



Explanation of Significant Differences

Grasse River (aka Alcoa Aggregation) Superfund Site

Massena, St. Lawrence County, New York

EPA Region 2

September 2026

INTRODUCTION

The purpose of this Explanation of Significant Differences (ESD) is to document specific aspects of the performance and protectiveness to the remedy selected for the Grasse River (aka Alcoa Aggregation) Superfund Site made by the U.S. Environmental Protection Agency (EPA), located in Town and Village of Massena, St. Lawrence County, New York.

Under Section 117 (c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA or Superfund), as amended, the Environmental Protection Agency (EPA) is required to publish an ESD when, after selection of a remedy,¹ subsequent circumstances lead to significant, but not fundamental, changes in the selected Site remedy. Sections 300.435(c)(2)(i) and 300.825(a)(2) of the National Oil and Hazardous Substances Contingency Plan (NCP) set forth the criteria for issuing an ESD and requiring that an ESD be published if the remedy is modified in a way that differs significantly in either scope, performance, or cost from the remedy selected for the site resulting in change to a component of a remedy that does not fundamentally alter the overall cleanup approach. While not required pursuant to the NCP criteria, EPA is nevertheless issuing this ESD to memorialize relevant information associated with the performance and protectiveness, as well as the operation and maintenance of the remedy that is not captured in the 2013 ROD.

On April 4, 2013, EPA issued a ROD which documented the selected remedy for the Site. The remedy for the Site included the following major components:

- Dredging of near shore sediment between river transects T1 and T21 with sediment PCB concentrations greater than or equal to 1 milligram per kilogram (mg/kg) on a segment length weighted average (SLWA) or maximum surface concentration basis, followed by backfill to grade;

- Dredging of near shore sediment between T21 and T72 with maximum surface sediment PCB concentrations greater than or equal to 1 mg/kg, followed by backfill to grade;
- Placement of an armored cap over the main channel sediments between T1 and T21 where either the SLWA or the maximum surface sediment PCB concentration is greater than or equal to 1 mg/kg. During design, the composition and thickness of the capping material will be optimized to promote reliability and efficacy of the cap;
- Placement of a main channel cap over sediments between T21 and T72 with maximum surface sediment PCB concentrations greater than or equal to 1 mg/kg. During design, the composition and thickness of the capping material will be optimized to promote reliability and efficacy of the cap;
- Within the near shore area targeted for dredging, the goal is to remove all of the PCB contaminated sediments within these areas, leaving a residual of less than 1 mg/kg;

The following remedial action objectives were established in the ROD:

- Reduce the cancer risk and non-cancer health hazards for people eating fish from the Grasse River by reducing the concentrations of PCBs in fish.
- Reduce the risk of ecological receptors by reducing the concentration of PCBs in fish.
- Minimize the current and potential future bioavailability of the PCBs in sediments.
- Protect the ecosystem of the lower Grasse River.
- Minimize the long-term transport of PCBs from the lower Grasse River to the St. Lawrence River.

Pursuant to the ROD, the dredging and backfilling of the nearshore areas began in May 2019 and was completed in November 2019. The construction related activities for the nearshore areas are more fully described in the "In-

¹ A Superfund remedy is memorialized in a document called a record of decision or ROD.

River Construction Remedial Action Report,” dated March 2023.

On April 7, 2020, EPA issued an ESD to document the increase in the volume of contaminated sediment to be dredged from Snug Harbor, a small embayment on the north shore of the Grasse River located a short distance upstream of its confluence with the St. Lawrence River, which is impacted by PCBs, and the channel leading to the harbor from the St. Lawrence River. This area required a deeper navigation channel to accommodate a new larger tugboat with greater engine power ordered by the St. Lawrence Seaway Development Corporation to service the Seaway lock system.

The capping of the main channel began in 2020 and was completed in 2021, followed by the completion of habitat reconstruction in 2022. Different capping material was used in the main channel design, with placement of an armored cap between transects (T1 and T21) as called for in the 2013 ROD. The armored cap is a three-layer design consisting of 6-inches of chemical isolation layer (CIL), a 6-inch gravel filter layer (GFL), and a 13-inches layer consisting primarily of 3- to 10-inch-diameter stones with a small fraction of gravel-sized particles. The modified armored cap has a two-layer design consisting of a 6-inch CIL and a 12-inch-thick armor layer of gravelly material consisting of up to 50% sand and the remainder is gravel up to 3 inches in diameter. The sand cap is a two-layer design consisting of a 6-inch CIL layer and a 6-inch habitat layer. The construction-related activities for the main channel are more fully described in the “In-River Construction Remedial Action Report,” dated March 2023, and the habitat related activities are documented in the “Habitat Reconstruction Remedial Action Report,” dated June 2023.

