

**Changed Pages**

**Part III, Attachment III-F**

**Groundwater Monitoring Plan**

**Part III  
Attachment III-F**

**GROUNDWATER MONITORING PLAN**

**Pescadito Environmental Resource Center  
MSW No. 2374  
Webb County, Texas**

**PESCADITO**  
ENVIRONMENTAL RESOURCE CENTER

**Initial Submittal March 2015  
Revised September 2015  
Revised November 2015  
Technically Complete March 11, 2016  
Revised January 2016**

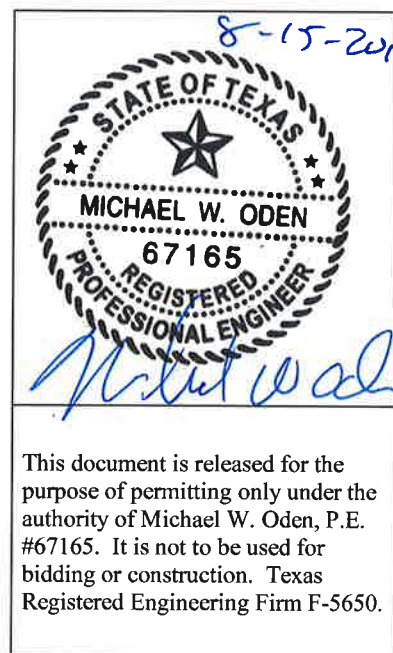
**Modified August 2017**

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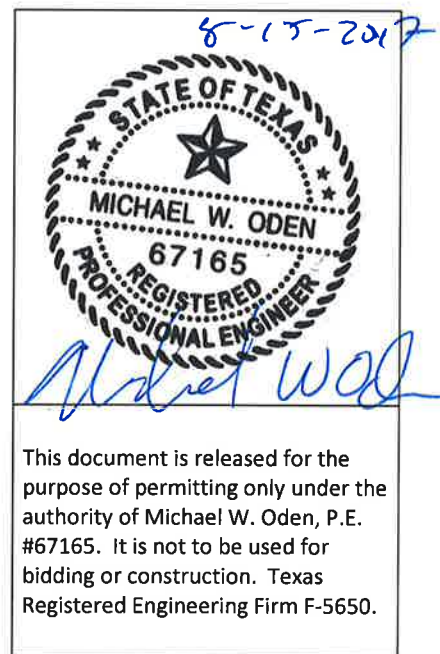


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Appendix III-F.1 – Figures

Appendix III-F.2 – Groundwater Sampling and Analysis Plan



Groundwater flow resulting from construction of the facility is not expected to change. Local lenses of groundwater may be removed and some flow may be re-routed around the facility; however the flow direction would still be from the north to the south, mimicking the ground surface.

Based on potentiometric surfaces prepared from data obtained from on-site piezometers installed in the near surface soils at the site (see Appendix III-E.2), the POC is located along a portion of the west, south and a portion of the eastern boundary as shown on the figures in Appendix III-F.1.

designed to detect a possible release from the landfill based on site specific conditions. As detailed above the “uppermost aquifer” for groundwater monitoring purposes is the contact zone at the base of R-P and extending down into the Y-J to a depth of 60 feet bgs. Groundwater flow rate is on the order of 1 to 2 feet per year to the south to southwest and is not affected by seasonal fluctuations based on data presented in Appendix III-E.2. The Y-J beneath the contact zone (Stratum III, III and IV) is predominately clay (95% clay per III-E.3) to great depths. Construction of the landfill may divert water around the facility but the overall direction will remain to the south to southwest. Therefore, no provisions are needed in the monitoring program to account for this.

If a release from the landfill were to occur, the highest probability is association with one of the leachate sumps. To ensure earliest possible detection of such a release, the groundwater monitoring system will consist of groundwater monitoring wells which will be installed to, or below, the deepest sump excavation elevation depth nearest the well. To determine monitor well depths, the excavation elevation of the nearest sump to the monitor well location will be used and will assume a 3-foot thick compacted soil liner. In general, the monitored interval will extend from the deepest sump excavation elevation depth nearest the well to within nine (9) feet of the surface for the landfill unit as shown on Drawing III-F.1-2. Two monitoring wells (MW-A and MW-B) will be installed to monitor the evaporation pond when it is constructed. The monitored interval for these wells will be 20-feet (i.e. 9 to 29 feet bgs) .

