely covered with dust and whatever the material was that they were working with and, of course, his project was to remove the steel from their eyes. One of my questions, and I'm cognizant of the fact that payouts of $150,000 have been made to a number of people who consequently died as a result of being subjected to the material at that particular plant. Do you by any chance happen to know how many people died and the families were reimbursed for that amount of money? You may not know that, but that's a question, you know, that I myself am very much interested in.	The U.S. Department of Labor is responsible for the Energy Employees Occupational Illness Compensation Program, which is for people that have previously worked at the Guterl Specialty Steel Site. The program's phone number is 1-800-941-3943. USACE is not involved with that program and does not have information with regard to payouts or the impacted families.
2	My second, most important to me, is the thought of the water actually being allowed to seep through and enter into the canal. I do have a lot of written material here from a number of years by Thomas Tones and all kinds of other people that have been interested in this. How often have you actually sampled the water that may be going into the canal? I	USACE monitors and samples the groundwater at the Guterl Site every year. Samples are collected annually from approximately 20-24 on-site wells, groundwater seeps dripping from the cliff face in the Erie Canal, and surface water samples from the water in the canal near the emergency water intake for the city. The data is documented in the Environmental Monitoring Reports available on the project webpage (https://www.lrb.usace.army.mil/Missions/HTRW/FUSRAP/Guterl-

	know you did it in 2007 and then it said in the report here that 2011 that there would be more sampling events. How often do you actually monitor that? And it's important, too, to be noted that at one time our city actually had to use the canal water as our drinking water, so it is exceedingly important and a concern that this is taken into consideration. We just recently had a gigantic flood in this community and interesting to see how much of the water -- the groundwater from over there ran off into the canal.	Steel-Site/). Historical data for the Guterl Site goes back approximately 14 years. Historical sample results for site groundwater (wells), seep water, and canal surface water are consistent. The seep samples do indicate contaminated water is entering into the Erie Canal, but the large amount of water in the canal, compared to the trickle of groundwater seeps, dilutes the uranium discharge down to background levels immediately. Historical surface sample results near the emergency water intake show no elevated samples in the canal water.
3	What is the answer to the fact that we had the flood this week and all that rainwater? Would that have had any effect? I mean, could that not have washed a great deal of materials into the canal?	The soil contamination is contained to the site. There is no gross movement of soil material off the site due to runoff. Any contamination that permeates into groundwater during a heavy rain would have residence time in the groundwater within the site bedrock for many years before it seeps into the canal. Over time the contamination in groundwater will decrease due to natural attenuation and dilution once combined with the large volume of water in the canal. Therefore, a large flux of uranium in the groundwater would not occur. The recent rain event in Lockport area should not have impacts on the Erie Canal water.
4	This is an interesting comment that was made by a friend of mine who wrote her thesis on this situation over at Simonds. She was told that once she was over there and she had walked around a certain area that prior to her getting back into her car she should remove and leave her sneakers, so it would seem to me that if someone had made that type of a statement to her, that there must be a great deal of contamination that you're going to have to deal with.	Remediation of the Guterl Site is contingent upon the funding available nationally in FUSRAP. Funding to begin remediation at Guterl is scheduled for the year 2032. Update Note: The response above was verbally provided in the public meeting. Since the public meeting, the Guterl schedule has changed to provide funding for the Guterl Site remediation in 2024.

	Do you have any idea as to when you're going to commence the cleanup and obviously it's going to take a number of years, but we in the community would like to know when something is going to happen. I have volumes and volumes of written material that I have kept over the years, was involved with the contamination in Watertown and worked with Kathy Hochul with regards to having the demolition of a number of homes, so I'm very well aware of contamination and the amount of time it takes to go into it, but I really feel that our community has waited a long time for this to commence and I thank you. I thank all of you for the work that you're doing, but I would really like a date as to what we can look forward to as seeing something commence.	
Tom Papura, New York State DEC (Public Meeting)		
5	Thank you very much and thank you to everybody for the presentation here. I want to say that I first traversed this property back in 1999, a long time before it was even brought into the FUSRAP program, and it was a long time coming to get to that point and that was due to the, I guess for lack of a better term, the openness of the Department of Energy to consider it because that's the way these things have to go, so the fact that this is kind of relatively new compared to some of the other Buffalo District FUSRAP sites is the reason that it's so far off in the, you know, in the	Thank you for your comment. USACE will be anticipating NYSDEC comments on the proposed plan.

	project schedule and I hope that kind of helps clarify things a little bit. That being said, the Department may or may not have some comments on the proposed plan, but I can say that I'm happy to see that it was incorporated into the FUSRAP program and we're looking forward to the remedial action being performed whenever it's feasible. Thank you very much, everybody.	
Laura Lee Zagarrigo, City of Lockport resident (Public Meeting)		
6	Thank you. I just have two concerns, one being the debris from the cleanup, how the process is to prevent that from going into the community.	Engineering controls would be put in place to protect the on-site workers and surrounding community. For example, dust control measures like misting, using water to keep down airborne particles, would be implemented during building demolition. Environmental monitoring techniques, such as air monitoring, will occur in the immediate area of the demolition, excavations, and at the fence line. These preventive methods will alert the workers if there is any indication of contamination migration.
7	The second question is with the debris that the soil that's being removed, where is that being removed to?	The location of disposal is not decided until the remedial design phase. There are multiple permitted or licensed facilities USACE contracts with for disposal of FUSRAP-related material that are outside of New York State. One of those permitted or licensed facilities will be selected for disposal of the Guterl Site materials.
Carla Speranzza (Public Meeting)		
8	What degree of confidence does Ms. Watson have for an actual record of decision to be committed? In other words, we would do a record of decision in 2020. However, the pandemic hit so now we're in 2021 and still awaiting a record of decision that's already 20 years in the making. Thank you. End of question.	There's a high degree of confidence the record of decision will be complete by the year 2023. FUSRAP projects follow the CERCLA process. The project went through the collection of multiple components of data (buildings, soil and groundwater) in the remedial investigation. Then the development of the feasibility study provided the possible remedial alternatives that could be performed at the Guterl Site. USACE completed the comparative analysis with the CERCLA criteria to select the highest rated most protective alternative. This preferred alternative was presented in

		the proposed plan and in the public meeting. At this phase, after receiving all public comments, the responses to comments will be included in the record of decision document. The record of decision will begin being drafted in October 2021. After reviews and approval, the record of decision is schedule for completion by 2023.

Comment No.	Comment	Response
Email and Written Comments Received During Public Comment Period		
Debra Allport, 4th Ward Alderman City of Lockport		
9	I will be brief. I strongly support Alternative 3. Our Lockport community has waited far too long for remediation and disposal of this site. My uncle worked for and retired from Simonds Saw & Steel, as well as died of cancer shortly thereafter. The earth needs this total remediation. We, as caretakers of this community, must see this through to completion…for the next generation at the very least.	Thank you for your comment.
Jeanine Kowalski, Citizen		
10	My late husband told me that his foreman ___ Niland, who was foreman of the pickle house told him that at one time the holding tanks in the pickle house were drained into the Erie Barge Canal from an underground pipe that was run from the plant under the parking lot and into the canal. The City of Lockport found this out and Simond's was told that they had to connect to the main sewage line. This happened sometime before Mr. Niland's death about 1970. When Mr. Niland suddenly died, the job was offered to my late husband. Joe worked the 2nd shift. He had to call the sewerage plant and inform them that he was dumping the holding tanks	Thank you for your comment. The information provided will be useful during site surveys and underground utility surveys to identify buried materials and utilities.

	down the city sewerage line. This was done before 11 P.M. He was foreman of that department from about 1968 to 1975 when he was laid off. Joe also, told me that there were barrels of sludge buried in the back lot. Also a vat with an employee's remains, who had fallen into the hot metal. Hope this information will help you in your clean-up efforts.	
Tim Durfy, Citizen		
11	My father died from exposure while working there, I have hired lawyers to try and get money owed to my sister and I. [sic] …the so called remediation plan is to small ,unless you plan on re routing erie canal. [sic]	We are very sorry for your loss. The Department of Labor is responsible for the Energy Employees Occupational Illness Compensation Program, which is for people that have previously worked at the Guterl Specialty Steel Site. The program's phone number is 1-800-941-3943. The chosen alternative for the Guterl Site is the highest rated of all the remedial alternatives. Site-Wide Alternative 3 effectively prevents exposure to FUSRAP-related contaminants in buildings and soil above the RGs, and prevents exposure to uranium in groundwater above the MCL. Alternative 3 is protective of groundwater contamination by reducing the soil-based source of uranium to a level that reduces the impact to groundwater. Residual risk from contamination remaining on site is minimized due to the larger volume of contaminated soil being removed. The rubblized trench and vertical extraction wells effectively capture the uranium in groundwater for *ex situ* treatment.
Joseph DiPasquale, Citizen		
12	Will the site be completely remediated? By when?	The USACE preferred alternative will remediate FUSRAP-related contamination in soils and groundwater to a level that will protect groundwater as a potential drinking water source.

		Remediation of the Guterl Site is contingent upon the funding available nationally in FUSRAP. Funding to begin remediation at Guterl is scheduled for the year 2032. Once remediation has started, the remediation of the soils and buildings is expected to take approximately three years to complete, and the treatment of the site groundwater is expected to take approximately 30 years to complete. <u>Update Note</u>: The response above was provided in the public meeting. Since the public meeting, the Guterl schedule has changed to provide funding for the Guterl Site remediation in 2024.
13	Will it cause more harm to our health by disturbing the site versus leaving it alone?	USACE is implementing this action as required under FUSRAP to address documented potential long-term risks to human health from FUSRAP-related contamination in site buildings, soils, and groundwater. When conducting cleanup actions at FUSRAP sites, the safety of site workers and the local community is USACE's top priority. USACE will implement appropriate safety precautions and environmental monitoring to prevent potential exposure to FUSRAP contaminants during site remediation activities. FUSRAP-related contamination will ultimately be disposed of off-site at an appropriately permitted or licensed disposal facility.
14	Is there any compensation being awarded to those affected by exposure?	The Department of Labor is responsible for the Energy Employees Occupational Illness Compensation Program, which is for people that have previously worked at the Guterl Specialty Steel Site. Their phone number is 1-800-941-3943.