In March 2022 during the seasonal ice breakup, an ice jam formed in the Lower Grasse River upstream of the Route 131 Bridge Transects² (T17 to T22). The ice jam resulted in damage to the sand cap installed along certain sections of the main channel. Additional damage to the cap occurred as a result of the remnants of Hurricane Debby in August 2024 and again during the seasonal ice breakup in March 2025. Details regarding the monitoring investigations and repair work that were performed following the three events consistent with the Operation, Monitoring & Maintenance Plan (OMMP)³ for the Site are provided in the Basis for the Document and Description of Significant Differences sections below.

Subsequent to the three aforementioned weather events, EPA conducted a remedy resilience assessment (RRA) to further evaluate potential or actual severe weather

events or environmental hazards that may affect the Site. The findings of the RRA are described in more detail in the Basis for the Document and Description of Significant Differences section below.

This ESD serves to document the cap repairs made in response to the March 2022 ice jam scour event, the August 2024 high-flow event, and the March 2025 ice jam scour event and explain how the OMM requirements will ensure continued protectiveness during severe weather events in the future.

SITE HISTORY, CONTAMINATION AND SELECTED REMEDY

The Grasse River site is located near the northern boundary of New York State in the Town and Village of Massena. The Site is not on the National Priorities List (NPL) but is being investigated and remediated as an enforcement-lead remedial action that follows the same investigation and remedy selection requirements as sites on the NPL. EPA issued an Administrative Order (Index II CERCLA – 90229) (Order) to Alcoa Inc. (Alcoa), Arconic’s predecessor in interest, in September 1989, calling for the investigation of the Alcoa Study Area to determine the nature and extent of hazardous substances contamination. The Alcoa Study Area included approximately 7.2 miles of the lower Grasse River from the intersection of the Massena Power Canal (Power Canal) and the Grasse River, to the confluence of the Grasse and St. Lawrence Rivers. This 7.2 mile stretch of the Grasse River is referred to as the Site. The Alcoa Study Area also included the approximately 1.3 miles of the lower Grasse River upstream of the confluence of the Grasse River and the Power Canal, Robinson Creek (which discharges to the St. Lawrence River), and the Unnamed Tributary (See Figure 1, Site Location Map).

The Alcoa Massena-West Plant (owned and operated by Arconic) is located on the north shore of the lower Grasse River, east of the Power Canal, and is bounded to the north by the St. Lawrence River. Two other large manufacturing facilities, the Alcoa Massena-East Plant (formerly a facility of Reynolds Metals Company) and the former General Motors Central Foundry Division plant (demolished as of 2012) are located within two miles east of the confluence of Grasse and St. Lawrence Rivers.⁴

The ancestral lands of the federally recognized Saint Regis Mohawk Tribe (SRMT), Mohawks, and Mohawks of Akwesasne, include land on both banks of the lower Grasse River and a tract of land along the confluence of the St. Lawrence River, as recognized by the 1796 Treaty with the Seven Nations of Canada, 7 Stat. 55, known as “Indian Meadows.” The lower Grasse River, as well as

² The Site was divided by transects (T) where each transect represented one-tenth of a mile. In most of the Site reports, the river is divided into 72 transects (T1 through T72).

³ The purpose of the operation, monitoring, and maintenance plan activities is to provide data to assess whether the RAOs

set forth in the ROD and the ESD are being met and to verify the integrity of the caps.

⁴ These two facilities are associated with the Reynolds Metals Co. and General Motors-Central Foundry Division Superfund Sites, respectively, and both include sediment in the St. Lawrence River. EPA is overseeing cleanups under CERCLA at both sites.

associated land identified by the SRMT as the Indian Meadows, are of cultural importance to the Mohawks, Mohawks of Akwesasne, and the SRMT. Fishing, hunting, harvesting and spiritual ceremonies are among the activities that have been historically and are now conducted by the Mohawks of Akwesasne in the lower Grasse River.

