Environmental Management Plan Pump Station MH-3

Quantum Loophole, Frederick Maryland

Submitted to:

Quantum Maryland, LLC 500 E. 4th Street, Suite 333 Austin, Texas 78701

Submitted by:

GEI Consultants, Inc. 400 Unicorn Park Drive Woburn, MA 01801 781-721-4000

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Document1



Transmittal

Quantum Maryland, LLC 500 E. 4th Street, Suite 333 Austin, Texas 78701

Attn: Mr. AD Robison

Re: Environmental Management Plan Pump Station Manhole 3 Quantum Maryland, Inc. Frederick County, Maryland

Dear Mr. Robison,

GEI Consultants, Inc. (GEI) has prepared this Environmental Management Plan (EMP) for utility construction work related to sewer pump station construction at the former Eastalco property in Frederick Maryland.

This EMP relates to disturbance of soil and groundwater within the limits of the area of the Environmental Covenant (EC) during the construction of a secant pile wall, excavation of soil and rock within that structure, and use of the excavation as a launch or receiving pit for installation of a sewer line via microtunneling from manhole MH-3 to MH-2 (MH-2 is located at the pump station outside the EC boundary).

The remainder of the work for the pump station construction takes place outside of the EC and is not the subject of this EMP.

This EMP has been prepared to address potential environmental impacts in the MH-3 work area. Environmental media samples (soil and groundwater collected in the vicinity of the MH-3 work east of Tuscarora Creek) have not identified environmental impacts of concern other than total chromium in soil. However, as the work area is partially within the EC, this document outlines the controls put in place to assure protection of human health for workers and future visitors in this area.

We appreciate the continued opportunity to be of assistance on this project. Should you have any questions regarding this information, or should you require additional information, please contact the GEI office in Washington, D.C.at (202) 828-9510.

cc: Ms. Anuradha Mohanty / Maryland Department of the Environment Land and Materials Administration

Ms. Barbara Brown / MDE LMA

Ms. Kate Ansalvish / MDE Water and Science Administration



1. Introduction

1.1 Overview and Purpose

At the request of Quantum Maryland, LLC (QL), GEI Consultants, Inc. (GEI) has prepared this Environmental Management Plan (EMP) for the construction of specific listed elements of a 1 million gallon per day (MGD) pump station (PS) as part of the development of the Former Alcoa Eastalco Works project (the "Site"). The overall Eastalco property ("overall property") comprises over 2,200 acres. The central portion of the overall property formerly contained the Eastalco Aluminum Works. The remaining portions of the overall property were primarily used for agricultural purposes. Future development of the overall property will include the construction of multiple data center buildings and associated infrastructure. The overall property is being developed in separate areas, and for the sake of expediency, multiple EMPs will be produced to cover individual work areas or construction elements.

The specific work elements covered by this EMP include construction of a secant pile wall around the sewer manhole MH-3 location at the southern end of the site, excavation of soil and rock within that structure, and use of the excavation as a launch or receiving pit for installation of a sewer line via microtunneling between MH-3 and MH-2 (located at the pump station outside the EC boundary).

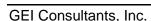
In 2021, the QL team requested that the Maryland Department of the Environment (MDE) Land and Materials Administration (LMA) participate in the review of the environmental conditions on the overall property and the proposed remedies. An expedited Inculpable Person (IP) was requested and was received by Quantum Maryland, LLC on June 22, 2021. On behalf of Quantum Maryland, LLC Geo Technology Associates, Inc. (GTA), the environmental consultant for QL at the time, submitted an application to the MDE Voluntary Cleanup Program (VCP) for the overall property on September 28, 2021. On May 4, 2022, GTA withdrew the site from the VCP and remedial oversight was engaged with the MDE Controlled Hazardous Substances (CHS) Enforcement Division. On September 26, 2023 Quantum Maryland further removed areas outside the EC from CHS oversight. Construction activities within the EC remain subject to CHS oversight and require preparation and approval of an EMP.

As part of the ongoing CHS oversight agreement between the project team and MDE, this EMP was prepared to establish proposed management of soils and groundwater encountered during the planned installation of the MH-3 construction elements. The proposed activities include:

- Installation of support of excavation (SOE) structures (secant pile wall);
- Soil screening and management/stockpiling during excavation;

- Removal of waste (if encountered);
- Removal, containerization and testing of seepage water in the excavation;
- Off-site disposal of water;
- Stockpiling and testing of excavated soil;
- Off-site disposal of soil (or soil re-use as backfill only if supported by the data collected and specifically authorized by MDE after review of data)
- Use of the MH-3 excavation as a microtunnelling launch pit or receiving pit for the MH-3 to MH-2 sewer line;
- Installation of MH-3 and tie-in of the MH-3 to MH-2 sewer line
- Import of quarry fill; and
- Use of appropriate health and safety measures during construction.

Once the EMP is approved, these remedial measures will be performed as part of the ongoing CHS oversight.



2. BACKGROUND

2.1 Site Description

The Site is located on a larger property ("overall property") that comprises over 2,200 acres and is located southeast of Ballenger Creek Pike, north and south of Manor Woods Road, west of New Design Road, northwest of Mountville Road, and north of Adamstown Road. The Site is being developed as a data center community, and near-term construction consists generally of construction of roads and utilities including water, sewer (including a 1 MGD sewer pump station) and cooling water.

This EMP applies only to specific identified work elements consisting of portions of the pump station construction which are located within the EC near the southern site boundary. A Site Location Map is presented as **Figure 1** and the work area is shown in **Figure 2**. **Figure 1** shows the approximate boundary of the overall property and the Limit of Disturbance (LOD) for the Pump Station Improvement Plan as approved by Frederick County and associated with the MDE construction stormwater permits (20-CP) described in **Section 2.2.2**. **Figure 2** shows the same Pump Station LOD for reference and then identifies with a green outline the specific area of subsurface work subject to this EMP (a 50-foot boundary around the MH-3 SOE). **Figure 5** shows the location of frac tanks for water storage and the location of the MH-3 soil/rock stockpiles. Both of these are located outside the EC in order to place them outside the floodplain. The stored water and soil remain subject to regulation under this EMP.

The work subject to this EMP includes installing and the secant pile wall surrounding manhole MH-3 (the western end extends into the EC), excavating soil and rock from within that wall (all soil and water from within the wall will be managed as "inside the EC" material), microtunneling between MH-2 and MH-3, on-site staging and testing of soil and containerized water generated within the MH-3 secant wall, off-site disposal of water, and off-site disposal of excavated soil (or soil re-use as backfill only if supported by the data collected and specifically authorized by MDE after review of data).

The pump station itself and MH-2 are located outside the EC and outside the floodplain and are not the subject of this EMP (not subject to CHS oversight). They will be constructed using similar means; however, soil and water generated during construction of and working within the separate Pump Station wet well/MH-2 secant wall will not be under CHS oversight. As a condition of the 20-CP Permits, water generated from the PS/MH-2 area (outside the EMP) will be containerized, tested and disposed off-site in the same manner as water generated from MH-3 (under this EMP).

The EMP boundary will be staked/flagged in the field with temporary/construction fence along the east side to ensure that workers/equipment performing PS/MH-3 work not subject to this EMP do not cross into the EMP area prior to approval of this EMP, and so that after approval of this EMP it remains clear to workers when they enter the EMP area.

2.2 Environmental Site History

The central portion of the overall property was historically developed as an aluminum smelting plant (Alcoa Eastalco Works) that was in operation from 1969 through 2005. The plant was demolished between 2011 and 2016. Since 2005, the plant area has undergone extensive environmental evaluation and is currently subject to an Environmental Covenant (EC) and MDE-approved Site Management Plan (SMP). The former plant area is subject to the EC due to environmental impacts associated with the historic use of the Site. The EC places restrictions on land and groundwater use within a portion of the Site and requires current and future property owners to follow an MDE-approved SMP. The EC boundary includes both the former plant area and a smaller Soil Management Area (SMA), which includes two closed, permitted industrial landfills, former waste disposal sites (WDS), and other areas containing constituents of potential concern (COPCs). The boundaries of the EC and SMP are depicted on **Figure 2**.

Historic plant operations resulted in impacts to groundwater, surface water, surface soils, and subsurface soils in the former plant area (now included within the SMA). COPCs in the SMA primarily include fluoride in groundwater, cyanide in surface water, and polychlorinated biphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAHs) in soils. Total chromium has also exceeded total chromium standards which are actually based on hexavalent chromium toxicity.

Prior sampling efforts have indicated that on-site lands surrounding the former plant area (within the EC boundary) have sustained limited impacts to soil by arsenic and several PAH compounds.

The work area covered by this EMP is well outside the SMA and thus does not include any construction activities within the SMA. Phase II soil data specific to the vicinity of MH-3 is described below. The MH-3 secant wall construction is also proximal to groundwater monitoring wells within the EC with detected exceedance of the fluoride groundwater standard and historic detection of VOCs (also described herein).

Land use restrictions and maintenance requirements specific to the SMA (i.e. engineered caps, fencing, 30-day notice of planned soil disturbance) are not relevant to the work covered by this EMP and are not enumerated here. Requirements for work in the EC (outside the SMA) include the following:

- Land use is limited to restricted commercial (Tier 2B) and restricted industrial (Tier 3B) land uses.
- Groundwater use is prohibited.
- A Health and Safety Plan (HASP) must be prepared in accordance with the SMP and maintained on-site during site work.
- A HASP must also address areas where groundwater is proposed to be encountered.
- Water encountered in/removed from excavations within the EC must be containerized and tested before disposal.

With regard to water management, page 3 of the EC states:

"Excavation Encountering Groundwater: When conducting any excavation activities on the Property extending to the ground water table, the Property Owner shall implement the requirements of a site-specific health and safety plan in accordance with the Site Management Plan to ensure that worker protection measures are met. The encountered ground water shall be containerized during all dewatering activities at the property and shall be analyzed before disposal. The analytical results shall be the basis for appropriate disposition of the ground water in accordance with applicable local, State and federal laws and regulations.

In addition to the requirements of the EC, work conducted within the scope of this EMP (and all construction within the EC) is subject to CHS oversight and as such, requires approval of the MDE CHS case manager.

GTA performed sampling in accordance with a Phase II ESA Work Plan – Initial Infrastructure Phase, as approved by MDE on September 28, 2022. This sampling plan was performed specifically to evaluate the proposed utility and roadway corridors and utility abandonment areas. The Phase II included a soil boring approximately every 300 feet along linear corridors such as utility lines and roadways, with a single boring at other features such as the pump station and proposed basins. Sampling was conducted within the SMA, EC, and former agricultural areas of the Site outside the EC, and additional information concerning these sampling activities in the vicinity of the MH-3 work area is presented in **Section 3.2** and **Appendix A**. During this investigation one surface sample was collected from 0-1 foot depth at each sample location. Sub-surface evaluation then consisted of the collection and analysis of one composite sample from 1 foot through up to 20 feet depth. Phase II data specific to the construction elements covered by this EMP are described in **Section 3.0**.

2.2.1 Construction of Sewage Pump Station Manhole 3

The Outlot 1 Pump Station (1 MGD sewage pump station) will be located in the southeastern portion of the Site, adjacent to the southwest terminus of future Happy Landing Road. The pump station will receive flows via gravity trunkline from the overall property to the west, and a force main is planned to exit the pump station towards the east. The Improvement Plan approved by Frederick County (and described in the next section) includes construction of

the pump station "wet well," generator pad, and the sewer line from manhole MH-3 via MH-2 to the pump station wet well.

All of these elements (including MH-3 itself) are located outside the EC. However, MH-3 is very close to the EC boundary. Therefore, installation of the SOE structures (secant pile wall at MH-3) and work elements involving excavation, water management and microtunnel installation within that structure extend within the EC. This MH-3 work area is also within the floodplain and subject to permits described in the next section.

The SOE structure at MH-3 extends to an excavation depth of 22 feet, with depth to water estimated at 4 feet and depth to bedrock estimated at 14.5 feet. Rock blasting is not proposed at this location.

Secant pile walls consist of overlapping drilled shafts installed from the ground surface down to an elevation that is determined based on the required embedment for the structural design. These walls provide a low-permeability cutoff for the groundwater that would flow horizontally towards the excavation. However, due to the potential for high groundwater flows through karst rock formations below the secant piles, QL is also proposing to construct a grout plug at the bottom of the excavation. This grout plug will be constructed with low-mobility grout pumped into a grid of grout holes to cover the footprint of the construction shafts.

Drilled soil and rock cuttings from the secant pile drilling and any groundwater displaced during grouting will be stored on-site in the same manner as excavated soil and containerized groundwater as described in **Sections 5.3 and 5.5.**

After completion of the secant wall, the contents will be excavated. As described in **Section 5.3**, approximately 1,500 tons of soil and rock will be generated, stockpiled and tested.

At the completed excavation depth, the seepage analysis in **Appendix D** estimates the groundwater seepage rate at the MH-3 SOE is 2,243 gallons per day. By design, two frac tanks (nominally 40,000 gallons capacity) is equal to 17.8 days capacity, which should allow for receipt of lab data for disposal. At a minimum it gives adequate time to rent a third or fourth tank if needed.

If needed (based on observed seepage rate after excavation of soil and rock within the secant wall), the SOE design includes a contingent concrete base over the grout plug. Alternatively, additional grouting can be conducted if the groundwater seepage rate is greater than expected.

The calculated seepage of 2,243 gallons per day would accumulate approximately 3 inches of water across the base of the SOE (25 feet x 50 feet) over a 24-hour period. Therefore, it should not be necessary to pump overnight to maintain construction conditions.

Once the MH-3 SOE and the PS/MH-2 SOE are both constructed, microtunneling between the two for sewer line installation will commence. The 30-inch diameter microtunnel boring machine (MTBM) is lowered into the "launch pit" (which could be MH-2 or MH-3) to begin tunneling through rock to the receiving pit. Microtunneling proceeds approximately 6 feet per day, or approximately 40 days for this project.

The MTBM has connections for water supply (initially charged with potable water) and slurry return. The fluid is not a drilling mud, rather water conveying rock chips directly from the MTBM to an aboveground separator, where water is returned to the MTBM and rock cuttings are removed for management along with excavated rock and soil.

Once tunneling is complete, the 24-inch sewer line is isntalled/pushed through from one end and grouted in place.

The sewer line will be connected to MH-3 (which is likely to be removed and replaced within the SOE) and the SOE then backfilled with jmported stone or site soil (after sampling and subject to MDE approval per **Sections 5.3 and 5.4**.

2.2.2 Plans and Permits

Several permits have been submitted to various issuing authorities for aspects of the work subject to this EMP.

Frederick County Maryland permitting included Site and Improvement Plans (Approved SP SP273456 and Approved IP PW273886). A copy of the Pump Station Site and Improvement Plans are included in **Appendix C**.

QL and its prime contractor STO have each submitted an NOI (notice of intent) for coverage under the General Permit for Discharges of Stormwater Associated with Construction Activity (Maryland General Permit No. 20-CP) and these NOIs have been processed/issued by MDE WSA. The permit numbers are as follows:

Site Name	20-CP Permit Number	State Number	Status	Applicant
Quantum Frederick - Pump Station	MDRCK07C7	20CPK07C7	Issued November 27, 2023	Quantum Maryland, LLC
Quantum Frederick - Pump Station	MDRCK078V	20CPK078V	Issued November 27, 2023	STO

Also on November 27, 2023 MDE issued an addendum to each of the two permits stating:

"This authorization does not cover discharges from the Environmental Covenant area as it is identified on the map included in your Stormwater Pollution Prevention Plan. The area, as marked, is to be left undisturbed unless approval from LMA is granted."

Upon MDE approval of this EMP by MDE LMA, QL and STO will contact MDE WSA to notify them of EMP approval and confirm removal of the above limitation from the 20-CP Permits.

An application for Water Appropriation and Water Use for construction dewatering for the Pump Station was submitted on 10/17/2023 and is awaiting approval.

Wetlands: No impacts to wetlands are authorized at this time.

Floodplain Permanent and temporary impacts to the 100-year Floodplain have been authorized by 20226097/22-NT-3124, and 202260706/22-NT-3094 respectively.