Comment No.	Comment	Response
Comments from New York Department of Environmental Conservation, Divisions of Materials Management and Environmental Remediation in consultation with staff from the New York State Department of Health		
15	It is recommended that the U.S. Army Corps of Engineers (USACE) secure the landfill area with fencing to eliminate the potential exposure of individuals to impacted soils. This recommendation is based on the fact that metals including chromium, nickel, and manganese in surface soils exceed DEC soil cleanup objectives for industrial use and the fact that the site is readily accessible from the end of Richfield Street.	The property incorporating the inactive hazardous waste area (landfill) is currently managed by the property owners, Allegheny Technologies Incorporated (ATI). Until the USACE remediation begins, any fencing and signage on the property is at the discretion of the property owner.
16	It is also noted that the site is impacted by chlorinated volatile organic compounds (CVOCs). DEC recommends that an interim action be implemented to mitigate the release of groundwater impacted by CVOCs to the waters of New York State.	FUSRAP does not authorize cleanup of contamination that does not specifically relate to activities of the former Manhattan Engineer District or Atomic Energy Commission. Only certain radioactive contamination is eligible for cleanup at the site. However, if other contaminants are mixed or commingled with FUSRAP-related contamination, USACE will remediate this waste stream irrespective of origin during remedial action. Contamination encountered during remediation that is not mixed with FUSRAP-related material will not be remediated.

Comment No.	Comment	Response
Comments from Edgard Bertaut, Allegheny Technologies Incorporated (ATI)		
17	ATI supports the selection of Site-Wide Alternative 3 to address impacted soils, buildings, and groundwater at the Guterl Site, as set forth in the Proposed Plan for the Former Guterl Specialty Steel Corporation Site. We are concerned, however, that there may not have been enough consideration given to the impacts that implementing the proposed plan could have on our business and our property.	The Guterl Site (previously Simonds Saw and Steel Company) is documented as a site to be remediated under FUSRAP. USACE has been in contact with ATI throughout the development of the feasibility study and proposed plan to relate site impacts and remediation activities.
18	Excavation of impacted soils will not interfere with site operations.	Coordination of site activities will have to occur between ATI and USACE.
19	Excavation of impacted soils will not affect the integrity of our existing structures.	Remedial design will consider the integrity of structures.
20	Excavated areas will be backfilled to grade and revegetated after excavation of impacted soils.	Areas that have been excavated will be backfilled, graded, and seeded.
21	Since our Building 24, which is use, is slated for demolition, it will be replaced in kind.	USACE will be in contact to negotiate the actions related to Building 24.
22	Temporary storage will be provided for our property while Building 24 is being demolished and replaced.	USACE will be in contact to negotiate the actions related to Building 24.
23	That the construction of the rubblized trench will not cause seismic issues.	The fractured bedrock trench, or rubblized trench, will be installed using specialized charges that control and direct blast energy downward to breakup (fracture) bedrock in the subsurface. For scale reference, the rubblized trench blasting is on a smaller scale than the limestone quarry blasting occurring at the Lafarge quarry neighboring the ATI property to the west.

Comment No.	Comment	Response
Comments from Edgard Bertaut, Allegheny Technologies Incorporated (ATI)		
24	That plant electric power supply currently routed through the Excised Area will be rerouted prior to demolition and no power disruption to our plant will occur.	USACE will contact utility companies that service the site and conduct utility surveys to identify and locate utility lines in the Excised Area and the active ATI property areas before demolition and excavation occurs.

Comment No.	Comment	Response
Comments from EPA Region 2		
25	The long-term surveillance and maintenance of the Formerly Utilized Sites Remedial Action Program (FUSRAP) materials remaining on site would continue to be the responsibility of Federal government[1], unless and until the final remedy satisfies the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)[2] process as set forth below. Land use decisions and final remedy selection (cleanup criteria) for an unrestricted (no further controls) release are inextricably bound together.	Thank you for your comment. The selected alternative, Site-Wide Alternative 3, will achieve UU/UE within 30 years, a time period during which the reasonable land use is expected to remain industrial.
26	<u>CERCLA Applicability</u> Full implementation of CERCLA[3] as applied within our Superfund programs is applicable at FUSRAP sites without regard to National Priority List status, funding source, property ownership (i.e., federal or site), owner/operator or 'federal facility' considerations.	Thank you for your comment.

27	<u>Radiation Risk Assessment at CERCLA Sites</u> EPA's most recent guidance Radiation Risk Assessment at CERCLA sites: Q & A Office of Superfund Remediation and Technology Innovation (OSRTI) Directive 9200.4-40 (EPA 540-R-012-13) dated May 2014, sets forth the policy principles EPA has developed for sites with radioactive materials addressed under CERCLA. Program implementors like U.S. Army Corps of Engineers (USACE) should generally use the 10^{-6} risk of developing cancer as compared to the risk range of 10^{-4} to 10^{-6} established in 40 CFR 300 (the National Oil and Hazardous Substances Pollution Contingency Plan (NCP)) as a point of departure when developing site-specific media cleanup standards, rather than start at 10^{-4} (less protective) as was apparently done in the Remedial Investigation (RI). EPA has determined that the use of 10 CFR § 20.1402 Radiological Criteria for Unrestricted Use, that the residual radioactivity that is distinguishable from background radiation results in a dose to an average member of the critical group that does not exceed 25 m[illi]rem per year as a dose-based standard as an Applicable or Relevant and Appropriate Requirements (ARARs)[4] as a general rule, is not protective of human health because it results in lifetime morbidity risk inconsistent with the CERCLA range. Cleanup levels should be based on cancer risk and expressed in terms of lifetime morbidity risk (cancer incidence). Use of radiation dose as a presumptive[5]	The RI established the critical group (construction workers) for exposure at the Guterl Site and analyzed the exposure routes possible for multiple receptors that may encounter the site. The 25 mrem/yr dose limit corresponds to the carcinogenic risk range of 1 x 10^{-4} to 1 x 10^{-6} established in the NCP for the critical group at this site. A RG based on the dose rate for the critical group is additionally protective of cancer risk for other potential receptors in this case, as their annual exposures are substantially lower at the time frame associated with the maximum exposure for the critical group on which the RG is based. Cancer risks were estimated using RESRAD software and the same cancer risk coefficients (FGR 13) cited in the referenced document (EPA 540-R-012-13) and serving as the basis for the risk levels noted in the comment. The risk coefficients were implemented in RESRAD for the site-specific conditions and exposure pathways. The development of applicable or relevant and appropriate requirements (ARARs) for a site is a promulgated requirement of CERCLA. The ARAR criteria assists in developing the remedial action objectives and establishing the remediation goals. In this case, the ARAR dose criteria produced a RG protective of all receptors for both dose and cancer risks.

Comment No.	Comment	Response
Comments from EPA Region 2		
	cleanup level, instead of cancer risk, to drive the cleanup at Guterl Steel expressly contradicts EPA policy memoranda. Since dose and risk are calculated using different approaches, USACE's use of dose to establish cleanup levels is risk inconsistent with CERCLA. Although the USACE proposed 25 millirem/yr cleanup level corresponds to a risk[6 7] of approximately 6×10^{-4}, the risk from this dose limit may vary considerably depending upon the radionuclide present as a contaminant at the site and the selected land use driving exposure pathways (i.e., inhalation, direct exposure, or ingestion). Thus, key portions of the CERCLA process have not been implemented for the radiological cleanup at Guterl Steel. It is impossible to say what cleanup level would be produced using the CERCLA process, or to assume that the goal for this specific site might be at or exceed the higher end (10^{-4}) of EPA's acceptable risk range, but it appears so based on the feasibility study (FS) and proposed plan (PP). More importantly, to implement the 1×10^{-6} cancer risk as a point of departure, the methods used to find and characterize contamination, and to confirm its removal, must be sensitive enough and specific enough to allow for an analysis using that point of departure. The radiological survey methods used to date may not be demonstrated as sensitive enough to allow for using the 1×10^{-6} cancer risk point of departure.	

Comment No.	Comment	Response
Comments from EPA Region 2		
28	Consider up-to-date science The final remedial action objective (RAO) should include new models such as based on Federal Guidance Report (FGR)-15[8] as such were not considered in the FS which was completed 10 years after the RI; risk (and dose) assessments using up-to-date science should be re-considered before the record of decision (ROD) is completed. 40 CFR 300.430 (e) (2) (i) states "...Final remediation goals will be determined when the remedy is selected. Remediation goals shall establish acceptable exposure levels that are protective of human health and the environment and shall be developed by considering the following: . . . (5) 'Other pertinentinformation' " This 'other pertinent information' may include long-term land use if strict controls are not implemented, sensitive populations (e.g., infants), and other factors like other possible uses of the property (community gardens).	USACE acknowledges that since the Guterl RI was completed there are more current guidance documents that expand analysis factors with additional modeling parameters. Any potential expanded analysis with up-to-date science, would not likely alter the remediation goals or the remedial alternatives. The 2010 RI is a thorough analysis of all potential current and future receptors and exposure pathways at the Guterl Site. Juveniles and hypothetical future on-site residents were evaluated in the RI and human health risk assessment using exposure pathways such as soil ingestion, groundwater ingestion, and gardening. The Guterl Site is currently zoned for industrial use and is anticipated to remain so in the future due to the industrial/warehouse operations, highways, and an active dolostone quarry surrounding the site. The remedial alternatives developed in the FS address the contaminated media at the site to establish acceptable exposure levels that are protective of human health and the environment. The selection of Site-Wide Alternative 3 is protective of human health and the environment by removing all contaminated soils above the RG-GW concentration, dismantling and disposing contaminated building materials off site, and actively capturing and treating groundwater to the EPA's 30 ug/L maximum contaminant level (MCL) for total uranium under the National Primary Drinking Water regulations.