Sediment at the Site is contaminated with PCBs from past disposal practices at the Alcoa Massena-West plant. The sediment PCB concentration profile in the main channel generally increases with depth; i.e., highest PCB concentrations are at the deepest layers of sediment (which overlay bedrock). Alcoa stopped using PCBs in the 1970s, so the sediment deposited since then is much cleaner than that deposited earlier.

As a result of these past disposal practices, the NYSDEC determined that environmental conditions arising from hazardous waste disposal at the facility gave rise to significant threats to human health and the environment. Under a 1985 NYSDEC order, Alcoa undertook land-based cleanup actions from 1991 to 2001, which included the elimination or mitigation of sources of contamination to the Grasse River. Concurrent with the land-based cleanup, Alcoa made several improvements in relation to its State Pollution Discharge Elimination System permit. Upland-based efforts included: remediation of 18 separate disposal areas, including 37 acres of landfill areas and 100 acres of lagoons; construction of Alcoa's on-site Secure Landfill to dispose of excavated material; remediation of the Unnamed Tributary; and cleaning of underground utilities that are part of a stormwater/wastewater collection system. Through these efforts, Alcoa (now Arconic) significantly reduced discharges and controlled the upland sources of PCBs to the Site.

Alcoa's early investigation of the Site under the terms of a 1989 EPA administrative Order identified significantly elevated PCB concentrations in an area of Grasse River sediment located adjacent to wastewater Outfall 001. As a result, EPA amended that Order in May 1995 to require Alcoa to conduct a Non-Time-Critical Removal Action to address the PCB-contaminated sediment within a one-acre area around the outfall. Approximately 3,000 cy of sediment, boulders, and debris were removed, dewatered, and disposed of in Alcoa's permitted, double-lined, on-site Secure Landfill.

Following extensive consultation with SRMT and coordination with the State of New York, EPA issued a ROD on April 4, 2013 to address cancer risk and noncancer health hazards associated with human ingestion of fish containing PCBs, as well as ecological risks, including those associated with ingestion of fish by birds and mammals. The estimated cost of the cleanup in the ROD was \$243 million. On April 7, 2020, EPA issued

an ESD to document the increase in the volume of contaminated sediment to be dredged from Snug Harbor from T69 to the confluence with the St. Lawrence. The estimated cost of the cleanup in the ESD was \$22.5 million.

BASIS FOR THE DOCUMENT AND DESCRIPTION OF SIGNIFICANT DIFFERENCES

In accordance with the OMM Plan, event-based cap monitoring and water sampling is triggered by the occurrence of severe ice jams or high flow events. The dominant erosive force in the upstream reach of the river is caused by velocities and associated turbulence under the toe of a severe ice jam or a high flow event. Sampling and supplemental bathymetric surveys is triggered by a water level of 160 feet United States lake Survey⁵ (USLS 1935) or greater at Outfall 001 during an event, which is approximately 5 feet above the mean water surface elevation and consistent with the results of the tree scar survey conducted after the 2003 ice jam. Another trigger for event-based monitoring is the daily average flows recorded at the United States Geological Survey (USGS) Grasse River gaging station (station number 04265432) at Chase Mills indicating an exceedance of the 10-year return-interval flow rate (i.e., corresponding flow of 10,000 cfs). If that monitoring does not indicate any statistical difference from routine monitoring, subsequent event-based water monitoring is triggered by an exceedance of 15,000 cfs (approximately the 100-year flow event).

After the completion of the cap construction in 2021 pursuant to the selected remedy, the March 2022 ice jam scour event, the August 2024 high-flow event, and the March 2025 ice jam scour event caused damage to the cap. Approximately 27 acres out of 258 acres (i.e., 10.5%) of the Site's cap was damaged during these three events due to scouring and downstream deposition of sediment and eroded cap material. The portions of the modified armored cap and sand cap that eroded were not designed to withstand scouring from severe high flow velocities. The armored cap placed upstream of the Route 131 Bridge in T1-T19, was designed to withstand forces from severe ice jams and performed well under the increased force and was not scoured. Because of the March 2022 ice jam event, the downstream extent of the main channel that is susceptible to erosion when severe ice jams and high flows occur was changed from T19 to T22.5, approximately 0.3 mile further downstream. As such, a total of 11 acres of capped area, between T19 to T22.55, that previously had a modified armored or sand cap has been repaired with an armored cap. The result is a total of 58.5 acres in the main channel between T1 and T22.55 have an armored cap.