DWSU Contract number: 601-S

MDE Sewer Construction Permit – 1 MGD PS is 23-1020

3. Recent Site Activities

3.1 Impacted Media Evaluations

GTA performed a Phase II ESA of the Site to provide project-specific data along utility and roadway alignments in order to determine the proper management of material that will be excavated during roadway installation and utility installation/abandonment. The Phase II ESA was also prepared in consideration of a Work Plan that was submitted to the MDE LMA for review and approval. The sampling locations and sampling parameters were determined on September 1, 2022. The Work Plan was approved with some alterations and additional sampling parameters on September 28, 2022. This section describes the Phase II ESA in general, followed by specific Phase II samples in the vicinity of the MH-3 work subject to this EMP. Section 3.3 further describes COPCs in soil and groundwater in the area subject to this EMP.

The Phase II ESA was conducted in September and August 2022 and consisted of sediment, surface water, groundwater, and soil sampling on the Site.. Soil samples were collected from 86 soil borings that were situated at approximate 300-foot intervals along the Site's roadway or utility alignments or within the Site's proposed sediment traps, sewage pumping station, and electrical sub-station. The approximate sample locations are depicted on **Figure 3**.

Section 3.3.1 describes the results of Phase II soil samples which are located closest to the area subject to this EMP (SA1-A within the EC, and SA5-A and SA6-A outside the EC). The analytes that were requested for analysis for samples at these locations were either not detected above the laboratory reporting limits or the applicable comparison values. Please refer to the *Phase II Environmental Site Assessment, Initial Infrastructure Phase* (GTA, October 11, 2022) and *Phase II ESA Initial Infrastructure Phase Addendum* (GTA, November 2, 2022) for specific details regarding the Phase II ESA. Figure 4, Figure 8, and Table 2 of the Phase II ESA are reproduced in **Appendix A** of this EMP.

3.2 Future Land Use

According to the development plans (referenced in **Section 2.2.2**), the Site will require the construction/installation of a pump station (wet well and MH-2), a section of gravity sewer line, and manhole MH-3 so that future additional development of the overall property may occur.

On-site soils displaced by construction of the pump station wet well and MH-2 and spoils generated by microtunneling between MH-2 and MH-3 are not subject to requirements of

this EMP – that construction is outside the EC and soils generated by or used to backfill that construction will remain outside the EC. That work outside the EC is subject to the requirements of the 20-CP construction stormwater permits referenced in Section 2.2.2 and the associated Stormwater Pollution Prevention Plan (SWPPP).

For the MH-3 SOE and excavation which straddles the EC boundary, all soils and water generated in this work element will be managed as "inside the EC" material. As described in **Section 2.2.1**, the work subject to this EMP includes creating a level drilling pad in the area surrounding MH-3, installing a secant wall SOE microtunnel shaft by drilling and grouting overlapping columns around MH-3, drilling and grouting the base of the pit (at the bottom elevation of the secant wall), excavating soil and rock from within the secant wall, and removing and containing seepage water from the base of the SOE. While maintaining the dewatered condition, the shaft will be used to microtunnel between MH-2 and MH-3. The shaft will then be backfilled as described in **Section 2.2.1** using materials described in **Section 5.4**.

3.3 Contaminants of Potential Concern

3.3.1 Soil

No work related to the pump station or MH-3 construction will be conducted within the SMA.

PAHs, PCBs, and arsenic are conservatively identified as COPCs in soil within EC areas, outside of the SMA; however, these COPCs were not detected above laboratory reporting limits and/or respective NRCS values outside the SMA as part of GTA's 2022 Phase II ESA – Initial Infrastructure Phase. See **Appendix A** for Phase II ESA – Initial Infrastructure Phase data tables.

As shown on **Figure 3**, the three closest Phase II boring locations surrounding the MH-3 location subject to this EMP include SA1-A within the EC, and SA5-A and SA6-A outside the EC. Sample SA-7C is the next closest boring within the EC, but it is located across Tuscarora Creek. Boring locations SA1-A, SA5-A and SA6-A are also shown on **Figure 2** in relation to proposed features. Sample depths are identified below.

At location SA1-A (northwest of pump station MH-3 inside the EC) – a grab sample was collected from 0-1 feet bgs and a composite sample was collected from 1-6.5 feet bgs.

 Arsenic results ranged between 2.7 (shallow) to 7.5 mg/kg (deep). All are below the Risk-based calculated value from the MDE NRCS • Total Chromium was detected in the deep samples above the 30 mg/kg level for Anticipated Typical Concentrations for soils in Eastern Maryland. The four reported detections of total chromium ranged from 20 to 44 mg/kg. These two samples (and others referenced in this section) were not speciated for hexavalent chromium. However, as described in the Phase II Addendum, 7 samples with total chromium over 30 mg/kg from across the site were analyzed for hexavalent chromium and (per the Phase II Addendum) "Hexavalent chromium was not detected above the laboratory's reporting limits in the submitted samples. As such, it appears that the chromium detection was associated with the more benign trivalent chromium." The non-residential trivalent chromium standard is 150,000 mg/kg.

At locations SA5-A (southeast of MH-3 outside the EC) and SA6-A (at the pump station location outside the EC) - four samples were analyzed (SA5-A[0-1 grab], SA5-A[1-7.5 composite]. SA6-A[0-1 grab], and SA6-A[1-20 composite].

- arsenic results ranged between 5.2 to 7.7 mg/kg. All arsenic results are below the Risk-based calculated value from the MDE NRCS of 26.8 mg/kg.
- Total Chromium was not detected in any of the four samples above the 30 mg/kg level for Anticipated Typical Concentrations for soils in Eastern Maryland. The four reported detections of total chromium ranged from 12 to 30 mg/kg.

Detections of beryllium, copper, lead, nickel, and zinc were reported at all soil sample locations described above, which were all below their associated MDE NRCS values. Mercury was also detected (below the associated MDE NRCS value) in sample SA1-A(1-6.5) only

3.3.2 Surface Water

No work activities for the pump station and MH-3 construction will encounter surface water bodies within the area of work. Also, the MH-3 work under this EMP will not include any discharge of collected water on-site or into surface water.

The pump station work (not subject to this EMP but subject to the 20-CP Permit and SWPP) will also not discharge collected water on-site or into surface water.

3.3.3 Groundwater

Prior evaluations, as summarized in the Environmental Background Summary of the SMP, indicated that fluoride exceeded the USEPA MCL on portions of the Site, primarily within the SMA and EC.

Groundwater data in the vicinity of the MH-3 SOE construction is available from several sources including the Phase II ESA (GTA 2022), current and historic sample results from the North and South Landfill monitoring programs (Tetra Tech 1988, 2005, 2022), a water sample from the partial pump station excavation (GTA 2022), and a water sample from water in the partially constructed 1B sewer line infiltrating from a pipe joint near MH-4.

GTA's 2022 *Phase II ESA – Initial Infrastructure Phase* included groundwater sampling for fluoride at sample locations SA6-A (the pump station location outside the eastern EC boundary – sample number GTA-GW-1) and SA7-H (outside the western EC boundary – sample number GTA-GW-2), both in utility corridors where groundwater is expected to be encountered. As shown on Table 4 of the Phase II report, both samples had non-detect fluoride results.

The nearest groundwater monitoring wells in the existing landfill monitoring network are MW-52, MW-60, MW-72 and MW-73 (two overburden monitoring wells and two bedrock monitoring wells). These four wells are located inside the EC west of the pump station MH-3 SOE location and , west of (across) Tuscarora Creek (see **Figure 4**, from Figure 1 of the September 1, 2017 Well Abandonment Plan). In 2022, bedrock well MW-60 was sampled semi-annually and had two fluoride detections of 2.5 and 2.6 mg/L, which were both below the fluoride MCL of 4 mg/L. In 2022, MW-52 (overburden), MW-72 (overburden) and MW-73 (bedrock) were each sampled semi-annually and all results were above the fluoride MCL of 4 mg/L. The fluoride detections in 2022 from MW-52, MW-72 and MW-73 ranged from 4.3 to 7.7 mg/L.

The landfill monitoring network is no longer sampled for VOCs. The most recent data for VOCs and other compounds was November 2005. Results from that event are as follows:

Historic Groundwater Results					
COC	units	MW-52	MW-60	MW-72	MW-73
		11/15/2005	11/15/2005	11/15/2005	11/15/2005
Free Cyanide	ug/L	2	3.7	7.1	5.8
1, 1-Dichloroethene (DCE)	ug/L	ND (<1)	ND (<1)	ND (<1)	ND (<1)
Cis-1, 2-Dichloroethene	ug/L	ND (<1)	ND (<1)	ND (<1)	ND (<1)
Tetrachloroethene (PCE)	ug/L	4.9	4.2	5	6.1
Trichloroethene (TCE)	ug/L	0.5	ND (<1)	ND (<1)	ND (<1)
Vinyl chloride	ug/L	ND (<1)	ND (<1)	ND (<1)	ND (<1)
Total Fluoride	mg/L	7.19	5.3	7.45	8.02

As shown on **Figure 4**, former (abandoned) overburden monitoring well MW-59 was previously located east of Tuscarora Creek, very close to the pump station location. This well was last sampled in 1988 and then abandoned in 2017 because groundwater concentrations for the parameters listed above were routinely non-detect or below standards in March, May, and June 1988. MDE has noted that this data is limited in number of samples and depth (overburden only) and is old. It is included here for completeness and direct proximity to the EMP work area. This data is consistent with more recent samples from SA6-A groundwater (GTA 2022, described above) and sample EMP-GW1 (GTA 2023) described in the next paragraph.

Appendix B provides the analytical data for the most-recent sample collected from groundwater seepage into the pump station excavation (EMP-GW1), collected May 23, 2023. This sample contained fluoride at a concentration below the reporting limit (0.25 mg/L) for the laboratory sample. Samples GW-2 and GW-3 on the same laboratory report relate to basins DA-2 and DA-11 which are not located near the area subject to this EMP.

3.4 Exposure Pathway Evaluation

Based on the Phase II ESA performed on the initial infrastructure phase of construction and the existing SMP, potential environmental exposure risks to future occupants and construction workers may exist at the Site. However, with institutional controls the EC itself serving as deed notice and prohibiting use of groundwater, there is not a complete exposure pathway after construction activities for the MH-3 area, within the EC.

Specific to this EMP and the MH-3 construction, potential soil exposure is described in **Section 3.4.1** and exposure to groundwater is described in **Section 3.4.2**.

During implementation of the work under this EMP there will be an environmental professional familiar with the authorized scope of work on-site during working hours. Typically, there are two - an employee of GEI Consultants, Inc. under contract to STO and an employee of Tetra Tech under contract directly to QL (see **Section 5.0**). In addition, the EMP will be distributed to and signed by representatives of QL, STO, Clark, and the GEI and Tetra Tech representatives (see **Section 7.2**)

The identified exposure pathways, potentially exposed populations, and COPCs are summarized in the table below.

Table 1: Potential Exposure Pathways

Media	Potential Exposed Population	Exposure Pathway	COPCs
Soil (SMA, Explicitly) EC Soils are assumed to have the potential to provide the same pathways	Adult On-Site Construction Worker Child Visitor Youth Visitor Adult Visitor Adult On-Site Worker	Dermal Exposure Incidental Ingestion Inhalation of Volatiles and Fugitive Dust	PAHs (benzo(a)anthrancene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthrancene, and indeno(1,2,3- c,d)pyrene), PCBs (Aroclor 1016, Aroclor 1242, and Aroclor
Groundwater	Adult On-Site Construction Worker	Dermal Exposure Incidental Ingestion	1248), and Arsenic Fluoride

3.4.1 Direct Contact to Soil Contamination

There is a potential for site construction workers to come into contact with the COPCs during drilling of secant piles, excavation of soil and rock and management of soil stockpiles including loading for disposal. Some of the site soil COPCs listed above (such as PCBs) are related to specific areas of the site and within the SMA and not likely to be contacted in the MH-3 area. Soil COPCs were not detected above standards in the Phase II soil samples in the vicinity of MH-3 (Section 3.3.1). However, for planning and safety purposes, the listed site soil COPCs are addressed in the HASP.

This contact will be limited by implementing a site-specific HASP.

3.4.2 Exposure to Groundwater Contamination

Groundwater has generally been identified at elevations at the site ranging from 5 to 25 feet below ground surface (bgs), with some apparent perched water conditions present on portions of the Site. In the vicinity of MH-3 (and as confirmed through recent geotechnical drilling), groundwater is generally 6 to 9 feet below ground surface. Groundwater at the site is not currently used for any purpose, and the EC prevents its use within the area encumbered by the EC. The groundwater at the Site will be prohibited from being used for any purpose via restrictions recorded in the property deeds for areas within the EC and SMA.

There is a potential for site construction workers to come into contact with groundwater from within the area encumbered by the EC during the excavation at MH-3 and continuing dewatering at MH-3 during microtunneling operations. This contact will be limited by implementing the secant pile SOE (which will significantly limit the overall volume of water to be encountered/managed), as well as water management actions including containerizing the groundwater for testing and proper disposal.

Based on the groundwater seepage analysis conducted in conjunction with the SOE design (see Table 2 of **Appendix D**), the estimated water generation rate at MH-3 SOE is 2,243 gallons per day. **Appendix D** Table 1 shows a seepage estimate of 3,723 gallons per day at the pump station/MH-2 SOE (outside the EC and EMP). The SEEP/W model shows a maximum decrease in the water table of 0.2 feet outside of the excavations. Pump station construction is estimated to take approximately 105 days including approximately 85 days of dewatering at the PS/MH-2 SOE. The duration of dewatering at the MH-3 SOE is shorter (it will start later and end at approximately the same time).

The site-specific HASP will address worker contact with the groundwater.

3.4.3 Inhalation of Fugitive Dust

During construction activities, it is possible for soil impacted by COPCs to become airborne. There is a potential for site construction workers to breathe this fugitive dust. The inhalation of fugitive dust will be limited by implementing the site-specific HASP and construction practices that prevent dust generation (e.g., implementation of dust control methodologies), as well as air monitoring for dust concentrations to assure no hazardous exposure can occur for workers. Details of this monitoring is provided in **Section 5**.

The proposed remedy for inhalation of fugitive dust is protective of human health as exposure to contamination above regulatory limits will be prevented.

4. Cleanup Criteria

The cleanup criteria for the Site are summarized in the table below. The cleanup criteria for the Site soil COPCs generally reflect the MDE NRCS values, which are the generic risk-based guidance values in MDE's Cleanup Standards for Soil and Groundwater; October 2018; Interim Final Guidance (Update No. 3). MDE cleanup standards are derived from USEPA Region III Reginal Screening Levels (RSLs), which assume a 1E-6 cancer risk; generally speaking, MDE modifies these values to reflect a 1E-5 cancer risk in the NRCS values. The cleanup criteria for fluoride and cyanide are derived from the USEPA National Primary Drinking Water Regulations (NPWDR); May 2009. The cleanup criterion for cyanide is derived from the Administrative Consent Order (dated 1992 and revised 1997, and 2007) between Eastalco Aluminum Company and the MDE.

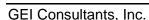


Table 2: Cleanup Criteria

Media	СОРС	Cleanup Criteria	Basis
Soil	Benzo(a)anthracene	21 mg/kg	NRCS
	Benzo(a)pyrene	2.1 mg/kg	NRCS
	Benzo(b)fluoranthene	21 mg/kg	NRCS
	Benzo(k)fluoranthene	210 mg/kg	NRCS
	Dibenz(a,h)anthrancene	2.1 mg/kg	NRCS
	Ideno(1,2,3-c,d)pyrene	21 mg/kg	NRCS
	Aroclor 1016	5.1 mg/kg	NRCS
	Aroclor 1242	0.95 mg/kg	NRCS
	Aroclor 1248	0.95 mg/kg	NRCS
	Arsenic	26.8 mg/kg	RCV
Groundwater	Fluoride	4.0 mg/L	NPWDR
Surface Water	Cyanide	0.2 mg/L	NPWDR

Note: Arsenic is proposed to be compared to the MDE risk-based comparison value (RCV) of 26.8 mg/kg for commercial properties.

If other COPCs are identified, the cleanup criteria will be re-evaluated. Generally, the cleanup criteria that will be applied to any additional COPCs will be the published MDE NRCS values, or site-specific values calculated using the appropriate frequency exposure parameters, as the need arises.