Comment No.	Comment	Response
Comments from EPA Region 2		
29	Calculators Other models can be used such as DOE's RESRAD, as well as the specified EPA tools. But for demonstration of compliance with the CERCLA risk range and ARARs, it's the EPA tools (Preliminary Remediation Goals (PRG) and other EPA calculators) that are the Region 2 expectations that USACE will apply to FUSRAP sites. Final site assessment as documented in the site closure report via a residual risk assessment of site soils using remedy verification sampling results should consider use of EPA calculators. Deviations from standardized EPA assumptions concerning exposure duration, intake factors[9] (breathing rate, water consumption), and so forth should be specified when using other models.	Thank you for your comment. It is USACE policy to use RESRAD software for FUSRAP sites, unless project parameters indicate other models are required to develop appropriate risk calculations. The use of RESRAD to produce risk and dose calculations for this site and potential receptors produced RGs that achieved ARARs and the CERCLA risk range. Exposure parameters implemented in RESRAD are documented in the RI and FS reports.
30	Process § 300.430 Remedial investigation/feasibility study and selection of remedy. (f) (1) (ii) states in pertinent part, "First, the lead agency, in conjunction with the support agency, identifies a preferred alternative and presents it to the public in a proposed plan...Second, the lead agency shall review the public comments and consult with the state...to determine if the alternative remains the most appropriate remedial action for the site or site problem." By issuing the RI and FS simultaneously, some opportunity for meaningful public comment is lost.	The FS and PP were released simultaneously in accordance with CERCLA. The opportunity to review both documents was provided during the public comment period for the public, stakeholders, and other agencies. A virtual public meeting was conducted to offer another opportunity for information to be shared and public comments to be made. No request was made to extend the comment period.

Comment No.	Comment	Response
Comments from EPA Region 2		
31	<u>Clear Writing and Federal Plain Language Guidelines</u> EPA reviewers noted that while the FS itself is often hard to follow; it is necessarily technical. However, it required multiple readings for reviews technically proficient in the material to understand, and multiple checks to confirm important commitments or conclusions. The proposed plan however is intended for the general public and must be written in accordance with available guidance for a document whose intent is understandability by the affected community. As a general recommendation, perhaps a clearer proposed plan summary would be helpful to accompany the record of decision. While there are thousands of pages between the RI, FS and the PP, there is a lack of clarity in key factors that are underlying the precise cleanup goal.	Thank you for your comment. This will be considered in developing the ROD and ensuring there is clarity in what underlies the cleanup goals.

32	Remedial Action Objectives (RAO) The proposed plan stated, "Prevent exposure to uranium and 232Th in soil and buildings and uranium in groundwater, such that a construction worker does not receive a total effective dose exceeding 25 m[illi]rem/yr above background from all pathways." Notwithstanding EPA's long-term policy statements that for radiological contaminated sites, risk be considered as a primary consideration, and that dose may be considered as well, the RAO should state specifically that the RAO considers short-term[10] (one-year on site with no further exposure) construction worker, long-term site worker (non-construction), intruder scenarios, as well as loss of land use control long-term residency[11] and the doses and risks resulting. It is our understanding, based on supplemental communication with our staff that soils remedy is designed to achieve an average value of 11 milligrams per kilogram. USACE's statement that, "The soil PRG-groundwater (GW) is 11 milligrams per kilogram (mg/kg) total uranium...is also protective of the residential pathway and thus reflects an ALARA[12] post-remedial condition" can be evaluated in terms of risk in the final post-remedial report. While selection of an ARAR itself does not determine on a site-specific basis what the ultimate residual risk following post-remedial evaluation, an average achieved value of 11 mg/kg is acceptable provided you can demonstrate it falls within the CERCLA risk range when integrated with land use decisions.	The RAO is a goal statement for the critical group for the Guterl Site. The construction worker is identified as the critical group due to the current use and potential future land use of the site. The parameters mentioned in the EPA comment, such as exposure for other potential receptors and pathways, are analyzed and detailed in the RESRAD exposure calculations in the RI. See the RI report for these details.

33	<u>Long-Term Stewardship</u> Guidance[13] on land use has two primary objectives, first, to promote early discussions between EPA and local land use planning authorities, local officials, and the public regarding reasonably anticipated future land uses. Second, to promote the use of the information from those discussions to formulate realistic assumptions regarding future land use, and to clarify how land use assumptions influence risk assessment, development of remedial alternatives, and remedy selection. There is scant evidence in the FS and PP that full consultation and other alternatives were considered. At the time of final remedy and closeout, EPA expectation is that these are fully documented in the administrative record. The plans state that the site is zoned for industrial use, as shown in the Niagara County land use map, and is anticipated to remain so in the future. EPA guidance requires more than a summary conclusion that zoning, and land use control (LUC) will remain in place over a time horizon appropriate for uranium. To ensure that the material remaining on site does not present a health hazard in the future, a clear understanding of the remedial action objectives and commitments for maintaining land use controls consistent with cleanup criteria that will be achieved in the final remedy are mandated. We are concerned that there is no acknowledgement by the Federal agency that must commit resources and its program to assuring that LUC continue for	USACE has been in consultation with other agencies, stakeholders, and the public throughout the process. The Guterl Site is currently zoned for industrial use and is anticipated to remain so in the future due to the industrial/warehouse operations, highways, and an active dolostone quarry surrounding the site. Background radiological constituents of concern concentrations must be representative of local settings and indicative of land use in the area of the Guterl Site. Based on considerations of other contaminants present, the groundwater at the Guterl Site is not a likely a source of potable water without treatment before consumption. After consultation with nearby cities and towns, no records indicate that groundwater is currently used in the area downgradient of the site (no residential wells). The City of Lockport public water supplies the area. The Guterl Site does not have land use controls as part of the remedial action. Operations and maintenance includes long-term operation of the groundwater recovery and treatment system, and groundwater sampling until RAOs are achieved. The acknowledgement of commitment of these resources for the remedial timeframe is indicated in the cost assessment breakdown in the FS appendices.

Comment No.	Comment	Response
Comments from EPA Region 2		
	1,000 years. Similarly, there need to be commitments by New York State and local agencies to ensure that land use controls will be in place as anticipated in the Proposed Plan. The Proposed Plan or ROD should identify who will be responsible for LUC over the 1,000-year period or in the alternative, the remedy supports fewer restrictions on use.	
34	<u>Duration of the Action</u> Although removing all the contaminated soils when considering the 1,000-year lifetime of the remedy, the cleanup goals interact with the potential future land use.	Thank you for the comment. The FS considered the reasonably anticipated future land use in identifying the RGs as required by CERCLA and the NCP.
35	<u>Specific Comments</u> Residual surface activity and residential and construction workers scenarios: Please confirm that the basis for Derived Concentration Guideline Level setting for residual surface radioactivity was based on a full year of exposure.	RESRAD-Build assumes the useable life of a building is 25 years; models were run to estimate annual dose rate and incremental lifetime cancer risk at year zero (current conditions) and at 25 years for each receptor. All receptors were considered for reasonable maximum exposure, which included full-time work for one year for the critical group (construction worker). Please see the RI report for more information on risk calculations.

Comment No.	Comment	Response
Comments from EPA Region 2		
36	Please address the possibility of a construction worker being involved in several projects over a working lifetime.	The construction worker and on-site worker were determined to experience long-term chronic exposure to contaminants at the Guterl Site with exposure routes such as incidental ingestion of soils, inhalation of fugitive dust, and external radiation. Dose and risk were evaluated for the construction worker as working on site five days a week for one year; the on-site worker calculated to work on site five days a week for 25 years. Please see the RI report for more information on risk calculations.
37	For an industrial site occupied by various industries; open construction on ground may be a reasonable exposure scenario to be considered.	Thank you for your comment. Please see the Guterl RI report for more information on the risk calculations and exposure scenarios evaluated.
38	The plan presumes that no new residence will be constructed; please consider evaluating the radiological risk in the event of that eventuality.	In the baseline Human Health Risk Assessment within the RI, a hypothetical future on-site resident was evaluated for exposure to surface and subsurface soil at Guterl while playing outdoors, walking around and while gardening. Other calculated exposure routes for the hypothetical resident were ingesting groundwater or eating produce grown on site. Hypothetical residents were assumed to live on site for 30 years. Please see the RI report for more information.
39	Please consider the possibility of site abandonment with nearby residents creating a community garden.	In the baseline Human Health Risk Assessment within the RI, a hypothetical future on-site resident was evaluated for exposure to surface and subsurface soil at Guterl while playing outdoors, walking around or while gardening. Other calculated exposure routes for the hypothetical resident were ingesting groundwater and eating produce grown on site. Please see the RI report for more information.