The March 2022 ice jam resulted in a water level elevation greater than 160 feet USLS 1935 at Outfall 001, which triggered event-based cap monitoring in accordance with

⁵ United States Lake Survey 1935 Datum. The reference system used to measure the height of the Great lakes and nearby rivers.

the OMM Plan. In summary, the investigations indicated that approximately 8.8 acres of the cap area (3.4% of the total cap footprint) were directly affected by the ice jam (i.e., experienced at least 6 inches of erosion or deposition over a contiguous area greater than 2,500 square feet). Within cap certification units (CCUs)⁶ comprising CCU-09, CCU-10 and CCU-32, erosion of at least 6 inches was revealed across 3.8 acres and deposition of at least 6 inches was revealed across 2.6 acres. Within CCU-11, CCU-12 and CCU-13, 2.4 acres were impacted with at least 6 inches of deposition. As a response to the cap investigation results, an armor layer was placed from T19 to T22.55 that was originally covered by a modified armored layer or sand habitat layer. In locations downstream of T22.55, gravel filter layer (GFL) or slope grading fill (SGF) material was selected to replace the sand habitat layer. GFL is a sandy gravel material with 25% sand and gravel up to 3 inches in diameter. GFL is more resistant to future erosion due to its broad range of particle size in comparison to SGF. SGF is a gravelly sandy material with 10% to 40% gravel up to 3 inches in diameter. SGF is less resistant to future erosion than GFL but more resistant than a sand cap layer. Locations where GFL and SGF material were placed downstream of T22.55 were selected by EPA based on PCB concentration, location in the river, and if the area is prone to erosion in consultation with NYSDEC and the SRMT.

In August 2024, the remnants of Hurricane Debby triggered a significant precipitation event in northern New York, which resulted in a high-flow event on the Grasse River. The USGS gauge at Chase Mills reported a peak instantaneous flow of 19,200 cfs on August 11, 2024, which exceeded the estimated flow for a 1-in-500 year flood event (17,070 cfs) and was the highest flow ever recorded at the Chase Mills gauge. The daily average flow on August 11th was 15,752 cfs and the cap design accounted for maximum flow velocities for a storm flow of 15,600 cfs (similar in magnitude to a 100-year flood event). During the August 2024 high-flow event, the stage height recorded at the Outfall 001 gauge at 5-minute intervals peaked at 8.31 feet on August 11th. In accordance with the OMM Plan, event-based cap monitoring was triggered by this event. In summary, the investigations indicated that 9.6 acres of the cap area (4%) were directly affected by the high flow event. The survey data indicated 7.4 acres of the cap had at least 6 inches of erosion (in CCU-10 through CCU-13, CCU-15 through CCU-17, CCU-26, and CCU-27), as well as 2.2 acres of the cap had at least 6 inches of deposition in CCU-10 through CCU-17, CCU-22, CCU-23, and CCU-26 through CCU-29. As a response to the cap investigation, GFL and SGF material was selected for repair based on PCB concentration, location in the river, and if the area is prone to erosion. The material type used

was selected by the EPA in consultation with NYSDEC and the SRMT.

In March 2025, during the seasonal ice breakup, an ice jam formed upstream of the Route 131 Bridge (T16 to T22.5). The water level elevation at the Outfall 001 gauge peaked at 11.5 feet on March 18th. In accordance with the OMM Plan, event-based cap monitoring was triggered by this event. In summary, the investigation indicated that 4.6 acres of cap area (less than 2%) were directly affected by the ice-jam event. The survey data indicated 4.5 acres of the cap had at least 6 inches of erosion but not into the native sediment (in CCU-26 and CCU-27), as well as 0.1 acres of the cap had at least 6 inches of deposition in CCU-16, CCU-17, and CCU-28. As a response to the cap investigation, GFL and SGF material was selected for repair based on PCB concentration, location in the river, and if the area is prone to erosion. The material type used was selected by the EPA in consultation with NYSDEC and the SRMT. The table below compares the percentage of cap types both pre and post repairs.

