November 22, 2025
File No. 04225055.00

Kevin Terrado
Project Specialist IV
Snohomish County Public Works
300 Rockefeller Ave
Everett, WA 98201

Email: Kevin.Terrado@co.snohomish.wa.us

Subject: **Landfill Condition Status and Data Gaps Memorandum**
McCollum Park (former Emander Landfill)

Dear Kevin:

The following memorandum provides a summary of findings related to a regulatory review, site inspection and data gap analysis performed by SCS Engineers for the Emander Landfill located at the northeast end of McCollum Park, Snohomish County. The landfill consists of an older WAC 173-301 municipal waste disposal site that is covered by a 1996 Agreed Order with the Washington Department of Ecology (Ecology) and is managed under the state's Model Toxics Control Act (MTCA) regulation.

The evaluation included a review of available environmental documentation for the property, a visual inspection of the landfill to assess current site conditions and infrastructure, and the identification of data gaps that require additional assessment to improve our understanding of the current environmental condition of the landfill. This memorandum also recommends preliminary options for addressing identified environmental data gaps, and is intended to provide the County with discussion points to support the development of a supplemental remedial work plan for the Emander Landfill Site.

BACKGROUND

McCollum Park is situated at 600 128th Street SE, approximately half a mile east of Interstate 5 on 128th Street SE in Snohomish County, Washington, within an unincorporated area near the Mill Creek city limits. The Emander Landfill occupies most of the northern half of the 78-acre park. The landfill extends up to, and possibly beneath, the 128th Street SE right-of-way to the north, to Dumas Road to the east, and is bordered by North Creek to the west and wooded parkland to the south. Site topography slopes shallowly from the northern portions of the landfill to the east, west and south. Previous investigations have considered the Emander Landfill site to include the northern half of the park, portions of the landfill that extend beneath public right-of-ways, areas hydrologically downgradient (south-southeast), and the southwest edge of a trailer park situated north of the landfill across 128th Street SE.

A Park and Ride facility is situated on the northern end of the landfill. A vacant County swimming pool center, locker-room building, and parking lot are located near the northwest edge of the landfill. A segment of Dumas Road crosses the eastern portion of the landfill and an inactive dirt bike (BMX) track is located on the southeast end of the landfill. In addition, two County Parks and Recreation buildings leased by Washington State University Extension Services and a building occupied by Northwest Stream Center (Adopt-a-Stream) are situated immediately southwest of the landfill.

Site History

The Emander Landfill occupies land that was acquired by the County in 1922. Gravel mining operations on the property reportedly commenced in 1929. The gravel pit was subsequently used by the County for refuse disposal between approximately 1947 and 1967. With landfilling operations substantially completed by 1967, a soil cover was installed over the refuse fill footprint. The property was subsequently turned over to the Snohomish County Parks and Recreation Department for development as McCollum County Park.

Little documentation is available regarding disposal operations at the landfill; however, preliminary assessments and a remedial investigation (RI) reported refuse typical of municipal solid waste landfills, including glass, plastic, paper, wood, metal, and concrete demolition debris. This refuse was mixed with soil in varying percentages throughout the landfill and was suspected to contain petroleum hydrocarbons in several areas. Anecdotal information by former refuse haulers reported that fuel storage tank bottoms, septic tank contents and ship bilge water were also disposed of at the landfill. Historical aerial photographs dating to 1941 show that 128th Street SE was established prior to landfill development, and that historic refuse placement extended up to, but not beyond, the existing roadway. Subsequent expansion of the 128th Street SE corridor is suspected to have extended the southern road shoulder over the northern edge of landfill.

The park was opened in 1996 and eventually included a public swimming pool facility on the northwest end of the property and a pair of County Parks buildings on the southwest end of the property. A BMX trackway was also constructed on the southeast end of the landfill during the mid-1990s. In addition, a transit Park and Ride facility was developed adjacent to the 128th Street SE corridor on the north portion of the landfill during the early 2000s.

Summary of Past Site Investigations & Corrective Actions

Historical investigations at the Emander Landfill began with landfill gas (LFG) vent and flare installations in the 1970s and 1980s. Between 1985 and January 1995, a series of site investigations confirmed refuse thicknesses ranging between 3 and 20 feet that are overlain by 1 to 6 feet of covering soil. Refuse thickness was noted to be greatest along the north-central portion of the landfill, with fill thickness decreasing significantly towards the landfill perimeter. Petroleum hydrocarbon contamination was identified in a few landfill areas, with a black, sludge-like liquid encountered along the south-central portion of the landfill. Analysis of landfill sludge revealed the presence of volatile and semi-volatile organic compounds (VOCs, SVOCs), metals, and total petroleum hydrocarbons (TPH).

As part of the County's Master Plan Implementation for McCollum Park, an Environmental Impact Statement (EIS) was issued in April 1993 to address environmental risks related to LFG and landfill contents. The EIS proposed mitigation measures including placing additional fill soil over the landfill, installing a partial synthetic cover, implementing an LFG management system, and establishing long-term groundwater monitoring. A Site Hazard Assessment was completed in 1995, resulting in the landfill's addition to the Washington State Hazardous Sites List. The County initially pursued a Remedial Investigation/Feasibility Study (RI/FS) independently, then entered negotiations for an Agreed Order in April 1995. Revised RI and FS reports were prepared by RZA AGRA, Inc. (RZA) later that year, with the County signing the final Agreed Order on October 25, 1995.

The RI established that the Emander Landfill is situated over a single aquifer (Advance Outwash and Esperance Sands) that extends to depths between 80 and 120 feet below ground surface (bgs). The aquifer in underlain by an aquitard (Lawton Clay). Geological cross-sections for the site suggest that

aquifer thickness increases towards the south. Local groundwater flows towards the south, with an increasing southwest vector along the southern end of the site. Groundwater sampling during the RI reported the presence of VOCs and metals, with samples from downgradient wells exceeding state groundwater quality standards and/or MTCA Method A groundwater cleanup levels for benzene, vinyl chloride, 1,2-dichloroethane, trichloroethene, arsenic, chromium, and lead. Two deep monitoring wells, MW-16 and MW-18, situated along the southwest perimeter of the landfill reported notably elevated vinyl chloride concentrations ranging between 14 and 45 µg/L. Offsite monitoring of six residential wells located southeast of McCullum Park did not report any groundwater impacts attributable to the landfill.

Surface water sampling of North Creek indicated exceedances of several water quality criteria, but none were determined to be attributed to the landfill. Air sampling detected several VOCs in soil gas samples, but concentrations were below state Acceptable Source Impact Levels (ASIL) for most compounds. However, higher levels of benzene, ethylbenzene, toluene, xylenes (BETX), TPH diesel, and hydrogen sulfide were associated with samples obtained directly over exposed sludge.

The RI also characterized the landfill sludge and associated hydrocarbon-contaminated refuse (HCR), and their potential impacts on groundwater, surface water and sediment. Borings and test pits detected BETX and chlorinated hydrocarbons in the sludge and HCR, with higher concentrations occurring in the sludge. TPH ranged from gasoline to heavy oil, with concentrations varying widely. Semi-volatile organic compounds (SVOCs), including polycyclic aromatic hydrocarbons (PAHs), and metals (arsenic, barium, copper, lead, and zinc) were also detected in the sludge. The RI estimated that the total volume of the sludge accrued to approximately 4,100 cubic yards, with a zone of HCR immediately surrounding this material.

Based on the findings of the RI/FS, RZA prepared a Cleanup Action Plan (CAP), with the following components completed by fall 1996:

- Approximately 4,100 cubic yards of sludge material and impacted HCR were stabilized in situ by adding and mixing Portland cement. TCLP testing confirmed the stabilized material was not leachable.
- The landfill surface was regraded and stormwater drainage systems constructed to direct surface water runoff away from the landfill.
- The landfill (except the area underlying the existing County swimming center and the southern edge of the SE 128th Street right-of-way) was covered with an engineered landfill cover system. Landfill cover design included a levelling course, 60-mil textured high-density polyethylene (HOPE) liner, a protection/drainage soil layer, and topsoil cover.
- Portions of the capped landfill were paved with roadways and parking areas. Unpaved portions of the landfill surface were revegetated to minimize erosion.
- An active LFG extraction system was installed with captured LFG being treated by flaring/thermal oxidation.
- An Environmental Monitoring Plan (EMP) was developed and implemented that initially included groundwater, LFG, surface water and sediment monitoring. Long-term monitoring was subsequently optimized to focus on groundwater and LFG.

Quarterly groundwater and LFG compliance monitoring at the Emander Landfill continues. Arsenic, iron, manganese, and vinyl chloride are routinely reported at concentrations in excess of their respective MTCA groundwater cleanup levels. These exceedances have most often been reported at downgradient wells BH-03, BH-05, BH-06, BH-07, MW-16, MW-17 and MW-18. LFG monitoring is performed in general conformance with Chapter 173-340 Washington Administrative Code (WAC), as

defined by the CAP. Similar to the majority of older solid waste landfills, the explosive components of LFG (methane) have declined significantly over the decades, with the flare station measurements typically ranging between 5 and 20 percent methane by volume during recent years. Perimeter probe monitoring has typically not reported detectable methane concentrations, indicating a low potential for offsite LFG migration.

It should be noted that Ecology considers the 1995 Agreed Order to remain in affect pending a final determination that all the conditions of the Order have been satisfied. In a 5-year review of the Emander Landfill site conducted in 2023, Ecology indicated that potential offsite groundwater and vapor intrusion risks from the landfill have not yet been fully characterized, and that the existing restrictive covenant needs to be expanded beyond its current prohibition of no beneficial use of onsite groundwater. Ecology has signaled that a new Agreed Order may need to be developed to see the site through full closure.

CURRENT SITE CONDITIONS

On September 16th, 2025, Karam Singh, PE and Daniel Venchiarutti, LHG of SCS Engineers visited the Emander Landfill to perform a visual inspection of the facility layout, landfill cover, groundwater (GW) and LFG monitoring infrastructure, and surrounding areas. In addition, SCS reviewed past landfill monitoring data, focusing on the past two years of LFG measurements and last four quarters of GW monitoring.

As previously noted, McCollum Park contains a Park and Ride lot and bus station on the north and northwest portions of the park; an inactive BMX biking track and building in the central portion of the park; an inactive pool building and outdoor swimming pool on the northwest portion of the park; a WSU Extension building, a WSU Education building, and an Adopt-A-Stream building on the southwest portion of the park; athletic fields; pathways; playgrounds; parking areas; and driveways. SCS's exterior inspection confirmed the presence of these features, and that the aboveground structures appeared to be in good condition. County staff confirmed that both the swimming pool facility and the BMX biking track have remained vacant and closed over a period of years.

The area surrounding the McCollum Park currently consists of predominantly vacant forested land to the west and south along North Creek, a golf driving range and single-family residences to the north (across 128th Street SE), and multi-family apartments to the east-southeast. The park remains an active recreation area serving southwest Snohomish County. Figure 1 displays the locations of the on-site features.

Landfill Cover

The landfill cover system, which is comprised of a one foot layer of leveling soil (over waste), a 60-millimeter textured HDPE liner, a 6-inch drainage layer, one foot of protective soil and a 6-inch topsoil layer, was installed over the entire accessible landfill footprint during the 1995/96 remedial action. Based on available drawings as well as anecdotal information, the cover system extended up to, but not beneath, the pre-existing swimming pool/locker-room building and the southern shoulder of the previously widened SE 128th Street right-of-way.

SCS observed that the landfill cover appeared to be in generally good condition, with relatively shallow grades over the top deck grassy area. The grass area generally sloped towards perimeter channels (e.g., side slope areas). The vegetative cover appeared to be well maintained, with no obvious visual evidence of pronounced disturbance or indications of erosion or stressed vegetation.

However, due to the relative shallow slopes, and some localized settlement, shallow depressions were evident in the top deck landfill.

As stated above, HDPE liner does not extend beneath on-site structures and road sections. However, these hard structures and roadways act as impervious surfaces to limit stormwater percolation into the waste mass. These buildings and road sections appeared to be well maintained. As previously noted, County staff reported that the on-site swimming pool and adjoining locker room building, as well as the BMX track structure, are permanently closed and vacant.

