

ATTACHMENT 1C.6.4

Upper Parker Brothers Arroyo Fines Pile, Ephemeral Pond,
and the Triangle Area
Parker Brothers Arroyo Assessment Area



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Upper Parker Brothers Arroyo Fines Pile, Ephemeral Pond, the Triangle Area, and Lower Parker Brothers Arroyo Outlet Parker Brothers Arroyo Assessment Area

Introduction

This Attachment is a status update of work completed through December 2016. Upon completion of each area in 2017, construction quality assurance reports (CQA reports) will be prepared and submitted to TCEQ with the 2017 Soil RACR.

The Parker Brothers Arroyo (PBA) (**Figure 1 Parker Brothers Arroyo Features included in this attachment**) is divided by the Union Pacific Railroad track into upper and lower reaches (i.e., Upper and Lower PBA). The Site features described in this attachment are part of the Upper PBA, and include the Fines Pile, Ephemeral Pond, Upper PBA Channel, Parcel 13, Area 12 and the “Triangle” Area. In addition, the Lower PBA Outlet (sometimes termed the “Paisano Outlet”) is presented in this attachment. As described in the Response Action Plan (RAP; Arcadis 2016e), Worksheet 1.0, page 1, the response actions for the Upper PBA are: 1) capping soil (i.e., constructing soil cover systems) and lining drainages (i.e., impermeable liner overlain with rip rap) where Category II materials are present within the Fines Pile and Ephemeral Pond; 2) grading and other drainage improvements to prevent infiltration of surface water; and 3) installing stormwater BMPs consisting of a gabion and lined, stabilized channels in upper portion of the PBA AA to control sediment entrainment in stormwater runoff.

The following documents detail the various response action activities:

- Letter to TCEQ dated July 31, 2014 regarding “Upper Parker Brothers Arroyo (Fines Pile/Ephemeral Pond/Triangle Areas) Improvement Plans Including Regrading, Cover and Drainage Elements and CLOMR Application” (**included in this attachment**)
- Letter to TCEQ dated October 22, 2015 regarding “Updated Submittal of the Upper Parker Brothers Arroyo (Fines Pile/Ephemeral Pond/Triangle Areas/Paisano Outlet) Improvement Plans Including Regrading, Cover and Drainage Elements” (**included in this attachment**)
- Letter to TCEQ dated April 6, 2016 regarding “Paisano Outlet and Railroad Channel Design Clarifications” (**included in this attachment**)
- Letter to TCEQ dated May 16, 2016 regarding “Upper Parker Brothers Channel and Fines Pile Design Clarifications” (**included in this attachment**)
- Report – Closure Report Parcel 13, dated March 2016 (**included in this attachment**)

In addition, the following sections of the RAP describe the Response Actions associated with the Upper PBA:

- RAP Worksheet 1.0, page 3 – Description of PBA AA
- RAP Worksheet 1.0, pages 5 and 6 – Response action objectives include: 1) constructing an evapotranspirative (ET) soil cover system for Category II materials located in the Fines Pile, thus preventing exposure to COCs in soil above their respective commercial/industrial direct contact (C/I $^{Tot}Soil_{Comb}$) protective concentration levels (PCLs), controlling potential migration of COCs in soil above their respective soil-to-groundwater-to-surface water PCLs ($^{SW-GW}Soil$) and C/I $^{Tot}Soil_{Comb}$ PCLs, and preventing COCs in surface soil from becoming entrained in stormwater runoff and conveying to surface water sediments ($^{Sed}Soil$ pathway); 2) constructing an impermeable liner overlain with riprap with appropriate grading and drainage for the Ephemeral Pond to prevent infiltration of surface water ($^{SW-GW}Soil$); 3) constructing lined, stabilized channels in the upper and lower PBA to control potential entrainment of soil in stormwater to sediment of the Rio Grande ($^{Sed}Soil$); and 4)

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installing, maintaining and monitoring gabion structures and stormwater BMPs to control discharge of COCs in soil to the sediment of the American Canal (^{Sed}Soil pathway).

- RAP Worksheet 1.0, pages 12 and 17 – Response actions and exposure pathways associated with the PBA AA
- RAP Worksheet 1.0, page 35 - Exposure pathways and PCL exceedance (PCLE) zones associated the PBA AA
- RAP Worksheet 2.0, pages 4 and 11 – Response actions again include: Soil removals at Area 12 and adjacent to the Fines Pile (part of Parcel 13), soil covers at the Fines Pile, liner and slope stabilization at the Upper PBA channel and Ephemeral Pond, and stormwater controls. In addition, liner and slope stabilization is a response action at the Lower PBA Channel and Outlet.
- RAP Figure 3, Parker Brothers Arroyo
- RAP Attachment 2A-8, Area 12 Confirmation Sampling, figure, monitoring well, boring, and surface water sample locations, data table
- RAP Attachment 2A-16, Upper Parker Brothers Arroyo Fines Pile Cover System and Drainage Improvements, dated October 6, 2015

