



Superfund Program Update for the Grasse River Study Area Massena, New York

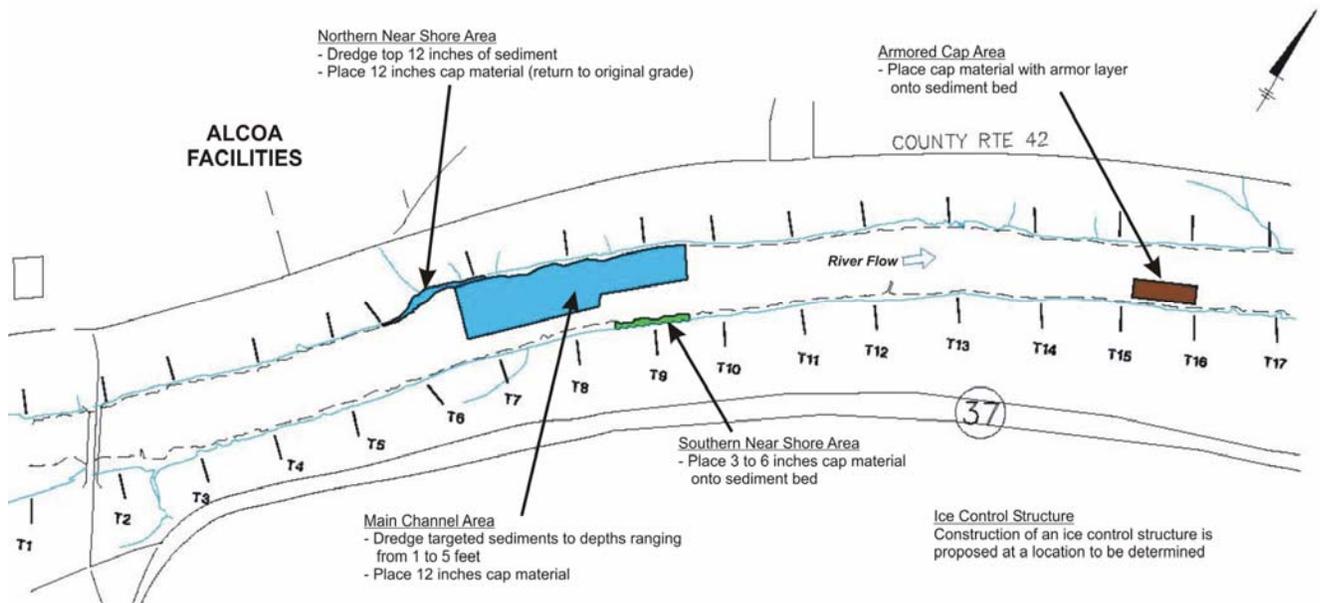
September 2006

Alcoa Completes Remedial Options Pilot Study – Evaluation Underway

Alcoa Inc., with oversight from the US Environmental Protection Agency (EPA), conducted a Remedial Options Pilot Study during the summer and fall of 2005 to further evaluate potential remedial options for a stretch of the lower Grasse River near its Massena West Plant in Massena, New York. Alcoa and EPA have been working together to develop a comprehensive clean up approach to address the sediments in this area of the river that are impacted by polychlorinated biphenyls, or PCBs, and the Remedial Options Pilot Study is part of this collaborative process. The multiple components of the study – removing sediment by dredging; covering areas of the river bed by capping; monitoring conditions in the river before, during, and after the work; and conducting longer-term post-construction monitoring in 2006 – were selected and developed to build upon previous work and address outstanding issues associated with the evaluation, selection, and effectiveness of a final remedy. Locations of the primary elements of the study are shown on the figure below. Alcoa has drafted a report describing the results of the work completed in 2005 and the lessons learned, and submitted the report to EPA in the late spring of 2006. This document is currently under review.

As a follow up to the field activities conducted in 2005, Alcoa will implement an additional pilot study in the river in fall 2006. This study involves the direct addition of activated carbon to sediments in order to bind up the PCBs and make them unavailable for uptake by fish in the river. Details regarding this study are provided in the insert update.

In addition to the in-river work completed in 2005, the project team is also evaluating a variety of options to manage potential impacts associated with severe ice jams, since an ice jam in the spring of 2003 increased water velocities and caused the scouring of sediments in some portions of the study area. The ice control evaluation is ongoing, and results will be used in the development of a final remedy for the site.



Remedial Options Pilot Study – Program Elements

Historical Overview

As part of an Administrative Order issued by EPA in 1989, Alcoa has conducted extensive investigations, and analyzed a range of remedial alternatives for an area called the Grasse River Study Area. Results of the studies indicated that remedial actions should be focused on a 7-mile stretch of the Grasse River between the Power Canal and the St. Lawrence River. This reach is often referred to as the lower Grasse River.