5. Remedies and Institutional Controls

This EMP presents proposed actions to protect against exposure to potentially contaminated soil and groundwater in conjunction with construction and improvement on the Site. Potentially complete exposure pathways have been identified between contaminated soil and groundwater and construction worker and future on-site worker and visitor populations at the Site (However, based on data local to the MH-3 work area, total chromium in soil is the only COC which exceeded screening values or standards). These potential exposure pathways will be eliminated through implementation of a site-specific HASP by Clark Construction (Clark) and any subcontractors working for Clark, construction observation for health and safety measures, proper management of impacted materials encountered during construction activities, and engineering and land use controls (deed restrictions on use of groundwater in the EC).

During implementation of the work under this EMP there will be an environmental professional familiar with the authorized scope of work on-site during working hours. Typically, there are two - an employee of GEI Consultants, Inc. under contract to STO and an employee of Tetra Tech under contract directly to QL. These inspectors are responsible to be familiar with approved environmental plans and scopes of work (including this EMP) and have the authority to stop work if necessary or otherwise direct concerns to appropriate client or contractor personnel. The inspectors have site compliance responsibilities and will not be present at MH-3 full-time. They are available on-site should questions arise and will use their judgement to determine when direct construction observation is appropriate (such as during excavation activities).

5.1 Site Security

The SMA portions of the Site are currently secured with fencing to prevent trespassing during non-working hours. The excavation area of MH-3 is not located within the SMA.

5.2 Health and Safety Measures

A site-specific HASP has been produced by Clark Construction (Clark) and is included in **Appendix C**. The primary action taken to mitigate potential exposures to construction workers will be the avoidance of direct contact with potentially impacted soil and groundwater, and the appropriate use of personal protective equipment (PPE) during construction activities. Any subcontractors working for Clark will also produce a HASP that provides the administrative and engineering controls and PPE that will be used to ensure workers are protected.

HASPs will be provided by the contractors covering the work of that company's workers involved in construction activities potentially encountering impacted media, for their information. The contractors should independently assess the available information and implement appropriate measures to protect the health and safety of their employees and subcontractors. Information and recommendations contained in Clark's HASP should not in any way be construed as relieving its subcontractors of their responsibilities for site health and safety.

5.2.1 Dust Control

The potential for worker exposure to site contaminants is primarily via direct contact, ingestion, or inhalation of nuisance dust. The primary action taken to mitigate potential exposures to construction workers will be the avoidance of direct contact with potentially impacted soil and the appropriate use of standard construction site personal protective equipment (work gloves, safety glasses, etc.) during construction activities.

Using the maximum detected on-site concentrations of COPCs in soil, the OSHA Permissible Exposure Limits (PELs) for the individual COPCs could only be exceeded if the nuisance dust PEL is exceeded by several to many orders of magnitude. Therefore, airborne dust will be used as a real-time surrogate to prevent potential exposure to contaminant; with nuisance dust controlled to below the worker protection limits, construction workers are protected from COPCs.

Accordingly, the nuisance dust PEL of 15 mg/m³ can be used as a conservative guideline for air monitoring. The nuisance dust concentration of 15 mg/m³ can be visually identified without active dust monitoring equipment. If airborne dust is visually observed during activities involving known or potentially contaminated soils, dust suppression measures (e.g., wetting, misting, etc.) will be implemented. If such efforts do not effectively suppress visible dust, then dust monitoring will be initiated to ensure nuisance dust does not exceed the OSHA PEL of 15 mg/m³. The nuisance dust PEL of 15 mg/m³ will be used as a stop work action level, and earthwork will cease until dust is no longer visible and dust concentrations are below the 15 mg/m³ stop work action level.

Visual indications of dust will be observed and recorded, and dust suppression activities will be implemented during earth moving activities at the Site.

A water truck is routinely present on-site during construction activities and available for use. Hydroseed equipment can also be used to spray water as a backup or where more appropriate to reach a particular area. Potable water is used for dust control. If water collected through site dewatering (after containerization and testing) meets parameters suitable for on-site discharge, QL may request MDE approval of use of such water for dust control as an alternate to potable water.

5.2.2 Volatile Organic Vapors

No environmental sampling data or observations have indicated any petroleum or other potentially hazardous volatile organic compounds are present outside of the EC area. If any additional organic odors are detected in borings or excavations during the work, QL will stop work and will direct an investigation of the presumed impacts. This EMP will be amended to describe the risks present and protections to enact if this situation occurs.

5.3 Construction-Related Soil Management

The current scope of work represents an interim use of the property. Soils excavated from within the EC area is subject to the requirements laid out in the recorded EC and MDE-approved SMP. The soils and rock from the MH-3 excavation will be stockpiled separate from all other materials (where shown on **Figure 5**) and will be tested for site COPCs. All stockpiles will be labelled as to source/contents (such as "MH-3/EC soil"). This soil excavated from within the MH-3 SOE will be a mix of EC and non-EC soil. Based on the size of the MH-3 SOE (approximately 25 feet by 50 feet and 22 feet deep) approximately 1,500 tons of soil and rock will be removed. For construction expediency on this particular work element, this soil is intended to be disposed off-site rather than used as backfill (which would require MDE review/approval as the SOE extends outside the EC).

Soil sampling will at a minimum meet the requirements of the selected disposal facility. If observed soil quality (lack of visible contamination/waste/debris) and/or disposal sample results suggest the material may be considered for reuse, QL may elect to sample the material in accordance with the MDE Fill Material and Soil Management in Maryland fact sheet and related regulation (including one 10-point composite per 2,000 tons of material). If sampled soils meet criteria for Category 1 – Residential Unrestricted Use Soil and Fill Material or Category 2 – Non-Residential Restricted Use Soil and Fill Material, QL may request authorization for use of the material as backfill in the MH-3 SOE or other use.

If field observations, field screening, unusual odors, odd coloration, or other factors indicate environmental impacts in significant quantities, the suspect impacted soils will be segregated from non-impacted soils so that additional characterization can be performed. This soil will be placed on and covered with plastic sheeting. Soil samples will be collected from the suspect impacted materials to evaluate whether it should be classified as regulated and requiring off-site disposal.

Impacted soils/waste (as determined by sampling results) may be disposed at an appropriate disposal facility. The potential disposal facilities will be contacted to establish the necessary sampling and analysis requirements. The likely facilities for disposal of soil include:

Soil Safe, Inc. (Soil Safe) or Clean Earth Inc. (Clean Earth)

16001 Mattawoman Drive 1469 Oak Ridge Place

Brandywine, Maryland 20613-3027 Hagerstown, Maryland 21740

(301) 782-3036 (215) 734-1400

After completion of MH-3 area excavation, microtunneling will be conducted through rock between the MH-3 SOE and the MH-2/pump station SOE. The contractor may elect to tunnel from MH-2 to MH-3 or more likely from MH-3 to MH-2. In that case (tunneling from MH-3 to MH-2), tunneling spoils will be removed via the MH-3 SOE. However, the entire length of this tunnel (from one SOE to the other) is outside the EC and tunneling spoils are not subject to this EMP unless they contact seepage water in the base of the MH-3 SOE.

5.4 Clean Fill Materials

Materials such as open-graded aggregate to be used within the MH-3 excavation will be documented to be clean, either through submittal to MDE of a certification from the supplier (for quarry stone) or by testing and approval by MDE prior to use.

5.5 Groundwater Management

A groundwater use restriction is recorded in the property deeds by way of the existing EC. As such, the use of public utilities is planned. Groundwater will be encountered during MH-3 area construction. Groundwater is anticipated to be encountered at a depth of 6 to 9 feet below grade at the MH-3 location.

The use of alternate means of construction including the secant pile SOE structure and grouted base plug will significantly limit the amount of seepage into the structure during excavation and construction within the SOE (microtunneling and MH-3 construction/pipe connection).

Appendix D includes a memorandum presenting the Pump Station Seepage Analysis with SOE Design elements. This memo separately describes the SOE design elements to be used for the pump station and for MH-3 as well as the anticipated groundwater seepage rate in the Pump Station SOE (outside the EC and not subject to this EMP) and the MH-3 SOE.

Based on the groundwater seepage analysis conducted in conjunction with the SOE design (see Table 2 of **Appendix D**), the estimated water generation rate at MH-3 SOE is 2,243 gallons per day. **Appendix D** Table 1 shows a seepage estimate of 3,723 gallons per day at the pump station/MH-2 SOE (outside the EC and EMP). Pump station construction is estimated to take approximately 105 days including approximately 85 days of dewatering at the PS/MH-2 SOE. The duration of dewatering at the MH-3 SOE is shorter (it will start later and end at approximately the same time).

With regard to water management, page 3 of the EC states:

"Excavation Encountering Groundwater: When conducting any excavation activities on the Property extending to the ground water table, the Property Owner shall implement the requirements of a site-specific health and safety plan in accordance with the Site Management Plan to ensure that worker protection measures are met. The encountered ground water shall be containerized during all dewatering activities at the property and shall be analyzed before disposal. The analytical results shall be the basis for appropriate disposition of the ground water in accordance with applicable local, State and federal laws and regulations.

This EC requirement is applicable to any water evacuated from secant pile boreholes at MH-3 as well as seepage water removed from the completed MH-3 SOE. Since this area of work abuts/crosses into the EC and site construction workers may come in contact with groundwater during the work, contractors are required to assure appropriate health and safety precautions presented in the contractors' HASPs are followed.

The water extracted during construction activities at MH-3 will be containerized and tested for COPCs to assure proper handling and disposal. Dut to the small amount of water estimated in the seepage analysis the contractor will dispose of all MH-3 area water at an off-site commercial disposal facility. Water will be pumped through a hose to two portable frac tanks located outside the floodplain (and therefore also outside the EC) as shown on **Figure 4**. When the first tank is between 20% and 100% full, the water will be sampled for the full list of COPCs identified in **Section 4 Table 2** plus any additional requirements of the disposal facility.

When results are received from the laboratory, they will be provided to the disposal facility for waste acceptance approval and will be sent to MDE for information. Because all MH-3 water will be disposed off-site, no further sampling is planned when the second and subsequent tanks are filled. The source of water is a defined single location, where water quality is not anticipated to vary significantly, and this water is not discharged on-site.

Groundwater will also be encountered in construction of the pump station wet well and MH-2. Since this water is outside the limits of the EC, this water will be managed as per the SWPPP, not subject to this EMP.

Due to the sequence of construction, water will be managed at MH-2 (including sampling for off-site disposal) prior to MH-3. Because the MH-3 work is partially within the EC it has the potential to have higher COPC concentrations than the MH-2 water. Therefore, the first MH-3 water containerized/tested will be placed in a separate tank from MH-2 water for testing. All tanks will be labelled as to their contents. Once water from both areas has been tested and approved for disposal, the contractor may elect to store both in the same tank and/or ship

water in the same load in order to limit the total number of tanks on-site. Any tank containing any EC water from MH-3 will be so labelled.

As noted above, the calculated groundwater seepage rate at MH-3 SOE is 2,243 gallons per day, and the seepage estimate at PS/MH-2 is 3,723 gallons per day. The PS/MH-2 SOE will be constructed first. By design, two frac tanks (nominally 40,000 gallons capacity) is equal to 10.7 days capacity, which should allow for receipt of lab data for disposal. At a minimum it gives adequate time to rent a third or fourth tank if needed. In the case that seepage rate is significantly higher than expected (the calculated number already includes a factor of safety), the design includes a contingency to pour a concrete base or implement additional grouting. Work could stop and the water level would not rise above natural groundwater elevation so there is no possibility of a surface discharge or need for emergency pumping. Once construction of the actual pump station commences it will be necessary to continuously dewater, but the rate will be controlled and known and water shipment can be scheduled to keep tank volumes low. Based on the established MH-2 flow rate, MH-3 will follow the same approach. For MH-3, 2 frac tanks is 17.8 days of capacity at the calculated rate.

Containerized water will be disposed at an appropriate disposal facility as determined by sampling results. The potential disposal facilities will be contacted to establish the necessary sampling and analysis requirements. Water recently collected from manhole MH-4 (groundwater seepage into a partially constructed sewer line generally near MH-3) was tested and shipped to Valicor Environmental Services under contract to Capitol Environmental Services, Inc. It is anticipated that water will go to the same Valicor facility if acceptable based on sample results:

Valicor Environmental Services 17551 Power House Road Williamsport, MD 21795 (410) 463-7662

Capitol Environmental Services, Inc. PO Box 37143
Baltimore, MD 21297-3143
Attn: Ben Sisti
(732) 672-9476

5.6 Capping

No activities for work covered by this EMP will be conducted within the SMA. Therefore, no capping activities are required for this work at this time.

5.7 Land Use Controls

Land use controls currently exist in the form of an EC that includes the area adjacent to MH-3, and closure documentation issued by the MDE LMA for the successful completion of EMP activities will also list land use controls. The existing land use controls for the area within the EC include but are not limited to the soil excavation controls and restrictions, as well as restrictions on the use of groundwater beneath the property. These land use controls are recorded in the local land records.



6. Contingencies

If site conditions observed during construction and/or remediation differ substantially from those described herein, modifications to this EMP may be necessary. Such differing conditions may warrant an adjustment of sampling procedures, analytical methods, remedial activities, etc. and such modifications will be addressed in an addendum or revision to this EMP. MDE will be notified of any newly discovered contamination, proposed changes to this EMP, or citations from other regulatory agencies.

Specifically, if newly discovered contamination is identified during site development, the following contingency measures will be taken:

- Notify MDE within 24 hours (verbally and written/email);
- Postpone implementation of the EMP;
- Evaluate new site conditions identified; and
- Amend EMP to address new site conditions identified.

Any amendments to the EMP must be approved by MDE prior to implementation

Notified departments will include:

MDE Land Restoration Program Land and Materials Administration 1800 Washington Boulevard Baltimore, Maryland 21230 (410) 537-3466

Attention: Anuradha Mohanty

In addition to the above, if there is evidence of an oil discharge at the Site in violations of applicable regulations, it must be reported within two hours as specified in COMAR 26.10.08.01, to the OCP (410-537-3442) or, if after normal business hours, to the 24-hour Spill Reporting Hotline (1-866-633-4646). The MDE will be verbally notified within 48 hours (72 hours in writing /email) of changes (planned or emergency) to the EMP implementation schedule, previously undiscovered contamination, and citations from regulatory entities related to health and safety practices. Notifications shall be made to the MDE project manager at 410-537-3466.

7. ADMINISTRATIVE

7.1 Schedule

The preliminary schedule to implement the EMP is presented below. Note that this preliminary schedule is subject to change based on unforeseen conditions that are beyond the development team's control. Deviations from this proposed schedule will be communicated to MDE.



Table 3: Estimated Construction Schedule Relevant to EMP

Milestone	Estimated Schedule
EMP Review/Approval	November 2023
Submission of Weekly EMP Progress Reports	Weekly following initiation of work (due Tuesday of the following week))
MH-3 Secant Wall Installation	December 2023 (after PS secant wall) – 30 days
MH-3 Excavation	January 2024 (10 days)
Microtunneling/Utility Installation Activities	January/February 2024 (30 days)
MH-3 Backfill	February/March 2024 (10 days)
EMP Completion Report Submittal	April 2024
MDE review completed	May 2024

The MDE project manager will be notified in writing within five calendar days prior to the beginning of EMP implementation activities. Schedule updates will be provided when needed, during preparation of the progress reports discussed in *Section 8.2*.

Based on the information provided herein, no EMP Addenda will be required. If site conditions or other factors lead to a change in the scope of work or procedures MDE will be notified and an EMP modification will be provided to MDE.

7.2 Documentation

After approval of the EMP and prior to the start of work under this EMP, QL and all site contractors working under this EMP (including the on-site environmental professionals) will review the EMP and sign the certification on the following page stating that they have received and read the EMP. No work within the scope of this EMP will be conducted until the EMP is approved and referenced permits are obtained.