In general, the objectives of the various activities were to:

- Regrade the Fines Pile to create the final shape of the area for capping in-place that conforms with TxDOT's Border Highway 375 design;
- Regrade the Ephemeral Pond and Upper PBA Channel area to enhance drainage of the area (and prevent COCs in surface soil from becoming entrained in stormwater runoff) and provide the foundation for channel lining and erosion protection components that conforms with the Border Highway 375 design;
- Regrade the area south of the west abutment of the I-10 slag bridge (Triangle Area) to enhance drainage of the area (and prevent COCs in surface soil from becoming entrained in stormwater runoff) and provide the foundation for channel lining and erosion protection components that conform with the Border Highway 375 design;
- Regrade the Lower PBA Outlet area to enhance drainage of the area and provide the foundation for channel lining and erosion protection components;
- Excavate select areas at Area 12 and adjacent to the Fines Pile with soils containing site COCs above their respective $C/I^{Tot}Soil_{Comb}$ PCLs to mitigate risk associated with direct contact exposure, and reduce potential migration of these COCs to groundwater and surface water; and
- Install stormwater BMP gabion feature in the Triangle Area to prevent COCs in surface soil from becoming entrained in stormwater runoff (2017 activity).

Regulatory Approval

- Letter from TCEQ dated August 21, 2014 regarding "Acknowledgement and Notice to Proceed, Upper Parker Brothers Arroyo (Fines Pile/Ephemeral Pond/Triangle Areas) Improvement Plans Including Regrading, Cover and Drainage Elements and CLOMR Application" **(included in this attachment)**
- Letter from TCEQ dated October 28, 2015 regarding "Acknowledgement and Notice to Proceed, Updated Submittal of the Upper Parker Brothers Arroyo (Fines Pile/Ephemeral Pond/Triangle Areas/Paisano Outlet) Improvement Plans Including Regrading, Cover and Drainage Elements" **(included in this attachment)**
- Letter from TCEQ regarding Approval of Final Report – Risk Reduction Standard No. 3, Closure Report for Parcel 13, dated March 28, 2016 **(included in this attachment)**

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- Letter from TCEQ dated June 1, 2016 regarding “Acknowledgement and Notice to Proceed, Upper Parker Brothers Channel and Fines Pile Design Clarifications” **(included in this attachment)**

Response Actions

TCT conducted response actions in the Upper PBA as described by area below and shown in **photologs included in this attachment.**

Fines Pile

- Regraded the Fines Pile, which included excavating and relocating the material elsewhere on the Fines Pile and track packing the material with dozers, water trucks, and loaded 40 ton (T) haul trucks.
- Added material to the Fines Pile, including Category II material excavated from around the eastern and southeastern perimeters of the Fines Pile and within Texas Department of Transportation (TxDOT) Parcel 13, east and south of the cemetery (see Closure Report, Parcel 13). In addition, placed slag from the adjacent Union Pacific Railroad (UPRR) property in the Fines Pile, demarcated with a light plastic orange grid, and compacted with a Caterpillar® (CAT) 825 sheepsfoot compactor. All material was placed in approximate 1-ft loose lifts.
- Prior to placement of a final cover, installed a lightweight geotextile fabric to act as a demarcation layer.
- The final ET soil cover included placing and compacting a minimum 1-ft thick layer of East Borrow Source (EBS) clayey soil to minimum compaction of 90 percent (ASTM D1557), achieving a maximum hydraulic conductivity of 5×10^{-5} centimeters per second (cm/sec), followed by a 1.5 foot thick layer of EBS sandy soil compacted to a minimum compaction of 90 percent (ASTM D1557), achieving a maximum hydraulic conductivity of 5×10^{-4} cm/sec, and lastly, followed by a 0.5 foot thick layer of desert armor at the surface, also with a max hydraulic conductivity of 5×10^{-4} cm/s **(Tables 1a and 1b of this attachment).**]
- TCT placed ET soil cover on the lower portions of the Fines Pile slope. In addition, a downchute constructed with Hydroturf CS® with 0.75 inches of hydrobinder, was installed on the south slope of the Fines Pile to divert surface runoff at the top of the Fines Pile to the Upper PBA Channel. The design changes are noted in a Letter to TCEQ dated May 16, 2016 regarding “Upper Parker Brothers Channel and Fines Pile Design Clarifications”.
- A CQA engineer on site on a full-time basis to monitor the fill quality and fill placement.
- Conducted laboratory testing per the Improvement Plans and Design Clarifications **(Table 2 of this attachment).**
- Surveyed control points **(Table 3 and Figure 1 As Built Upper PBA Plan, both included in this attachment).**

Parcel 13

- Category I and II materials were excavated from the northern portion of Parcel 13, of which a small portion is located on the north shoulder of the Upper PBA (located east and south of the cemetery and adjacent to the Fines Pile). Category I materials were placed in the Cell 4 Landfill, and Category II materials were taken to areas on the site (including the Fines Pile) as subgrade material for the construction of soil cover system.
- Results of confirmation soil sampling following the removal activities indicate that metals concentrations are below applicable $C/I^{Tot}Soil_{Comb}$ PCLs.

