ADDENDUM TO SECOND FIVE-YEAR REVIEW REPORT
ALCOA (POINT COMFORT)/LAVACA BAY SUPERFUND SITE
POINT COMFORT, CALHOUN COUNTY, TEXAS

DECEMBER 2019

Prepared by

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CONCURRENCES

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ALCOA (POINT COMFORT)/LAVACA BAY SUPERFUND SITE
EPA ID#: TXD 008123168
POINT COMFORT, CALHOUN COUNTY, TEXAS

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Addendum to Second Five-Year Review Report
Alcoa (Point Comfort)/Lavaca Bay Superfund Site
December 2019

A Five-Year Review addendum is generally completed for remedies where the protectiveness determination is deferred until further information is obtained. When deferring protectiveness in the Five-Year Review report, EPA typically provides a timeframe for when the information will be obtained and a protectiveness statement can be made. This document provides progress since the Second Five-Year Review and protectiveness determinations for the remedies where the statement was deferred in the July 8, 2016, Second Five-Year Review.

The Second Five-Year Review report (Report) for the Alcoa (Point Comfort)/ Lavaca Bay Superfund Site in Point Comfort, Texas, was signed by the Region 6 Division Director on July 8, 2016. The protectiveness statement outlined in the Report was as follows for the sitewide operable unit (OU):

> *The remedy for the Alcoa (Point Comfort)/Lavaca Bay Superfund Site is protective of human health and the environment in the short term due to the fish closure order in place to control the consumption of finfish and shellfish from the "Closed Area" of Lavaca Bay.*
>
> *A long term protectiveness determination of the remedy cannot be made at this time until further information is obtained related to the exposure assumptions and understanding of potential sources of mercury used at the time of the ROD. Further information will be obtained by undertaking the recommendations identified in this Five-Year Review Report. It is expected that the recommendations will take approximately three years to implement.*

This addendum addresses the Protectiveness Statement for the sitewide OU.

Progress Since the Five-Year Review Completion Date

The following chart summarizes recommendations and follow-up actions to the issues identified in the July 8, 2016, Five-Year Review (FYR):

Issues and Recommendations Identified in the Second Five-Year Review:	
OU(s): Sitewide	**Issue Category: Remedy Performance**
	Issue: Total mercury levels in the Causeway marsh sediments are approaching levels in the Adjacent Open Area of Lavaca Bay; however, there has not been a corresponding reduction in the mercury levels in red drum and juvenile blue crab in the vicinity of these marshes. It is unknown whether there are site-specific conditions in the marshes where enhanced methylation and uptake into red drum and juvenile blue crab can occur even in the presence of low total mercury concentrations in the surface sediment.

	Recommendation: Conduct the following studies to evaluate site-specific marsh conditions where enhanced methylation and uptake can occur. • Focused sediment sampling in and near marshes • Expanded methylation study during the peak mercury methylation period			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
Yes	Yes	PRP	EPA/State	12/1/2016

OU(s): Sitewide	**Issue Category: Remedy Performance**			
	Issue: It is uncertain whether red drum may be accumulating a significant level of their mercury through an uptake pathway not being monitored. Additional mercury uptake pathways need to be considered in evaluating options to reduce elevated mercury levels in red drum.			
	Recommendation: The following studies should be conducted to evaluate whether additional uptake pathways cause mercury levels in red drum in the Closed Area to remain elevated. • Focused prey sampling in marshes • Methylmercury Sediment Sampling in Open Water			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
Yes	Yes	PRP	EPA/State	12/1/2016

OU(s): Sitewide	**Issue Category: Remedy Performance**			
	Issue: It is uncertain whether there are additional sources of mercury on sediments that are transported into areas where conditions are favorable for enhanced methylation and uptake into the food web.			
	Recommendation: Conduct a study to understand sediment and mercury transport from the Witco and Alcoa channels and Witco Cut to the area north of Dredge Island.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
Yes	Yes	PRP	EPA/State	12/1/2016

OU(s): Sitewide	Issue Category: Remedy Performance			
	Issue: Residual sources of mercury may exist in sediments and soils in the vicinity of Mainland Shoreline No. 3, the shallows adjacent to the Alcoa and Witco channels (including the Witco Harbor) and along the northwest edge of Dredge Island.			
	Recommendation: • Conduct a high-resolution water column sampling program in the vicinity of the Alcoa and Witco channel areas and Mainland Shoreline No. 3 to evaluate dissolved and particulate mercury levels.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
Yes	Yes	PRP	EPA/State	12/1/2016

OU(s): Sitewide	Issue Category: Remedy Performance			
	Issue: Concentrations of mercury in red drum from the Closed Area continue to be elevated when compared to the Adjacent Open Area.			
	Recommendation: Utilizing results of the above recommendations, update and refine the site conceptual model and incorporate the results of the studies into a remedial action plan, that once implemented, would reduce mercury levels in red drum.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
Yes	Yes	PRP	EPA/State	3/31/2017

Alcoa undertook the following work to address the FYR issues:

- A study to evaluate site-specific marsh conditions where enhanced methylation and uptake can occur:
  - Focused sediment sampling in and near marshes – the study provided additional information on potential areas in and near the marshes where juvenile blue crab have elevated mercury concentrations.
  - Expanded methylation study during the peak mercury methylation period - the study was designed to help understand why methylmercury levels may not be declining in areas where total mercury levels have achieved the cleanup goals and understand what specific site conditions are associated with high levels of methylmercury.
  - This study has been completed and was used to update the CSM and a remedial action plan.