Landfill Gas Management and Generation

The Emander Landfill's LFG management system is comprised of two distinct piping networks. A perimeter system includes a series of gas collection wells situated along the south side of 128th Street SE and the area surrounding the existing pool facility. A second LFG collection system consisting of a network of gas collection trenches and wells provides coverage along the interior portions of the landfill. Both systems connect to a manifold vault located beneath the existing Park and Ride facility. Collected LFG is directed to a flare station, equipped with a pair of blowers, situated within a fenced compound located across Dumas Road on the southeast flank of the property. The system has reportedly been operated by the County in a semi-passive mode since approximately 2010, with accumulated LFG being routed through the flare via an auto-igniter when methane concentrations are sufficient to support thermal oxidation. County staff currently monitor the LFG system on a weekly basis. The LFG control system appeared to be functioning as intended during SCS's site inspection.

The existing LFG monitoring network is comprised of five shallow LFG probes (GP-14, GP-15, GP-16, GP-18 and GP-19) situated along the landfill perimeter on the north, northeast, northwest and southwest sides of the property (Figure 1). These probes were observed to consist of a mix of flush and above-ground completions. No LFG probes were observed along the south and southeast perimeter of the landfill. A review of quarterly methane measurements obtained at the perimeter probes between August 18, 2023 and August 20, 2025 (the most recent two years of data) did not report detectable methane concentrations in the perimeter monitoring probes. Carbon dioxide concentrations ranged between 0 and 11 percent by volume, with most measurements under 3 percent by volume. Oxygen measurements recorded at these probes ranged between 6 and 22 percent by volume. Over this same period methane concentration measured at the flare station ranged between 0 and 29 percent by volume, with most measurements being less than 12 percent by volume. A summary of the past two years of LFG monitoring data is attached as Table 1.

Groundwater Conditions and Quality

Groundwater monitoring at the Emander Landfill is performed by County staff on a quarterly schedule at 13 well locations. The wells were observed to consist of standard above-ground completions with two-inch PVC casings and dedicated sampling pumps. Five wells (BH-03, BH-05, BH-06, BH-07, and BH-08) are completed in the upper portion of the aquifer, with 10-foot screens extending to depths ranging between 5.5 and 25 feet bgs. A single well (MW-17) is situated within an intermediate aquifer zone (35-45 foot screen depth). The remaining wells (MW-12, MW-14, MW-15, MW-16, MW-18, MW-19, and MW-20) are all situated in deeper horizons within the aquifer, with screened intervals ranging between 60-70 feet bgs to 110-120 feet bgs.

Geological cross-sections developed for the site indicate that the deeper wells are positioned near the base of the aquifer near its contact with the Lawton Clay aquitard. The groundwater flow direction is generally towards the south-southwest, with flow velocities in the range of 10 and 33

feet/year in the shallow and deep aquifer zones, respectively. The majority of the monitoring wells are situated along the landfill's southwest and southern perimeter, hydrologically downgradient of the fill zone. Figure 1 displays the location of the active monitoring wells.

The current groundwater parameter analytical suite includes field parameters, geochemical and leachate indicators, VOCs and dissolved and total metals. A review of the past year's quarterly groundwater monitoring results (obtained between September 17, 2024 and June 3, 2025 routinely identified groundwater quality standards exceedances for two field parameters (pH and specific conductance), three metals (arsenic, iron and manganese), and one VOC (vinyl chloride). Over this period, pH and specific conductance exceedances were sporadic, ranging between 5.8 and 6.4 SU and 809 to 885 umhos/cm^2, respectively. Total arsenic exceedances ranged between 0.219 and 20.74 mg/L, with three wells (BH-7, MW-16 and MW-18) exceeding the 10 mg/L federal MCL. The most elevated iron and manganese concentrations were also reported in these three wells, with sitewide exceedances ranging between 0.33 and 16.9 mg/L for iron, and 0.057 and 3.87 mg/L for manganese. Vinyl chloride exceedances were reported in four shallow wells at concentrations ranging between 0.05 and 2.78 µg/L, and in three deep wells at concentrations ranging between 0.02 and 6.97 µg/L. The most elevated vinyl chloride levels were consistently observed in deep well MW-18. A summary of the most recent four quarters of groundwater monitoring data (September 2024 to June 2025) for select landfill contaminants of concern (COCs) is attached as Table 2.

Site Drainage and Surface Water

The landfill cover system is designed to infiltrate precipitation through the surface topsoil into the underlying drainage soil layer and direct any resulting flows along contoured surfaces and towards the landfill's perimeter. Stormwater generated off the former landfill and surrounding paved surfaces is directed to a series of catch basins that connect to a pair of detention ponds situated on the south end of McCullum Park. The northerly pond is referred to as the upper detention pond and the southernmost pond is referred to as the lower detention pond. Stormwater overflow from the detention ponds is discharged further south into a constructed swale and pond/wetland area located on County property leased to the Northwest Stream Center. In addition, North Creek, which is situated approximately 100 feet west of the landfill, flows south along the western end of McCullum Park. However, previous surface water evaluations reported that the creek is seasonally dry and was not being impacted by the landfill.

As previously noted, SCS observed the landfill cover to be in good condition, with no obvious indications of significant surface erosion. The surface water management system (perimeter ditches, ponds, etc.) also appears to be well maintained and functional.

SCS reviewed a 2019 surface water quality evaluation (prepared by Landau Associates) that reported elevated levels of ammonia nitrogen, ranging between 11 and 41 mg/L, in the lower detention pond and the swale/wetland pond areas. The study recommended several options for addressing these impacts, including modifications to the swale and/or installation of an aeration system in the lower pond.

IDENTIFICATION OF DATA GAPS

Data gaps are defined as significant missing pieces of information needed to develop a more complete understanding of the condition of an environmental site. As previously noted, Ecology's 2023, 5-year review identified several areas of concern regarding the protectiveness of the 1996 site remedial action; including whether groundwater and vapor intrusion (VI) risks may potentially extend beyond County property, and if existing institutional controls (i.e., restrictions on the

beneficial use of Property groundwater and long-term landfill cover/LFG system maintenance) need to be more rigorously defined or expanded.

The following sections discuss the data gaps identified by SCS for the Emander Landfill site based on our review of the available environmental documentation and our visual inspection of the landfill.

Landfill Cover and Infrastructure

Only limited information regarding the final grades and survey elevations for the landfill cover system installed during the 1996 remedial actions appear to exist. Establishing that the landfill cover has not experienced significant settlement and is maintaining adequate drainage grades is a critical component of demonstrating landfill stability and providing for its long-term management. The lack of existing survey data for the Emander landfill remains a significant data gap.

Uncertainty also exists regarding the extent to which refuse is present beneath the County swimming pool facility and the southern edge of the 128th Street right-of-way. Available information suggests that the pool facility is at least partially situated over the landfill footprint, with the soil cover/geomembrane extending up to the foundation of the structure. In addition, historical records suggest the landfill footprint extended up to 128th Street, and that the subsequent widening of the roadway is suspected to have covered the northern fringe of the fill zone. Information presented in the 1996 RI suggests that the refuse thickness along the landfill perimeter is less than 5 feet. It is anticipated that any future development in these areas will require the ongoing protection and possible enhancement of the protective landfill cover system.

Landfill Gas

LFG generation rates and methane concentrations reported at the Emander Landfill are low and consistent with those associated with older, municipal solid waste landfills. The past several years of LFG system and perimeter probe monitoring data suggest a low potential for significant LFG migration. However, the existing LFG monitoring network appears to lack coverage along the south and southeast landfill perimeter, limiting the ability to assess the potential for LFG migration over these parts of the property. This appears to represent a potential data gap. Interestingly, a pre-RI investigation map depicts the presence of several LFG probes (GP-10, GP-17 and GP-20) that could, if they still exist, provide coverage in these areas. However, none of these probes were encountered during SCS's site inspection.

Soil vapor samples analyzed from LFG probes installed during 1993/1994 reported detectable levels of several VOCs, including acetone, BTEX, cis-12-dicholorethane and vinyl chloride. The most elevated VOC concentrations were reportedly observed along the landfill's northern border. However, air screen modelling performed by RZA determined that ambient risks associated with these detections remained well below Acceptable Source Impact Levels (ASILs).

More recently, Parametrix (2021) analyzed sub-slab vapor samples and ambient indoor air samples at five Park structures including the pool clubhouse, the three County buildings under lease, and BMX center building. Sub-slab vapor samples reportedly did not exceed screening levels for any chemicals of concern (COCs). While there were several reported exceedances of indoor air cleanup levels, they did not appear to correlate with the sub-slab soil gas data. The evaluation determined that vapor intrusion was not causing the indoor air exceedances observed in these buildings.

The available information suggests that the VI risks at Property structures are being successfully managed by the existing landfill cover and LFG collection system. Based on the reduced rate of LFG generation, the likelihood of significant offsite migration of methane and/or regulated VOCs is expected to be low. However, as noted by Ecology, VI risks at adjacent occupied properties,

particularly north of the landfill along the trailer home lots situated across 128th Street, have not been fully evaluated and represent a data gap.

Groundwater

Although groundwater quality at the Emander Landfill has shown overall improvement since the 1995/96 remedial action, pH, specific conductance, arsenic, iron, manganese and vinyl chloride continue to routinely exceed their respective MTCA cleanup standards at multiple site monitoring wells. It is notable that lingering exceedance of these three metals, as well as residual vinyl chloride detections, are commonly observed at older unlined landfill sites. Arsenic, iron and manganese are particularly prone to partition into groundwater under the reducing hydrogeological environment associated with these facilities. However, concentrations of these metals and residual vinyl chloride can be expected to diminish as the groundwater flow is exposed to less reducing conditions downgradient of the landfill.

Our review confirmed that groundwater exceedances continue to be reported in downgradient wells BH-03, BH-05, BH-06 and BH-07 (in the upper zone of the aquifer) and MW-16, MW-17 and MW-18 (in the deeper zone of the aquifer). As a result, the downgradient extent of these groundwater impacts has not been fully defined and represents a significant data gap.

In addition, anecdotal information and a regulatory database listing indicate that a former wood waste landfill historically operated immediately to the north (across 128th Street) of the property. An Environmental Data Resources (EDR) listing identified this facility as the RDA (Verbeek) wood waste Landfill and reports the facility's status as closed. Although no additional information regarding this facility was available, active operations are apparent at this location in historical aerial photographs dating from 1952 through the mid-1970s. No water quality data appears to exist for this facility. Since this landfill is situated hydrologically upgradient of McCullum Park, it remains uncertain whether potentially impacted groundwater may be migrating onto County property or the footprint of Emander Landfill. This is also considered to represent a data gap.

Surface Water

Local surface water flows in the vicinity of McCollum Park and in the adjacent reach of North Creek are generally towards the south. A pair of engineered stormwater detention ponds and a wetland swale/pond situated to the south of the Emander Landfill receive discharges from the landfill, perimeter roadway and the buildings on the southern end of the park. As previously noted, surface water sampling in North Creek documented that the creek is seasonally dry and not being impacted by the landfill.

A 2019 surface water assessment of the park's stormwater ponds concluded that groundwater discharge from the landfill is a suspected source of elevated levels of ammonia detected in the lower detention pond and associated swale. Notably, the highest ammonia levels in site groundwater have been typically reported in shallow well BH-7. Recommended options for addressing this surface water impact included swale modifications and/or installation of an aeration system in the lower pond. No information was available indicating that any of these recommendations have been implemented.

Based on our review, it appears that surface water quality at the Emander Landfill site is reasonably well defined and does not represent a significant data gap.

RECOMMENDATIONS FOR ADDRESSING DATA GAPS

SCS recommends that the County consider performing the following actions to address the data gaps identified by our evaluation.

Landfill Cover and Infrastructure

The lack of existing and historical elevation survey data for the Emander landfill was identified as a data gap. This limits the County's ability to establish existing slopes and demonstrate the long-term stability of the landfill cover. It is recommended that a detailed surface survey be performed on the landfill cover and structures that are on or immediately adjacent to the landfill.