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Upper PBA Channel

- Placed and compacted a minimum 12-inch thick layer of 3-inch minus granular fill from the EBS in the channel area below the planned geomembrane system. A 10T smooth drum roller was used to compact the fill.
- Prior to installment of the geomembrane by American Environmental Group (AEG), CQA personnel and AEG observed the work area and verified that the top of the subgrade surface was smooth and uniform and free of irregularities, dimples, loose soil, or abrupt changes in grade. Subgrade acceptance forms were provided and signed by AEG and the CQA Engineer prior to installation.
- Installed a 60mil linear low-density polyethylene (LLDPE) microspike geomembrane. All seams between each panel were fusion welded and air tested. Extrusion weld testing was performed prior to any extrusion welds or repairs. After repairs were completed, vacuum testing was performed to verify their proper installation. All testing, welding, and placement was recorded by AEG and the CQA Engineer.
- Hydroturf CS® with 0.75 inches of hydrobinder was installed over the top of the geomembrane.
- Perimeter anchor trenches were grouted (see **Figure 2 As-Built Upper PBA included in this attachment**).

Ephemeral Pond

- Placed and compacted a minimum 12-inch thick layer of 3-inch minus granular fill from the EBS in the channel area below the planned liner system. A 10T smooth drum roller was used to compact the fill.
- Prior to installment of the geomembrane by American Environmental Group (AEG), CQA personnel and AEG observed the work area and verified that the top of the subgrade surface was smooth and uniform and free of irregularities, dimples, loose soil, or abrupt changes in grade. Subgrade acceptance forms were provided and signed by AEG and the CQA Engineer prior to installation.
- Installed a 60mil LLDPE microspike geomembrane. All seams between each panel were fusion welded and air tested. Extrusion weld testing was performed prior to any extrusion welds or repairs. After repairs were completed, vacuum testing was performed to verify their proper installation. All testing, welding, and placement was recorded by AEG and the CQA Engineer.
- Installed 12-ounce nonwoven geofabric and 16 inches of 8- to 12-inch size rip-rap over the geomembrane.
- Grouted the perimeter anchor trenches.
- Surveyed final surfaces.

Triangle Area

- Cleared and the grubbed area and compacted the subgrade to nonyielding as determined by the CQA Engineer.
- Prior to installation of the geomembrane by American Environmental Group (AEG), CQA personnel and AEG observed the work area and verified that the top of the subgrade surface was smooth and uniform and free of irregularities, dimples, loose soil, or abrupt changes in grade. Subgrade acceptance forms were provided and signed by AEG and the CQA Engineer prior to installation.
- Installed a 60mil LLDPE microspike geomembrane. All seams between each panel were fusion welded and air tested. Extrusion weld testing was performed prior to any extrusion welds or repairs. After repairs were completed, vacuum testing was performed to verify their proper installation. All testing, welding, and placement was recorded by AEG and the CQA Engineer.

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- A 12-ounce nonwoven geofabric and 16 inches of 8- to 12-inch size rip-rap were installed over the geomembrane.
- Surveyed final surfaces (**Figure 3 As-Built Triangle Area Plan included in this attachment**).

Area 12

- Soil removal activities were conducted by ASARCO in Area 12 in 2006 as part of the general response actions for the site.

Lower PBA Outlet

- Graded and compacted the subgrade to nonyielding as determined by the CQA Engineer.
- Placed and compacted EBS sandy fill for subsequent placement of LLDPE liner.
- Prior to installment of the geomembrane by American Environmental Group (AEG), CQA personnel and AEG observed the work area and verified that the top of the subgrade surface was relatively smooth and uniform and free of irregularities, dimples, loose soil, or abrupt changes in grade. Subgrade acceptance forms were provided and signed by AEG and the CQA Engineer prior to installation.
- Installed a 60mil LLDPE microspike geomembrane. All seams between each panel were fusion welded and air tested. Extrusion weld testing was performed prior to any extrusion welds or repairs. After repairs were completed, vacuum testing was performed to verify their proper installation. All testing, welding, and placement was recorded by AEG and the CQA Engineer.
- Installed Hydroturf CS® with 0.75 inches of hydrobinder over the geomembrane. The Hydroturf CS® was installed in-lieu of ACB and rip-rap as presented in a Letter to TCEQ dated April 6, 2016 regarding "Paisano Outlet and Railroad Channel Design Clarifications".
- Grouted the perimeter anchor trenches.
- Added 36-inch diameter HDPE pipe extension to the existing reinforced concrete pipe outlet that drains to the concrete box directly east of the BNSF railroad tracks.