- A study to evaluate whether additional uptake pathways cause mercury levels in red drum in the Closed Area to remain elevated.

- Focused prey sampling in marshes - the purpose of this study was to expand the understanding of potential sources of mercury to red drum by including prey items, which are significant components of the red drum diet but have not routinely been collected and may contribute to the uptake of mercury to red drum.
- Methylmercury Sediment Sampling in Open Water – information from the study was used to evaluate the potential for methylmercury uptake in the open water areas north and east of Dredge Island.
- This study has been completed and was used to update the CSM and a remedial action plan.

- A study to understand sediment and mercury transport from the Witco and Alcoa channels and Witco Cut to the area north of Dredge Island.
  - The information from this study helped determine whether mercury is mobilized via re-suspension of sediments and if this plays a role in slowing recovery in the Causeway marshes and the associated methylmercury levels in red drum and juvenile blue crab.
  - This study has been completed and was used to update the CSM and a remedial action plan.

- High-resolution water column sampling in the vicinity of the Alcoa and Witco channel areas and Mainland Shoreline No. 3 (MS3).
  - This study evaluated dissolved and particulate mercury levels. This data was used to identify potential residual sources of mercury.
  - Utilized results from the above study to further characterize mercury concentrations in near-shore sediments areas (e.g., Mainland Shoreline No. 3) and at-depth sediments (e.g., Alcoa and Witco channels).
  - This study has been completed and was used to update the CSM and a remedial action plan.

Alcoa used the results from the additional studies to update and refine the conceptual site model and incorporated the results of the studies into remedial action plans. The "*Witco Channel and Harbor Dredging and MS3 Excavation Response Action Plan*" (RAP) presented the approach to remove the ongoing sources of mercury to the Lavaca Bay system. In addition to the response actions stated in the RAP, Alcoa prepared the "*Causeway Cove Response Action Addendum.*" The addendum described an additional remedial action designed to reduce the Closed Area biota mercury levels. This remedial action included the excavation of marshes in the Causeway Cove and Witco Harbor.

Causeway Cove Response Action Addendum

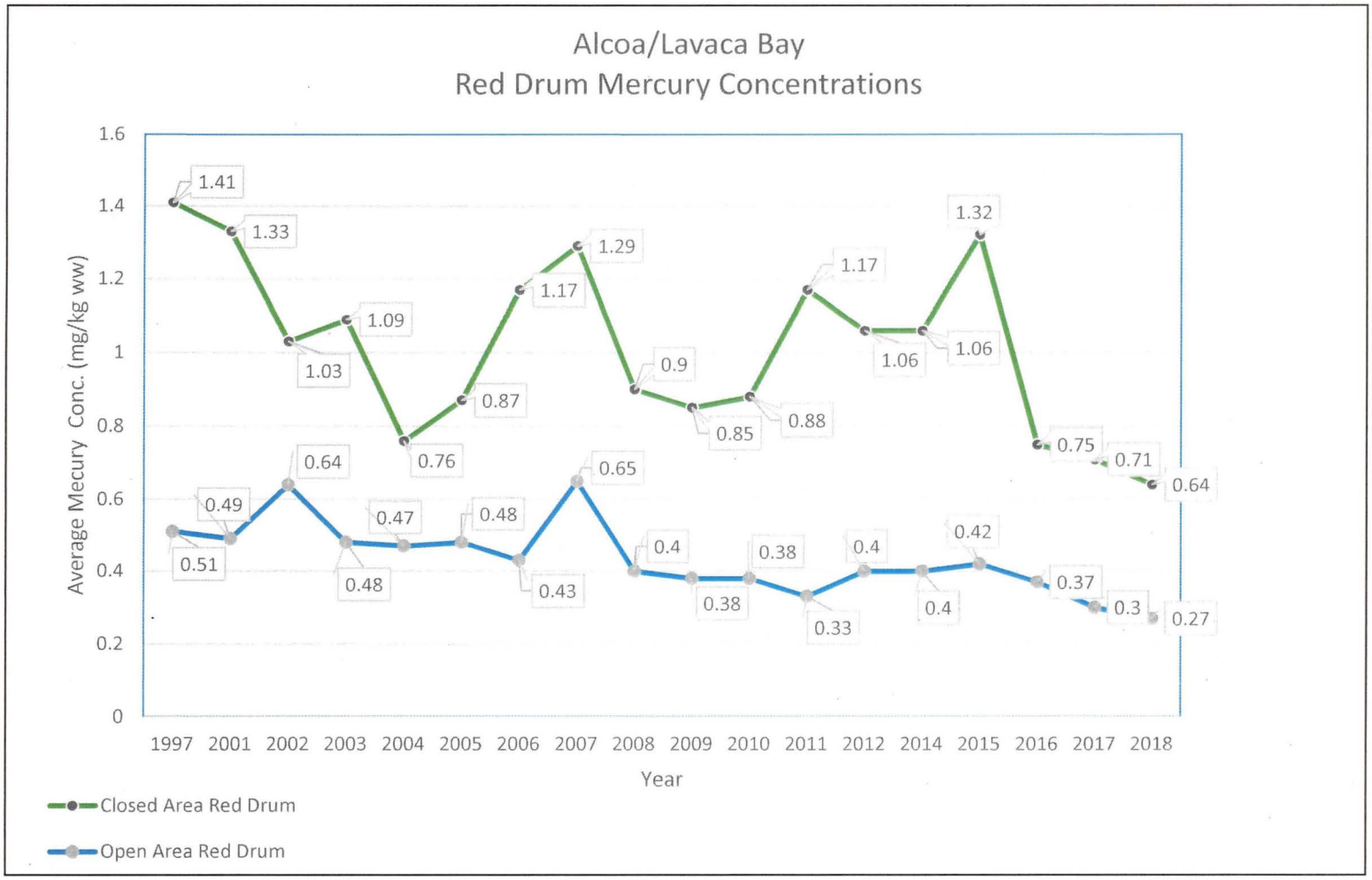
Starting on January 17, 2017, excavation of the emergent marsh vegetation and sediment from the upland edge of the vegetation to the bayside edge of the emergent vegetation occurred. All excavation activities were completed by February 1, 2017. The excavation activities resulted in the removal of 13,862 cubic yards (CY) of sediments and vegetation from 4.08 acres along the Causeway Cove and Witco shorelines. The final report for the project, titled *Causeway Cove Marsh Removal Report,* was submitted to EPA on May 26, 2017.