In addition, the County should also consider the future installation of a series of benchmark survey monuments that can be resurveyed over two-year intervals to document the degree, or lack of, future soil cover settlement. Ecology guidance for closed landfills recommends the installation of one elevation survey monument for every 20,000 square feet of landfill cover.

Landfill Gas and Vapor Intrusion

The existing LFG probe monitoring network appears to lack sufficient coverage along the south and southeast perimeter of the landfill. However, several inactive LFG probes, including GP-10, GP-17 and GP-20, were formerly located in these areas. If these probes remain present, the County should confirm their current condition and if feasible add them to the quarterly LFG monitoring network. In the event these probes have been decommissioned or are unusable, the County should consider installing three new LFG probes along south and southeast perimeter of the landfill to improve the coverage of the LFG monitoring network.

Although recent soil vapor assessment at McCullum Park buildings determined that potential VI risks are being successfully managed by the existing landfill cover and LFG collection system, uncertainly exists at whether residential properties in the immediate vicinity of the Emander Landfill may be at risk. The lack of VI data appears to be most acute for the trailer homes situated to the north of 128th Street. It is recommended that the County consider:

- Monitoring and vapor sampling the perimeter LFG probes including the analysis of collected samples for VOCs using EPA method TO-15 or comparable method.
- Performing a bar-hole sampling survey along the northern 128th Street right-of-way in the vicinity of the trailer home lots. The survey should include measurement of major LFG components as well as the collection of VOC samples.

Groundwater

Uncertainties regarding the extent of the water quality impacts (pH, specific conductance, arsenic, iron, manganese and vinyl chloride exceedance) observed in the monitoring wells immediately downgradient of the Emander Landfill have been identified as a significant data gap. SCS recommends the County consider the installation of two sets of "sentinel well" pairs on County property downgradient (south-southwest) of the existing well network. One set, consisting of a shallow (~25 foot deep) and a deep (~100 foot deep) well pair could be constructed in the wooded area approximately 400 feet south of BH-05/MW-17. The second pair could be located near the current position of inactive shallow well MW-09. Assuming existing well MW-09 remains in sampleable condition, only an additional deep well would need to be installed at this location. It is

understood that access to these locations may be challenging due to the presence of the wooded preserve and wetlands occupying the southern portions of McCollum Park.

The Verbeek wood waste Landfill historically operated on a property (currently a golf driving range) immediately north of McCullum Park. It remains uncertain whether groundwater impacts from this former landfill have affected upgradient water quality before it migrates onto the Emander Landfill site. MW-14 currently represents the sole upgradient monitoring location in the County's well network; however, this well is situated cross-gradient from the former wood waste landfill. The County should consider, if feasible, the installation of a shallow/deep monitoring well pair along 128th Street's northern right-of-way to assess potential groundwater impacts from this former landfill.

CONCLUSIONS

Based on our review of available Emander Landfill documentation and a visual inspection of the existing landfill infrastructure, in our opinion the remedial actions completed at the landfill are generally consistent with the requirements of the 1996 Agreed Order, and appear to be protective of human health and the environment. However, as noted in the preceding sections. the long-term stability of the landfill cover, potential VI risk to residential properties north of 128th Street SE, and the nature and extent of metals and vinyl chloride contamination in groundwater are outstanding gaps in the understanding of the landfill's condition. Further evaluation of these identified data gaps should be addressed during the development of a supplemental remedial work plan for the site.

In addition, the future status of the 1996 Agreed Order may also be regarded as an admistrative data gap. The most recent (2023) 5-year MTCA review for the site noted that the existing restrictive covenant for the Emander Landfill will likely need to be broadened beyond its current prohibition of no beneficial use of onsite groundwater. Ecology has signaled that a new Agreed Order may need to be developed to see the site through full closure.

Please do not hesitate to contact the undersigned with any questions that you may have regarding this submittal.

Sincerely,

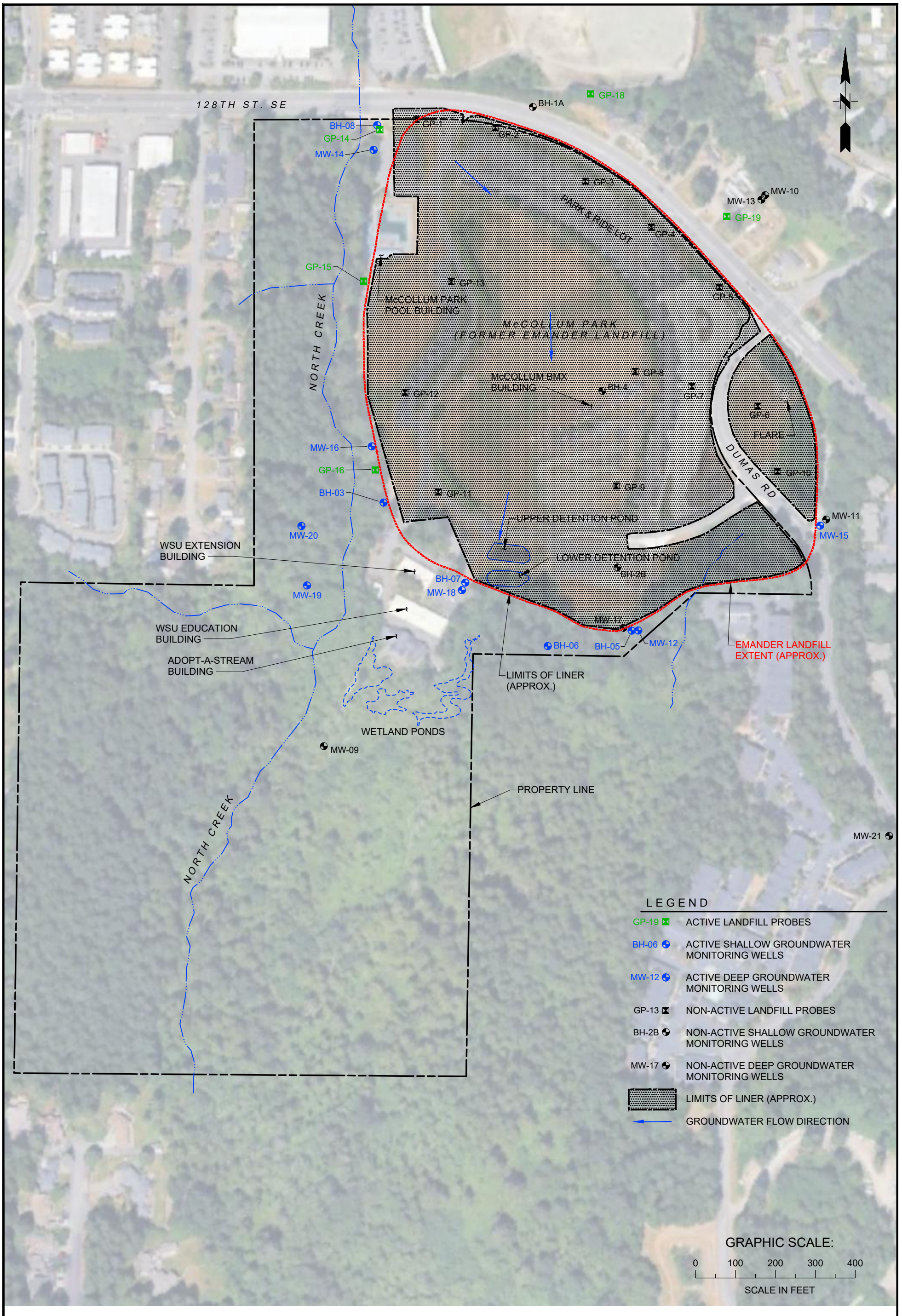
Daniel A. Venchiarutti, LHG
Project Director
SCS Engineers

Karam Singh, P.E.
Project Director
SCS Engineers

Gregory D. Helland, LHG
Vice President
SCS Engineers

Enclosed: Figure 1 – Site Plan and Monitoring Networks
Table 1 – Landfill Gas Monitoring Results – August 2023 to August 2025
Table 2 – Groundwater Monitoring Results for Select COCs – September 2024 to June 2025

ATTACHMENTS



SCS ENGINEERS
Environmental Consultants and Contractors
2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005
(425) 746-4600 FAX: (503) 684-6948

PROJECT NO. 04225055.00	DES BY LEL	SITE PLAN AND MONITORING NETWORKS McCOLLUM PARK (FORMER EMANDER LANDFILL) SNOHOMISH COUNTY, WASHINGTON	DATE NOVEMBER 2025
SCALE 1" = 250'	CHK BY D.V.		FIGURE 1
CAD FILE FIGURE 1	APP BY K.S.		

Table 1
Landfill Gas Monitoring Results
Emander Landfill

August 2023 to August 2025

Date:	Probe ID	Time (Military)	Methane (% VOL)	Oxygen (% VOL)	Carbon Diox. (% VOL)
08/18/23	GP-18	0850	0%	15%	6%
08/18/23	GP-19	0855	0%	20%	0%
08/18/23	GP-14	0835	0%	15%	3%
08/18/23	GP-15	0840	0%	19%	2%
08/18/23	GP-16	0845	0%	19%	1%
08/18/23	Flare	0900	0%	20%	0%
11/28/23	GP-18	1035	0%	18%	2%
11/28/23	GP-19	1040	0%	20%	0%
11/28/23	GP-14	1044	0%	17%	3%
11/28/23	GP-15	1048	0%	18%	3%
11/28/23	GP-16	1052	0%	19%	1%
11/28/23	Flare	1056	11%	10%	9%
02/16/24	GP-18	1155	0%	6%	5%
02/16/24	GP-19	1200	0%	13%	6%
02/16/24	GP-14	1205	0%	21%	1%
02/16/24	GP-15	1210	0%	19%	2%
02/16/24	GP-16	1215	0%	20%	1%
02/16/24	Flare	1220	0%	21%	0%
05/10/24	GP-18	1104	0%	10%	10%
05/10/24	GP-19	1100	0%	10%	11%
05/10/24	GP-14	1107	0%	20%	1%
05/10/24	GP-15	1111	0%	20%	5%
05/10/24	GP-16	1116	0%	19%	1%
05/10/24	Flare	1120	7%	1%	12%
08/16/24	GP-18	1039	0%	16%	7%
08/16/24	GP-19	1042	0%	21%	0%
08/16/24	GP-14	1021	0%	19%	2%
08/16/24	GP-15	1030	0%	20%	2%
08/16/24	GP-16	1035	0%	21%	0%
08/16/24	Flare	1050	29%	4%	16%
11/22/24	GP-18	1054	0%	21%	2%
11/22/24	GP-19	1056	0%	21%	0%
11/22/24	GP-14	1100	0%	21%	2%
11/22/24	GP-15	1104	0%	21%	3%
11/22/24	GP-16	1106	0%	21%	1%
11/22/24	Flare	1110	0%	21%	0%

Table 1
Landfill Gas Monitoring Results
Emander Landfill

August 2023 to August 2025

02/14/25	GP-18	1110	0%	21%	0%
02/14/25	GP-19	1114	0%	21%	0%
02/14/25	GP-14	1117	0%	21%	1%
02/14/25	GP-15	1120	0%	20%	1%
02/14/25	GP-16	1122	0%	22%	1%
02/14/25	Flare	1127	0%	22%	0%
05/21/25	GP-18	1030	0%	18%	4%
05/21/25	GP-19	1035	0%	19%	2%
05/21/25	GP-14	1038	0%	17%	5%
05/21/25	GP-15	1042	0%	20%	1%
05/21/25	GP-16	1047	0%	21%	1%
05/21/25	Flare	1050	12%	10%	10%
08/20/25	GP-18	1101	0%	21%	1%
08/20/25	GP-19	1103	0%	20%	3%
08/20/25	GP-14	1107	0%	18%	5%
08/20/25	GP-15	1110	0%	20%	2%
08/20/25	GP-16	1113	0%	20%	1%
08/20/25	Flare	1119	0%	21%	0%

% VOL: percent by volume.