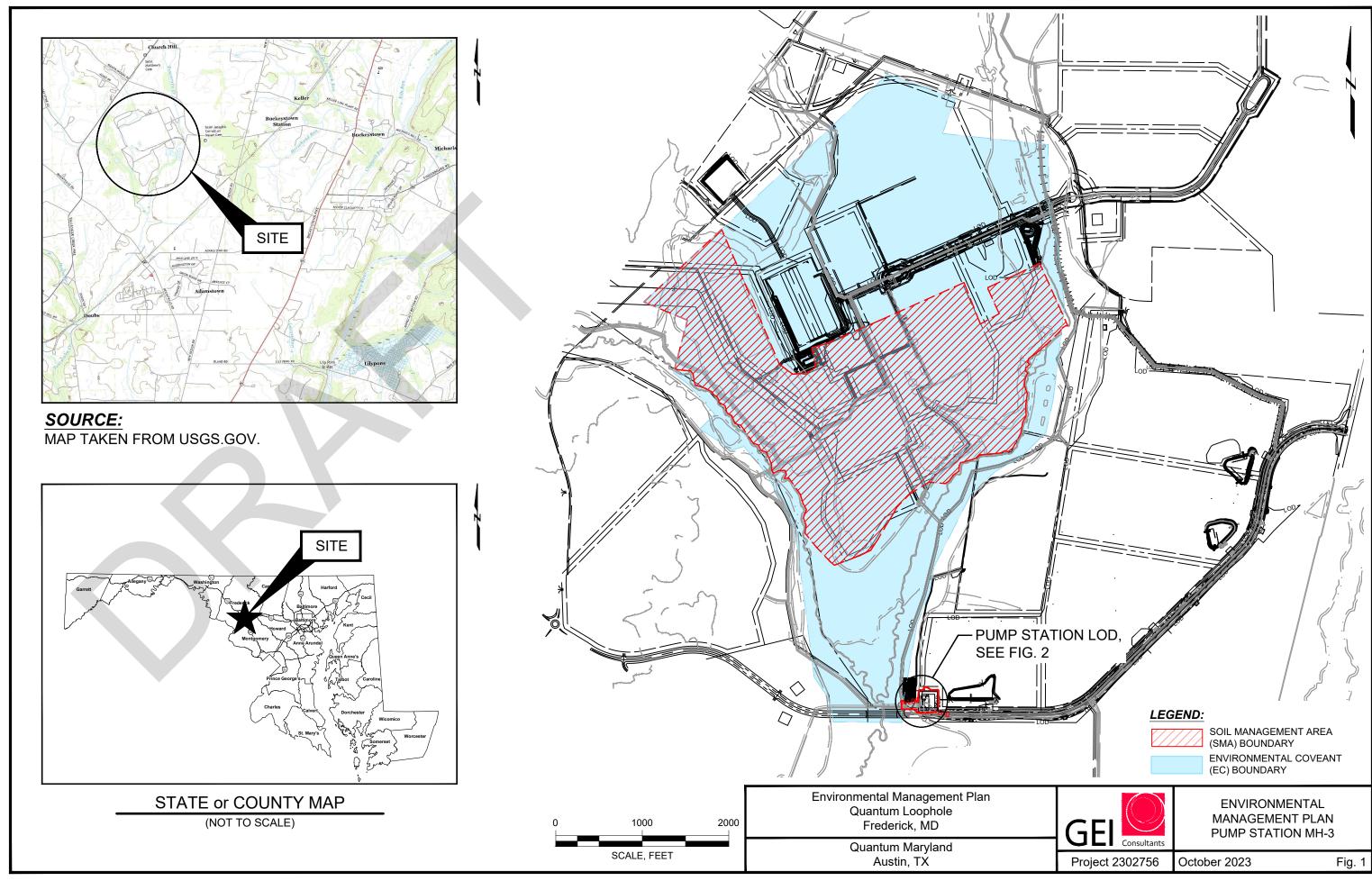
During implementation of this EMP, QL will prepare weekly progress reports summarizing the remedial activities occurring during that week. These weekly progress reports will be submitted to the Client and to MDE by Tuesday of the following week, to demonstrate implementation of this EMP. At the conclusion of EMP implementation, QL will prepare an EMP Completion Report.

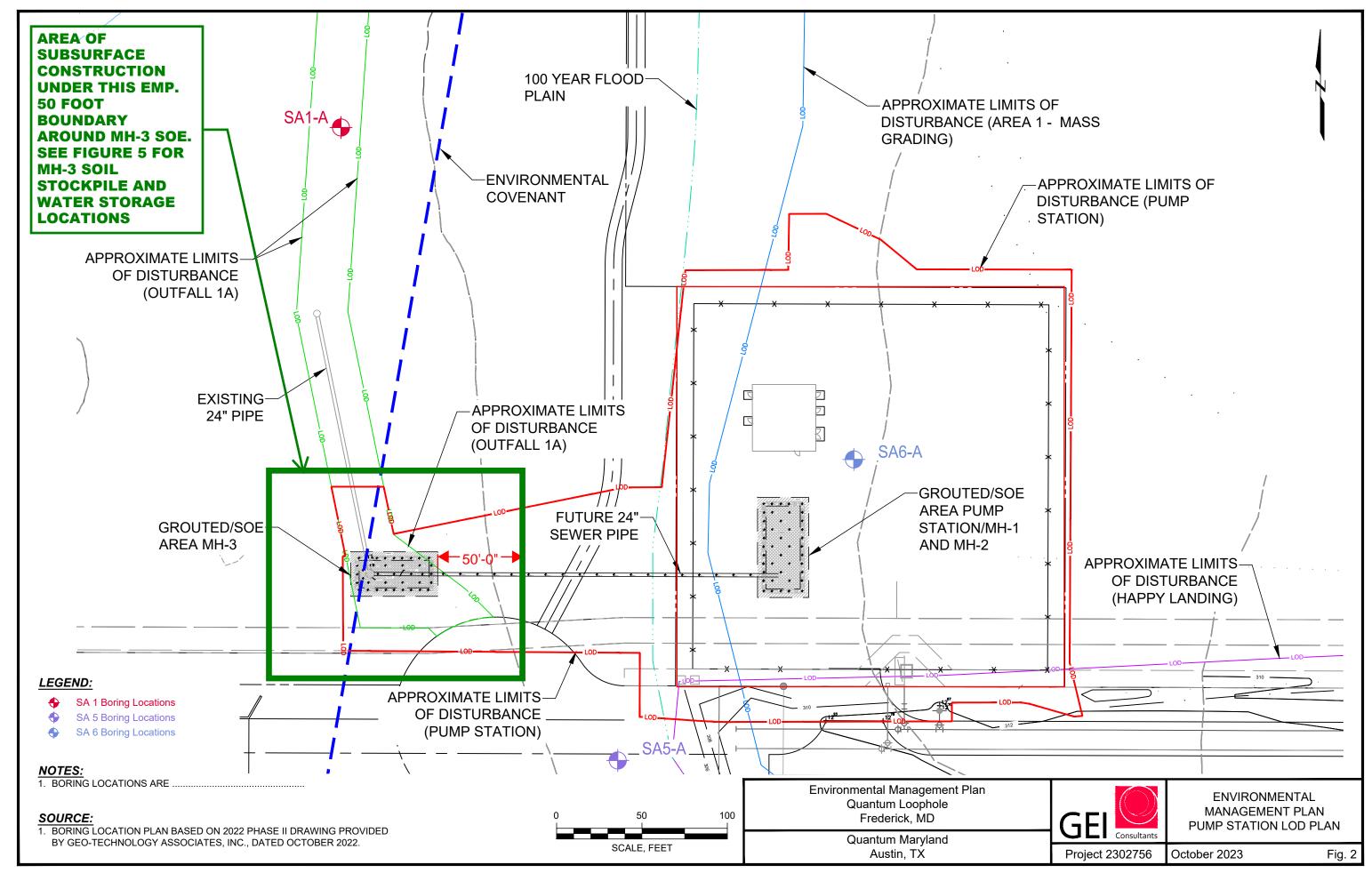
MH-3 EMP Certification

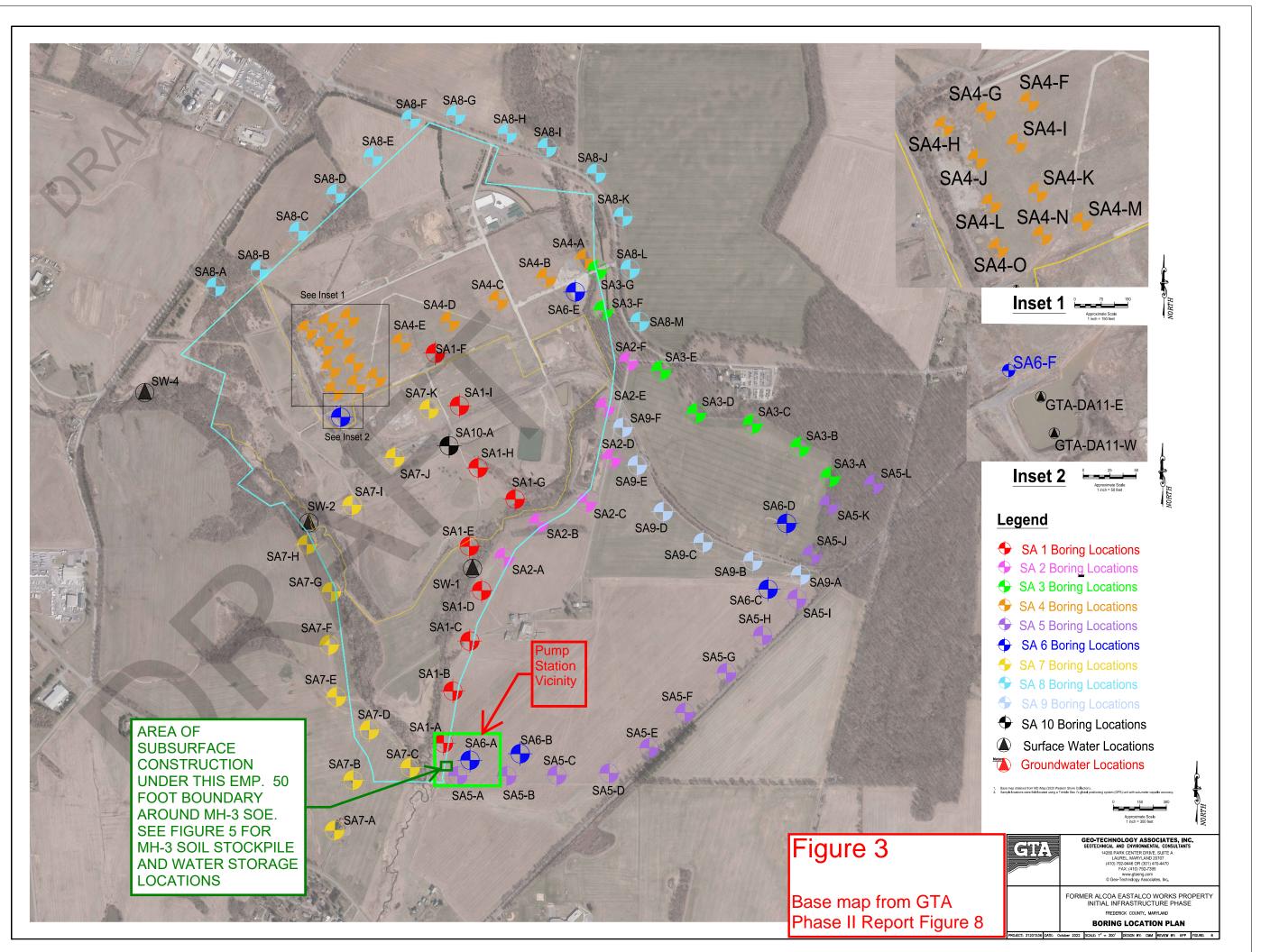
By signing below, I certify that I have read and understand the terms and conditions of the EMP for the above designated project and agree to follow the practices described in the EMP.