Witco Channel and Harbor Dredging and MS3 Excavation Response Action Plan

Excavation of MS3 upland areas and dredging at Witco began in June 2017. Excavation activities on MS3 resulted in the removal of 36,956 CY of soil that were placed in the Dredge

Island confined disposal facility (CDF). Bathymetric and topographic surveys for the entire removal project were conducted throughout the dredging project to confirm design elevations. The intermittent surveys were then combined into a final survey. The final survey was used to develop the total dredge volume of approximately 366,667 CY, all of which was pumped to the CDF on Dredge Island. The final report for the project, titled *Response Action Completion Report for the Witco Channel and Harbor Dredging and MS3 Excavation,* was submitted to EPA on December 28, 2017.

As required under the RD/RA Consent Decree, Alcoa conducts annual sampling and analysis of finfish and shellfish. Since completion of the two removal projects in 2017, Alcoa has conducted two finfish/shellfish sampling events. Sampling results since completion of the additional cleanup work are documented in the 2017 and 2018 Remedial Action Annual Effectiveness Reports (RAAERs). Results of the finfish sampling within the Closed Area are presented in the figure below.



The mean concentration of mercury measured in Closed Area red drum in 2018 (0.64 mg/kg) represents the lowest mean concentration measured in the fish/shellfish monitoring program. The 2018 data represent a continuation of the downward trend observed in average concentrations over the last three years in Closed Area red drum. The concentrations of mercury in Closed Area

red drum in 2018 remain statistically elevated relative to concentrations of Adjacent Open Area red drum. However, the additional cleanup actions conducted in 2017 have been effective in reducing mercury levels in red drum in the Closed Area.

The 2018 finfish sampling results suggest that mercury uptake in the Alcoa and Witco channels and Causeway Cove has decreased relative to the historical trends. These decreases can be attributed to dredging and marsh removal activities performed in 2017. Future monitoring will continue to be conducted under the RD/RA Consent Decree to confirm this trend, as the historical record indicates that interannual variability can be significant in data from specific stations.

Issues and Recommendations

No new issues or recommendations have been identified since completion of the July 8, 2016, FYR.

Protectiveness Statements

Based on new information and/or actions taken since the Second Five-Year Review completion date, the protectiveness statement(s) for the Sitewide OU is being revised as follows:

Sitewide Protectiveness Statement
Protectiveness Determination: *Protective*
Protectiveness Statement: The remedy for the Alcoa (Point Comfort)/Lavaca Bay Superfund Site is protective of human health and the environment in the short term due to the fish closure order in place to control the consumption of finfish and shellfish from the "Closed Area" of Lavaca Bay.

Next Five-Year Review

The next five-year review will be completed by July 8, 2021, five years after the signature of the last five-year review report.

Wren Stenger

Date 12/30/19

Wren Stenger
Director, Superfund and Emergency Management Division