Table 2
Groundwater Monitoring Result for Select COCs
Emander Landfill

September 2024 to June 2025

Date	Location	Constituent	PQL	Result	Units
9/17/24	BH-03A	pH	0.1	7.1	std units
12/16/24	BH-03A	pH	0.1	6.7	std units
3/18/25	BH-03A	pH	0.1	6.9	std units
6/3/25	BH-03A	pH	0.1	7.9	std units
9/17/24	BH-05	pH	0.1	6.6	std units
12/16/24	BH-05	pH	0.1	6.2	std units
3/18/25	BH-05	pH	0.1	6.7	std units
6/3/25	BH-05	pH	0.1	7.3	std units
9/17/24	BH-06	pH	0.1	6.7	std units
12/16/24	BH-06	pH	0.1	6.5	std units
3/18/25	BH-06	pH	0.1	6.6	std units
6/3/25	BH-06	pH	0.1	7.4	std units
9/18/24	BH-07	pH	0.1	6.8	std units
12/17/24	BH-07	pH	0.1	6.6	std units
3/19/25	BH-07	pH	0.1	6.6	std units
6/4/25	BH-07	pH	0.1	7.0	std units
9/17/24	BH-08	pH	0.1	5.8	std units
12/16/24	BH-08	pH	0.1	6.1	std units
3/18/25	BH-08	pH	0.1	6.4	std units
6/3/25	BH-08	pH	0.1	7.5	std units
9/17/24	MMW-12	pH	0.1	7.1	std units
12/16/24	MMW-12	pH	0.1	6.9	std units
3/18/25	MMW-12	pH	0.1	7.6	std units
6/3/25	MMW-12	pH	0.1	7.8	std units
9/17/24	MMW-14	pH	0.1	5.9	std units
9/17/24	MMW-14	pH	0.1	5.8	std units
12/16/24	MMW-14	pH	0.1	6.7	std units
3/18/25	MMW-14	pH	0.1	6.3	std units
6/3/25	MMW-14	pH	0.1	7.5	std units
9/18/24	MMW-15	pH	0.1	7.4	std units
12/17/24	MMW-15	pH	0.1	7.1	std units
3/19/25	MMW-15	pH	0.1	7.4	std units
6/4/25	MMW-15	pH	0.1	7.7	std units
9/17/24	MMW-17	pH	0.1	7.6	std units
12/16/24	MMW-17	pH	0.1	6.8	std units
3/18/25	MMW-17	pH	0.1	7.0	std units
6/3/25	MMW-17	pH	0.1	7.9	std units
9/18/24	MMW-18	pH	0.1	7.7	std units
12/17/24	MMW-18	pH	0.1	6.7	std units
3/19/25	MMW-18	pH	0.1	7.5	std units
6/4/25	MMW-18	pH	0.1	7.6	std units

Table 2
Groundwater Monitoring Result for Select COCs
Emander Landfill

September 2024 to June 2025

9/18/24	MMW-19	pH	0.1	7.4	std units
12/17/24	MMW-19	pH	0.1	7.0	std units
3/19/25	MMW-19	pH	0.1	6.6	std units
6/4/25	MMW-19	pH	0.1	7.4	std units
12/17/24	MMW-20	pH	0.1	7.1	std units
3/19/25	MMW-20	pH	0.1	7.0	std units
3/19/25	MMW-20	pH	0.1	6.6	std units
6/4/25	MMW-20	pH	0.1	7.6	std units
9/17/24	BH-03A	Conductivity	0.5	196	umhos/cm
12/16/24	BH-03A	Conductivity	0.5	195	umhos/cm
3/18/25	BH-03A	Conductivity	0.5	196	umhos/cm
6/3/25	BH-03A	Conductivity	0.5	192	umhos/cm
9/17/24	BH-05	Conductivity	0.5	423	umhos/cm
12/16/24	BH-05	Conductivity	0.5	212	umhos/cm
3/18/25	BH-05	Conductivity	0.5	186	umhos/cm
6/3/25	BH-05	Conductivity	0.5	228	umhos/cm
9/17/24	BH-06	Conductivity	0.5	622	umhos/cm
12/16/24	BH-06	Conductivity	0.5	292	umhos/cm
3/18/25	BH-06	Conductivity	0.5	198	umhos/cm
6/3/25	BH-06	Conductivity	0.5	203	umhos/cm
9/18/24	BH-07	Conductivity	0.5	881	umhos/cm
12/17/24	BH-07	Conductivity	0.5	801	umhos/cm
3/19/25	BH-07	Conductivity	0.5	834	umhos/cm
6/4/25	BH-07	Conductivity	0.5	809	umhos/cm
6/25/24	BH-08	Conductivity	0.5	127	umhos/cm
9/17/24	BH-08	Conductivity	0.5	127	umhos/cm
12/16/24	BH-08	Conductivity	0.5	133	umhos/cm
3/18/25	BH-08	Conductivity	0.5	166	umhos/cm
6/3/25	BH-08	Conductivity	0.5	142	umhos/cm
3/24/21	MMW-11	Conductivity	0.5	140	umhos/cm
6/16/21	MMW-11	Conductivity	0.5	110	umhos/cm
3/23/22	MMW-11	Conductivity	0.5	160	umhos/cm
6/15/22	MMW-11	Conductivity	0.5	150	umhos/cm
9/17/24	MMW-12	Conductivity	0.5	405	umhos/cm
12/16/24	MMW-12	Conductivity	0.5	400	umhos/cm
3/18/25	MMW-12	Conductivity	0.5	399	umhos/cm
6/3/25	MMW-12	Conductivity	0.5	390	umhos/cm
9/17/24	MMW-14	Conductivity	0.5	170	umhos/cm
9/17/24	MMW-14	Conductivity	0.5	171	umhos/cm
12/16/24	MMW-14	Conductivity	0.5	166	umhos/cm
3/18/25	MMW-14	Conductivity	0.5	167	umhos/cm
6/3/25	MMW-14	Conductivity	0.5	163	umhos/cm
9/18/24	MMW-15	Conductivity	0.5	314	umhos/cm

Table 2
Groundwater Monitoring Result for Select COCs
Emander Landfill

September 2024 to June 2025

12/17/24	MMW-15	Conductivity	0.5	314	umhos/cm
3/19/25	MMW-15	Conductivity	0.5	318	umhos/cm
6/4/25	MMW-15	Conductivity	0.5	322	umhos/cm
9/17/24	MMW-16	Conductivity	0.5	544	umhos/cm
12/16/24	MMW-16	Conductivity	0.5	532	umhos/cm
12/16/24	MMW-16	Conductivity	0.5	532	umhos/cm
3/18/25	MMW-16	Conductivity	0.5	536	umhos/cm
6/3/25	MMW-16	Conductivity	0.5	542	umhos/cm
6/3/25	MMW-16	Conductivity	0.5	516	umhos/cm
9/17/24	MMW-17	Conductivity	0.5	327	umhos/cm
12/16/24	MMW-17	Conductivity	0.5	289	umhos/cm
3/18/25	MMW-17	Conductivity	0.5	334	umhos/cm
6/3/25	MMW-17	Conductivity	0.5	349	umhos/cm
9/18/24	MMW-18	Conductivity	0.5	826	umhos/cm
12/17/24	MMW-18	Conductivity	0.5	885	umhos/cm
3/19/25	MMW-18	Conductivity	0.5	876	umhos/cm
6/4/25	MMW-18	Conductivity	0.5	835	umhos/cm
9/18/24	MMW-19	Conductivity	0.5	212	umhos/cm
12/17/24	MMW-19	Conductivity	0.5	220	umhos/cm
3/19/25	MMW-19	Conductivity	0.5	213	umhos/cm
6/4/25	MMW-19	Conductivity	0.5	218	umhos/cm
9/18/24	MMW-20	Conductivity	0.5	246	umhos/cm
12/17/24	MMW-20	Conductivity	0.5	232	umhos/cm
3/19/25	MMW-20	Conductivity	0.5	237	umhos/cm
3/19/25	MMW-20	Conductivity	0.5	239	umhos/cm
6/4/25	MMW-20	Conductivity	0.5	244	umhos/cm
9/17/24	BH-03A	Total Arsenic	0.1	0.690	ug/L
12/16/24	BH-03A	Total Arsenic	0.1	0.707	ug/L
3/18/25	BH-03A	Total Arsenic	0.1	0.780	ug/L
6/3/25	BH-03A	Total Arsenic	0.1	0.510	ug/L
9/17/24	BH-05	Total Arsenic	0.1	6.368	ug/L
12/16/24	BH-05	Total Arsenic	0.1	4.538	ug/L
3/18/25	BH-05	Total Arsenic	0.1	4.908	ug/L
6/3/25	BH-05	Total Arsenic	0.1	4.524	ug/L
9/17/24	BH-06	Total Arsenic	0.1	6.993	ug/L
12/16/24	BH-06	Total Arsenic	0.1	3.955	ug/L
3/18/25	BH-06	Total Arsenic	0.1	4.453	ug/L
6/3/25	BH-06	Total Arsenic	0.1	6.159	ug/L
9/18/24	BH-07	Total Arsenic	0.1	16.84	ug/L
12/17/24	BH-07	Total Arsenic	0.1	14.61	ug/L
3/19/25	BH-07	Total Arsenic	0.1	15.54	ug/L
6/4/25	BH-07	Total Arsenic	0.1	11.41	ug/L
9/17/24	BH-08	Total Arsenic	0.1	0.219	ug/L

Table 2
Groundwater Monitoring Result for Select COCs
Emander Landfill

September 2024 to June 2025

12/16/24	BH-08	Total Arsenic	0.1	0.319	ug/L
3/18/25	BH-08	Total Arsenic	0.1	0.268	ug/L
6/3/25	BH-08	Total Arsenic	0.1	0.251	ug/L
9/17/24	MMW-12	Total Arsenic	0.1	2.053	ug/L
12/16/24	MMW-12	Total Arsenic	0.1	1.847	ug/L
3/18/25	MMW-12	Total Arsenic	0.1	2.018	ug/L
6/3/25	MMW-12	Total Arsenic	0.1	1.385	ug/L
9/17/24	MMW-14	Total Arsenic	0.1	0.469	ug/L
9/17/24	MMW-14	Total Arsenic	0.1	0.465	ug/L
12/16/24	MMW-14	Total Arsenic	0.1	0.384	ug/L
3/18/25	MMW-14	Total Arsenic	0.1	0.561	ug/L
6/3/25	MMW-14	Total Arsenic	0.1	0.328	ug/L
9/18/24	MMW-15	Total Arsenic	0.1	2.323	ug/L
12/17/24	MMW-15	Total Arsenic	0.1	2.161	ug/L
3/19/25	MMW-15	Total Arsenic	0.1	2.647	ug/L
6/4/25	MMW-15	Total Arsenic	0.1	1.716	ug/L
9/17/24	MMW-16	Total Arsenic	0.1	20.39	ug/L
12/16/24	MMW-16	Total Arsenic	0.1	19.82	ug/L
12/16/24	MMW-16	Total Arsenic	0.1	19.96	ug/L
3/18/25	MMW-16	Total Arsenic	0.1	20.74	ug/L
6/3/25	MMW-16	Total Arsenic	0.1	14.49	ug/L
6/3/25	MMW-16	Total Arsenic	0.1	14.80	ug/L
9/17/24	MMW-17	Total Arsenic	0.1	9.192	ug/L
12/16/24	MMW-17	Total Arsenic	0.1	8.402	ug/L
3/18/25	MMW-17	Total Arsenic	0.1	9.838	ug/L
6/3/25	MMW-17	Total Arsenic	0.1	6.178	ug/L
9/18/24	MMW-18	Total Arsenic	0.10	14.49	ug/L
12/17/24	MMW-18	Total Arsenic	0.1	14.52	ug/L
3/19/25	MMW-18	Total Arsenic	0.1	16.63	ug/L
6/4/25	MMW-18	Total Arsenic	0.1	11.21	ug/L
9/18/24	MMW-19	Total Arsenic	0.1	0.779	ug/L
12/17/24	MMW-19	Total Arsenic	0.1	0.679	ug/L
3/19/25	MMW-19	Total Arsenic	0.1	1.008	ug/L
6/4/25	MMW-19	Total Arsenic	0.1	0.540	ug/L
9/18/24	MMW-20	Total Arsenic	0.1	0.676	ug/L
12/17/24	MMW-20	Total Arsenic	0.1	0.553	ug/L
3/19/25	MMW-20	Total Arsenic	0.1	0.733	ug/L
3/19/25	MMW-20	Total Arsenic	0.1	0.811	ug/L
6/4/25	MMW-20	Total Arsenic	0.1	0.630	ug/L
9/17/24	BH-03A	Total Manganese	0.01	0.088	mg/L
12/16/24	BH-03A	Total Manganese	0.01	0.086	mg/L
3/18/25	BH-03A	Total Manganese	0.01	0.083	mg/L
6/3/25	BH-03A	Total Manganese	0.01	0.083	mg/L