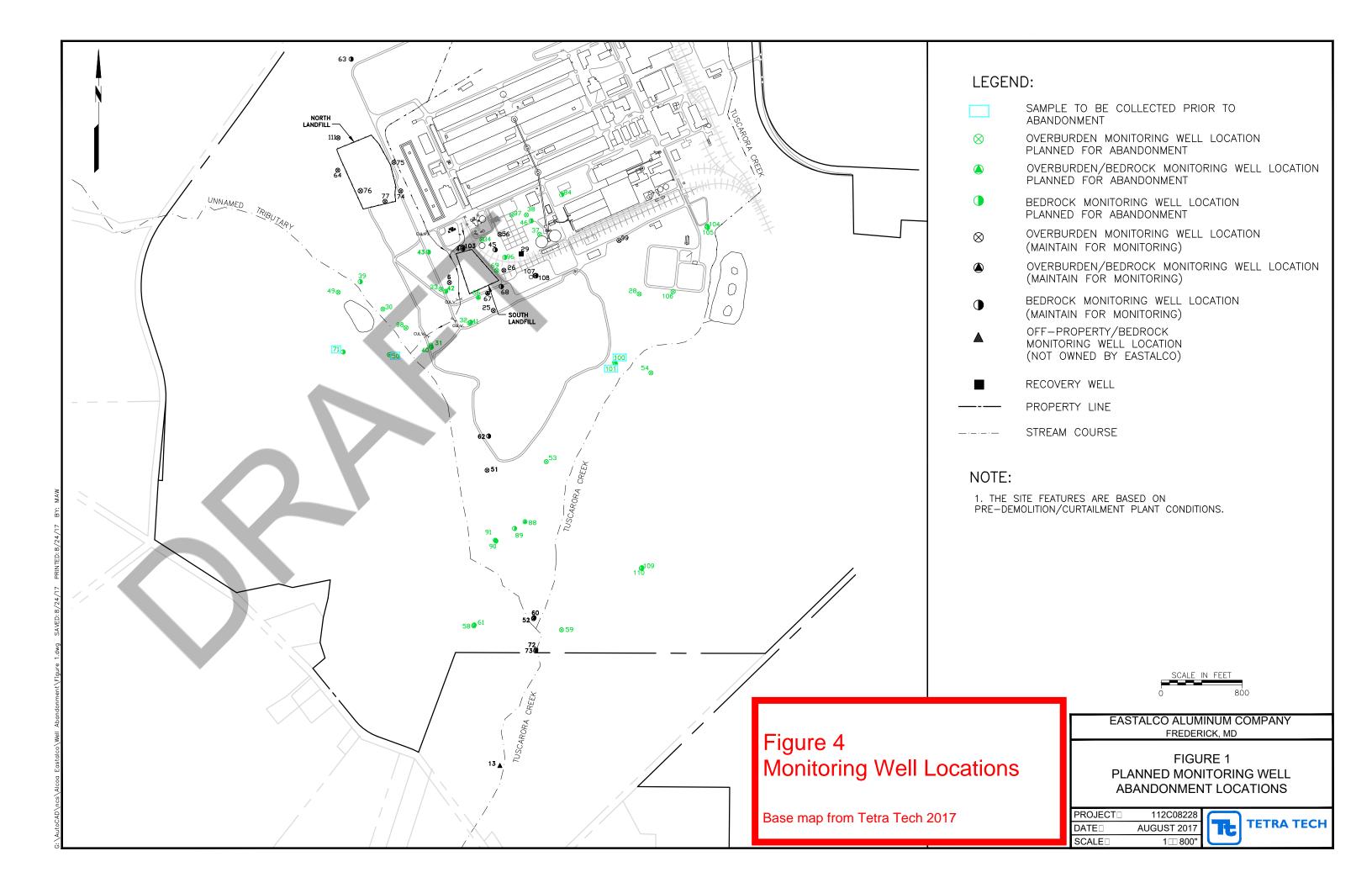
Name	Company	Signature
	*	

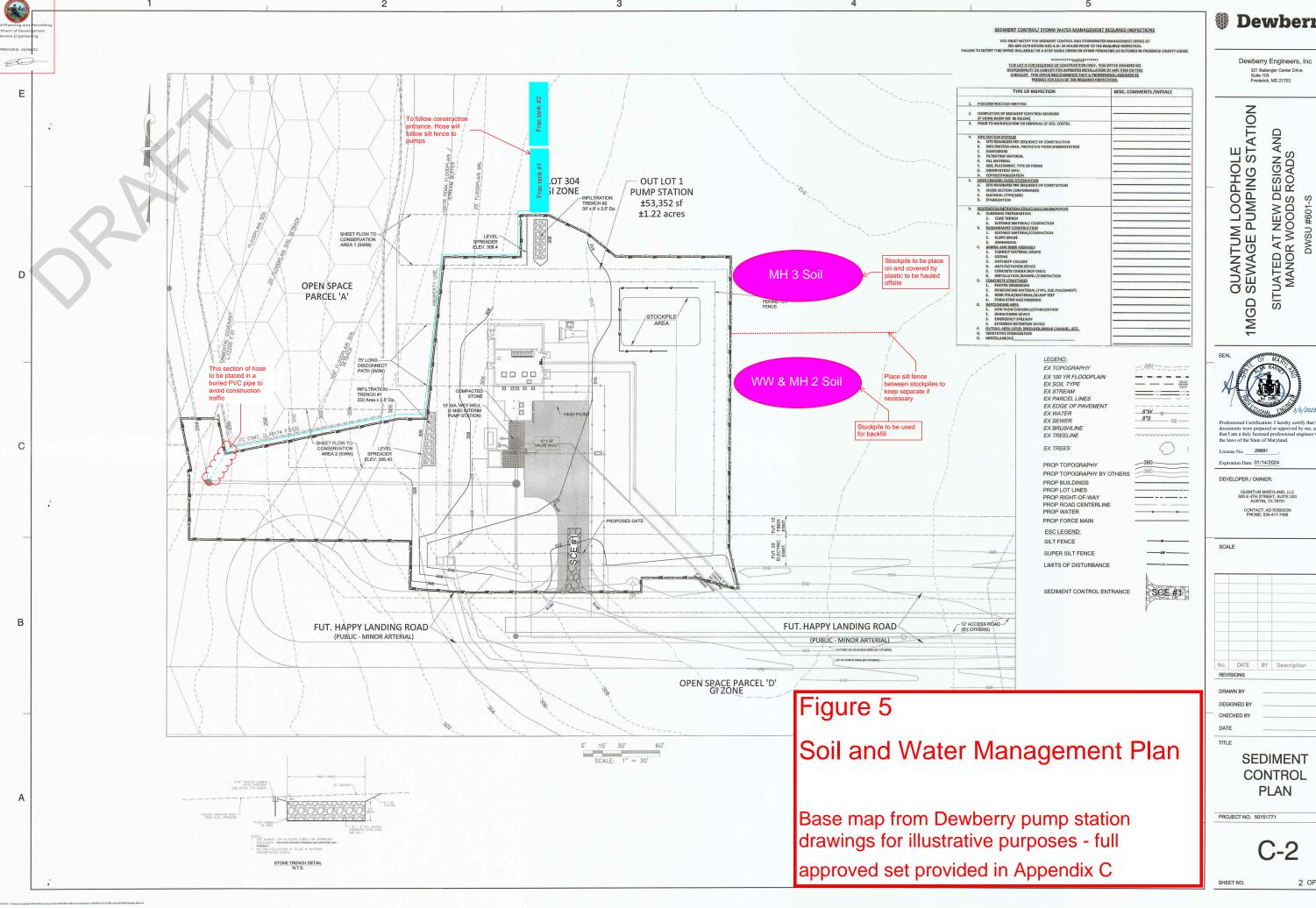
Figures



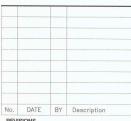








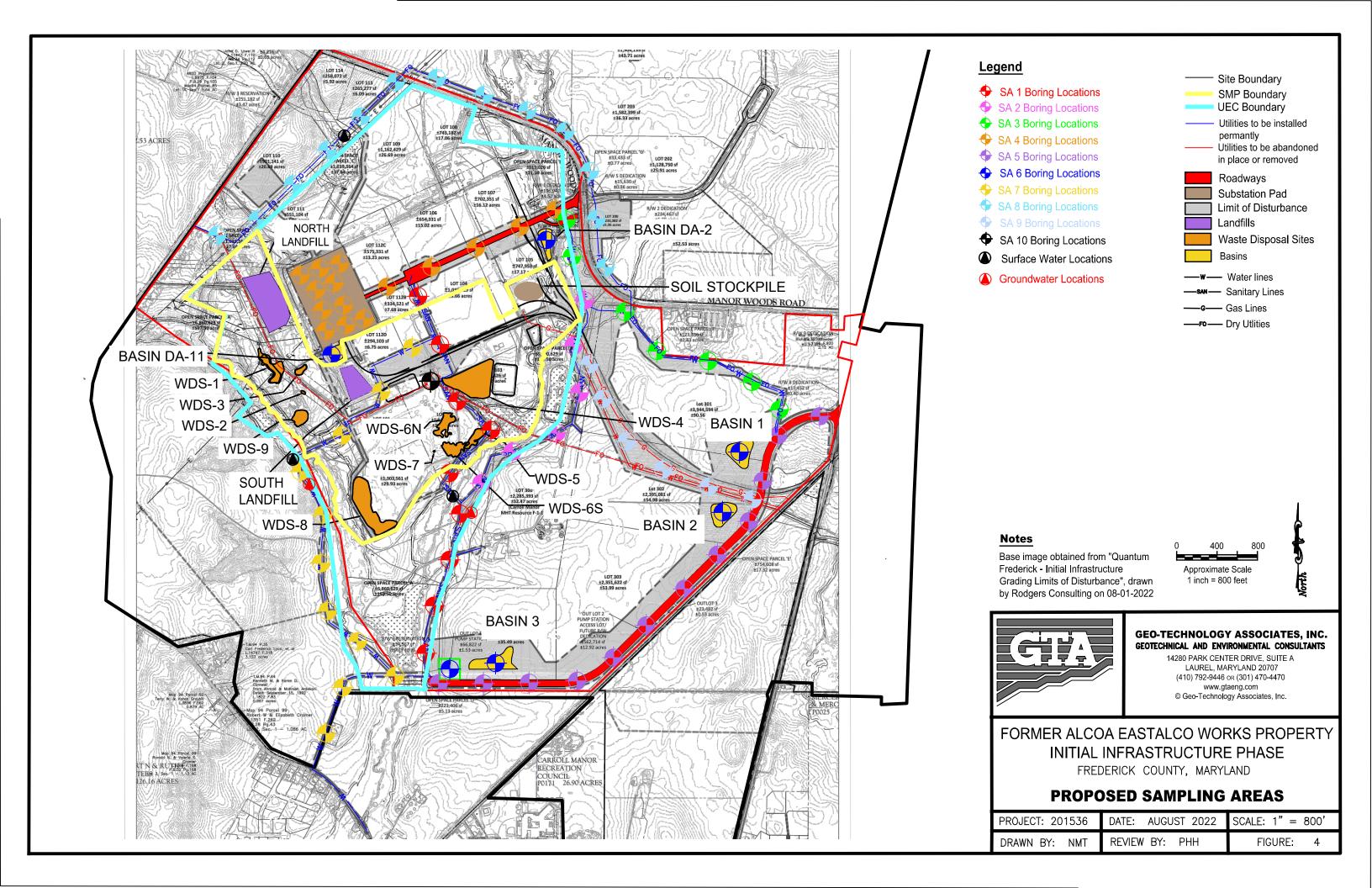
Dewberry*

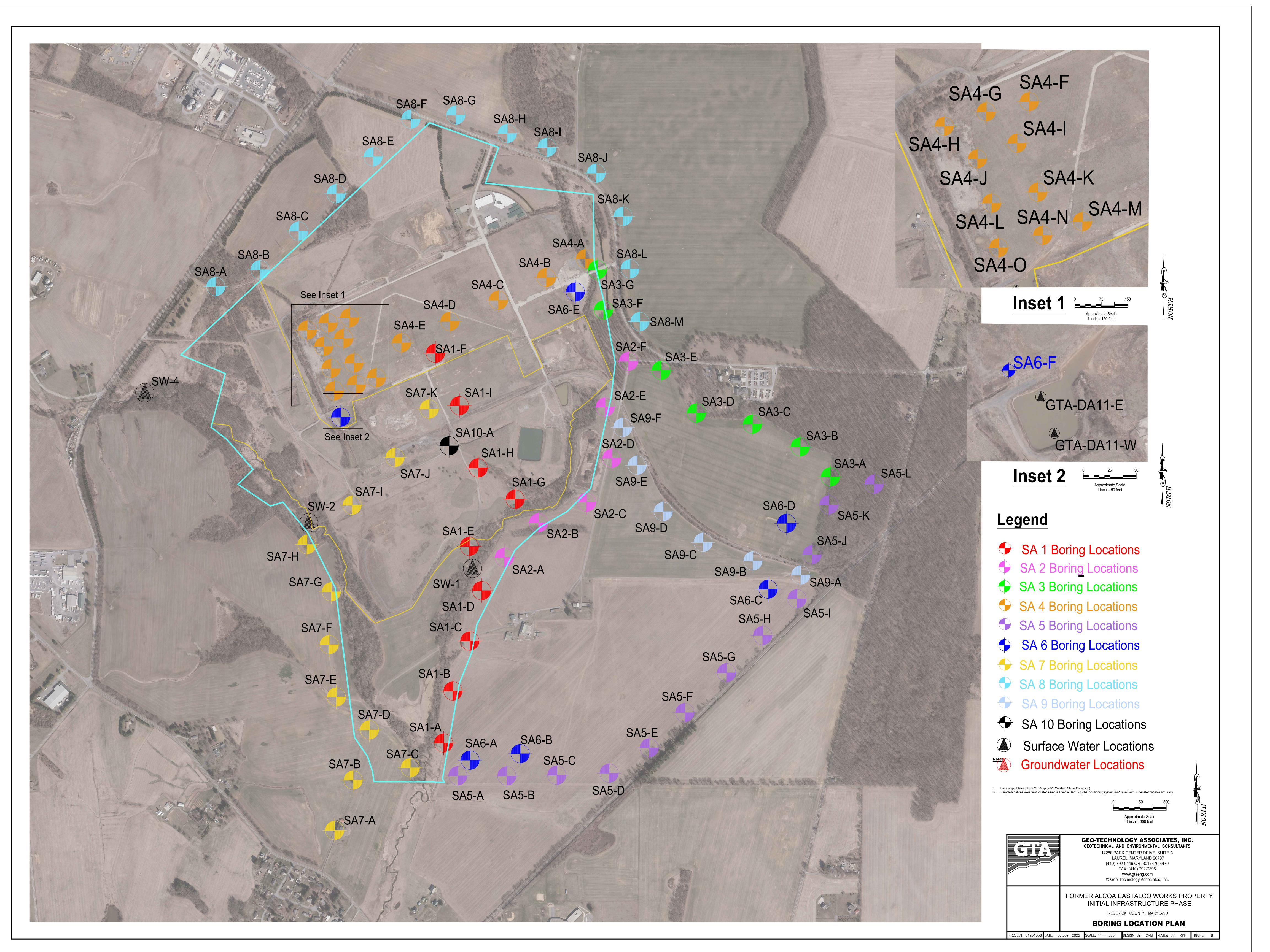


Environmental Management Plan Pump Station MH-3 Quantum Loophole, Frederick Maryland DRAFT V2 November 28, 2023

Appendix A

Phase II Environmental Site Assessment – Initial Infrastructure Phase – Figures 4 and 5 and Table 2





Sample Identification			GTA-SA1-A	GTA-SA1-A	GTA-SA1-B	GTA-SA1-B
Sample Interval	MDE NDCC	ATC Combinel	0-1	1-6.5	0-1	1-5.5
Sample Type	MDE NRCS	ATC Central	Grab	Composite	Grab	Composite
Sampling Date			9/12/2022	9/12/2022	9/12/2022	9/12/2022
Polycyclic Aromatic Hydrocarbons (PAHs)						
2-Methylnaphthalene	300		< 0.0097	<0.011	< 0.010	< 0.011
Acenaphthene	4,500		<0.0097	<0.011	<0.010	<0.011
Acenaphthylene	NE		<0.0097	<0.011	<0.010	<0.011
Anthracene Benzo(a)anthracene	23,000 21		<0.0097 <0.0097	<0.011 <0.011	<0.010 <0.010	<0.011 <0.011
Benzo(a)pyrene	2		<0.0097	<0.011	<0.010	<0.011
Benzo(b)fluoranthene	21		<0.0097	<0.011	<0.010	<0.011
Benzo(g,h,i)perylene	NE NE		< 0.0097	<0.011	<0.010	<0.011
Benzo(k)fluoranthene	210		< 0.0097	<0.011	<0.010	< 0.011
Chrysene	2,100		<0.0097	<0.011	<0.010	< 0.011
Dibenz(a,h)Anthracene	2.1		< 0.0097	< 0.011	< 0.010	< 0.011
Fluoranthene	3,000		< 0.0097	< 0.011	<0.010	< 0.011
Fluorene	3,000		< 0.0097	< 0.011	< 0.010	< 0.011
Indeno(1,2,3-c,d)Pyrene	21		< 0.0097	< 0.011	<0.010	< 0.011
Naphthalene	17		<0.0097	<0.011	< 0.010	< 0.011
Phenanthrene	2,300		<0.0097	<0.011	<0.010	< 0.011
Pyrene	2,300		<0.0097	<0.011	<0.010	<0.011
Priority Pollutant (PP) Metals	47	6.0	-2.0	60.0	-2.2	-2.0
Antimony Arsenic	47 3.0/26.8*	6.8 4.9	<2.0 2.7	<2.3 7.5	<2.3 5.4	<2.6 4.0
Beryllium	230	1.6	<0.39	2.4	1.5	1.8
Cadmium	98	1.1	<0.39	<0.46	< 0.47	<0.52
Chromium (3)	6.3	30	20	44	36	45
Copper	4,700	42	6.4	30	15	19
Lead	550	61	10	22	16	15
Mercury	4.6	0.14	< 0.079	0.19	< 0.094	< 0.10
Nickel	2,200	22	8.1	52	25	37
Selenium	580	1.0	< 0.39	<0.46	< 0.47	< 0.52
Silver	580	1.0	< 0.39	<0.46	< 0.47	< 0.52
Thallium	1.2	1.5	<0.39	<0.46	< 0.47	< 0.52
Zinc	35,000	73	22	90	38	64
Organochlorine Pesticides						ı
4,4-DDD	2.5	-	<0.0047		<0.0049 <0.0049	
4,4-DDE	9.3 8.5		<0.0047 <0.0047		<0.0049	
4,4-DDT Aldrin	0.18		<0.0047	-	<0.0049	
Chlordane (n.o.s.)	7.7	-	<0.12	7	<0.12	
Dieldrin	7.7		< 0.0047		< 0.0049	
Endosulfan I	0.14		< 0.0047		< 0.0049	
Endosulfan II	700		< 0.0047		< 0.0049	
Endosulfan Sulfate	NE		< 0.0047		< 0.0049	
Endrin	NE		< 0.0047		< 0.0049	
Endrin Aldehyde	25		< 0.0047		< 0.0049	
Endrin ketone	NE		< 0.0047		< 0.0049	
Gamma-BHC (Lindane)	NE	-	< 0.0047		< 0.0049	
Heptachlor	2.5		< 0.0047		< 0.0049	
Heptachlor Epoxide	7.7	7-	<0.0047		<0.0049	
Methoxychlor	0.63		<0.0047		<0.0049	
Toxaphene	0.33		< 0.12		<0.12	
alpha-BHC beta-BHC	410 2.1		<0.0047 <0.0047		<0.0049 <0.0049	
cis-Chlordane	0.36		<0.0047		<0.0049	
delta-BHC	1.3		<0.0047		<0.0049	
trans-Chlordane	NE		< 0.0047		< 0.0049	
Chlorinated Herbicides						
2,4,5-T			< 0.021	-	< 0.023	
2,4,5-TP (Silvex)			< 0.021		< 0.023	
2,4-D			<0.21		<0.23	
2,4-DB			<0.22		<0.24	
Dalapon			< 0.51		< 0.56	
Dicamba			<0.021		<0.023	
Dichloroprop			<0.21		<0.23	
Dinoseb			<0.11		<0.12	
MCPA			<21		<23	
MCPP			<21		<23	
Total Petroleum Hydrocarbons (TPH)						
TPH DRO	620					

Notes:

This table is only to be used in conjunction with the report for which it was prepared. See the report text for background information, assumptions, limitations, & Samples collected Between September 8, 2022 and September 15, 2022

Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm)

NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Standards for Soil and Groundwater; October 2018; Interim Final Guidanc ATC = Anticipated Typical Concentration for soils in Eastern Maryland Shaded and bold values represent exceedance of MDE RCS