Aspects of the response action which remain to be completed in 2017 include:

- Lining a drainage swale with asphalt concrete along the perimeter of the northwest side of the Fines Pile, adjacent to the cemetery;
- Continuing installation of 60mil LLDPE liner and Hydroturf CS® at the upper end of the Upper PBA Channel connecting to the TxDOT I-10 box culverts, gabions/concrete walls, and shotcrete slope;
- Placing asphalt concrete adjacent to the Ephemeral Pond liner and over the existing underlying natural gas pipeline; coordinating with TxDOT regarding the Border Highway 375 Improvements on UPRR property for a new drain from the Ephemeral Pond under UPRR's tracks and exiting to the Lower PBA channel;
- Implementing Railroad Channel tie-in; coordinating with TxDOT regarding the Border Highway 375 Improvements on UPRR property; TxDOT's contractor AKJV will be constructing a channel from the south drain on UPRR property to the existing Lower PBA channel. TCT will coordinate with AKJV on these improvements.
- Placing hydrobinder in Hydroturf CS® at Lower PBA Outlet; and
- Installing planned stormwater gabion feature in the Triangle Area (to be approximately 50 to 60 feet in length, 3 feet in width and 3 feet in height).

Supporting Documentation Included in this Attachment

- Figure 1 – Parker Brothers Arroyo
- Letter to TCEQ dated July 31, 2014 regarding “Upper Parker Brothers Arroyo (Fines Pile/Ephemeral Pond/Triangle Areas) Improvement Plans Including Regrading, Cover and Drainage Elements and CLOMR Application” (included in this attachment)
- Letter from TCEQ dated August 21, 2014 regarding “Acknowledgement and Notice to Proceed Upper Parker Brothers Arroyo (Fines Pile/Ephemeral Pond/Triangle Areas) Improvement Plans Including Regrading, Cover and Drainage Elements and CLOMER Application”
- Letter to TCEQ dated October 22, 2015 regarding Updated Submittal of the Upper Parker Brothers Arroyo (Fines Pile/Ephemeral Pond/Triangle Areas/Paisano Outlet) Improvement Plans Including Regrading, Cover and Drainage Elements, including:
 - Drawing C-2 Overall Site Plan
 - Drawing C-5 Triangle Plan and Profile
- Letter from TCEQ dated October 28, 2015 regarding “Acknowledgement and Notice To Proceed, Updated Submittal of the Upper Parker Brothers Arroyo (Fines Pile/Ephemeral Pond/Triangle Areas/Paisano Outlet) Improvement Plans Including Regrading, Cover and Drainage Elements”
- Letter to TCEQ dated April 6, 2016 regarding “Paisano Outlet and Railroad Channel Design Clarifications, including:
 - Sheet 1 of 4 “Lower Reach Outlet”
 - Sheet 2 of 4 “Lower Reach Outlet Details”
 - Sheet 3 of 4 “Civil Details”
 - Sheet 4 of 4 “Lower Reach Outlet”
- Letter to TCEQ dated May 16, 2016 regarding “Upper Parker Brothers Channel and Fines Pile Design Clarifications” including:
 - Sheet 1 of 3 “Upper Parker Brothers Arroyo and Fines Pile VE Exhibit”
 - Sheet 2 of 3 “Upper Reach Channel Details”
 - Sheet 3 of 3 “Fines Pile Perimeter Swale Details”
- Letter from TCEQ dated June 1, 2016 regarding Acknowledgement and Notice to Proceed, Upper Parker Brothers Channel and Fines Pile Design Clarifications
- Letter from TCEQ dated March 28, 2016 regarding Approval of Final Report – Risk Reduction Standard No. 3, Closure Report for Parcel 13, dated March 22, 2016
- Report – Closure Report Parcel 13, dated March 2016
- Tables 1a and 1b Field Density Testing Results for Fines Pile ET Cover
- Table 2 Laboratory Testing Results for Fines Pile ET Cover
- Table 3 Control Points for the Fines Pile ET Cover
- Figure 1 Fines Pile CQA Control Points
- Figure 2 As-Built Upper PBA Plan
- Figure 3 As-Built Triangle Area Plan
- Photologs
 - Fines Pile Cover and Channel Construction
 - Triangle Area Construction
 - Lower PBA Outlet Construction