Table 2
Groundwater Monitoring Result for Select COCs
Emander Landfill

September 2024 to June 2025

9/17/24	BH-05	Total Manganese	0.01	2.45	mg/L
12/16/24	BH-05	Total Manganese	0.01	0.966	mg/L
3/18/25	BH-05	Total Manganese	0.01	0.732	mg/L
6/3/25	BH-05	Total Manganese	0.01	0.968	mg/L
9/17/24	BH-06	Total Manganese	0.01	2.42	mg/L
12/16/24	BH-06	Total Manganese	0.01	1.09	mg/L
3/18/25	BH-06	Total Manganese	0.01	0.720	mg/L
6/3/25	BH-06	Total Manganese	0.01	0.756	mg/L
9/18/24	BH-07	Total Manganese	0.01	3.73	mg/L
12/17/24	BH-07	Total Manganese	0.01	3.56	mg/L
3/19/25	BH-07	Total Manganese	0.01	3.87	mg/L
6/4/25	BH-07	Total Manganese	0.01	3.60	mg/L
9/17/24	BH-08	Total Manganese	0.01	0.034	mg/L
12/16/24	BH-08	Total Manganese	0.01	0.183	mg/L
3/18/25	BH-08	Total Manganese	0.01	0.023	mg/L
6/3/25	BH-08	Total Manganese	0.01	0.013	mg/L
9/17/24	MMW-12	Total Manganese	0.01	<0.010	mg/L
12/16/24	MMW-12	Total Manganese	0.01	<0.010	mg/L
3/18/25	MMW-12	Total Manganese	0.01	<0.010	mg/L
6/3/25	MMW-12	Total Manganese	0.01	<0.010	mg/L
9/17/24	MMW-14	Total Manganese	0.01	0.069	mg/L
9/17/24	MMW-14	Total Manganese	0.01	0.065	mg/L
12/16/24	MMW-14	Total Manganese	0.01	0.069	mg/L
3/18/25	MMW-14	Total Manganese	0.01	0.065	mg/L
6/3/25	MMW-14	Total Manganese	0.01	0.057	mg/L
9/18/24	MMW-15	Total Manganese	0.01	<0.010	mg/L
12/17/24	MMW-15	Total Manganese	0.01	<0.010	mg/L
3/19/25	MMW-15	Total Manganese	0.01	0.018	mg/L
6/4/25	MMW-15	Total Manganese	0.01	<0.010	mg/L
9/17/24	MMW-16	Total Manganese	0.01	2.41	mg/L
12/16/24	MMW-16	Total Manganese	0.01	2.44	mg/L
12/16/24	MMW-16	Total Manganese	0.01	2.40	mg/L
3/18/25	MMW-16	Total Manganese	0.01	2.49	mg/L
6/3/25	MMW-16	Total Manganese	0.01	2.47	mg/L
6/3/25	MMW-16	Total Manganese	0.01	2.18	mg/L
9/17/24	MMW-17	Total Manganese	0.01	1.95	mg/L
12/16/24	MMW-17	Total Manganese	0.01	1.77	mg/L
3/18/25	MMW-17	Total Manganese	0.01	2.05	mg/L
6/3/25	MMW-17	Total Manganese	0.01	2.16	mg/L
9/18/24	MMW-18	Total Manganese	0.01	1.84	mg/L
12/17/24	MMW-18	Total Manganese	0.01	1.94	mg/L
3/19/25	MMW-18	Total Manganese	0.01	2.01	mg/L
6/4/25	MMW-18	Total Manganese	0.01	1.87	mg/L

Table 2
Groundwater Monitoring Result for Select COCs
Emander Landfill

September 2024 to June 2025

9/18/24	MMW-19	Total Manganese	0.01	<0.010	mg/L
12/17/24	MMW-19	Total Manganese	0.01	0.013	mg/L
3/19/25	MMW-19	Total Manganese	0.01	0.015	mg/L
6/4/25	MMW-19	Total Manganese	0.01	<0.010	mg/L
9/18/24	MMW-20	Total Manganese	0.01	<0.010	mg/L
12/17/24	MMW-20	Total Manganese	0.01	0.013	mg/L
3/19/25	MMW-20	Total Manganese	0.01	0.019	mg/L
3/19/25	MMW-20	Total Manganese	0.01	<0.010	mg/L
6/4/25	MMW-20	Total Manganese	0.01	<0.010	mg/L
9/17/24	BH-03A	Total Iron	0.03	<0.030	mg/L
12/16/24	BH-03A	Total Iron	0.03	0.048	mg/L
3/18/25	BH-03A	Total Iron	0.03	<0.030	mg/L
6/3/25	BH-03A	Total Iron	0.03	<0.030	mg/L
9/17/24	BH-05	Total Iron	0.03	14.3	mg/L
12/16/24	BH-05	Total Iron	0.03	6.34	mg/L
3/18/25	BH-05	Total Iron	0.03	5.55	mg/L
6/3/25	BH-05	Total Iron	0.03	6.95	mg/L
9/17/24	BH-06	Total Iron	0.03	5.80	mg/L
12/16/24	BH-06	Total Iron	0.03	2.78	mg/L
3/18/25	BH-06	Total Iron	0.03	1.56	mg/L
6/3/25	BH-06	Total Iron	0.03	2.36	mg/L
9/18/24	BH-07	Total Iron	0.03	16.7	mg/L
12/17/24	BH-07	Total Iron	0.03	16.6	mg/L
3/19/25	BH-07	Total Iron	0.03	16.2	mg/L
6/4/25	BH-07	Total Iron	0.03	16.9	mg/L
9/17/24	BH-08	Total Iron	0.03	0.126	mg/L
12/16/24	BH-08	Total Iron	0.03	1.31	mg/L
3/18/25	BH-08	Total Iron	0.03	0.078	mg/L
6/3/25	BH-08	Total Iron	0.03	<0.030	mg/L
9/17/24	MMW-12	Total Iron	0.03	<0.030	mg/L
12/16/24	MMW-12	Total Iron	0.03	0.087	mg/L
3/18/25	MMW-12	Total Iron	0.03	<0.030	mg/L
6/3/25	MMW-12	Total Iron	0.03	0.038	mg/L
9/17/24	MMW-14	Total Iron	0.03	<0.030	mg/L
9/17/24	MMW-14	Total Iron	0.03	<0.030	mg/L
12/16/24	MMW-14	Total Iron	0.03	<0.030	mg/L
3/18/25	MMW-14	Total Iron	0.03	<0.030	mg/L
6/3/25	MMW-14	Total Iron	0.03	<0.030	mg/L
9/18/24	MMW-15	Total Iron	0.03	<0.030	mg/L
12/17/24	MMW-15	Total Iron	0.03	<0.030	mg/L
3/19/25	MMW-15	Total Iron	0.03	<0.030	mg/L
6/4/25	MMW-15	Total Iron	0.03	<0.030	mg/L
9/17/24	MMW-16	Total Iron	0.03	0.936	mg/L

Table 2
Groundwater Monitoring Result for Select COCs
Emander Landfill

September 2024 to June 2025

12/16/24	MMW-16	Total Iron	0.03	1.02	mg/L
12/16/24	MMW-16	Total Iron	0.03	0.977	mg/L
3/18/25	MMW-16	Total Iron	0.03	0.976	mg/L
6/3/25	MMW-16	Total Iron	0.03	1.14	mg/L
6/3/25	MMW-16	Total Iron	0.03	0.972	mg/L
9/17/24	MMW-17	Total Iron	0.03	0.435	mg/L
12/16/24	MMW-17	Total Iron	0.03	0.328	mg/L
3/18/25	MMW-17	Total Iron	0.03	0.598	mg/L
6/3/25	MMW-17	Total Iron	0.03	0.429	mg/L
9/18/24	MMW-18	Total Iron	0.03	0.637	mg/L
12/17/24	MMW-18	Total Iron	0.03	0.688	mg/L
3/19/25	MMW-18	Total Iron	0.03	0.752	mg/L
6/4/25	MMW-18	Total Iron	0.03	0.659	mg/L
9/18/24	MMW-19	Total Iron	0.03	<0.030	mg/L
12/17/24	MMW-19	Total Iron	0.03	<0.030	mg/L
3/19/25	MMW-19	Total Iron	0.03	0.059	mg/L
6/4/25	MMW-19	Total Iron	0.03	<0.030	mg/L
9/18/24	MMW-20	Total Iron	0.03	<0.030	mg/L
12/17/24	MMW-20	Total Iron	0.03	<0.030	mg/L
3/19/25	MMW-20	Total Iron	0.03	<0.030	mg/L
3/19/25	MMW-20	Total Iron	0.03	<0.030	mg/L
6/4/25	MMW-20	Total Iron	0.03	<0.030	mg/L
9/17/24	BH-03A	Dissolved Arsenic	0.05	0.499	ug/L
12/16/24	BH-03A	Dissolved Arsenic	0.05	0.579	ug/L
3/18/25	BH-03A	Dissolved Arsenic	0.05	0.548	ug/L
6/3/25	BH-03A	Dissolved Arsenic	0.05	0.533	ug/L
9/17/24	BH-05	Dissolved Arsenic	0.05	6.110	ug/L
12/16/24	BH-05	Dissolved Arsenic	0.05	4.810	ug/L
3/18/25	BH-05	Dissolved Arsenic	0.05	4.239	ug/L
6/3/25	BH-05	Dissolved Arsenic	0.05	3.794	ug/L
9/17/24	BH-06	Dissolved Arsenic	0.05	8.442	ug/L
12/16/24	BH-06	Dissolved Arsenic	0.05	4.432	ug/L
3/18/25	BH-06	Dissolved Arsenic	0.05	5.416	ug/L
6/3/25	BH-06	Dissolved Arsenic	0.05	10.52	ug/L
9/18/24	BH-07	Dissolved Arsenic	0.05	10.55	ug/L
12/17/24	BH-07	Dissolved Arsenic	0.05	9.960	ug/L
3/19/25	BH-07	Dissolved Arsenic	0.05	13.93	ug/L
6/4/25	BH-07	Dissolved Arsenic	0.05	11.21	ug/L
9/17/24	MMW-12	Dissolved Arsenic	0.05	1.809	ug/L
12/16/24	MMW-12	Dissolved Arsenic	0.05	1.787	ug/L
3/18/25	MMW-12	Dissolved Arsenic	0.05	1.718	ug/L
6/3/25	MMW-12	Dissolved Arsenic	0.05	1.954	ug/L
9/17/24	MMW-14	Dissolved Arsenic	0.05	0.302	ug/L