Comment No.	Comment	Response
Comments from EPA Region 2		
Footnotes Referenced in EPA Region 2 Comments: [1] In accordance with the USACE-USDOE MOU; Beginning two years after closeout, US Department of Energy (DOE) shall be responsible for long-term surveillance, operation and maintenance, including monitoring and enforcement of any institutional controls which have been imposed on a site or vicinity properties, and, upon closeout, shall accept the transfer of federally-owned real property and interests therein, acquired by USACE for FUSRAP execution. [2] Public Laws 105-245 and 106-60 clarified Congressional intent that response actions taken by the USACE under FUSRAP should be performed subject to the provisions of CERCLA and the NCP, “Any response action …shall be subject … CERCLA and 40 CFR 300.” [3] The act 42 U.S.C. § 9601 *et seq.* as amended and NCP 40 CFR 300. [4] See OSWER 9200.4-23 and 9200.4-18 both in August 1997. [5] Use of 10–6 as a point of departure does not establish a strict presumption that all final cleanups will necessarily attain that level of risk reduction. [6] In itself, in excess of the risk range. [7] Assuming a risk of cancer incidence of 8.46×10^{-4} per rem of exposure. [8] Federal Guidance Report No. 15 (FGR 15), External Exposure to Radionuclides in Air, Water and Soil, tabulates age- specific reference person effective dose rate coefficients for radionuclides based on external exposure to radionuclides distributed in air, water, or soil. FGR 15 updates FGR 12 by incorporating six different age groups (whereas FGR 12 had one), updated tissue weighting factors, and other improvements. [9] verify factors are consistent with current EPA guidance 10 This is discussed further in the enclosure. [10] This is discussed further in the enclosure. [11] Both future residential use and use of the land for gardening were not considered. [12] As Low as Reasonably Achievable (ALARA) is not a specific requirement of the CERCLA process. [13] May 25, 1995, EPA issued a Directive titled, “Land Use in the CERCLA Remedy Selection Process.”		

TABLES

Record of Decision
For The Former Guterl Specialty Steel Corporation Site
Lockport, New York

TABLE 1: CONCENTRATIONS OF GUTERL SITE COCS

Exposure Unit/ Medium/ COC	Units	Number of Observations	Mean	Sd	Maximum Detection	EPC
EU 1 - Building 1						
Building Material						
Thorium-232	pCi/g	2	0.24	0.34	0.48	0.48
Uranium-238	pCi/g	2	0.22	0.15	0.32	0.32
EU2 - Building 2						
Building Material						
Thorium-232	pCi/g	9	0.57	0.47	1.34	1.33
Uranium-238	pCi/g	9	0.98	1.01	3.50	1.74
Surface Soil						
Thorium-232	pCi/g	13	1.29	0.73	2.67	1.65
Uranium-238	pCi/g	13	11.50	7.82	26.70	15.37
Total Soil						
Thorium-232	pCi/g	26	1.28	0.63	2.67	1.52
Uranium-238	pCi/g	26	9.06	8.77	28	12.88
EU3 - Building 3						
Building Material						
Thorium-232	pCi/g	6	0.42	0.59	1.60	1.54
Uranium-238	pCi/g	6	2.11	1.24	3.86	3.14
Surface Soil						
Thorium-232	pCi/g	9	0.82	0.33	1.41	1.02
Uranium-238	pCi/g	9	16	12	36	23.04
Total Soil						
Thorium-232	pCi/g	16	0.91	0.37	1.48	1.07
Uranium-238	pCi/g	16	40	96	396	95.50
EU4 - Building 4/9						
Building Material						
Thorium-232	pCi/g	3	0.59	0.36	1.01	1.01
Uranium-238	pCi/g	3	1.15	0.70	1.79	1.79
Surface Soil						
Thorium-232	pCi/g	9	0.94	0.35	1.42	1.16
Uranium-238	pCi/g	9	6.77	6.58	20	12.69
Total Soil						
Thorium-232	pCi/g	18	1.01	0.32	1.42	1.14
Uranium-238	pCi/g	18	4.73	5.37	20	8.67

Exposure Unit/ Medium/ COC	Units	Number of Observations	Mean	Sd	Maximum Detection	EPC
EU5 - Building 5						
Building Materials						
Thorium-232	pCi/g	1	0.34	NA	0.34	0.34
Uranium-238	pCi/g	1	0.40	NA	0.40	0.40
EU6 - Building 6						
Building Material						
Thorium-232	pCi/g	5	0.90	0.77	1.67	1.64
Uranium-238	pCi/g	5	2.48	1.86	4.96	4.24
Surface Soil						
Thorium-232	pCi/g	5	4.99	9.46	22	21.90
Uranium-238	pCi/g	5	24	25	68	67.60
Total Soil						
Thorium-232	pCi/g	10	5.19	8.25	22	13.76
Uranium-238	pCi/g	10	30	33	107	59.78
EU7 - Building 8						
Building Materials						
Thorium-232	pCi/g	1	0.23	NA	0.23	0.23
Uranium-238	pCi/g	1	6.44	NA	6.44	6.44
Surface Soil						
Thorium-232	pCi/g	6	1.85	1.44	4.52	3.03
Uranium-238	pCi/g	6	3,792	7,014	17,919	17919
Total Soil						
Thorium-232	pCi/g	12	2.10	1.93	7.14	3.32
Uranium-238	pCi/g	12	2,465	4,993	17,919	5722
EU8 - Building 24						
Building Material						
Thorium-232	pCi/g	6	5.92	7.51	16	16.44
Uranium-238	pCi/g	6	732	975	2,169	2,169.00
Surface Soil						
Thorium-232	pCi/g	7	0.92	0.19	1.17	1.05
Uranium-238	pCi/g	7	8	6	17	12
Total Soil						
Thorium-232	pCi/g	14	1.08	0.35	2.06	1.25
Uranium-238	pCi/g	14	4.67	5.06	17	7.82

Exposure Unit/ Medium/ COC	Units	Number of Observations	Mean	Sd	Maximum Detection	EPC
EU9 - Building 35						
Building Materials						
Thorium-232	pCi/g	1	0.22	NA	0.22	0.22
Uranium-238	pCi/g	1	0.12	NA	0.12	0.12
Surface Soil						
Thorium-232	pCi/g	1	1.33	NA	1.33	1.33
Uranium-238	pCi/g	1	6.58	NA	6.58	6.58
Total Soil						
Thorium-232	pCi/g	2	1.75	0.59	2.16	2.16
Uranium-238	pCi/g	2	4.24	3.31	6.58	6.58
EU10 - Exterior of Buildings						
Surface Soil						
Thorium-232	pCi/g	14	0.85	0.28	1.27	0.99
Uranium-238	pCi/g	14	6.79	11.01	44.00	15.27
Total Soil						
Thorium-232	pCi/g	36	1.18	0.52	2.25	1.32
Uranium-238	pCi/g	36	5.48	8.76	44	11.85
Groundwater						
Thorium-232	pCi/L	10	0.01	0.01	0.04	0.01
Uranium-238	pCi/L	10	2.88	2.68	7.15	4.43
EU11 - Between Buildings						
Surface Soil						
Thorium-232	pCi/g	16	0.71	0.51	2.44	0.92
Uranium-238	pCi/g	16	25	59	247	49.45
Total Soil						
Thorium-232	pCi/g	24	0.83	0.57	2.44	1.04
Uranium-238	pCi/g	24	19.18	48.86	247	36
Groundwater						
Thorium-232	pCi/L	8	0.00	0.01	0.02	0.01
Uranium-238	pCi/L	8	5.62	6.50	16	15.64

Exposure Unit/ Medium/ COC	Units	Number of Observations	Mean	Sd	Maximum Detection	EPC
EU12 - Landfill						
Surface Soil						
Thorium-232	pCi/g	30	0.72	0.35	1.74	0.84
Uranium-238	pCi/g	30	8.60	10.61	58	11.28
Total Soil						
Thorium-232	pCi/g	60	0.80	0.55	2.85	0.91
Uranium-238	pCi/g	60	12	19	122	22.75
Groundwater						
Thorium-232	pCi/L	14	0.01	0.02	0.07	0.03
Uranium-238	pCi/L	14	4.77	7.55	22	13.90
EU13 - IA04A						
Surface Soil						
Thorium-232	pCi/g	30	0.71	0.36	1.90	1.37
Uranium-238	pCi/g	30	20	31	152	32.22
Total Soil						
Thorium-232	pCi/g	60	0.79	0.49	3.08	1.19
Uranium-238	pCi/g	60	29	55	347	58.99
Groundwater						
Thorium-232	pCi/L	14	0.01	0.02	0.07	0.03
Uranium-238	pCi/L	14	7.72	9.74	31	12.99
EU14 - IA04B						
Surface Soil						
Thorium-232	pCi/g	29	0.46	0.24	1.09	0.54
Uranium-238	pCi/g	29	1.24	1.73	9.50	1.70
Total Soil						
Thorium-232	pCi/g	60	0.70	0.34	1.65	0.77
Uranium-238	pCi/g	60	1.85	2.44	15	3.22
Groundwater						
Thorium-232	pCi/L	8	0.00	0.01	0.02	0.01
Uranium-238	pCi/L	8	44	28	71	70.84

Exposure Unit/ Medium/ COC	Units	Number of Observations	Mean	Sd	Maximum Detection	EPC
EU15 - IA04C						
Surface Soil						
Thorium-232	pCi/g	20	0.87	0.24	1.48	0.96
Uranium-238	pCi/g	20	1.42	1.03	4.92	1.84
Total Soil						
Thorium-232	pCi/g	33	0.95	0.25	1.51	1.02
Uranium-238	pCi/g	33	1.47	1.01	4.92	1.77
EU16 - IA04D						
Surface Soil						
Thorium-232	pCi/g	12	1.07	0.35	1.93	1.25
Uranium-238	pCi/g	12	4.27	4.51	15	7.28
Total Soil						
Thorium-232	pCi/g	24	1.23	0.38	1.99	1.36
Uranium-238	pCi/g	24	3.00	3.42	15.19	6.04
Groundwater						
Thorium-232	pCi/L	4	0.02	0.03	0.06	0.06
Uranium-238	pCi/L	4	15	17	30	29.98
EU17 - IA05A						
Surface Soil						
Thorium-232	pCi/g	30	2.36	8.17	46	8.86
Uranium-238	pCi/g	30	148	795	4,357	1592
Total Soil						
Thorium-232	pCi/g	60	1.94	6.11	46	5.38
Uranium-238	pCi/g	60	109	608	4,357	600
EU18 - IA05B						
Surface Soil						
Thorium-232	pCi/g	10	0.83	0.18	1.18	0.94
Uranium-238	pCi/g	10	0.69	0.08	0.79	0.73
Total Soil						
Thorium-232	pCi/g	23	0.88	0.15	1.18	0.94
Uranium-238	pCi/g	23	0.69	0.11	0.91	0.73
Groundwater						
Thorium-232	pCi/L	2	0.00	0.00	0.01	0.01
Uranium-238	pCi/L	2	0.95	0.39	1.23	1.23