NA = Not applicable

NE = MDE standard not established

* = Risk-based calculated value



Sample Identification			GTA-SA1-C	GTA-SA1-C	GTA-SA1-D	GTA-SA1-D
Sample Interval			0-1	1-7	0-1	1-7
Sample Type	MDE NRCS	ATC Central	Grab	Composite	Grab	Composite
Sampling Date			9/12/2022	9/12/2022	9/12/2022	9/12/2022
Polycyclic Aromatic Hydrocarbons (PAHs)						
2-Methylnaphthalene	300		<0.010	<0.0098	<0.010	<0.010
Acenaphthene	4,500		<0.010	<0.0098 <0.0098	<0.010	<0.010 <0.010
Acenaphthylene Anthracene	NE 23,000		<0.010 <0.010	<0.0098	<0.010 <0.010	<0.010
Benzo(a)anthracene	23,000		<0.010	<0.0098	<0.010	<0.010
Benzo(a)pyrene	2		<0.010	<0.0098	<0.010	<0.010
Benzo(b)fluoranthene	21		<0.010	<0.0098	<0.010	< 0.010
Benzo(g,h,i)perylene	NE		<0.010	<0.0098	<0.010	< 0.010
Benzo(k)fluoranthene	210		< 0.010	<0.0098	< 0.010	< 0.010
Chrysene	2,100		< 0.010	<0.0098	<0.010	< 0.010
Dibenz(a,h)Anthracene	2.1		< 0.010	<0.0098	< 0.010	< 0.010
Fluoranthene	3,000		< 0.010	<0.0098	<0.010	< 0.010
Fluorene	3,000		< 0.010	<0.0098	< 0.010	< 0.010
Indeno(1,2,3-c,d)Pyrene	21		<0.010	<0.0098	<0.010	<0.010
Naphthalene	17		<0.010	<0.0098	<0.010	<0.010
Phenanthrene	2,300		<0.010	<0.0098	<0.010	<0.010
Pyrene Priority Pollutant (PP) Metals	2,300		<0.010	<0.0098	<0.010	<0.010
Antimony	47	6.8	<3.1	<2.6	<2.5	<2.9
Arsenic	3.0/26.8*	4.9	4.2	2.3	5.6	12
Beryllium	230	1.6	1.7	1.4	0.87	0.97
Cadmium	98	1.1	<0.62	<0.53	< 0.51	< 0.57
Chromium (3)	6.3	30	38	31	39	33
Copper	4,700	42	18	13	10	17
Lead	550	61	14	13	19	25
Mercury	4.6	0.14	<0.12	< 0.11	< 0.10	< 0.11
Nickel	2,200	22	29	19	13	25
Selenium	580	1.0	< 0.62	< 0.53	< 0.51	< 0.57
Silver	580	1.0	<0.62	<0.53	<0.51	< 0.57
Thallium	1.2	1.5	<0.62	<0.53	<0.51	< 0.57
Zinc Organochlorine Pesticides	35,000	73	48	47	34	39
4,4-DDD	2.5		<0.0050		<0.0050	
4,4-DDE	9.3		<0.0050		<0.0050	
4,4-DDT	8.5		<0.0050		<0.0050	
Aldrin	0.18		< 0.0050		< 0.0050	
Chlordane (n.o.s.)	7.7		<0.12		< 0.13	
Dieldrin	7.7	4	< 0.0050		< 0.0050	
Endosulfan I	0.14		< 0.0050		< 0.0050	
Endosulfan II	700		<0.0050		< 0.0050	
Endosulfan Sulfate	NE		<0.0050		<0.0050	
Endrin	NE		<0.0050		<0.0050	
Endrin Aldehyde	25		<0.0050		<0.0050	
Endrin ketone	NE NE		<0.0050		<0.0050	
Gamma-BHC (Lindane) Heptachlor	NE 2.5		<0.0050 <0.0050		<0.0050 <0.0050	
Heptachlor Epoxide	7.7		<0.0050		<0.0050	
Methoxychlor	0.63		<0.0050		<0.0050	
Toxaphene	0.33		<0.12		<0.13	
alpha-BHC	410		< 0.0050		<0.0050	
beta-BHC	2.1		<0.0050		<0.0050	
cis-Chlordane	0.36		< 0.0050		< 0.0050	
delta-BHC	1.3		< 0.0050		< 0.0050	
trans-Chlordane	NE		<0.0050		<0.0050	
Chlorinated Herbicides	ı					
2,4,5-T			<0.024		<0.024	
2,4,5-TP (Silvex)			<0.024		<0.024	
2,4-D			< 0.23		<0.23	
2,4-DB			<0.24		<0.24	
Dalapon			<0.57 <0.023		<0.56 <0.023	
Dicamba Dichloroprop			<0.023		<0.023	
Dinoseb			<0.23		<0.23	
MCPA			<23		<23	
MCPP	İ		<23		<23	
Total Petroleum Hydrocarbons (TPH)						
TPH DRO	620					

Notes:

This table is only to be used in conjunction with the report for which it was prepared. See tetc. Samples collected Between September 8, 2022 and September 15, 2022

Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm)

NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Stane (Update No. 3) ATC = Anticipated Typical Concentration for soils in Eastern Maryland

Shaded and bold values represent exceedance of MDE RCS

NA = Not applicable

NE = MDE standard not established

* = Risk-based calculated value



Sample Identification			GTA-SA1-E	GTA-SA1-E	GTA-SA1-F	GTA-SA1-F
Sample Interval			0-1	1-8	0-1	1-17
Sample Type	MDE NRCS	ATC Central	Grab	Composite	Grab	Composite
Sampling Date			9/15/2022	9/15/2022	9/9/2022	9/9/2022
Polycyclic Aromatic Hydrocarbons (PAHs)						
2-Methylnaphthalene	300		< 0.011	< 0.011	<0.0085	< 0.0094
Acenaphthene	4,500		0.012	< 0.011	<0.0085	<0.0094
Acenaphthylene	NE		< 0.011	< 0.011	<0.0085	<0.0094
Anthracene	23,000		0.015	<0.011	<0.0085	<0.0094
Benzo(a)anthracene	21		0.11	<0.011	<0.0085	<0.0094
Benzo(a)pyrene	2		0.15	<0.011	<0.0085	<0.0094
Benzo(b)fluoranthene Benzo(g,h,i)perylene	21 NE		0.14 0.11	<0.011 <0.011	<0.0085 <0.0085	<0.0094 <0.0094
Benzo(k)fluoranthene	NE 210		0.11	<0.011	<0.0085	<0.0094
Chrysene	2,100		0.11	<0.011	<0.0085	<0.0094
Dibenz(a,h)Anthracene	2.1		0.034	<0.011	<0.0085	<0.0094
Fluoranthene	3,000		0.16	< 0.011	0.0092	< 0.0094
Fluorene	3,000		< 0.011	< 0.011	<0.0085	< 0.0094
Indeno(1,2,3-c,d)Pyrene	21		0.11	< 0.011	<0.0085	< 0.0094
Naphthalene	17		< 0.011	< 0.011	< 0.0085	< 0.0094
Phenanthrene	2,300		0.055	< 0.011	<0.0085	< 0.0094
Pyrene	2,300		0.16	< 0.011	0.0088	<0.0094
Priority Pollutant (PP) Metals	T					
Antimony	47	6.8	<2.9	<2.8	<2.1	<2.2
Arsenic	3.0/26.8*	4.9	7.9	7.0	2.7	4.8
Beryllium	230	1.6	1.5	1.3	<0.42	1.3
Cadmium Chromium (3)	98 6.3	1.1 30	<0.57 26	<0.57 27	<0.42 14	<0.43
Copper	4,700	42	25	24	6.6	18
Lead	550	61	19	14	4.9	8.5
Mercury	4.6	0.14	<0.11	<0.11	<0.085	< 0.087
Nickel	2,200	22	37	37	16	38
Selenium	580	1.0	< 0.57	< 0.57	< 0.42	< 0.43
Silver	580	1.0	< 0.57	<0.57	< 0.42	< 0.43
Thallium	1.2	1.5	< 0.57	< 0.57	< 0.42	< 0.43
Zinc	35,000	73	75	65	41	57
Organochlorine Pesticides						•
4,4-DDD	2.5	-	<0.0059		<0.0042	
4,4-DDE	9.3		<0.0059		<0.0042 <0.0042	
4,4-DDT	8.5 0.18		<0.0059 <0.0059		<0.0042	
Aldrin Chlordane (n.o.s.)	7.7		<0.15		<0.0042	
Dieldrin	7.7	1	<0.0059		<0.0042	
Endosulfan I	0.14		<0.0059		<0.0042	
Endosulfan II	700		< 0.0059		<0.0042	
Endosulfan Sulfate	NE		< 0.0059		< 0.0042	
Endrin	NE		< 0.0059		< 0.0042	
Endrin Aldehyde	25		< 0.0059		< 0.0042	
Endrin ketone	NE				< 0.0042	
Gamma-BHC (Lindane)	NE		<0.0059		< 0.0042	
Heptachlor	2.5		<0.0059		<0.0042	
Heptachlor Epoxide	7.7	7-	<0.0059		<0.0042	
Methoxychlor	0.63		-0 4F		<0.0042	
Toxaphene	0.33 410		<0.15		<0.10	
alpha-BHC beta-BHC	2.1		<0.0059 <0.0059	-	<0.0042 <0.0042	
cis-Chlordane	0.36		<0.0059		<0.0042	
delta-BHC	1.3		< 0.0059		<0.0042	
trans-Chlordane	NE		< 0.0059		<0.0042	
Chlorinated Herbicides						
2,4,5-T			< 0.023		< 0.020	
2,4,5-TP (Silvex)			< 0.023		< 0.020	
2,4-D			<0.23		<0.20	
2,4-DB			<0.24		<0.21	
Dalapon			<0.56		< 0.49	
Dicamba			<0.023		<0.020	
Dichloroprop			<0.23		<0.20	
Dinoseb			<0.12		<0.10	
MCPA MCPR			<23 <23		<20 <20	
MCPP Total Petroleum Hydrocarbons (TPH)			\23		\20	
TPH DRO	620					T
I I I DIO	020					

Notes:

This table is only to be used in conjunction with the report for which it was prepared. See t Samples collected Between September 8, 2022 and September 15, 2022

Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm)
NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Stan

NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Star ATC = Anticipated Typical Concentration for soils in Eastern Maryland

Shaded and bold values represent exceedance of MDE RCS

NA = Not applicable

NE = MDE standard not established

* = Risk-based calculated value



Sample Identification			GTA-SA1-G	GTA-SA1-G	GTA-SA1-H	GTA-SA1-H
Sample Interval			0-1	1-19	0-1	1-19
Sample Type	MDE NRCS	ATC Central	Grab	Composite	Grab	Composite
Sampling Date			9/9/2022	9/9/2022	9/9/2022	9/9/2022
Polycyclic Aromatic Hydrocarbons (PAHs)						
2-Methylnaphthalene	300		1.0	< 0.010	< 0.0095	< 0.011
Acenaphthene	4,500		2.2	< 0.010	<0.0095	< 0.011
Acenaphthylene	NE		< 0.094	< 0.010	< 0.0095	< 0.011
Anthracene	23,000		3.0	<0.010	<0.0095	< 0.011
Benzo(a)anthracene	21		6.1	<0.010	0.013	<0.011
Benzo(a)pyrene	2		6.0	<0.010	0.015	<0.011
Benzo(b)fluoranthene	21 NE		6.3	<0.010 <0.010	0.014	<0.011
Benzo(g,h,i)perylene Benzo(k)fluoranthene	NE 210		3.7 4.9	<0.010	0.011 0.012	<0.011 <0.011
Chrysene	2,100		5.9	<0.010	0.012	<0.011
Dibenz(a,h)Anthracene	2.1		1.3	<0.010	<0.0095	<0.011
Fluoranthene	3,000		16	<0.010	0.016	< 0.011
Fluorene	3,000		2.7	<0.010	<0.0095	< 0.011
Indeno(1,2,3-c,d)Pyrene	21		3.7	< 0.010	0.011	< 0.011
Naphthalene	17		0.77	<0.010	< 0.0095	< 0.011
Phenanthrene	2,300		15	< 0.010	<0.0095	< 0.011
Pyrene	2,300		11	< 0.010	0.016	< 0.011
Priority Pollutant (PP) Metals	1	•				
Antimony	47	6.8	<2.1	<2.6	<2.5	<2.9
Arsenic	3.0/26.8*	4.9	5.4	2.9	5.6	6.6
Beryllium	230	1.6	1.2	0.93	1.7	1.5
Cadmium Chromium (3)	98 6.3	1.1 30	<0.41	<0.51 46	<0.49 32	<0.58 16
Copper	4,700	42	20	21	20	22
Lead	550	61	12	14	12	11
Mercury	4.6	0.14	<0.083	<0.10	<0.099	<0.12
Nickel	2,200	22	37	40	40	34
Selenium	580	1.0	<0.41	<0.51	< 0.49	<0.58
Silver	580	1.0	< 0.41	<0.51	< 0.49	<0.58
Thallium	1.2	1.5	< 0.41	<0.51	< 0.49	<0.58
Zinc	35,000	73	65	72	75	50
Organochlorine Pesticides						•
4,4-DDD	2.5		<0.0044		<0.0044	
4,4-DDE	9.3		<0.0044		<0.0044 <0.0044	
4,4-DDT	8.5 0.18		<0.0044 <0.0044		<0.0044	
Aldrin Chlordane (n.o.s.)	7.7		<0.11	7	<0.0044	
Dieldrin	7.7	1	<0.0044		<0.011	
Endosulfan I	0.14		<0.0044		<0.0044	
Endosulfan II	700		< 0.0044		<0.0044	
Endosulfan Sulfate	NE		< 0.0044		< 0.0044	
Endrin	NE		< 0.0044		< 0.0044	
Endrin Aldehyde	25		< 0.0044		< 0.0044	
Endrin ketone	NE		< 0.0044		< 0.0044	
Gamma-BHC (Lindane)	NE		<0.0044		< 0.0044	
Heptachlor	2.5		<0.0044		<0.0044	
Heptachlor Epoxide	7.7	7-	<0.0044		<0.0044	
Methoxychlor	0.63		<0.0044		<0.0044	
Toxaphene	0.33 410		<0.11		<0.11	
alpha-BHC beta-BHC	2.1		<0.0044 <0.0044		<0.0044 <0.0044	
cis-Chlordane	0.36		<0.0044		<0.0044	
delta-BHC	1.3		<0.0044		<0.0044	
trans-Chlordane	NE NE		< 0.0044		<0.0044	
Chlorinated Herbicides						
2,4,5-T			< 0.021		< 0.022	
2,4,5-TP (Silvex)			< 0.021		<0.022	
2,4-D			<0.20		<0.22	
2,4-DB			<0.21		< 0.23	
Dalapon			< 0.49		< 0.54	
Dicamba			<0.020		<0.022	
Dichloroprop			<0.20		<0.22	
Dinoseb			<0.10		<0.11	
MCPA			<20		<22	
MCPP Total Petroleum Hydrocarbons (TPH)	l		<20		<22	
, , ,	620					
TPH DRO	020					

Notes:

This table is only to be used in conjunction with the report for which it was prepared. See t Samples collected Between September 8, 2022 and September 15, 2022

Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm)
NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Stan

NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Star ATC = Anticipated Typical Concentration for soils in Eastern Maryland