Table 2
Groundwater Monitoring Result for Select COCs
Emander Landfill

September 2024 to June 2025

9/17/24	MMW-14	Dissolved Arsenic	0.05	0.391	ug/L
12/16/24	MMW-14	Dissolved Arsenic	0.05	0.328	ug/L
3/18/25	MMW-14	Dissolved Arsenic	0.05	0.274	ug/L
6/3/25	MMW-14	Dissolved Arsenic	0.05	0.326	ug/L
9/18/24	MMW-15	Dissolved Arsenic	0.05	1.988	ug/L
12/17/24	MMW-15	Dissolved Arsenic	0.05	2.237	ug/L
3/19/25	MMW-15	Dissolved Arsenic	0.05	2.217	ug/L
6/4/25	MMW-15	Dissolved Arsenic	0.05	2.397	ug/L
9/17/24	MMW-16	Dissolved Arsenic	0.05	19.96	ug/L
12/16/24	MMW-16	Dissolved Arsenic	0.05	20.50	ug/L
12/16/24	MMW-16	Dissolved Arsenic	0.05	20.21	ug/L
3/18/25	MMW-16	Dissolved Arsenic	0.05	20.40	ug/L
6/3/25	MMW-16	Dissolved Arsenic	0.05	20.87	ug/L
6/3/25	MMW-16	Dissolved Arsenic	0.05	21.24	ug/L
9/17/24	MMW-17	Dissolved Arsenic	0.05	8.439	ug/L
12/16/24	MMW-17	Dissolved Arsenic	0.05	8.612	ug/L
3/18/25	MMW-17	Dissolved Arsenic	0.05	8.958	ug/L
6/3/25	MMW-17	Dissolved Arsenic	0.05	9.186	ug/L
9/18/24	MMW-18	Dissolved Arsenic	0.05	15.59	ug/L
12/17/24	MMW-18	Dissolved Arsenic	0.05	15.11	ug/L
3/19/25	MMW-18	Dissolved Arsenic	0.05	15.02	ug/L
6/4/25	MMW-18	Dissolved Arsenic	0.05	15.28	ug/L
9/18/24	MMW-19	Dissolved Arsenic	0.05	0.647	ug/L
12/17/24	MMW-19	Dissolved Arsenic	0.05	0.667	ug/L
3/19/25	MMW-19	Dissolved Arsenic	0.05	0.661	ug/L
6/4/25	MMW-19	Dissolved Arsenic	0.05	0.770	ug/L
12/17/24	MMW-20	Dissolved Arsenic	0.05	0.497	ug/L
3/19/25	MMW-20	Dissolved Arsenic	0.05	0.460	ug/L
3/19/25	MMW-20	Dissolved Arsenic	0.05	0.434	ug/L
6/4/25	MMW-20	Dissolved Arsenic	0.05	0.302	ug/L
9/17/24	BH-03A	Dissolved Iron	0.03	<0.030	mg/L
12/16/24	BH-03A	Dissolved Iron	0.03	<0.030	mg/L
3/18/25	BH-03A	Dissolved Iron	0.03	<0.030	mg/L
6/3/25	BH-03A	Dissolved Iron	0.03	<0.030	mg/L
9/17/24	BH-05	Dissolved Iron	0.03	12.7	mg/L
12/16/24	BH-05	Dissolved Iron	0.03	5.50	mg/L
3/18/25	BH-05	Dissolved Iron	0.03	4.46	mg/L
6/3/25	BH-05	Dissolved Iron	0.03	3.67	mg/L
9/17/24	BH-06	Dissolved Iron	0.03	4.67	mg/L
12/16/24	BH-06	Dissolved Iron	0.03	2.81	mg/L
3/18/25	BH-06	Dissolved Iron	0.03	2.12	mg/L
6/3/25	BH-06	Dissolved Iron	0.03	2.88	mg/L
9/18/24	BH-07	Dissolved Iron	0.03	3.08	mg/L

Table 2
Groundwater Monitoring Result for Select COCs
Emander Landfill

September 2024 to June 2025

12/17/24	BH-07	Dissolved Iron	0.03	4.94	mg/L
3/19/25	BH-07	Dissolved Iron	0.03	8.20	mg/L
6/4/25	BH-07	Dissolved Iron	0.03	5.70	mg/L
9/17/24	BH-08	Dissolved Iron	0.03	0.038	mg/L
12/16/24	BH-08	Dissolved Iron	0.03	<0.030	mg/L
3/18/25	BH-08	Dissolved Iron	0.03	0.207	mg/L
6/3/25	BH-08	Dissolved Iron	0.03	<0.030	mg/L
9/17/24	MMW-12	Dissolved Iron	0.03	<0.030	mg/L
12/16/24	MMW-12	Dissolved Iron	0.03	<0.030	mg/L
3/18/25	MMW-12	Dissolved Iron	0.03	0.179	mg/L
6/3/25	MMW-12	Dissolved Iron	0.03	<0.030	mg/L
9/17/24	MMW-14	Dissolved Iron	0.03	<0.030	mg/L
9/17/24	MMW-14	Dissolved Iron	0.03	<0.030	mg/L
12/16/24	MMW-14	Dissolved Iron	0.03	<0.030	mg/L
3/18/25	MMW-14	Dissolved Iron	0.03	<0.030	mg/L
6/3/25	MMW-14	Dissolved Iron	0.03	<0.030	mg/L
9/18/24	MMW-15	Dissolved Iron	0.03	<0.030	mg/L
12/17/24	MMW-15	Dissolved Iron	0.03	<0.030	mg/L
3/19/25	MMW-15	Dissolved Iron	0.03	<0.030	mg/L
6/4/25	MMW-15	Dissolved Iron	0.03	<0.030	mg/L
9/17/24	MMW-16	Dissolved Iron	0.03	0.172	mg/L
12/16/24	MMW-16	Dissolved Iron	0.03	0.478	mg/L
12/16/24	MMW-16	Dissolved Iron	0.03	0.462	mg/L
3/18/25	MMW-16	Dissolved Iron	0.03	0.324	mg/L
6/3/25	MMW-16	Dissolved Iron	0.03	<0.030	mg/L
6/3/25	MMW-16	Dissolved Iron	0.03	0.033	mg/L
9/17/24	MMW-17	Dissolved Iron	0.03	0.084	mg/L
12/16/24	MMW-17	Dissolved Iron	0.03	0.104	mg/L
3/18/25	MMW-17	Dissolved Iron	0.03	<0.030	mg/L
6/3/25	MMW-17	Dissolved Iron	0.03	<0.030	mg/L
9/18/24	MMW-18	Dissolved Iron	0.03	<0.030	mg/L
12/17/24	MMW-18	Dissolved Iron	0.03	<0.030	mg/L
3/19/25	MMW-18	Dissolved Iron	0.03	<0.030	mg/L
6/4/25	MMW-18	Dissolved Iron	0.03	0.062	mg/L
9/18/24	MMW-19	Dissolved Iron	0.03	<0.030	mg/L
12/17/24	MMW-19	Dissolved Iron	0.03	<0.030	mg/L
3/19/25	MMW-19	Dissolved Iron	0.03	0.071	mg/L
6/4/25	MMW-19	Dissolved Iron	0.03	<0.030	mg/L
9/18/24	MMW-20	Dissolved Iron	0.03	<0.030	mg/L
12/17/24	MMW-20	Dissolved Iron	0.03	<0.030	mg/L
3/19/25	MMW-20	Dissolved Iron	0.03	<0.030	mg/L
3/19/25	MMW-20	Dissolved Iron	0.03	<0.030	mg/L
6/4/25	MMW-20	Dissolved Iron	0.03	<0.030	mg/L

Table 2
Groundwater Monitoring Result for Select COCs
Emander Landfill

September 2024 to June 2025

9/17/24	BH-03A	Dissolved Manganese	0.01	0.088	mg/L
12/16/24	BH-03A	Dissolved Manganese	0.01	0.070	mg/L
3/18/25	BH-03A	Dissolved Manganese	0.01	0.066	mg/L
6/3/25	BH-03A	Dissolved Manganese	0.01	0.081	mg/L
9/17/24	BH-05	Dissolved Manganese	0.01	2.24	mg/L
12/16/24	BH-05	Dissolved Manganese	0.01	0.880	mg/L
3/18/25	BH-05	Dissolved Manganese	0.01	0.658	mg/L
6/3/25	BH-05	Dissolved Manganese	0.01	0.902	mg/L
9/17/24	BH-06	Dissolved Manganese	0.01	2.48	mg/L
12/16/24	BH-06	Dissolved Manganese	0.01	1.15	mg/L
3/18/25	BH-06	Dissolved Manganese	0.01	0.747	mg/L
6/3/25	BH-06	Dissolved Manganese	0.01	0.851	mg/L
9/18/24	BH-07	Dissolved Manganese	0.01	3.65	mg/L
12/17/24	BH-07	Dissolved Manganese	0.01	3.46	mg/L
3/19/25	BH-07	Dissolved Manganese	0.01	4.23	mg/L
6/4/25	BH-07	Dissolved Manganese	0.01	3.83	mg/L
9/17/24	BH-08	Dissolved Manganese	0.01	<0.010	mg/L
12/16/24	BH-08	Dissolved Manganese	0.01	<0.010	mg/L
3/18/25	BH-08	Dissolved Manganese	0.01	<0.010	mg/L
6/3/25	BH-08	Dissolved Manganese	0.01	<0.010	mg/L
9/17/24	MMW-12	Dissolved Manganese	0.01	<0.010	mg/L
12/16/24	MMW-12	Dissolved Manganese	0.01	<0.010	mg/L
3/18/25	MMW-12	Dissolved Manganese	0.01	<0.010	mg/L
6/3/25	MMW-12	Dissolved Manganese	0.01	<0.010	mg/L
9/17/24	MMW-14	Dissolved Manganese	0.01	0.059	mg/L
9/17/24	MMW-14	Dissolved Manganese	0.01	0.057	mg/L
12/16/24	MMW-14	Dissolved Manganese	0.01	0.059	mg/L
3/18/25	MMW-14	Dissolved Manganese	0.01	0.098	mg/L
6/3/25	MMW-14	Dissolved Manganese	0.01	0.052	mg/L
9/18/24	MMW-15	Dissolved Manganese	0.01	<0.010	mg/L
12/17/24	MMW-15	Dissolved Manganese	0.01	<0.010	mg/L
3/19/25	MMW-15	Dissolved Manganese	0.01	<0.010	mg/L
6/4/25	MMW-15	Dissolved Manganese	0.01	<0.010	mg/L
9/17/24	MMW-16	Dissolved Manganese	0.01	2.30	mg/L
12/16/24	MMW-16	Dissolved Manganese	0.01	2.27	mg/L
12/16/24	MMW-16	Dissolved Manganese	0.01	2.32	mg/L
3/18/25	MMW-16	Dissolved Manganese	0.01	2.43	mg/L
6/3/25	MMW-16	Dissolved Manganese	0.01	2.21	mg/L
6/3/25	MMW-16	Dissolved Manganese	0.01	2.10	mg/L
9/17/24	MMW-17	Dissolved Manganese	0.01	1.81	mg/L
12/16/24	MMW-17	Dissolved Manganese	0.01	1.60	mg/L
3/18/25	MMW-17	Dissolved Manganese	0.01	2.19	mg/L
6/3/25	MMW-17	Dissolved Manganese	0.01	2.12	mg/L

Table 2
Groundwater Monitoring Result for Select COCs
Emander Landfill

September 2024 to June 2025

9/18/24	MMW-18	Dissolved Manganese	0.01	1.72	mg/L
12/17/24	MMW-18	Dissolved Manganese	0.01	1.80	mg/L
3/19/25	MMW-18	Dissolved Manganese	0.01	1.94	mg/L
6/4/25	MMW-18	Dissolved Manganese	0.01	1.78	mg/L
9/18/24	MMW-19	Dissolved Manganese	0.01	<0.010	mg/L
12/17/24	MMW-19	Dissolved Manganese	0.01	<0.010	mg/L
3/19/25	MMW-19	Dissolved Manganese	0.01	0.015	mg/L
6/4/25	MMW-19	Dissolved Manganese	0.01	<0.010	mg/L
9/18/24	MMW-20	Dissolved Manganese	0.01	<0.010	mg/L
12/17/24	MMW-20	Dissolved Manganese	0.01	<0.010	mg/L
3/19/25	MMW-20	Dissolved Manganese	0.01	<0.010	mg/L
3/19/25	MMW-20	Dissolved Manganese	0.01	<0.010	mg/L
6/4/25	MMW-20	Dissolved Manganese	0.01	<0.010	mg/L
9/17/24	BH-03A	Total Dissolved Solids	5	128	mg/L
12/16/24	BH-03A	Total Dissolved Solids	5	100	mg/L
3/18/25	BH-03A	Total Dissolved Solids	5	129	mg/L
6/3/25	BH-03A	Total Dissolved Solids	5	128	mg/L
9/17/24	BH-05	Total Dissolved Solids	5	252	mg/L
12/16/24	BH-05	Total Dissolved Solids	5	116	mg/L
3/18/25	BH-05	Total Dissolved Solids	5	116	mg/L
6/3/25	BH-05	Total Dissolved Solids	5	151	mg/L
9/17/24	BH-06	Total Dissolved Solids	5	318	mg/L
12/16/24	BH-06	Total Dissolved Solids	5	161	mg/L
3/18/25	BH-06	Total Dissolved Solids	5	126	mg/L
6/3/25	BH-06	Total Dissolved Solids	5	154	mg/L
9/18/24	BH-07	Total Dissolved Solids	5	325	mg/L
12/17/24	BH-07	Total Dissolved Solids	5	297	mg/L
3/19/25	BH-07	Total Dissolved Solids	5	332	mg/L
6/4/25	BH-07	Total Dissolved Solids	5	307	mg/L
9/17/24	BH-08	Total Dissolved Solids	5	78.0	mg/L
12/16/24	BH-08	Total Dissolved Solids	5	71.0	mg/L
3/18/25	BH-08	Total Dissolved Solids	5	89.0	mg/L
6/3/25	BH-08	Total Dissolved Solids	5	88.0	mg/L
9/17/24	MMW-12	Total Dissolved Solids	5	256	mg/L
12/16/24	MMW-12	Total Dissolved Solids	5	212	mg/L
3/18/25	MMW-12	Total Dissolved Solids	5	231	mg/L
6/3/25	MMW-12	Total Dissolved Solids	5	246	mg/L
9/17/24	MMW-14	Total Dissolved Solids	5	120	mg/L
9/17/24	MMW-14	Total Dissolved Solids	5	140	mg/L
12/16/24	MMW-14	Total Dissolved Solids	5	91.0	mg/L
3/18/25	MMW-14	Total Dissolved Solids	5	108	mg/L
6/3/25	MMW-14	Total Dissolved Solids	5	119	mg/L
9/18/24	MMW-15	Total Dissolved Solids	5	187	mg/L