Exposure Unit/ Medium/ COC	Units	Number of Observations	Mean	Sd	Maximum Detection	EPC
EU19 IA09 - Erie Barge Canal						
Surface Water						
Thorium-232	pCi/L	12	0.01	0.03	0.07	0.03
Uranium-238	pCi/L	12	0.14	0.05	0.25	0.17
EU20						
Surface Soil						
Thorium-232	pCi/g	12	0.83	0.18	1.16	0.93
Uranium-238	pCi/g	12	1.30	1.02	4.26	1.85
Total Soil						
Thorium-232	pCi/g	24	0.80	0.23	1.31	0.88
Uranium-238	pCi/g	24	1.41	0.98	4.26	2.28

Notes:
COC = constituent of concern
EPC = exposure point concentration
EU = exposure unit
IA - investigative area
NA = Not Applicable
pCi/g = picocuries per gram
pCi/L = picocuries per liter
Sd = standard deviation

TABLE 2: PROJECT-SPECIFIC DERIVED CONCENTRATION GUIDELINE LEVELS (DCGL) IN BUILDINGS AT THE GUTERL SITE

	DCGL	
	Total	**Removable**
Alpha (α) dpm/100 cm^2	2,391	240
Beta (β) dpm/100 cm^2	2,515	252

Notes: Total DCGL includes fixed and removable measurements.

TABLE 3: ESTIMATED EXTENT OF URANIUM CONTAMINATED GROUNDWATER

Water Bearing Zone	Area of Water Bearing Zone	Average Thickness of Water Bearing Zone	Volume of Contaminated Groundwater
	ha (ac)	**m (ft)**	**Million L (Million gal)**
Shallow Groundwater	15.7 (38.7)	5.2 (17)	204 (54)
Deep Groundwater	7.3 (18.0)	11.6 (38)	42 (11)

Units: m=meters, ft=feet, ha=hectares, ac=acres, L=liters, gal=gallons

TABLE 4: REMEDIATION GOALS FOR RADIONUCLIDES IN SOIL AT THE GUTERL SITE

FUSRAP-Related COC	Units	Average Background Concentration	RG-CW[a]	RG-GW[b]
Thorium-232 [c]	pCi/g	0.644	6.6	Not separately defined[d]
Uranium-238 [e]	pCi/g	0.74	23	3.66
Total Uranium	mg/kg	2.2	69	11
Total Uranium	pCi/g	1.5	47 [f]	7.5

Notes: Values represent minimum of RESRAD calculated RG at years 0 through 1,000 (year of peak dose per nuclide group). Based of 10 CFR 20.

mg/kg: milligrams per kilogram
pCi/g: picocurie(s) per gram (amount of radioactivity)

a. These cleanup goals represent activity levels above the average site background activity corresponding to 25 mrem/yr dose to a construction worker. Since a mixture of radionuclides (i.e., U and Th) is present, the RG-CW values for soil would utilize the following sum of ratios (SOR) equation: SOR = (Th-232/6.6) + (U-234 + U-235 + U-238)/47
b. RG-GW cleanup goal present activity levels developed to protect against continued impacts to groundwater above the 30 μg/L MCL for U.
c. RG-CW for Th-232 includes Ra-228 and Th-228 decay contribution to dose at time zero.
d. Removal of soil that exceeds the U-238 PRG-GW will include the removal of the collocated soil with activity concentrations that exceed the Th-232 soil RG-CW. Since Th-232 is not a COC for groundwater, a separate Th-232 PRG for soil is not required for groundwater protection.
e. A conversion factor of 0.333 was used to convert U mass to U-238 activity.
f. RG for total U includes dose contribution from U-234, U-235, and U-238, assuming natural activity abundance of U isotopes (in ratio of U-234 (1): U-235 (0.046): U-238 (1).

TABLE 5: ESTIMATED VOLUME OF CONTAMINATED SOIL FOR REMEDIATION GOALS

Soil RG	*In Situ* Contaminated Soil Volume m^3 (yd^3)	*Ex Situ*[a] Contaminated Soil Volume m^3 (yd^3)
Construction Worker(RG-CW)	3,800 (5,000)	5,000 (6,500)
Groundwater Protection (RG-GW)	44,000 (58,000)	57,200 (75,400)

[a]- *Ex situ* contaminated soil volume estimates a 1.3 times bulking factor from the *in-situ* volume estimate to account for the increase in volume when naturally compacted soil is excavated.
Units: m^3=cubic meters yd^3=cubic yards

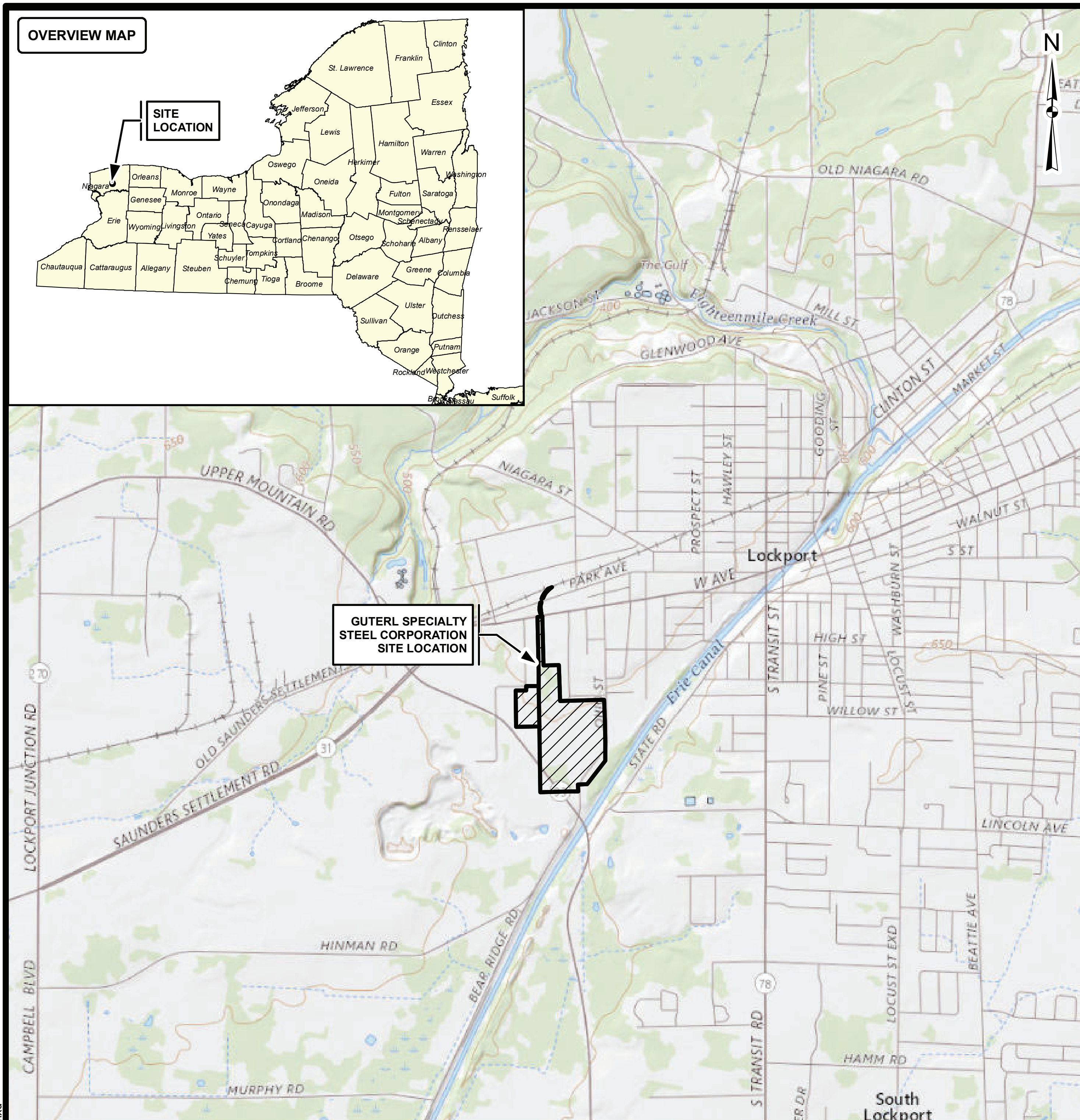
TABLE 6: COMPARATIVE ANALYSIS FOR GUTERL REMEDIAL ALTERNATIVES

NCP Evaluation Criteria	Site-Wide Alternative 1	Site-Wide Alternative 2	Site-Wide Alternative 3	Site-Wide Alternative 4
Threshold Criteria				
Overall Protection of Human Health and the Environment	Not Protective	Protective	Protective	Protective
Compliance with ARARs	Not Compliant	Compliant	Compliant	Compliant
Balancing Criteria				
Long-Term Effectiveness and Permanence	Low	High	High	Moderate
Reduction in Toxicity, Mobility, and Volume Through Treatment	Low	Low	Moderate	Low
Short-Term Effectiveness	High	Moderate	Moderate	Moderate
Implementability	High	Moderate	Low	High
Cost				
Capital Cost (non-discounted)	$0	$180.9 M	$189.3 M	$104.4 M
Present Worth Operations and Maintenance Cost	$0	$5.2 M	$16.3 M	$5.2 M
Total Present Worth Cost	$0	$186.1 M	$205.6 M	$109.7 M

