

ATTACHMENT 1C.4.5b

Plant Site Final Cover
Plant Site Assessment Areas



ARCADIS

Plant Site Final Cover

Plant Site Assessment Areas

Introduction

One of the primary Response Action objectives is to construct an evapotranspirative (ET) soil cover system for Category II materials located in the Plant Site Assessment Areas (Plant Site AAs), as discussed in RAP Worksheet 1.0 (page 5) and shown on RAP Figure 10 (Arcadis 2016e). The ET soil cover system used at the Plant Site will be extended to prevent exposure to constituents of concern (COCs) in soil above the protective concentration level (PCL) for direct contact ($^{Tot}Soil_{comb}$) in commercial/industrial (C/I) soils, to control 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 to prevent COCs in surface soil from becoming entrained in stormwater runoff and conveyed to surface water sediments ($^{Sed}Soil$ pathway). In simpler terms, the goal of the cover system is to prevent direct contact of people and stormwater runoff with COCs in surface soil. The ET soil cover also provides control of stormwater infiltration, reducing groundwater hydraulic gradients that drive COCs into groundwater of the floodplain.

The ET soil cover is composed of 3 feet of soil from the East Borrow source area previously characterized for the cover of the Cell 4 Landfill. In addition, the ET cover design calculations use the same model as approved for the Cell 4 Landfill. The soil ET cover is designed to have a maximum infiltration rate of 0.19 cm/yr, providing sufficient protection against potential leachate that might impact groundwater beneath the Category II Storage Area. Design of the cover system includes drainage improvements to prevent ponding of stormwater on the cover.

On the western slope of the plant site, reported results for nine surface soil sample locations exceeded C/I $^{Tot}Soil_{comb}$ PCLs and reported results for an additional eight sample locations exceeded SW-GW Soil PCLs (RAP Appendix 2.1 (Arcadis 2016e)). TCT will apply slope stabilization materials to the western and northern slopes of the plant site during the 2017 field season.

Documents pertaining to design of covers to be used at the plant site include:

- Letter to TCEQ dated April 8, 2015 regarding Proposed Plant Site Evapotranspirative Soil, Asphalt and Flexible Membrane Covers; letter with enclosures: figures showing existing surface and proposed cover system and attachments:
 - Site Cover Modeling by Geosyntec (2015),
 - Cover System Soil Loss Calculation,
 - TAC/TASC Memorandum,
 - Equivalent Paving Section Calculations,
 - Closure Turf Product Information, and
 - XR3 Product Information
- Letter to TCEQ dated April 21, 2015 Regarding Plant Site Cover Improvement Plans and Specifications/CQA Requirements Submittal
- Letter to TCEQ dated July 23, 2015 Regarding Response to Comments – Plant Cover System
- RAP Attachment 2A-15 Letter to TCEQ dated April 8, 2015 Regarding Proposed Plant Site Evapotranspirative Soil, Asphalt and Flexible Membrane Covers
- RAP Appendix 2.1 West Plant Slope
- RAP Appendix 3.7 Geosyntec Site Cover Modeling Report dated April 2, 2015

Regulatory Approval

- Letter from TCEQ dated May 22, 2015 Regarding TCEQ Review and Approval of the following documents:
 - Proposed Plant Site Evapotranspirative Soil, Asphalt and Flexible Membrane Covers, dated April 8, 2015
 - Plant Site Cover Improvement Plans and Specifications/CQA Requirements Submittal, dated April 21, 2015
- Letter from TCEQ dated August 17, 2015 Regarding TCEQ Approval of Response to May 22, 2015 TCEQ Comment Letter, dated July 23, 2015, Proposed Plant Site Evapotranspirative Soil, Asphalt and Flexible Membrane Cover System

Response Action

TCT has completed the following activities through December 2016:

North Pad

- Installation of light weight fabric (Conweb) used as a demarcation between underlying Category II/Category III material and final cover.
- Placement and compaction of East Borrow Source clayey soil to a minimum thickness of 1 ft, minimum compaction of 90 percent (ASTM D1557) (Table 1), and maximum hydraulic conductivity of 5×10^{-5} cm/sec (Table 5).
- Placement and compaction of East Borrow Source sandy soil to a minimum thickness of 2 ft, minimum compaction of 90 percent (ASTM D1557) (Table 2), and maximum hydraulic conductivity of 5×10^{-4} cm/sec (Table 5).
- On perimeter slopes, installation of a 10 oz. nonwoven geofabric; placement and compaction of East Borrow Source clayey soil to minimum thickness of 1 ft, minimum compaction of 90 percent (ASTM D1557) (Table 1), and maximum hydraulic conductivity of 5×10^{-5} cm/sec (Table 5); and placement of 18- to 24-inch thick layer of armor stone (onsite excavated rock) for erosion protection.
- Construction of North Stormwater Detention Pond that consists of 60-mil LLDPE textured liner, 36-inch HDPE standpipe and 24-inch diameter HDPE pipe.
- Construction of drainage swales that are lined with 40-mil textured flexible membrane liner.
- Surveying of subgrade waste layer, clay layer, and ET cover (Table 7).