Table 2
Groundwater Monitoring Result for Select COCs
Emander Landfill

September 2024 to June 2025

12/17/24	MMW-15	Total Dissolved Solids	5	194	mg/L
3/19/25	MMW-15	Total Dissolved Solids	5	179	mg/L
6/4/25	MMW-15	Total Dissolved Solids	5	187	mg/L
9/17/24	MMW-16	Total Dissolved Solids	5	322	mg/L
12/16/24	MMW-16	Total Dissolved Solids	5	295	mg/L
12/16/24	MMW-16	Total Dissolved Solids	5	297	mg/L
3/18/25	MMW-16	Total Dissolved Solids	5	332	mg/L
6/3/25	MMW-16	Total Dissolved Solids	5	316	mg/L
6/3/25	MMW-16	Total Dissolved Solids	5	299	mg/L
9/17/24	MMW-17	Total Dissolved Solids	5	200	mg/L
12/16/24	MMW-17	Total Dissolved Solids	5	146	mg/L
3/18/25	MMW-17	Total Dissolved Solids	5	177	mg/L
6/3/25	MMW-17	Total Dissolved Solids	5	198	mg/L
9/18/24	MMW-18	Total Dissolved Solids	5	470	mg/L
12/17/24	MMW-18	Total Dissolved Solids	5	489	mg/L
3/19/25	MMW-18	Total Dissolved Solids	5	512	mg/L
6/4/25	MMW-18	Total Dissolved Solids	5	498	mg/L
9/18/24	MMW-19	Total Dissolved Solids	5	131	mg/L
12/17/24	MMW-19	Total Dissolved Solids	5	129	mg/L
3/19/25	MMW-19	Total Dissolved Solids	5	128	mg/L
6/4/25	MMW-19	Total Dissolved Solids	5	121	mg/L
9/18/24	MMW-20	Total Dissolved Solids	5	151	mg/L
12/17/24	MMW-20	Total Dissolved Solids	5	142	mg/L
3/19/25	MMW-20	Total Dissolved Solids	5	137	mg/L
3/19/25	MMW-20	Total Dissolved Solids	5	182	mg/L
6/4/25	MMW-20	Total Dissolved Solids	5	151	mg/L
9/17/24	BH-03A	Total Organic Carbon	0.5	7.7	mg/L
12/16/24	BH-03A	Total Organic Carbon	0.5	0.7	mg/L
3/18/25	BH-03A	Total Organic Carbon	0.5	0.5	mg/L
6/3/25	BH-03A	Total Organic Carbon	0.5	0.68	mg/L
9/17/24	BH-05	Total Organic Carbon	0.5	25.5	mg/L
12/16/24	BH-05	Total Organic Carbon	0.5	5.4	mg/L
3/18/25	BH-05	Total Organic Carbon	0.5	3.3	mg/L
6/3/25	BH-05	Total Organic Carbon	0.5	3.88	mg/L
9/17/24	BH-06	Total Organic Carbon	0.5	40.4	mg/L
12/16/24	BH-06	Total Organic Carbon	0.5	9.9	mg/L
3/18/25	BH-06	Total Organic Carbon	0.5	8.6	mg/L
6/3/25	BH-06	Total Organic Carbon	0.5	8.45	mg/L
9/18/24	BH-07	Total Organic Carbon	0.5	84.1	mg/L
12/17/24	BH-07	Total Organic Carbon	0.5	7.7	mg/L
3/19/25	BH-07	Total Organic Carbon	0.5	7.2	mg/L
6/4/25	BH-07	Total Organic Carbon	0.5	7.92	mg/L
9/17/24	BH-08	Total Organic Carbon	0.5	3.9	mg/L

Table 2
Groundwater Monitoring Result for Select COCs
Emander Landfill

September 2024 to June 2025

12/16/24	BH-08	Total Organic Carbon	0.5	3.3	mg/L
3/18/25	BH-08	Total Organic Carbon	0.5	0.8	mg/L
6/3/25	BH-08	Total Organic Carbon	0.5	0.90	mg/L
9/17/24	MMW-12	Total Organic Carbon	0.5	20.7	mg/L
12/16/24	MMW-12	Total Organic Carbon	0.5	<0.5	mg/L
3/18/25	MMW-12	Total Organic Carbon	0.5	<0.5	mg/L
6/3/25	MMW-12	Total Organic Carbon	0.5	<0.5	mg/L
9/17/24	MMW-14	Total Organic Carbon	0.5	1.7	mg/L
9/17/24	MMW-14	Total Organic Carbon	0.5	2.3	mg/L
12/16/24	MMW-14	Total Organic Carbon	0.5	<0.5	mg/L
3/18/25	MMW-14	Total Organic Carbon	0.5	1.7	mg/L
6/3/25	MMW-14	Total Organic Carbon	0.5	<0.50	mg/L
9/18/24	MMW-15	Total Organic Carbon	0.5	16.1	mg/L
12/17/24	MMW-15	Total Organic Carbon	0.5	<0.5	mg/L
3/19/25	MMW-15	Total Organic Carbon	0.5	<0.5	mg/L
6/4/25	MMW-15	Total Organic Carbon	0.5	<0.5	mg/L
9/17/24	MMW-16	Total Organic Carbon	0.5	31.6	mg/L
12/16/24	MMW-16	Total Organic Carbon	0.5	1.8	mg/L
12/16/24	MMW-16	Total Organic Carbon	0.5	1.7	mg/L
3/18/25	MMW-16	Total Organic Carbon	0.5	<0.5	mg/L
6/3/25	MMW-16	Total Organic Carbon	0.5	1.78	mg/L
6/3/25	MMW-16	Total Organic Carbon	0.5	1.58	mg/L
9/17/24	MMW-17	Total Organic Carbon	0.5	21.1	mg/L
12/16/24	MMW-17	Total Organic Carbon	0.5	4.7	mg/L
3/18/25	MMW-17	Total Organic Carbon	0.5	4.2	mg/L
6/3/25	MMW-17	Total Organic Carbon	0.5	3.92	mg/L
9/18/24	MMW-18	Total Organic Carbon	0.5	23.0	mg/L
12/17/24	MMW-18	Total Organic Carbon	0.5	5.4	mg/L
3/19/25	MMW-18	Total Organic Carbon	0.5	4.5	mg/L
6/4/25	MMW-18	Total Organic Carbon	0.5	5.36	mg/L
9/18/24	MMW-19	Total Organic Carbon	0.5	4.8	mg/L
12/17/24	MMW-19	Total Organic Carbon	0.5	<0.5	mg/L
3/19/25	MMW-19	Total Organic Carbon	0.5	<0.5	mg/L
6/4/25	MMW-19	Total Organic Carbon	0.5	0.55	mg/L
9/18/24	MMW-20	Total Organic Carbon	0.5	13.2	mg/L
12/17/24	MMW-20	Total Organic Carbon	0.5	<0.5	mg/L
3/19/25	MMW-20	Total Organic Carbon	0.5	<0.5	mg/L
3/19/25	MMW-20	Total Organic Carbon	0.5	<0.5	mg/L
6/4/25	MMW-20	Total Organic Carbon	0.5	<0.5	mg/L
9/17/24	BH-03A	Trichloroethylene	2	<2.00	ug/L
12/16/24	BH-03A	Trichloroethylene	2	<2.00	ug/L
3/18/25	BH-03A	Trichloroethylene	2	<2.00	ug/L
6/3/25	BH-03A	Trichloroethylene	2	<2.00	ug/L

Table 2
Groundwater Monitoring Result for Select COCs
Emander Landfill

September 2024 to June 2025

9/17/24	BH-05	Trichloroethylene	2	<2.00	ug/L
12/16/24	BH-05	Trichloroethylene	2	<2.00	ug/L
3/18/25	BH-05	Trichloroethylene	2	<2.00	ug/L
6/3/25	BH-05	Trichloroethylene	2	<2.00	ug/L
9/17/24	BH-06	Trichloroethylene	2	<2.00	ug/L
12/16/24	BH-06	Trichloroethylene	2	<2.00	ug/L
3/18/25	BH-06	Trichloroethylene	2	<2.00	ug/L
6/3/25	BH-06	Trichloroethylene	2	<2.00	ug/L
9/18/24	BH-07	Trichloroethylene	2	<2.00	ug/L
12/17/24	BH-07	Trichloroethylene	2	<2.00	ug/L
3/19/25	BH-07	Trichloroethylene	2	<2.00	ug/L
6/4/25	BH-07	Trichloroethylene	2	<2.00	ug/L
9/17/24	BH-08	Trichloroethylene	2	<2.00	ug/L
12/16/24	BH-08	Trichloroethylene	2	<2.00	ug/L
3/18/25	BH-08	Trichloroethylene	2	<2.00	ug/L
6/3/25	BH-08	Trichloroethylene	2	<2.00	ug/L
9/17/24	MMW-12	Trichloroethylene	2	<2.00	ug/L
12/16/24	MMW-12	Trichloroethylene	2	<2.00	ug/L
3/18/25	MMW-12	Trichloroethylene	2	<2.00	ug/L
6/3/25	MMW-12	Trichloroethylene	2	<2.00	ug/L
9/17/24	MMW-14	Trichloroethylene	2	<2.00	ug/L
9/17/24	MMW-14	Trichloroethylene	2	<2.00	ug/L
12/16/24	MMW-14	Trichloroethylene	2	<2.00	ug/L
3/18/25	MMW-14	Trichloroethylene	2	<2.00	ug/L
6/3/25	MMW-14	Trichloroethylene	2	<2.00	ug/L
9/18/24	MMW-15	Trichloroethylene	2	<2.00	ug/L
12/17/24	MMW-15	Trichloroethylene	2	<2.00	ug/L
3/19/25	MMW-15	Trichloroethylene	2	<2.00	ug/L
6/4/25	MMW-15	Trichloroethylene	2	<2.00	ug/L
9/17/24	MMW-16	Trichloroethylene	2	<2.00	ug/L
12/16/24	MMW-16	Trichloroethylene	2	<2.00	ug/L
12/16/24	MMW-16	Trichloroethylene	2	<2.00	ug/L
3/18/25	MMW-16	Trichloroethylene	2	<2.00	ug/L
6/3/25	MMW-16	Trichloroethylene	2	<2.00	ug/L
6/3/25	MMW-16	Trichloroethylene	2	<2.00	ug/L
9/17/24	MMW-17	Trichloroethylene	2	<2.00	ug/L
12/16/24	MMW-17	Trichloroethylene	2	<2.00	ug/L
3/18/25	MMW-17	Trichloroethylene	2	<2.00	ug/L
6/3/25	MMW-17	Trichloroethylene	2	<2.00	ug/L
9/18/24	MMW-18	Trichloroethylene	2	<2.00	ug/L
12/17/24	MMW-18	Trichloroethylene	2	<2.00	ug/L
3/19/25	MMW-18	Trichloroethylene	2	<2.00	ug/L
6/4/25	MMW-18	Trichloroethylene	2	<2.00	ug/L