Note: High represents a favorable rating for the specific criteria whereas Low represents the least favorable rating. Present Worth discount rate used is 3.5%. M=million

FIGURES

Record of Decision
For The Former Guterl Specialty Steel Corporation Site
Lockport, New York



0 1,500 3,000 6,000
Feet

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
BUFFALO, NY

SITE LOCATION MAP

Document Name: 181018_SiteLocationMap.mxd
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GUTERL SPECIALTY STEEL CORPORATION
LOCKPORT, NEW YORK

FIGURE 1

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Legend

Excised Area Boundary

ATI Specialty Materials Boundary

Buildings

US Army Corps of Engineers®
Buffalo District
BUILDING STRONG®

SITE PLAN

GUTERL SPECIALTY STEEL CORPORATION
LOCKPORT, NY

Date:	Scale:	Figure No. :
06/06/2017	1 inch = 500 feet	2

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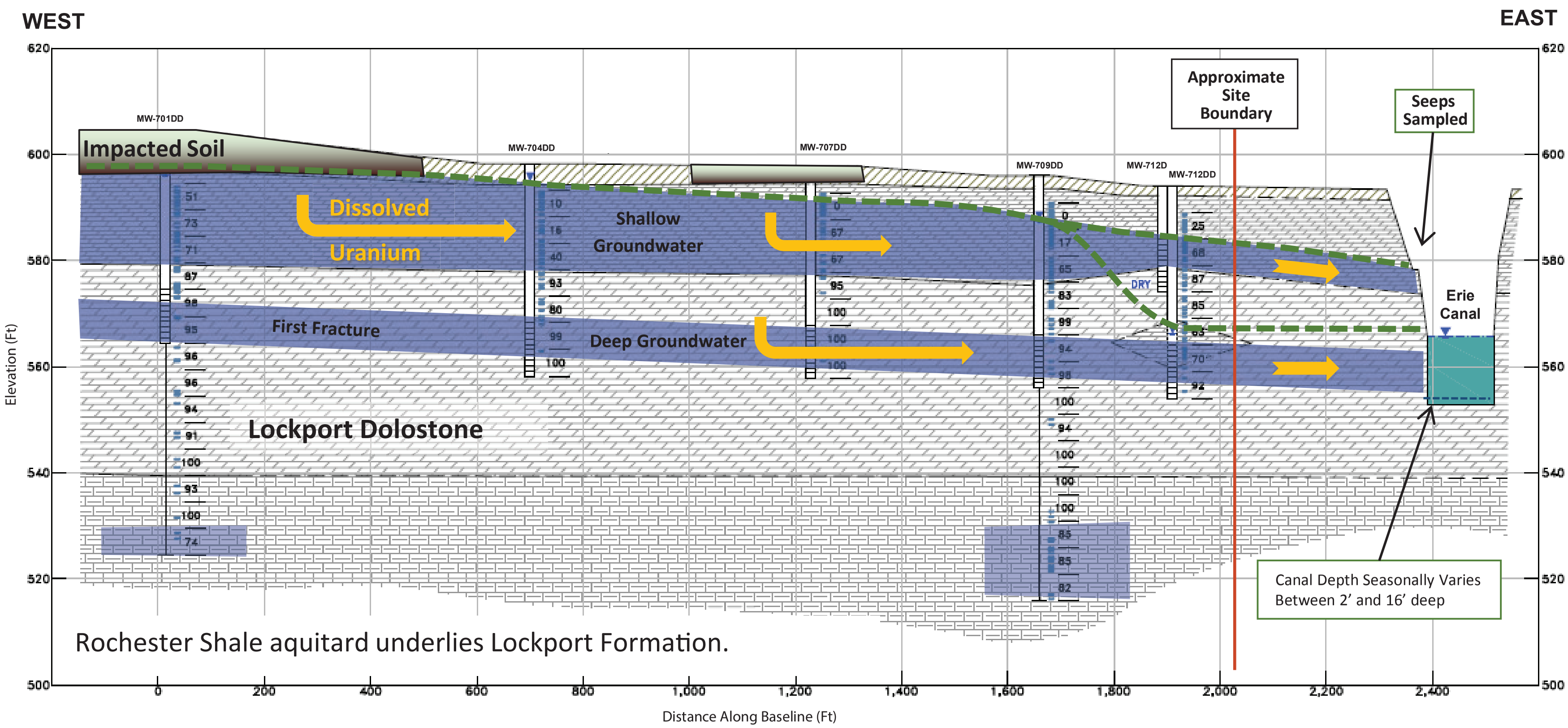


LEGEND:

MONITORING WELL

WATER LEVEL, AUGUST 2011

SCREENED INTERVAL

BOTTOM OF BORING

SEEP FLOW

23 FRACTURES / RQD (%)

DISSOLVED URANIUM

OVERBURDEN SOIL

FRACTURED DOLOSTONE, RQD <80% SHALLOW FLOW ZONE

DOLOSTONE, RQD >80%

SHALEY DOLOSTONE

WATER BEARING ZONES

ZONE OF GREATER FRACTURES CONTAINED WITHIN LOWER FRACTURE ROCK THAT IS NOT OBSERVED IN ADJACENT BORINGS.

NOTES

1) CANAL WATER LEVEL AND BOTTOM REFERENCED FROM AUGUST 2011 GAUGE READING AT LOCK 35, APPROXIMATELY 1.75 MILES DOWNSTREAM.

2) RQD = ROCK QUALITY DESIGNATION. A DEGREE OF FRACTURING IN A ROCK CORE (%) WHERE THE VALUE IS INVERSELY RELATED TO LENGTH OF ROCK BROKEN BY FRACTURES. FEW FRACTURES HAVE HIGH RQD% (FEW BLUE DASHES), MULTIPLE FRACTURES (MANY BLUE DASHES) HAVE LOW RQD%.

3) IMPACTED SOILS: <2 – 9 FT THICK FILL MIXED WITH REWORKED NATIVE SOIL OVERLYING 0 – 4 FT THICK GLACIOLACUSTRINE AND/OR TILL DEPOSITS.

VERTICAL SCALE 0 – 20'

HORIZONTAL SCALE 0 – 200'

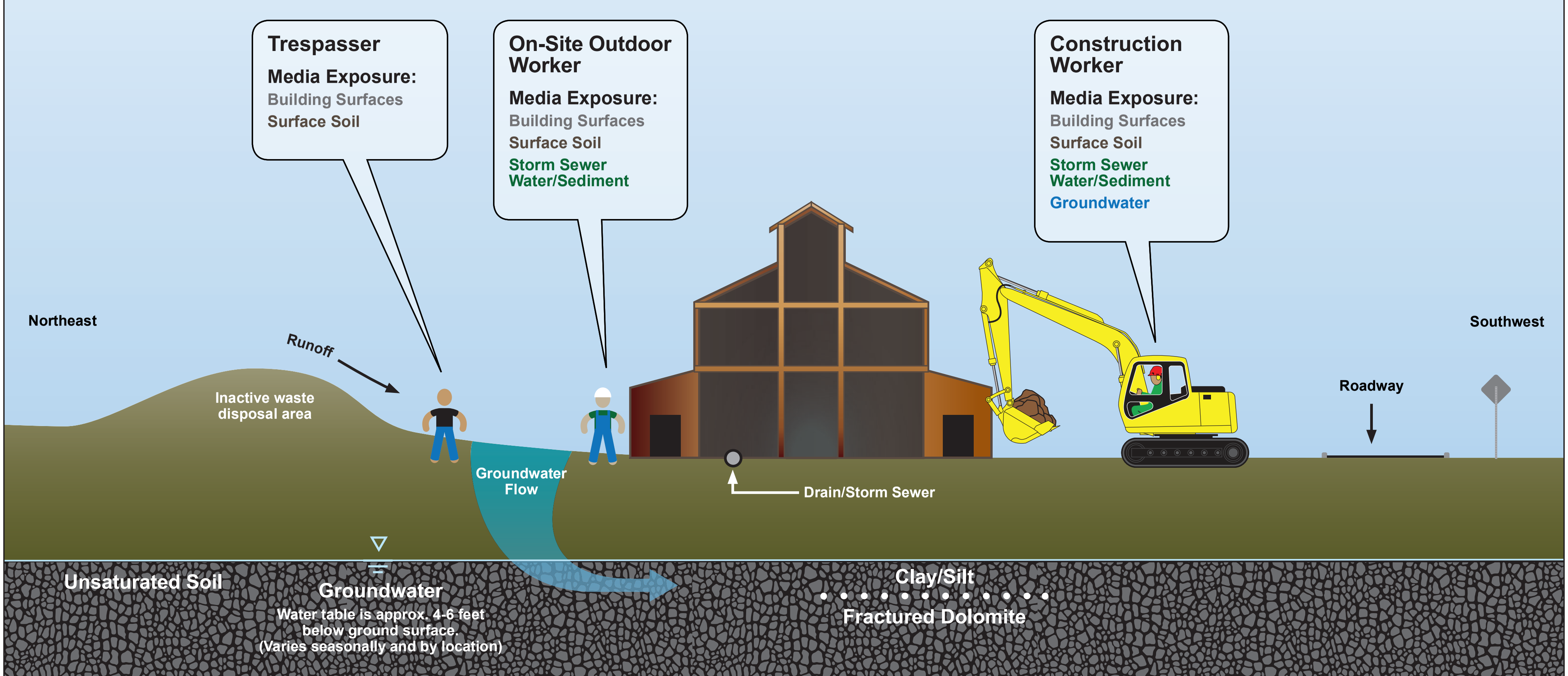
US Army Corps of Engineers® Buffalo District BUILDING STRONG®