Substrate Type	Percent Total Cap Area	
	Original Cap (2021)	Post-Cap Repairs (2025)
Armored Cap	18%	23%
Modified Armored Cap/GFL	4%	4%
Sand Cap with Sand Habitat Layer	43%	36%
Sand Cap with SGF Surface Layer	35%	37%
Total	100%	100%

Less than 1 acre (or less than 0.4%) of the river bottom experienced erosion into native sediments beneath the cap. Downstream of T22.55, there were isolated areas of erosion of the sand cap, where in most cases, cap material remained in place at a reduced thickness. Downstream of T22.55, isolated areas of deposition generally occurred downstream of erosion areas and the deposited material consisted primarily of cap material. In areas of erosion downstream of T22.55, a more erosion resistant material was used to repair the sand cap, GFL or SGF. Construction of the cap repairs started in 2022, continued into 2024, and was completed in 2025. Based on information provided by Arconic, the cost to extend the armored cap from T19 to T22.55, including the cap repairs downstream of T22.55, is estimated at approximately \$26.1 million.

Based on daily precipitation and temperature projections, the RRA showed an increase in frequency of storm events through mid-century and a potential reduction in ice cover

⁶ The cap footprint was divided into 32 cap certification units (CCUs). CCU subareas were designated with a letter suffix for cap areas within a CCU that were not contiguous or for each change in cap type where

there were multiple contiguous cap types within a CCU. The completion of capping was verified for each cap layer in a CCU in accordance with the CQAP before the next cap layer was placed.

duration and thickness as temperatures are projected to warm, which could demonstrate that severe ice jams will occur less often while localized ice jams may become more frequent. These findings are consistent with erosional events anticipated in the Site's OMM Plan, which includes event-based cap monitoring, investigation, and subsequent repair work. Additionally, the RRA provides support for the repair work performed after the three events discussed above using more resilient materials. The OMM Plan will be followed for future actions, as the RRA supports the response actions and repair approach.

SUPPORT AGENCY COMMENTS

NYSDEC and SRMT support this ESD as documentation of the remedy cap repairs that were performed due to high-flow and ice jam events. The remedy was not significantly modified or fundamentally altered from the remedy selected in the 2013 ROD.

FIVE-YEAR REVIEWS

Because hazardous substances, pollutants or contaminants remain at the Site which do not allow for unlimited use or unrestricted exposure, in accordance with 40 CFR 300.430 (f)(4)(ii), the remedial action for the Site shall be reviewed no less often than every five years. The second five-year review for this Site is scheduled to be completed by April 2027.

AFFIRMATION OF STATUTORY DETERMINATIONS

The remedy selected in the 2013 ROD remains fundamentally unaltered, and the statutory determinations made in the ROD still apply. The changes to the remedial action include modifications to the type of cap placed on 21 acres from T19 to T22.55 and 1.76 acres between T25 and T33.

The remedy will continue to be protective of human health and the environment, and it will comply with federal and state requirements that are legally applicable or relevant and appropriate to the remedial action. The remedy remains technically feasible, cost-effective and satisfies the statutory requirements of CERCLA, with the exception of the CERCLA preference for treatment as a principal element and, therefore, permanently and significantly reduces the toxicity, mobility and volume of hazardous substances. As noted in the 2013 ROD for the Site, EPA does not believe that treatment of the sediments is practicable or cost effective given the widespread nature of the sediment contamination and the high volume of sediment that is being addressed.

PUBLIC PARTICIPATION ACTIVITIES

Pursuant to NCP §300.825(a)(2), this ESD will become part of the Administrative Record file for the Site. The Administrative Record for the remedial decisions related

to the Site is available for public review at the following locations:

Massena Public Library
41 Glenn Street
Massena, NY 13662
(315) 769-9914

Akwesasne Library
321 State Route 37
Akwesasne, NY 13655
(518) 358-2240

Saint Regis Mohawk Tribe – Environment Division
850 State Route 37
Akwesasne, NY 13655
By appointment: (518) 358-5937

The Administrative Record file and other relevant reports and documents are also available for public review at the EPA Region 2 office at the following location or the Site's Profile Page:

U.S. Environmental Protection Agency
290 Broadway, 18th Floor
New York, New York
By appointment: (212) 637-4308
<https://www.epa.gov/superfund/alcoa-aggregate>
Hours: Monday to Friday: 9:00 am – 5:00 pm

EPA, NYSDEC and SRMT are making this ESD available to the public to inform them of the change to be made to the remedy. Should there be any questions regarding this ESD, please contact:

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With the publication of this ESD, the public participation requirements set out in §300.435(c)(2)(i) of the NCP have been met.

AUTHORIZING SIGNATURE

Pat Evangelista
Digitally signed by Pat Evangelista
Date: 2026.09.30 17:36:05
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Pat Evangelista, Director
Superfund and Emergency Management Division
US Environmental Protection Agency

September 30, 2026

Date