Shaded and bold values represent exceedance of MDE RCS

NA = Not applicable

NE = MDE standard not established

* = Risk-based calculated value



Sample Identification			GTA-SA1-I	GTA-SA1-I	GTA-SA2-A	GTA-SA2-A	GTA-SA2-B	GTA-SA2-B	GTA-SA2-C
Sample Interval	-		0-1	1-12.5	0-1	1-18	0-1	1-18	0-1
Sample Type	MDE NRCS	ATC Central	Grab	Composite	Grab	Composite	Grab	Composite	Grab
Sampling Date			9/9/2022	9/9/2022	9/12/2022	9/12/2022	9/12/2022	9/12/2022	9/12/2022
Polycyclic Aromatic Hydrocarbons (PAHs)									
2-Methylnaphthalene	300		<0.0090	< 0.044	< 0.010	< 0.011	< 0.0099	< 0.012	< 0.010
Acenaphthene	4,500		<0.0090	<0.044	<0.010	<0.011	<0.0099	<0.012	< 0.010
Acenaphthylene	NE		<0.0090	<0.044	<0.010	<0.011	<0.0099	<0.012	<0.010
Anthracene	23,000		0.013	<0.044	<0.010	<0.011	<0.0099	<0.012	<0.010
Benzo(a)anthracene Benzo(a)pyrene	21		0.032 0.028	0.096	<0.010 <0.010	<0.011 <0.011	<0.0099 <0.0099	<0.012 <0.012	<0.010
Benzo(b)fluoranthene	21		0.028	0.092 0.19	<0.010	<0.011	<0.0099	<0.012	<0.010 <0.010
Benzo(g,h,i)perylene	NE		0.020	0.085	<0.010	<0.011	<0.0099	<0.012	<0.010
Benzo(k)fluoranthene	210		0.025	0.080	<0.010	< 0.011	< 0.0099	<0.012	< 0.010
Chrysene	2,100		0.036	0.18	< 0.010	< 0.011	< 0.0099	< 0.012	< 0.010
Dibenz(a,h)Anthracene	2.1		<0.0090	< 0.044	< 0.010	< 0.011	< 0.0099	< 0.012	< 0.010
Fluoranthene	3,000		0.075	0.081	< 0.010	< 0.011	<0.0099	< 0.012	< 0.010
Fluorene	3,000		< 0.0090	< 0.044	< 0.010	< 0.011	<0.0099	< 0.012	< 0.010
Indeno(1,2,3-c,d)Pyrene	21		0.019	0.074	< 0.010	<0.011	<0.0099	< 0.012	< 0.010
Naphthalene	17		<0.0090	<0.044	<0.010	<0.011	<0.0099	<0.012	< 0.010
Phenanthrene	2,300	-	0.070	<0.044	<0.010	<0.011	<0.0099	<0.012	<0.010
Pyrene Pyrene Pyrenity Pollytont (PR) Matela	2,300		0.060	0.14	<0.010	<0.011	<0.0099	<0.012	<0.010
Priority Pollutant (PP) Metals Antimony	47	6.8	<2.5	<2.1	<2.6	<2.4	<2.1	<2.6	<2.4
Arsenic	3.0/26.8*	4.9	3.2	3.2	6.8	8.3	5.9	4.6	5.6
Beryllium	230	1.6	0.65	0.45	0.83	0.90	0.99	1.1	0.76
Cadmium	98	1.1	<0.51	< 0.43	<0.52	< 0.48	<0.42	<0.53	<0.48
Chromium (3)	6.3	30	24	18	43	26	33	16	31
Copper	4,700	42	13	13	19	16	17	31	17
Lead	550	61	18	27	16	22	16	11	15
Mercury	4.6	0.14	< 0.10	<0.085	<0.10	<0.096	<0.084	< 0.11	< 0.095
Nickel	2,200	22	19	14	19	21	24	46	24
Selenium	580	1.0	<0.51	<0.43	<0.52	<0.48	<0.42	<0.53	<0.48
Silver	580	1.0	<0.51	<0.43	<0.52	<0.48	<0.42	< 0.53	<0.48
Thallium	1.2 35,000	1.5 73	<0.51 53	<0.43 41	<0.52 46	<0.48 36	<0.42 50	<0.53 50	<0.48 43
Zinc Organochlorine Pesticides	33,000	/3	33	1 41	40] 30	30		43
4,4-DDD	2.5		< 0.0043	-	<0.0050		<0.0048		<0.0048
4,4-DDE	9.3		< 0.0043		<0.0050	<u> </u>	<0.0048		<0.0048
4,4-DDT	8.5		< 0.0043		<0.0050		< 0.0048		< 0.0048
Aldrin	0.18		< 0.0043	4	<0.0050		< 0.0048		< 0.0048
Chlordane (n.o.s.)	7.7		< 0.11		<0.12		< 0.12		< 0.12
Dieldrin	7.7	-	<0.0043	7-	<0.0050		<0.0048		<0.0048
Endosulfan I	0.14	-	<0.0043		< 0.0050		<0.0048		<0.0048
Endosulfan II	700	-	<0.0043		<0.0050		<0.0048		<0.0048
Endosulfan Sulfate	NE NE		<0.0043		<0.0050 <0.0050		<0.0048		<0.0048
Endrin Endrin Aldehyde	25		<0.0043 <0.0043	-	<0.0050		<0.0048 <0.0048		<0.0048 <0.0048
Endrin Aldenyde Endrin ketone	NE		<0.0043		<0.0050		<0.0048		<0.0048
Gamma-BHC (Lindane)	NE		<0.0043		<0.0050		<0.0048		<0.0048
Heptachlor	2.5		<0.0043		<0.0050		<0.0048		<0.0048
Heptachlor Epoxide	7.7		<0.0043		<0.0050		<0.0048		<0.0048
Methoxychlor	0.63		< 0.0043		< 0.0050		<0.0048		<0.0048
Toxaphene	0.33		< 0.11		<0.12		<0.12		<0.12
alpha-BHC	410		< 0.0043		<0.0050		<0.0048		<0.0048
beta-BHC	2.1	-	< 0.0043		<0.0050		<0.0048		<0.0048
cis-Chlordane	0.36	-	<0.0043		<0.0050		<0.0048		<0.0048
delta-BHC	1.3		<0.0043		<0.0050		<0.0048		<0.0048
trans-Chlordane	NE	-	<0.0043		<0.0050		<0.0048		<0.0048
Chlorinated Herbicides			<0.020		<0.023		<0.022		<0.023
2 4 5-T			<0.020		<0.023		<0.022		<0.023
2,4,5-T 2 4 5-TP (Silvex)			~0.020				<0.22		<0.23
2,4,5-TP (Silvex)			< 0.20		<0.23				
2,4,5-TP (Silvex) 2,4-D			<0.20 <0.20		<0.23 <0.23				< 0.24
2,4,5-TP (Silvex) 2,4-D 2,4-DB			<0.20		<0.23		<0.22		<0.24 <0.56
2,4,5-TP (Silvex) 2,4-D 2,4-DB Dalapon			<0.20 <0.48		<0.23 <0.55		<0.22 <0.53		< 0.56
2,4,5-TP (Silvex) 2,4-D 2,4-DB Dalapon Dicamba			<0.20		<0.23		<0.22		
2,4,5-TP (Silvex) 2,4-D 2,4-DB Dalapon			<0.20 <0.48 <0.020		<0.23 <0.55 <0.023		<0.22 <0.53 <0.022	==	<0.56 <0.023
2,4,5-TP (Silvex) 2,4-D 2,4-DB Dalapon Dicamba Dichloroprop			<0.20 <0.48 <0.020 <0.20		<0.23 <0.55 <0.023 <0.23	===	<0.22 <0.53 <0.022 <0.22	= = = = = = = = = = = = = = = = = = =	<0.56 <0.023 <0.23
2,4,5-TP (Silvex) 2,4-D 2,4-DB Dalapon Dicamba Dichloroprop Dinoseb			<0.20 <0.48 <0.020 <0.20 <0.099	**************************************	<0.23 <0.55 <0.023 <0.23 <0.12	00 00 00 00 00 00 00 00	<0.22 <0.53 <0.022 <0.22 <0.11	### ##################################	<0.56 <0.023 <0.23 <0.12
2,4,5-TP (Silvex) 2,4-D 2,4-DB Dalapon Dicamba Dichloroprop Dinoseb MCPA			<0.20 <0.48 <0.020 <0.20 <0.099 <19	**************************************	<0.23 <0.55 <0.023 <0.23 <0.12 <23	00 00 00 00 00 00 00 00	<0.22 <0.53 <0.022 <0.22 <0.11 <22	### ### #### #########################	<0.56 <0.023 <0.23 <0.12 <23

Notes:

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ATC = Anticipated Typical Concentration for soils in Eastern Maryland Shaded and bold values represent exceedance of MDE RCS

NA = Not applicable

NE = MDE standard not established

* = Risk-based calculated value



Sample Identification			GTA-SA2-C	GTA-SA2-D	GTA-SA2-D	GTA-SA2-E	GTA-SA2-E
Sample Interval	MADE NIDGE	ATC Countries	1-18	0-1	1-5	0-1	1-5
Sample Type	MDE NRCS	ATC Central	Composite	Grab	Composite	Grab	Composite
Sampling Date			9/12/2022	9/12/2022	9/12/2022	9/9/2022	9/9/2022
Polycyclic Aromatic Hydrocarbons (PAHs)	1						
2-Methylnaphthalene Acenaphthene	300 4,500		<0.011 <0.011	<0.011 <0.011	<0.010 <0.010	<0.011 <0.011	<0.011 <0.011
Acenaphthylene	4,500 NE		<0.011	<0.011	<0.010	<0.011	<0.011
Anthracene	23,000		<0.011	<0.011	<0.010	<0.011	<0.011
Benzo(a)anthracene	21		<0.011	0.086	<0.010	<0.011	<0.011
Benzo(a)pyrene	2		< 0.011	0.11	< 0.010	< 0.011	< 0.011
Benzo(b)fluoranthene	21		< 0.011	0.096	< 0.010	< 0.011	< 0.011
Benzo(g,h,i)perylene	NE		< 0.011	0.077	< 0.010	< 0.011	< 0.011
Benzo(k)fluoranthene	210		< 0.011	0.082	<0.010	< 0.011	<0.011
Chrysene	2,100	-	<0.011	0.090	<0.010	<0.011	<0.011
Dibenz(a,h)Anthracene Fluoranthene	2.1	-	<0.011 <0.011	0.021 0.12	<0.010 <0.010	<0.011 <0.011	<0.011 <0.011
Fluorene	3,000 3,000		<0.011	<0.011	<0.010	<0.011	<0.011
Indeno(1,2,3-c,d)Pyrene	21		<0.011	0.071	<0.010	<0.011	<0.011
Naphthalene	17		<0.011	<0.011	<0.010	<0.011	<0.011
Phenanthrene	2,300		< 0.011	0.043	<0.010	<0.011	<0.011
Pyrene	2,300		< 0.011	0.12	<0.010	< 0.011	< 0.011
Priority Pollutant (PP) Metals		_					
Antimony	47	6.8	<3.1	<3.1	<2.7	<2.9	<2.9
Arsenic	3.0/26.8*	4.9	2.3	8.1	8.3	7.6	9.6
Beryllium	230	1.6	< 0.61	1.4	1.8	1.5	2.3
Cadmium	98 6.3	1.1 30	<0.61 6.4	<0.62 36	<0.54 37	<0.59 29	<0.58
Chromium (3) Copper	4,700	42	13	17	17	29	31
Lead	550	61	7.2	19	18	19	17
Mercury	4.6	0.14	<0.12	<0.12	<0.11	<0.12	<0.12
Nickel	2,200	22	8.9	32	33	36	34
Selenium	580	1.0	< 0.61	<0.62	< 0.54	< 0.59	< 0.58
Silver	580	1.0	< 0.61	<0.62	< 0.54	< 0.59	< 0.58
Thallium	1.2	1.5	< 0.61	<0.62	< 0.54	< 0.59	<0.58
Zinc	35,000	73	21	71	61	65	57
Organochlorine Pesticides	3.5			10.0053		-0.0053	
4,4-DDD 4,4-DDE	2.5 9.3	-	-	<0.0053 <0.0053		<0.0053 <0.0053	
4,4-DDT	8.5	-		<0.0053	-	<0.0053	
Aldrin	0.18		4	< 0.0053		< 0.0053	
Chlordane (n.o.s.)	7.7			<0.13		< 0.13	
Dieldrin	7.7		7-	< 0.0053		< 0.0053	
Endosulfan I	0.14			< 0.0053		< 0.0053	
Endosulfan II	700	-		< 0.0053		< 0.0053	
Endosulfan Sulfate	NE	\		<0.0053		< 0.0053	
Endrin	NE NE			<0.0053		<0.0053	
Endrin Aldehyde Endrin ketone	25 NE			<0.0053 <0.0053		<0.0053 <0.0053	
Gamma-BHC (Lindane)	NE NE			<0.0053		<0.0053	
Heptachlor	2.5			<0.0053		<0.0053	
Heptachlor Epoxide	7.7			< 0.0053		<0.0053	
Methoxychlor	0.63	-		<0.0053		<0.0053	
Toxaphene	0.33			< 0.13		< 0.13	
alpha-BHC	410			< 0.0053		< 0.0053	
beta-BHC	2.1			< 0.0053		< 0.0053	
cis-Chlordane	0.36			<0.0053		<0.0053	
delta-BHC	1.3			<0.0053		<0.0053	
trans-Chlordane Chlorinated Herbicides	NE			<0.0053		<0.0053	
2,4,5-T				<0.024		<0.025	
2,4,5-TP (Silvex)				<0.024		<0.025	
2,4-D				<0.23		<0.24	
2,4-DB				<0.24		<0.25	
Dalapon				< 0.57		< 0.59	
Dicamba				< 0.023		< 0.024	
Dichloroprop				<0.23		< 0.24	
Dinoseb				<0.12		<0.12	
MCPA				<23		<24	
MCPP	l			<23		<24	
Total Petroleum Hydrocarbons (TPH) TPH DRO	620						

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Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm)
NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Stan

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Sample Identification			GTA-SA2-F	GTA-SA2-F	GTA-SA3-A	GTA-SA3-A
Sample Interval			0-1	1-7	0-1	1-7
Sample Type	MDE NRCS	ATC Central	Grab	Composite	Grab	Composite
Sampling Date			9/9/2022	9/9/2022	9/13/2022	9/13/2022
Polycyclic Aromatic Hydrocarbons (PAHs)						
2-Methylnaphthalene	300		<0.0096	<0.0094	<0.011	<0.011
Acenaphthene	4,500		<0.0096	<0.0094	<0.011	<0.011
Acenaphthylene Anthracene	NE 23,000		<0.0096 <0.0096	<0.0094 <0.0094	<0.011 <0.011	<0.011 <0.011
Benzo(a)anthracene	23,000		<0.0096	<0.0094	<0.011	<0.011
Benzo(a)pyrene	2		< 0.0096	<0.0094	<0.011	<0.011
Benzo(b)fluoranthene	21		< 0.0096	< 0.0094	<0.011	<0.011
Benzo(g,h,i)perylene	NE		< 0.0096	<0.0094	<0.011	< 0.011
Benzo(k)fluoranthene	210		< 0.0096	< 0.0094	< 0.011	< 0.011
Chrysene	2,100		< 0.0096	< 0.0094	<0.011	< 0.011
Dibenz(a,h)Anthracene	2.1		< 0.0096	< 0.0094	< 0.011	<0.011
Fluoranthene	3,000		<0.0096	< 0.0094	<0.011	< 0.011
Fluorene	3,000		<0.0096	< 0.0094	< 0.011	< 0.011
Indeno(1,2,3-c,d)Pyrene	21		<0.0096	<0.0094	<0.011	<0.011
Naphthalene	17		<0.0096	<0.0094	<0.011	<0.011
Phenanthrene	2,300		<0.0096	<0.0094	<0.011	<0.011
Pyrene Priority Pollutant (PP) Metals	2,300		<0.0096	<0.0094	<0.011	<0.011
Antimony	47	6.8	<2.3	<2.4	<2.8	<2.7
Arsenic	3.0/26.8*	4.9	6.5	7.0	9.9	8.5
Beryllium	230	1.6	< 0.47	1.1	2.2	3.7
Cadmium	98	1.1	< 0.47	< 0.47	< 0.57	< 0.54
Chromium (3)	6.3	30	37	38	74	61
Copper	4,700	42	13	21	34	33
Lead	550	61	15	12	17	14
Mercury	4.6	0.14	< 0.094	< 0.094	0.19	0.16
Nickel	2,200	22	17	57	56	53
Selenium	580	1.0	<0.47	< 0.47	< 0.57	< 0.54
Silver	580	1.0	<0.47	<0.47	<0.57	<0.54
Thallium	1.2	1.5	<0.47	<0.47	< 0.57	<0.54
Zinc Organochlorine Pesticides	35,000	73	48	73	77	81
4,4-DDD	2.5	-	<0.0045		<0.0051	
4,4-DDE	9.3		<0.0045		<0.0051	
4,4-DDT	8.5		< 0.0045		< 0.0051	
Aldrin	0.18		< 0.0045		< 0.0051	
Chlordane (n.o.s.)	7.7		<0.11		< 0.13	
Dieldrin	7.7	-	< 0.0045		< 0.0051	
Endosulfan I	0.14		< 0.0045		< 0.0051	
Endosulfan II	700		< 0.0045		< 0.0051	
Endosulfan Sulfate	NE		<0.0045		< 0.0051	
Endrin	NE		<0.0045		<0.0051	
Endrin Aldehyde	25		<0.0045		<0.0051	
Endrin ketone	NE NE		<0.0045		<0.0051	
Gamma-BHC (Lindane) Heptachlor	NE 2.5		<0.0045 <0.0045		<0.0051 <0.0051	
Heptachlor Epoxide	7.7		<0.0045		<0.0051	
Methoxychlor	0.63		< 0.0045		<0.0051	
Toxaphene	0.33		<0.11		< 0.13	
alpha-BHC	410		< 0.0045		<0.0051	
beta-BHC	2.1		< 0.0045		< 0.0051	
cis-Chlordane	0.36		< 0.0045		<0.0051	
delta-BHC	1.3		< 0.0045		< 0.0051	
trans-Chlordane	NE		<0.0045		<0.0051	
Chlorinated Herbicides						1
2,4,5-T	 		<0.022		<0.024	
2,4,5-TP (Silvex)	 		<0.022		<0.024	
2,4-D	_		<0.21		<0.23 <0.24	
2,4-DB	-		<0.22 <0.52		<0.24	
Dalapon Dicamba	 		<0.52		<0.023	
Dichloroprop			<0.021		<0.023	
Dinoseb	†		<0.11		<0.12	
MCPA	1		<21		<23	
MCPP			<21		<23	
Total Petroleum Hydrocarbons (TPH)						
TPH DRO	620					