Table 2
Groundwater Monitoring Result for Select COCs
Emander Landfill

September 2024 to June 2025

9/18/24	MMW-19	Trichloroethylene	2	<2.00	ug/L
12/17/24	MMW-19	Trichloroethylene	2	<2.00	ug/L
3/19/25	MMW-19	Trichloroethylene	2	<2.00	ug/L
6/4/25	MMW-19	Trichloroethylene	2	<2.00	ug/L
9/18/24	MMW-20	Trichloroethylene	2	<2.00	ug/L
12/17/24	MMW-20	Trichloroethylene	2	<2.00	ug/L
3/19/25	MMW-20	Trichloroethylene	2	<2.00	ug/L
3/19/25	MMW-20	Trichloroethylene	2	<2.00	ug/L
6/4/25	MMW-20	Trichloroethylene	2	<2.00	ug/L
9/17/24	BH-03A	Cis-1,2-Dichloroethene	0.03	0.36	ug/L
12/16/24	BH-03A	Cis-1,2-Dichloroethene	0.03	0.38	ug/L
3/18/25	BH-03A	Cis-1,2-Dichloroethene	0.03	0.53	ug/L
6/3/25	BH-03A	Cis-1,2-Dichloroethene	0.03	<0.03	ug/L
9/17/24	BH-05	Cis-1,2-Dichloroethene	0.03	0.21	ug/L
12/16/24	BH-05	Cis-1,2-Dichloroethene	0.03	0.11	ug/L
3/18/25	BH-05	Cis-1,2-Dichloroethene	0.03	0.10	ug/L
6/3/25	BH-05	Cis-1,2-Dichloroethene	0.03	<0.03	ug/L
9/17/24	BH-06	Cis-1,2-Dichloroethene	0.03	0.24	ug/L
12/16/24	BH-06	Cis-1,2-Dichloroethene	0.03	0.14	ug/L
3/18/25	BH-06	Cis-1,2-Dichloroethene	0.03	0.44	ug/L
6/3/25	BH-06	Cis-1,2-Dichloroethene	0.03	<0.03	ug/L
9/18/24	BH-07	Cis-1,2-Dichloroethene	0.03	0.33	ug/L
12/17/24	BH-07	Cis-1,2-Dichloroethene	0.03	0.32	ug/L
3/19/25	BH-07	Cis-1,2-Dichloroethene	0.03	0.25	ug/L
6/4/25	BH-07	Cis-1,2-Dichloroethene	0.03	0.35	ug/L
9/17/24	BH-08	Cis-1,2-Dichloroethene	0.03	<0.03	ug/L
12/16/24	BH-08	Cis-1,2-Dichloroethene	0.03	<0.03	ug/L
3/18/25	BH-08	Cis-1,2-Dichloroethene	0.03	<0.03	ug/L
6/3/25	BH-08	Cis-1,2-Dichloroethene	0.03	<0.03	ug/L
9/17/24	MMW-12	Cis-1,2-Dichloroethene	0.03	<0.03	ug/L
12/16/24	MMW-12	Cis-1,2-Dichloroethene	0.03	<0.03	ug/L
3/18/25	MMW-12	Cis-1,2-Dichloroethene	0.03	<0.03	ug/L
6/3/25	MMW-12	Cis-1,2-Dichloroethene	0.03	<0.03	ug/L
9/17/24	MMW-14	Cis-1,2-Dichloroethene	0.03	<0.03	ug/L
9/17/24	MMW-14	Cis-1,2-Dichloroethene	0.03	<0.03	ug/L
12/16/24	MMW-14	Cis-1,2-Dichloroethene	0.03	<0.03	ug/L
3/18/25	MMW-14	Cis-1,2-Dichloroethene	0.03	<0.03	ug/L
6/3/25	MMW-14	Cis-1,2-Dichloroethene	0.03	<0.03	ug/L
9/18/24	MMW-15	Cis-1,2-Dichloroethene	0.03	<0.03	ug/L
12/17/24	MMW-15	Cis-1,2-Dichloroethene	0.03	<0.03	ug/L
3/19/25	MMW-15	Cis-1,2-Dichloroethene	0.03	<0.03	ug/L
6/4/25	MMW-15	Cis-1,2-Dichloroethene	0.03	<0.03	ug/L
9/17/24	MMW-16	Cis-1,2-Dichloroethene	0.03	1.50	ug/L

Table 2
Groundwater Monitoring Result for Select COCs
Emander Landfill

September 2024 to June 2025

12/16/24	MMW-16	Cis-1,2-Dichloroethene	0.03	1.29	ug/L
12/16/24	MMW-16	Cis-1,2-Dichloroethene	0.03	1.35	ug/L
3/18/25	MMW-16	Cis-1,2-Dichloroethene	0.03	1.36	ug/L
6/3/25	MMW-16	Cis-1,2-Dichloroethene	0.03	0.59	ug/L
6/3/25	MMW-16	Cis-1,2-Dichloroethene	0.03	0.89	ug/L
9/17/24	MMW-17	Cis-1,2-Dichloroethene	0.03	<0.03	ug/L
12/16/24	MMW-17	Cis-1,2-Dichloroethene	0.03	0.12	ug/L
3/18/25	MMW-17	Cis-1,2-Dichloroethene	0.03	<0.03	ug/L
6/3/25	MMW-17	Cis-1,2-Dichloroethene	0.03	<0.03	ug/L
9/18/24	MMW-18	Cis-1,2-Dichloroethene	0.03	0.59	ug/L
12/17/24	MMW-18	Cis-1,2-Dichloroethene	0.03	0.66	ug/L
3/19/25	MMW-18	Cis-1,2-Dichloroethene	0.03	0.61	ug/L
6/4/25	MMW-18	Cis-1,2-Dichloroethene	0.03	0.70	ug/L
9/18/24	MMW-19	Cis-1,2-Dichloroethene	0.03	<0.03	ug/L
12/17/24	MMW-19	Cis-1,2-Dichloroethene	0.03	<0.03	ug/L
3/19/25	MMW-19	Cis-1,2-Dichloroethene	0.03	<0.03	ug/L
6/4/25	MMW-19	Cis-1,2-Dichloroethene	0.03	<0.03	ug/L
9/18/24	MMW-20	Cis-1,2-Dichloroethene	0.03	<0.03	ug/L
12/17/24	MMW-20	Cis-1,2-Dichloroethene	0.03	<0.03	ug/L
3/19/25	MMW-20	Cis-1,2-Dichloroethene	0.03	<0.03	ug/L
3/19/25	MMW-20	Cis-1,2-Dichloroethene	0.03	<0.03	ug/L
6/4/25	MMW-20	Cis-1,2-Dichloroethene	0.03	<0.03	ug/L
9/17/24	BH-03A	Vinyl Chloride	0.01	0.16	ug/L
12/16/24	BH-03A	Vinyl Chloride	0.01	0.21	ug/L
3/18/25	BH-03A	Vinyl Chloride	0.01	0.11	ug/L
6/3/25	BH-03A	Vinyl Chloride	0.01	<0.01	ug/L
9/17/24	BH-05	Vinyl Chloride	0.01	0.47	ug/L
12/16/24	BH-05	Vinyl Chloride	0.01	0.10	ug/L
3/18/25	BH-05	Vinyl Chloride	0.01	0.05	ug/L
6/3/25	BH-05	Vinyl Chloride	0.01	<0.01	ug/L
9/17/24	BH-06	Vinyl Chloride	0.01	0.40	ug/L
12/16/24	BH-06	Vinyl Chloride	0.01	0.15	ug/L
3/18/25	BH-06	Vinyl Chloride	0.01	0.10	ug/L
6/3/25	BH-06	Vinyl Chloride	0.01	<0.01	ug/L
9/18/24	BH-07	Vinyl Chloride	0.01	0.57	ug/L
12/17/24	BH-07	Vinyl Chloride	0.01	0.64	ug/L
3/19/25	BH-07	Vinyl Chloride	0.01	0.29	ug/L
6/4/25	BH-07	Vinyl Chloride	0.01	2.78	ug/L
9/17/24	BH-08	Vinyl Chloride	0.01	<0.01	ug/L
12/16/24	BH-08	Vinyl Chloride	0.01	<0.01	ug/L
3/18/25	BH-08	Vinyl Chloride	0.01	<0.01	ug/L
6/3/25	BH-08	Vinyl Chloride	0.01	<0.01	ug/L
9/17/24	MMW-12	Vinyl Chloride	0.01	<0.01	ug/L

Table 2
Groundwater Monitoring Result for Select COCs
Emander Landfill

September 2024 to June 2025

12/16/24	MMW-12	Vinyl Chloride	0.01	<0.01	ug/L
3/18/25	MMW-12	Vinyl Chloride	0.01	<0.01	ug/L
6/3/25	MMW-12	Vinyl Chloride	0.01	<0.01	ug/L
9/17/24	MMW-14	Vinyl Chloride	0.01	<0.01	ug/L
12/16/24	MMW-14	Vinyl Chloride	0.01	<0.01	ug/L
3/18/25	MMW-14	Vinyl Chloride	0.01	<0.01	ug/L
6/3/25	MMW-14	Vinyl Chloride	0.01	<0.01	ug/L
9/18/24	MMW-15	Vinyl Chloride	0.01	<0.01	ug/L
12/17/24	MMW-15	Vinyl Chloride	0.01	<0.01	ug/L
3/19/25	MMW-15	Vinyl Chloride	0.01	<0.01	ug/L
6/4/25	MMW-15	Vinyl Chloride	0.01	<0.01	ug/L
9/17/24	MMW-16	Vinyl Chloride	0.01	0.34	ug/L
12/16/24	MMW-16	Vinyl Chloride	0.01	0.38	ug/L
12/16/24	MMW-16	Vinyl Chloride	0.01	0.40	ug/L
3/18/25	MMW-16	Vinyl Chloride	0.01	0.23	ug/L
6/3/25	MMW-16	Vinyl Chloride	0.01	<0.01	ug/L
6/3/25	MMW-16	Vinyl Chloride	0.01	<0.01	ug/L
9/17/24	MMW-17	Vinyl Chloride	0.01	<0.01	ug/L
12/16/24	MMW-17	Vinyl Chloride	0.01	<0.01	ug/L
3/18/25	MMW-17	Vinyl Chloride	0.01	<0.01	ug/L
6/3/25	MMW-17	Vinyl Chloride	0.01	<0.01	ug/L
9/18/24	MMW-18	Vinyl Chloride	0.01	1.42	ug/L
12/17/24	MMW-18	Vinyl Chloride	0.01	1.95	ug/L
3/19/25	MMW-18	Vinyl Chloride	0.01	1.06	ug/L
6/4/25	MMW-18	Vinyl Chloride	0.01	6.97	ug/L
9/18/24	MMW-19	Vinyl Chloride	0.01	<0.01	ug/L
12/17/24	MMW-19	Vinyl Chloride	0.01	<0.01	ug/L
3/19/25	MMW-19	Vinyl Chloride	0.01	0.02	ug/L
6/4/25	MMW-19	Vinyl Chloride	0.01	<0.01	ug/L
9/18/24	MMW-20	Vinyl Chloride	0.01	<0.01	ug/L
12/17/24	MMW-20	Vinyl Chloride	0.01	<0.01	ug/L
3/19/25	MMW-20	Vinyl Chloride	0.01	<0.01	ug/L
3/19/25	MMW-20	Vinyl Chloride	0.01	<0.01	ug/L
6/4/25	MMW-20	Vinyl Chloride	0.01	<0.01	ug/L

Shaded Results: Exceeds MTCA Groundwater Cleanup Standard or Secondary Groundwater Quaity Standard.

mg/L = milligams per liter.

ug/L = micrograms per liter.