South Pad

- Installation of light weight fabric (Conweb) used as a demarcation between underlying Category II/Category III material and final cover.
- Placement and compaction of min. one foot thickness of East Borrow Source clayey soil to min. compaction of 90 percent (ASTM D1557) (Table 3), and max. hydraulic conductivity of 5×10^{-5} cm/sec (Table 6). Far north and south portions of South Pad remain to be completed as shown in Sheet C-8.
- Placement and compaction of min. two-foot thickness of East Borrow Source sandy soil to min. compaction of 90 percent (ASTM D1557) (Table 4), and max. hydraulic conductivity of 5×10^{-4} cm/sec (Table 6). Far north and south portions of South Pad remain to be completed as shown in Sheet C-8.
- On perimeter slopes, installed a 10 oz. nonwoven geofabric, placed and compacted min. one foot thickness of East Borrow Source clayey soil to min. compaction of 90 percent (ASTM D1557) (Table 3) and max. hydraulic conductivity of 5×10^{-5} cm/sec (Table 6), and lastly, placed 18 to 24 inch thickness of armor stone (onsite excavated rock) with a maximum hydraulic conductivity of 5×10^{-4} for erosion protection.
- One drainage swale remains to be completed.

Pump Stations SWPS-2 and SWPS-10

- New pump station SWPS-10 at Sabatka Valley was constructed in Nov. 2016 except for final power connection planned for Jan. 2017. An 8-inch diameter HDPE pipe was installed from this pump station that discharges to SWPS-4.
- At existing pump station SWPS-2, power was activated and this station is operational except for surface hardscape improvements around the perimeter have not been completed but are planned for 2017 completion.

Aspects of this Response Action which remain to be completed in 2017 include:

- Construction of the remaining cover at South Pad (Drawing C-8 Sheet 10 of 20), Boneyard (Sheet C-7), Boneyard Channel (south of, and adjacent to Boneyard), and Little Mesa (south of, and adjacent to Boneyard Channel)
- Construction of one drainage swale at South Pad (northern portion of South Pad) that connects and drains to Pond 1.
- Application of surface hardscape improvements adjacent to SWPS-2 (east of Cell 3 on Drawing C-7 Sheet 9 of 20)
- Completion of power hook-up to SWPS-10 (southwest corner of site shown on Drawing C-7 Sheet 9 of 20)

The combined Plant Site final Cover activities will be documented in the 2017 Soil RACR.

Supporting Documentation Included in this Attachment

- Letter from TCEQ dated May 22, 2015 Regarding TCEQ Review and Approval of the following documents:
 - Proposed Plant Site Evapotranspirative Soil, Asphalt and Flexible Membrane Covers, dated April 8, 2015
 - Plant Site Cover Improvement Plans and Specifications/CQA Requirements Submittal, dated April 21, 2015
- Letter from TCEQ dated August 17, 2015 Regarding TCEQ Approval of Response to May 22, 2015 TCEQ Comment Letter, dated July 23, 2015, Proposed Plant Site Evapotranspirative Soil, Asphalt and Flexible Membrane Cover System
- Tables 1 through 4 – North and South Pad Field Density Test Results
- Tables 5 and 6 – North and South Pad Final Cover Laboratory Test Results
- Table 7 North Pad ET Cover CQA Control Points
- Drawing C-7 Sheet 9 of 20, North Pad and Boneyard Final Grading Plan from Letter to TCEQ Regarding Plant Site Cover Improvement Plans and Specifications/CQA Requirements Submittal, dated April 21, 2015
- Drawing C-8 Sheet 10 of 20, South Pad Final Grading Plan from Letter to TCEQ Regarding Plant Site Cover Improvement Plans and Specifications/CQA Requirements Submittal, dated April 21, 2015
- Drawing C-18 Sheet 1 of 1, North Pad CQA Control Points
- Photolog