The Groundwater Monitoring Program for the Pescadito Environmental Resource Center (MSW 2374) has been prepared to meet the requirements of 30TAC330.403. The landfill compliance monitoring wells will be installed along the POC as shown on Figure III-F.1-1. Well spacing will be a maximum of 600-feet and will consist of a minimum of 14 wells. However, in the event that a transmissive sand zone containing perched water is encountered in the sidewall of the excavation within approximately fifty feet of the bottom of the excavation, the next well along the POC boundary will be relocated to that area, with depths determined as outlined above, and the 600-foot spacing will be re-started. That specific groundwater monitoring well will be screened across the transmissive sand zone using the installation detail previously provided. Monitoring well installation will be performed so that there is always a well along the POC a minimum of 600-feet downgradient from the most recent cell constructed.

Note that the POC well locations were selected based on the potential flow direction in the

“uppermost aquifer”, i.e., flow direction to the south and generally mimicking surface topography. However, the POC well locations are also effective for any shift in the flow direction in the deeper (> 60 feet bgs) unweathered Y-J to align with the regional geologic dip. As a consequence, the POC well locations are strategically placed to intercept any potential migration pathways for any release from the landfill.

A total of 3 groundwater monitoring wells will be placed along the northern and portion of the east and west boundaries on an approximately 1200-foot spacing to obtain background or upgradient groundwater quality for comparison to the compliance wells located at the POC.

As each phase of monitoring well installation is completed and prior to placement of waste within 600-feet of newly installed wells, the owner or operator will submit a certification in accordance with 30 TAC §330.401(e) that the facility is in compliance with the groundwater monitoring requirements of §§330.403, 330.405, 330.407, and 330.409.

### **3.1 Monitoring Well Design and Construction**

In accordance with the Monitor Well Construction Specifications found at 30TAC330.421, all monitoring wells will be installed by a licensed Texas driller in accordance with all applicable regulations. The wells will be drilled by a method that will not introduce contaminants into the borehole or casing. A licensed professional geoscientist or engineer who is familiar with the geology of the area will supervise the monitoring well installation and development and will prepare a log of the boring. Monitoring well construction details including proposed screen intervals, well locations and elevations, filter pack and bentonite seal elevations, and surface completion are shown on Figure III-F.1-2. Equivalent alternatives to the construction specifications in 330.421 may be used if prior written approval is obtained from the executive director.

If any fluid is required in the drilling of the monitoring wells, only clean, treated city water will be used and a chemical analysis provided to the executive director along with the installation report. No glue or solvents will be used in the construction of groundwater monitoring wells.

After installation, the monitoring wells will be developed to remove drilling artifacts and open any water-bearing zone for maximum flow. The wells will be developed until all water that was

**5.0 Groundwater Monitoring System Certification**

**330.403(e)**

General Site Information:

Pescadito Environmental Resource Center  
Webb County, Texas  
MSW Permit Application No.: 2374

**Qualified Groundwater Scientist Statement**

I, Michael W. Oden, am a registered professional engineer in the State of Texas and a qualified groundwater scientist as defined in 30 TAC §330.3. I have reviewed the groundwater monitoring system and supporting data contained in the permit documents. In my professional opinion, the groundwater monitoring system is in compliance with the groundwater monitoring requirements specified in 30 TAC §330.401 through §330.421. This system has been designed specifically for the Pescadito Environmental Resource Center (Permit Application No. MSW No. 2374). The only warranty made by me in connection with this document is that I have used that degree of care and skill ordinarily exercised under similar conditions by reputable members of my profession, practicing in the same or similar locality. No other warranty, expressed or implied, is made or intended.

Firm/Address: APTIM Environmental & Infrastructure, Inc.  
12005 Ford Road; Suite 600  
Dallas, Texas 75234  
TBPE Firm Registration F-5650

Signature: \_\_\_\_\_

*Michael W Oden*

Date: \_\_\_\_\_

*8-15-2017*