FIGURE 3

GEOLOGIC CROSS SECTION ACROSS SITE - WEST TO EAST CONCEPTUAL MODEL

GUTERL SPECIALTY STEEL CORPORATION
LOCKPORT, NEW YORK

Figure 4 - GUTERL SITE CONCEPTUAL SITE MODEL



Complete Exposure Media and Exposure Routes

Exposure Media:	Building Surfaces	Subsurface Soil	Surface Soil	Storm Sewer Water/Sediment	Groundwater
● Complete exposure pathways for the trespasser, on-site worker, and construction worker receptors.	● Ingestion ● Dermal contact ● Inhalation ● External radiation	● Ingestion ● Dermal contact ● Inhalation ● External radiation	● Ingestion ● Dermal contact ● Inhalation ● External radiation	● Ingestion ● Dermal contact ● External radiation	● Ingestion ● Dermal contact ● External radiation

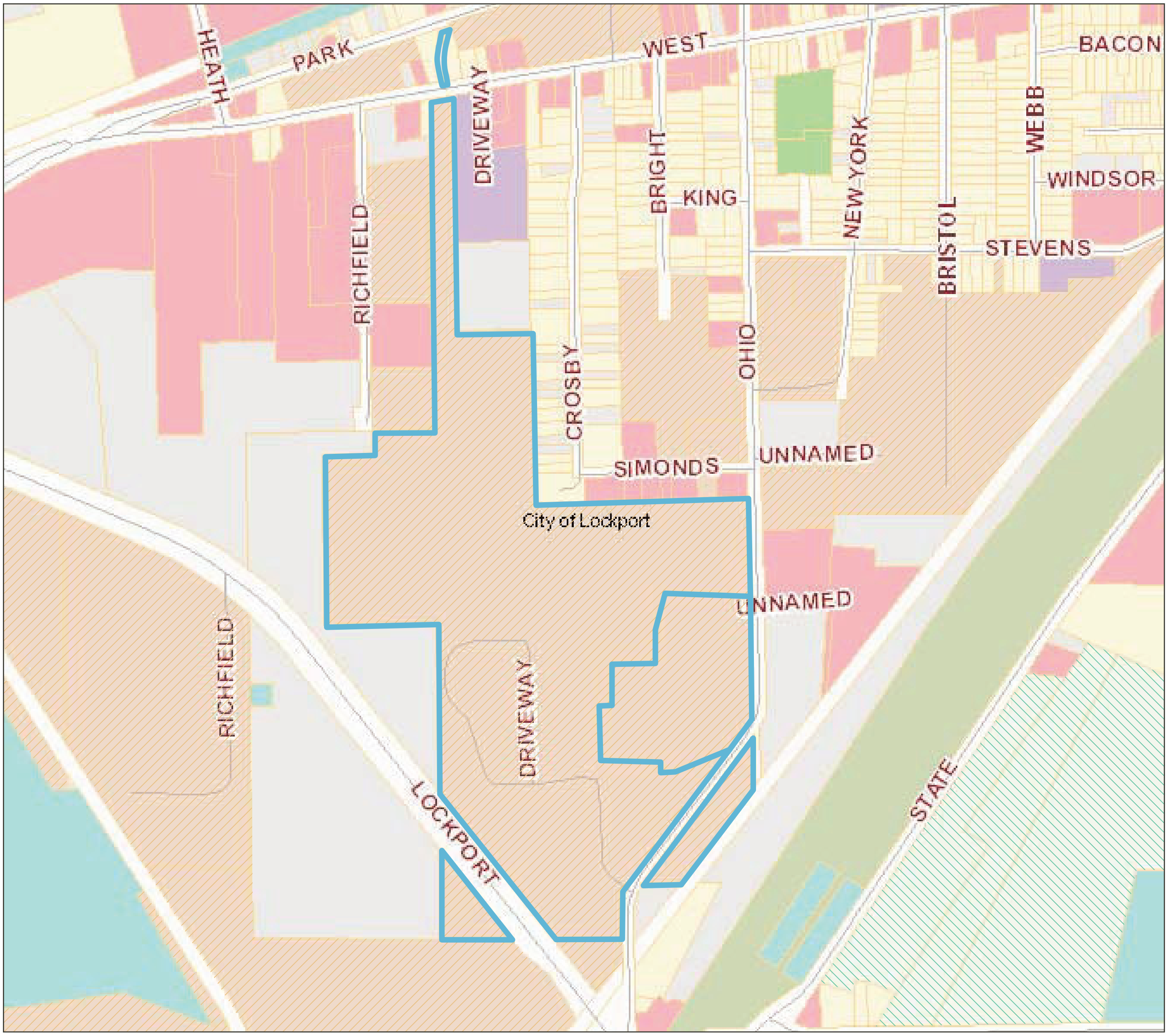


Image from Erie and Niagara County PAS-TAS
http://gis1.erie.gov/RoyaltonNYGIS/

FEET
0 500 1,000

Site Boundary

Land Use
- Agricultural
- Residential
- Vacant Land
- Commercial
- Recreation and Entertainment
- Community Services
- Industrial
- Public Services
- Wild, Forested, Conservation Lands

US Army Corps of Engineers
Buffalo District
BUILDING STRONG

N W E S

LAND USE FROM NIAGARA COUNTY GIS

GUTERL SPECIALTY STEEL CORPORATION
LOCKPORT, NY

Date:
2/24/12

Figure 5

s-140416-12/11-w

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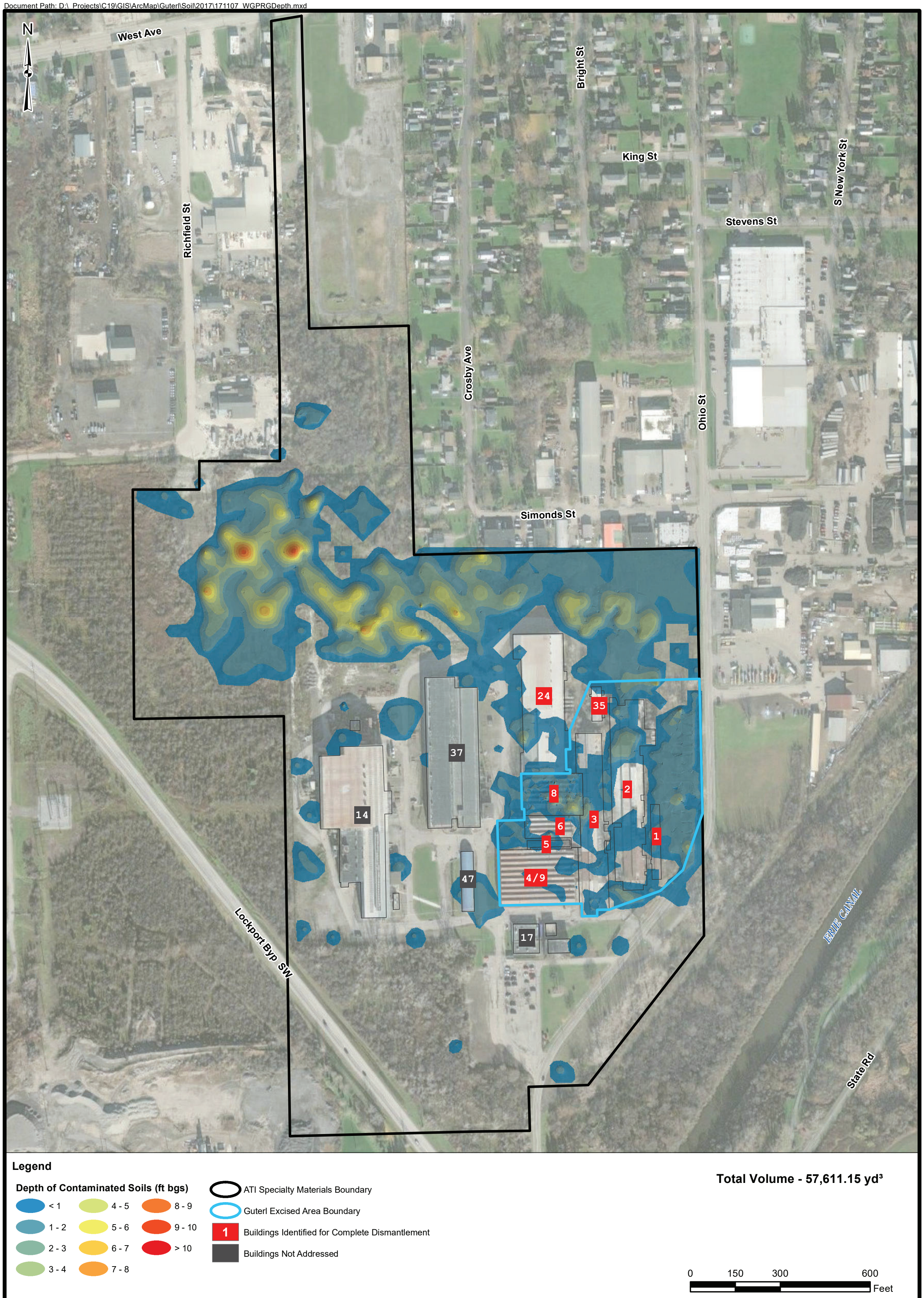

US Army Corps of Engineers
Buffalo District

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
BUFFALO, NY

SITE-WIDE ALTERNATIVE 2
DISMANTLEMENT AND OFF-SITE DISPOSAL OF BUILDINGS 1, 2, 3, 4/9, 5, 6, 8, 24, AND 35;
COMPLETE SOIL REMOVAL TO THE SOIL RG-GW AND OFF-SITE DISPOSAL;
MONITORED NATURAL ATTENUATION WITH ENVIRONMENTAL MONITORING