The primary contaminant of concern in the lower Grasse River is PCBs. The results of the most recent human health risk assessment – developed in 2001 – indicated that consumption of fish from the lower Grasse River is the primary driver of potential risks at this site. In the near term, this potential risk is being addressed by the New York State Department of Health’s fish consumption advisory, which recommends that people eat no fish taken from the lower Grasse River. In support of a long-term solution, Alcoa has been sampling Grasse River sediments, surface water, and biota since the early 1990s and began evaluating potential remedial alternatives by performing two in-river pilot studies. In 1995, Alcoa completed a Non-Time-Critical Removal Action (NTCRA), which resulted in the removal of sediments from a 1-acre area directly offshore of the main wastewater discharge outfall from the plant. Alcoa performed another pilot study in 2001 in a 7-acre area to evaluate the feasibility and effectiveness of various approaches to subaqueous (underwater) capping. Following the completion of these activities, Alcoa developed an Analysis of Alternatives Report for the site that was submitted to USEPA in June 2002.

Cleanup at the Massena West Plant

Alcoa has conducted extensive site remediation and wastewater treatment system upgrade work at the Massena West Plant under agreements with the NYSDEC. A major focus of these efforts, which took place over a 10-year period, was the control of PCB discharges to the Grasse River. Source control is a critical component of the overall strategy to reduce PCB levels in fish in the lower Grasse River.

Data collected in 2001 and 2002 indicated that the subaqueous cap was intact, there was no evidence of PCBs moving into or through the cap, and a variety of organisms were re-colonizing the capped area. However, monitoring of the river in the spring of 2003 revealed that the cap, and in some areas the underlying sediment, had been disturbed. A severe ice jam, which occurred in the lower Grasse River in the spring of 2003, increased water velocities and caused the scouring of sediments in some portions of the study area. The ice jam-related scour was not expected, and the pilot cap had not been designed to withstand the forces generated by the severe ice jam event.

Remedial Options Pilot Study – Overview & Results

The 2003 ice jam and EPA’s and Alcoa’s response to the event revealed that despite the extensive studies undertaken to date, there are still some factors that need to be more clearly understood to answer outstanding questions and develop a comprehensive, effective remedy for the site. To this end, EPA and Alcoa agreed to perform the Remedial Options Pilot Study during the 2005 construction season (May through November). The elements of the study are as follows:

- Dredging in the main channel of the river (including the side slopes) and in the northern near shore area;
- Placing various types of sediment caps (1-foot thick, thin layer, and armored) in different locations in the river;
- Monitoring conditions in the river before, during, and after dredging and capping activities; and
- Designing and constructing an ice control structure (not completed as part of the 2005 study activities).

Dredging

Dredging efforts in the main channel of the river were designed to remove buried PCB-containing sediments, assess the implementability of dredging, and evaluate the effectiveness of removal efforts. Dredging began in June 2005, and by mid-September 2005, far less sediment had been removed than originally anticipated. After dredging the top layer of sediment, a variety of issues complicated removal of the remaining materials. The river bottom was irregular and uneven, and dredge operators frequently encountered hard bottom, rocks, or debris – all of which resulted in equipment damage. These problems were compounded by the fact that as sediment removal becomes more difficult, typically more water is dredged with the sediments, and that excess water has to be separated. Significant time was lost to silt curtain maintenance due to weather and other factors. Finally, the results of daily water sampling



Hydraulic dredging in the main channel area

indicated periodic exceedances of action levels that necessitated operational and equipment modifications. Collectively, all these issues significantly reduced dredging productivity. Alcoa incorporated a variety of modifications to address these complications and maintain progress toward the project goals. Although these adjustments were beneficial, the lower productivity rates and other difficulties were limiting and as a result, only about 40% of the targeted sediments were removed from the main channel.

Sediment removal was also carried out in a northern near shore area, as there are unique considerations associated with removal in these shallow areas where water is typically less than 5 feet deep. No significant issues were encountered in the northern near shore area, and the targeted sediments were removed.

Capping

After dredging, the removal areas were covered, or capped, with a clean mixture of sand and topsoil to limit the potential for exposure to remaining PCB-impacted sediments. In the main channel and northern near shore area, approximately 1 foot of sand and topsoil was placed.

Caps were also placed in two areas that were not dredged. A thin layer cap, consisting of 3 to 6 inches of sand and topsoil was placed in the southern near shore area over top of the existing sediments. In addition, an armored cap was placed in an approximate 1-acre location downstream of the dredging areas. The armored cap, which was designed specifically to resist the faster water flows and scour associated with ice jams, consisted of a layer of sand and topsoil, a coarser filter layer, and then a layer of large stones. The various caps will be monitored to determine the effectiveness of the different approaches, and to assess if the armor stones provide additional permanence or protection from ice-related scour.



Monitoring

A variety of monitoring efforts were conducted to support the study. These included:

- Conducting profiling surveys to characterize the shape of the river bottom and the depth of sediments. These surveys were done before dredging to establish a baseline, during dredging to assess progress, and after dredging and capping activities to evaluate the effectiveness of the efforts. In general, the results during and after dredging indicated that in the main channel, significant amounts of targeted sediment remained, and the irregular nature of the river bottom with boulders and rock outcrops in some areas likely limited the effectiveness of the hydraulic dredge.
- Collecting more than 800 water samples for PCB and solids analysis. While there were no problems with concentrations of solids during the project, PCB action levels were exceeded on 8 days. When these exceedances were measured, additional samples were collected near the dredge area to better understand the situation, and changes in operations (such as slowing the dredging operations, altering removal methods, and limiting times of operations) were implemented to address the issue.
- Collecting more than 100 air samples for analysis of PCBs, particulate matter, and other compounds. There were no exceedances of the action levels for PCBs or other compounds. Some elevated levels of particulate matter were measured, but further assessment revealed the exceedances were not related to the project.
- Collecting 144 fish samples for PCB analysis. PCB levels in fish tissue were clearly higher than 2004 results for smallmouth bass, brown bullhead, and spottail shiner. Post-NTCRA fish monitoring conducted in 1995 also showed increased fish tissue PCB levels; a downward trend was observed within a couple of years. Future monitoring efforts will be necessary to put the ROPS results in perspective and address the question of whether these increases are temporary and if the previously observed downward trend in PCB concentrations will be re-established.
- Monitoring was also carried out to gauge impacts associated with odor, noise, and lighting impacts. No issues associated with the project were identified.



Longer-term monitoring efforts have been performed in 2006; the results of which are under evaluation.

Conclusions and Next Steps

The Remedial Options Pilot Study was successful in a variety of ways despite the numerous difficulties encountered. Significant information was developed regarding the uniqueness and complexity of the site conditions and how various technologies (including dredging and capping) respond to these conditions. Progress was made in the river, as a portion of the originally targeted PCB-containing sediments was removed from an ice scour prone area of the river.

Ice Control

Research on the most effective approach to ice control continues. Options currently under evaluation include the installation of an ice control structure just downstream of the Alcoa main plant outfall (Outfall 001) and integration of ice control into the proposed hydroelectric project under consideration by the Massena Electric Department. Alcoa is no longer considering the site near Louisville.

Also under evaluation the possible use of ice breaking equipment as an interim measure for ice management until a final solution is in place. If a decision is made to pursue interim ice breaking (possibly in the spring of 2007), additional information will be provided to the community.

river.

The information gathered and lessons learned as a result of this study and the 2006 activated carbon pilot study (see insert) will be used to revise the 2002 Analysis of Alternatives (AA) Report and develop a final remedy for the site. After the AA Report is approved, EPA will prepare a Proposed Plan that will identify the proposed remedy for the lower Grasse River. The public will have the opportunity

to comment on the Proposed Plan, and then EPA will formalize the selection of the remedy in a Record of Decision. After the Record of Decision is issued, the selected remedial approach will be implemented.

For More Information

If you are interested in more detailed information than what is included in this summary, please visit one of the information repositories established for the project.

Each repository contains site-related documents issued or approved by EPA.

Massena Public Library

41 Glenn Street
Massena, New York 13662
(315) 769-9914

USEPA

290 Broadway, 18th Floor
New York, New York 10007-1866
Call for an appointment: (212) 637-4217

St. Regis Mohawk Tribe Environmental Division

82 Indian Village Road
Akwesasne, New York 13655
Contact Ken Jock, Division Director
for an appointment: (518) 358-5937

If you have specific questions about the activities at the Grasse River Study Area or would like to be added to the project mailing list, please contact one of the project representatives listed below:

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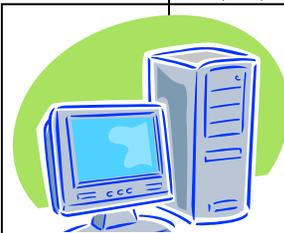
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For a comprehensive history of work at the Grasse River Study Area, visit the project website at:

www.thegrasseriver.com

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Alcoa and EPA produce the Superfund Program Update periodically to provide an overview of activities associated with the Grasse River Study Area, including key elements of the process and the next steps in the program. This update provides a description of each element of the Remedial Options Pilot Study, the work that took place during 2005, and describes the activated carbon pilot study that Alcoa is planning for fall 2006 (see insert). If you have questions or would like to provide comments on the activities described in this update, contact one of the project representatives listed above.