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GUTERL SPECIALTY STEEL CORPORATION
LOCKPORT, NEW YORK

FIGURE 6

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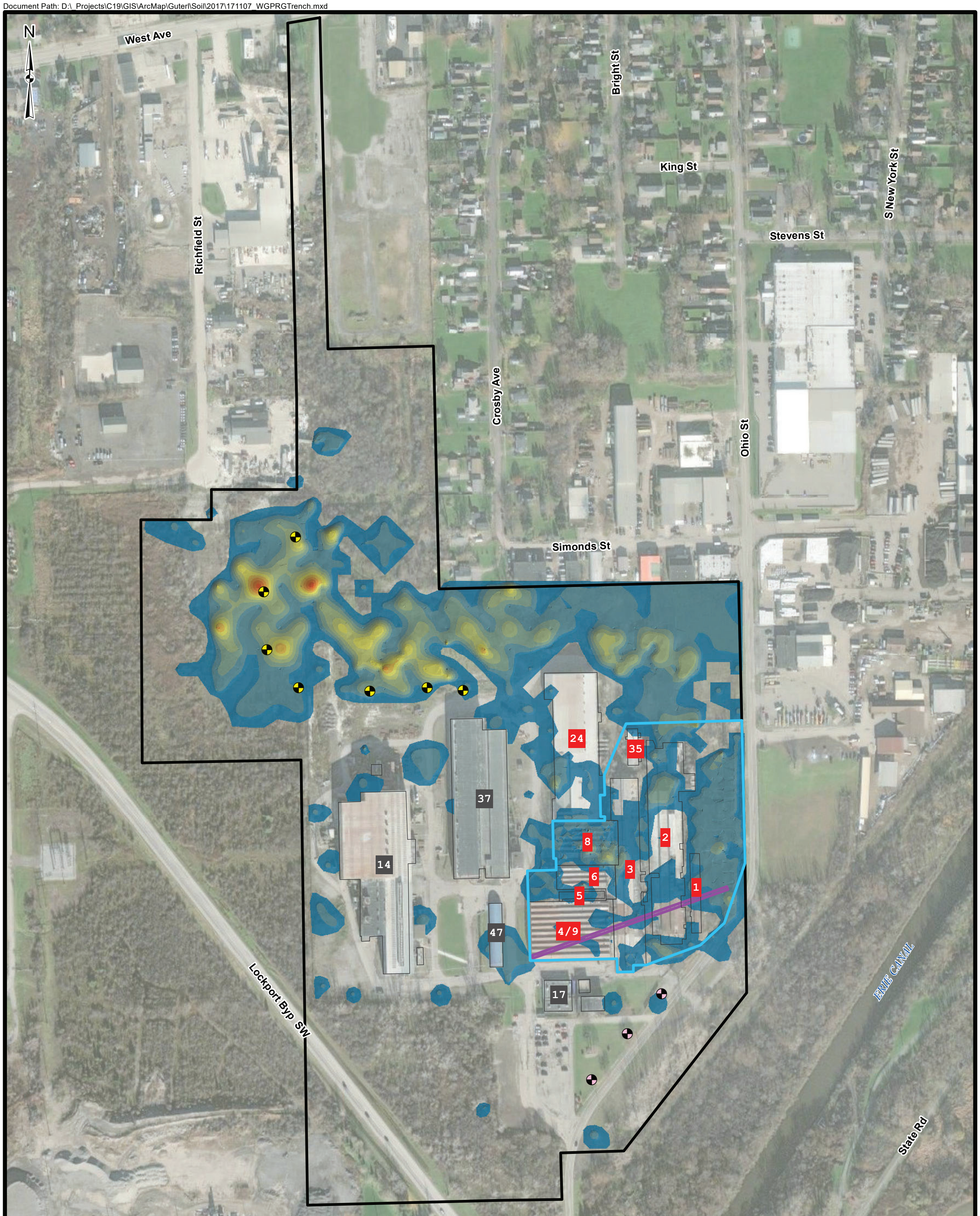

Legend

Depth of Contaminated Soils (ft bgs)

- < 1
- 1 - 2
- 2 - 3
- 3 - 4
- 4 - 5
- 5 - 6
- 6 - 7
- 7 - 8
- 8 - 9
- 9 - 10
- > 10

- ATI Specialty Materials Boundary
- Guterl Excised Area Boundary
- 1 Buildings Identified for Complete Dismantlement
- Buildings Not Addressed
- Shallow Extraction Well
- Deep Extraction Well
- Rubblized Trench

Total Volume - 57,611.15 yd³

0 150 300 600 Feet

US Army Corps of Engineers® Buffalo District

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
BUFFALO, NY

SITE-WIDE ALTERNATIVE 3
DISMANTLEMENT AND OFF-SITE DISPOSAL OF BUILDINGS 1, 2, 3, 4/9, 5, 6, 8, 24, AND 35; COMPLETE SOIL REMOVAL TO THE SOIL RG-GW AND OFF-SITE DISPOSAL; GROUNDWATER RECOVERY USING EXTRACTION WELLS AND A RUBBLIZED TRENCH WITH EX SITU TREATMENT (CONCEPTUAL LOCATION), WITH ENVIRONMENTAL MONITORING

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GUTERL SPECIALTY STEEL CORPORATION
LOCKPORT, NEW YORK

FIGURE 7

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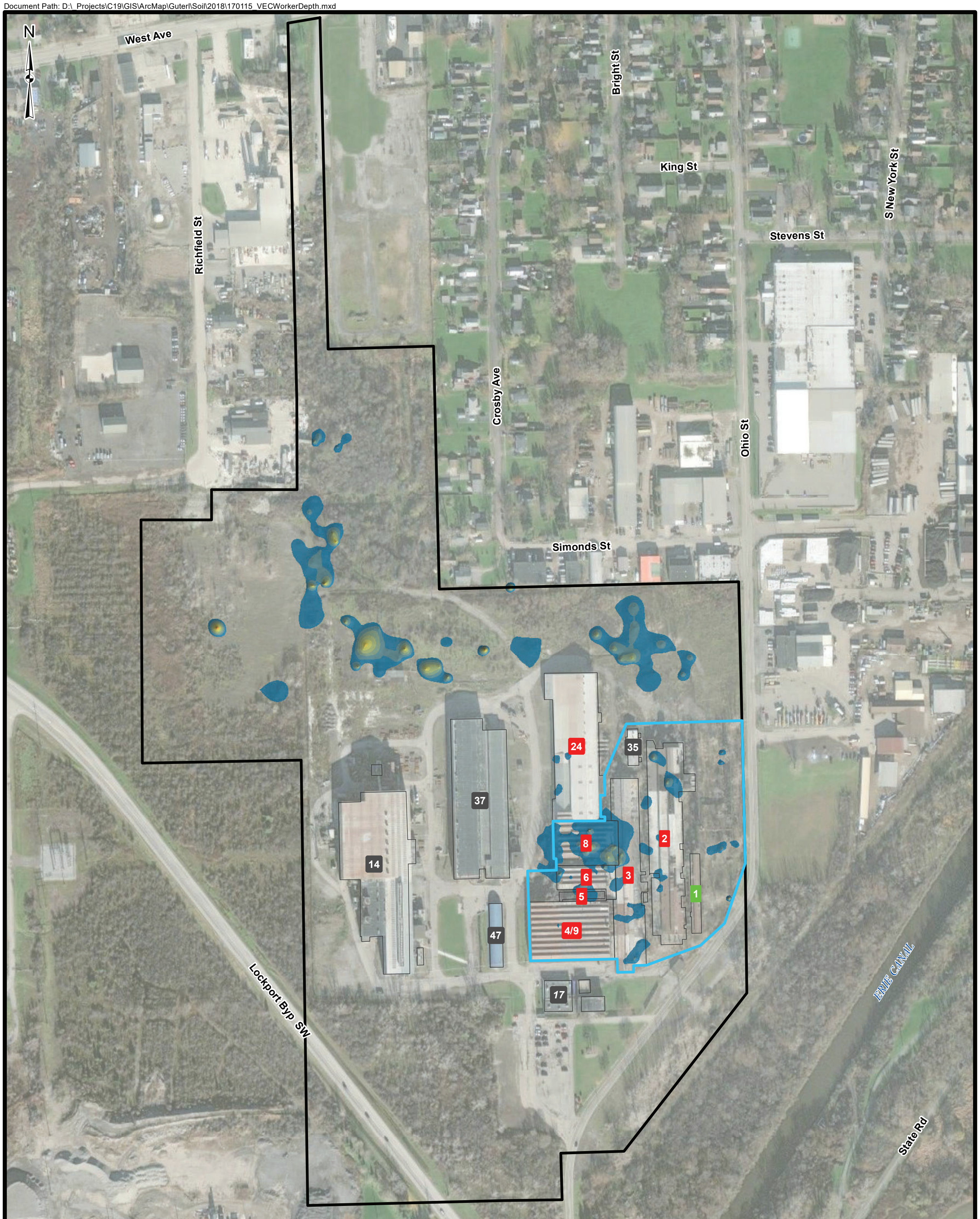

Legend

Depth of Contaminated Soils (ft bgs)

<= 1
1 - 2
2 - 3
3 - 4
4 - 5
5 - 6
6 - 7
7 - 8
8 - 9
> 9

ATI Specialty Materials Boundary

Guterl Excised Area Boundary

1 Buildings Identified for Decontamination

2 Buildings Identified for Complete Dismantlement

Buildings Not Addressed

Total Volume - 5,013.1 yd³

0 150 300 600 Feet

US Army Corps of Engineers Buffalo District

U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS BUFFALO, NY

SITE-WIDE ALTERNATIVE 4

DECONTAMINATION OF BUILDING 1; DISMANTLEMENT AND OFF-SITE DISPOSAL OF BUILDINGS 2, 3, 4/9, 5, 6, 8, AND 24; COMPLETE SOIL REMOVAL TO THE SOIL RG-CW AND OFF-SITE DISPOSAL; MONITORED NATURAL ATTENUATION WITH ENVIRONMENTAL MONITORING

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GUTERL SPECIALTY STEEL CORPORATION
LOCKPORT, NEW YORK

FIGURE 8