Notes:

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Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm)
NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Stan

NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Star ATC = Anticipated Typical Concentration for soils in Eastern Maryland

Shaded and bold values represent exceedance of MDE RCS

NA = Not applicable

NE = MDE standard not established

* = Risk-based calculated value



Sample Identification			GTA-SA3-B	GTA-SA3-B	GTA-SA3-C
Sample Interval	MDE NRCS	ATC Central	0-1	1-8	0-1
Sample Type	WIDE NACS	ATC Celitial	Grab	Composite	Grab
Sampling Date			9/13/2022	9/13/2022	9/13/2022
Polycyclic Aromatic Hydrocarbons (PAHs)	200		-0.010	-0.044	-0.040
2-Methylnaphthalene Acenaphthene	300 4,500		<0.010 <0.010	<0.011 <0.011	<0.010 <0.010
Acenaphthylene	4,300 NE		<0.010	<0.011	<0.010
Anthracene	23,000		<0.010	<0.011	<0.010
Benzo(a)anthracene	21		< 0.010	<0.011	< 0.010
Benzo(a)pyrene	2		< 0.010	<0.011	<0.010
Benzo(b)fluoranthene	21		< 0.010	< 0.011	< 0.010
Benzo(g,h,i)perylene	NE		< 0.010	< 0.011	< 0.010
Benzo(k)fluoranthene	210		< 0.010	< 0.011	< 0.010
Chrysene	2,100		< 0.010	< 0.011	<0.010
Dibenz(a,h)Anthracene	2.1		< 0.010	<0.011	<0.010
Fluoranthene	3,000		<0.010	<0.011	<0.010
Fluorene	3,000		<0.010	<0.011	<0.010
Indeno(1,2,3-c,d)Pyrene Naphthalene	21 17		<0.010 <0.010	<0.011	<0.010 <0.010
Phenanthrene	2,300		<0.010	<0.011	<0.010
Pyrene	2,300		<0.010	<0.011	<0.010
Priority Pollutant (PP) Metals	2,300	1	13.010	3.011	10.010
Antimony	47	6.8	<2.4	<3.2	<2.2
Arsenic	3.0/26.8*	4.9	7.5	12	6.3
Beryllium	230	1.6	1.2	1.7	0.99
Cadmium	98	1.1	<0.48	< 0.63	<0.44
Chromium (3)	6.3	30	36	40	31
Copper	4,700	42	24	32	18
Lead	550	61	19	18	16
Mercury	4.6	0.14	<0.097	<0.13	<0.088
Nickel Selenium	2,200 580	1.0	33 <0.48	64 <0.63	22 <0.44
Silver	580	1.0	<0.48	<0.63	<0.44
Thallium	1.2	1.5	<0.48	<0.63	<0.44
Zinc	35,000	73	56	99	49
Organochlorine Pesticides	33,000	7.5	30	33	
4,4-DDD	2.5		<0.0048		<0.0048
4,4-DDE	9.3	-	<0.0048		< 0.0048
4,4-DDT	8.5	-	< 0.0048		< 0.0048
Aldrin	0.18		<0.0048		<0.0048
Chlordane (n.o.s.)	7.7		<0.12		< 0.12
Dieldrin	7.7		<0.0048		<0.0048
Endosulfan I	0.14		<0.0048		<0.0048
Endosulfan II	700		<0.0048		<0.0048
Endosulfan Sulfate	NE NE		<0.0048 <0.0048		<0.0048 <0.0048
Endrin Endrin Aldehyde	25		<0.0048		<0.0048
Endrin Aldenyde Endrin ketone	NE		<0.0048		<0.0048
Gamma-BHC (Lindane)	NE	V	<0.0048		<0.0048
Heptachlor	2.5		< 0.0048		< 0.0048
Heptachlor Epoxide	7.7		< 0.0048		< 0.0048
Methoxychlor	0.63		< 0.0048		< 0.0048
Toxaphene	0.33		< 0.12		< 0.12
alpha-BHC	410		< 0.0048		<0.0048
beta-BHC	2.1		<0.0048		<0.0048
cis-Chlordane	0.36		<0.0048		<0.0048
delta-BHC	1.3		<0.0048		<0.0048
trans-Chlordane	NE		<0.0048		<0.0048
Chlorinated Herbicides 2,4,5-T			<0.023		<0.024
2,4,5-TP (Silvex)			<0.023		<0.024
2,4-D			<0.23		<0.024
2,4-DB			<0.24		<0.25
Dalapon			<0.56		< 0.58
Dicamba			<0.023		<0.024
Dichloroprop			<0.23		<0.24
Dinoseb			< 0.12		< 0.12
MCPA			<23		<24
МСРР	·		<23		<24
Total Petroleum Hydrocarbons (TPH)					
TPH DRO	620				

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Sample Identification Sample Interval Sample Type Sampling Date Polycyclic Aromatic Hydrocarbons (PAHs) 2-Methylnaphthalene Acenaphthylene Acenaphthylene Anthracene Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(b,hi)perylene Benzo(k,hi)perylene Benzo(k,hi)arbarathene Chrysene	300 4,500 NE 23,000 21 2 21		GTA-SA3-C 1-8 Composite 9/13/2022 <0.011 <0.011 <0.011 <0.011 <0.011	GTA-SA3-D 0-1 Grab 9/13/2022 <0.011 <0.011 <0.011 <0.011	GTA-SA3-D 1-8 Composite 9/13/2022 <0.011 <0.011 <0.011 <0.011	GTA-SA3-E 0-1 Grab 9/13/2022 <0.011 <0.011 <0.011
Sample Type Sampling Date Polycyclic Aromatic Hydrocarbons (PAHs) 2-Methylnaphthalene Acenaphthene Acenaphthylene Anthracene Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene Chrysene Chrysene	300 4,500 NE 23,000 21 2		9/13/2022 <0.011 <0.011 <0.011 <0.011	9/13/2022 <0.011 <0.011 <0.011 <0.011	9/13/2022 <0.011 <0.011 <0.011	9/13/2022 <0.011 <0.011 <0.011
Polycyclic Aromatic Hydrocarbons (PAHs) 2-Methylnaphthalene Acenaphthene Acenaphthylene Acenaphthylene Anthracene Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene Chrysene	4,500 NE 23,000 21 2 21		<0.011 <0.011 <0.011 <0.011	<0.011 <0.011 <0.011 <0.011	<0.011 <0.011 <0.011	<0.011 <0.011 <0.011
2-Methylnaphthalene Acenaphthene Acenaphthylene Anthracene Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(pi,hi)perylene Benzo(k)fluoranthene Benzo(k)revylene Benzo(k)revylene	4,500 NE 23,000 21 2 21		<0.011 <0.011 <0.011	<0.011 <0.011 <0.011	<0.011 <0.011	<0.011 <0.011
Acenaphthene Acenaphthylene Anthracene Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(b,h)perylene Benzo(k)fluoranthene	4,500 NE 23,000 21 2 21		<0.011 <0.011 <0.011	<0.011 <0.011 <0.011	<0.011 <0.011	<0.011 <0.011
Acenaphthylene Anthracene Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene Chrysene	NE 23,000 21 2		<0.011 <0.011	<0.011 <0.011	< 0.011	< 0.011
Anthracene Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(k)fluoranthene Chrysene	23,000 21 2 2		< 0.011	<0.011		
Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(b,h)perylene Benzo(k)fluoranthene Chrysene	21 2 21					
Benzo(a)pyrene Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene Chrysene	2 21			< 0.011	< 0.011	<0.011
Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene Chrysene	21		< 0.011	< 0.011	< 0.011	< 0.011
Benzo(k)fluoranthene Chrysene	NE		< 0.011	< 0.011	< 0.011	< 0.011
Chrysene			< 0.011	< 0.011	< 0.011	< 0.011
	210		< 0.011	< 0.011	< 0.011	< 0.011
Nihenz/a h)Anthracene	2,100		< 0.011	< 0.011	<0.011	< 0.011
Dibenz(a,h)Anthracene	2.1		< 0.011	< 0.011	<0.011	<0.011
Fluoranthene	3,000		< 0.011	<0.011	<0.011	< 0.011
Fluorene	3,000		<0.011	<0.011	<0.011	<0.011
ndeno(1,2,3-c,d)Pyrene	21 17		<0.011 <0.011	<0.011	<0.011	<0.011
Naphthalene Phenanthrene	2,300		<0.011	<0.011 <0.011	<0.011	<0.011
Pyrene	2,300		<0.011	<0.011	<0.011	<0.011
Priority Pollutant (PP) Metals	2,300		V0.011	0.011	10.011	10.011
Antimony	47	6.8	<2.6	<2.7	<2.9	<2.5
Arsenic	3.0/26.8*	4.9	8.8	6.2	6.4	7.4
Beryllium	230	1.6	3.6	1.1	1.0	0.90
Cadmium	98	1.1	<0.53	< 0.54	< 0.59	< 0.51
Chromium ⁽³⁾	6.3	30	24	19	16	36
Copper	4,700	42	30	28	30	18
Lead	550	61	23	16	17	18
Mercury	4.6	0.14	<0.11	<0.11	<0.12	<0.10
Nickel	2,200	22	42	31	36	20
Selenium	580	1.0	<0.53	<0.54	<0.59	<0.51
Silver Thallium	580 1.2	1.0 1.5	<0.53 <0.53	<0.54 <0.54	<0.59 <0.59	<0.51 <0.51
Zinc	35,000	73	65	59	73	47
Organochlorine Pesticides	33,000	/3	05	33	73	47
4,4-DDD	2.5	-		<0.0052		<0.0051
4,4-DDE	9.3			<0.0052		<0.0051
4,4-DDT	8.5			< 0.0052		< 0.0051
Aldrin	0.18			<0.0052		< 0.0051
Chlordane (n.o.s.)	7.7			<0.13		< 0.13
Dieldrin	7.7	1-		<0.0052		<0.0051
Endosulfan I	0.14			< 0.0052		< 0.0051
Endosulfan II	700			<0.0052		<0.0051
Endosulfan Sulfate	NE			<0.0052		<0.0051
Endrin	NE 25	-		<0.0052		<0.0051
Endrin Aldehyde	25 NE			<0.0052 <0.0052		<0.0051
Endrin ketone Gamma-BHC (Lindane)	NE NE			<0.0052		<0.0051 <0.0051
Heptachlor	2.5			<0.0052		<0.0051
Heptachlor Epoxide	7.7	-		<0.0052		<0.0051
Methoxychlor	0.63			<0.0052		< 0.0051
Toxaphene	0.33			<0.13		<0.13
alpha-BHC	410			< 0.0052		< 0.0051
peta-BHC	2.1			< 0.0052		< 0.0051
cis-Chlordane	0.36			<0.0052		< 0.0051
delta-BHC	1.3			<0.0052		<0.0051
rone Chlordone	NE			<0.0052		<0.0051
			1	10.000	ı	-0.001
Chlorinated Herbicides				<0.026		<0.024
Chlorinated Herbicides 2,4,5-T	_	ı ———		< 0.026		< 0.024
Chlorinated Herbicides 2,4,5-T 2,4,5-TP (Silvex)			-			
Chlorinated Herbicides 2,4,5-T 2,4,5-TP (Silvex) 2,4-D				< 0.26		<0.23
Chlorinated Herbicides 2,4,5-T 2,4,5-TP (Silvex) 2,4-D 2,4-D				<0.26 <0.26		< 0.24
Chlorinated Herbicides 2,4,5-T 2,4,5-TP (Silvex) 2,4-D 2,4-D Dalapon				<0.26 <0.26 <0.62		<0.24 <0.57
Chlorinated Herbicides 2,4,5-T 2,4,5-TP (Silvex) 2,4-D 2,4-D 2,4-DB Dalapon Dicamba				<0.26 <0.26 <0.62 <0.026		<0.24 <0.57 <0.023
Chlorinated Herbicides 2,4,5-T 2,4,5-TP (Silvex) 2,4-D 2,4-DB Dalapon Dicamba Dichloroprop				<0.26 <0.26 <0.62 <0.026 <0.26		<0.24 <0.57 <0.023 <0.23
Chlorinated Herbicides 2,4,5-T 2,4,5-TP (Silvex) 2,4-D 2,4-DB Dalapon Dicamba Dichloroprop Dinoseb			# 10 m	<0.26 <0.26 <0.62 <0.026 <0.26 <0.13		<0.24 <0.57 <0.023
trans-Chlordane Chlorinated Herbicides 2,4,5-T 2,4,5-TP (Silvex) 2,4-D 2,4-DB Dalapon Dicamba Dichloroprop Dinoseb MCPA MCPP				<0.26 <0.26 <0.62 <0.026 <0.26		<0.24 <0.57 <0.023 <0.23 <0.12
Chlorinated Herbicides 2,4,5-T 2,4,5-TP (Silvex) 2,4-5-TP (Silvex) 2,4-DB Dalapon Dicamba Dichloroprop Dinoseb MCPA				<0.26 <0.26 <0.62 <0.026 <0.26 <0.13 <25		<0.24 <0.57 <0.023 <0.23 <0.12 <23

Notes:

This table is only to be used in conjunction with the report for which it was prepared. See t Samples collected Between September 8, 2022 and September 15, 2022

Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm)
NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Stan

ATC = Anticipated Typical Concentration for soils in Eastern Maryland Shaded and bold values represent exceedance of MDE RCS

NA = Not applicable

NE = MDE standard not established

* = Risk-based calculated value



Sample Identification			GTA-SA3-E	GTA-SA3-F	GTA-SA3-F	GTA-SA3-G	GTA-SA3-G	GTA-SA4-A	GTA-SA4-A	GTA-SA4-B	GTA-SA4-B
Sample Interval			1-8	0-1	1-8	0-1	1-8	0-1	1-15	0-1	1-15
Sample Type	MDE NRCS	ATC Central	Composite	Grab	Composite	Grab	Composite	Grab	Composite	Grab	Composite
Sampling Date			9/13/2022	9/9/2022	9/9/2022	9/9/2022	9/9/2022	9/8/2022	9/8/2022	9/8/2022	9/8/2022
Polycyclic Aromatic Hydrocarbons (PAHs)											
2-Methylnaphthalene	300		< 0.011	< 0.0097	< 0.010	< 0.010	< 0.012	< 0.010	< 0.010	<0.0097	< 0.011
Acenaphthene	4,500		< 0.011	<0.0097	< 0.010	<0.010	< 0.012	<0.010	< 0.010	<0.0097	<0.011
Acenaphthylene	NE		<0.011	<0.0097	<0.010	<0.010	<0.012	<0.010	<0.010	<0.0097	<0.011
Anthracene	23,000		< 0.011	<0.0097	<0.010	<0.010	<0.012	<0.010	<0.010	<0.0097	<0.011
Benzo(a)anthracene	21		<0.011 <0.011	<0.0097 <0.0097	<0.010 <0.010	<0.010 <0.010	<0.012 <0.012	<0.010 <0.010	<0.010 <0.010	<0.0097 <0.0097	<0.011 <0.011
Benzo(a)pyrene Benzo(b)fluoranthene	2 21		<0.011	<0.0097	<0.010	<0.010	<0.012	<0.010	<0.010	<0.0097	<0.011
Benzo(g,h,i)perylene	NE		<0.011	<0.0097	<0.010	<0.010	<0.012	<0.010	<0.010	<0.0097	<0.011
Benzo(k)fluoranthene	210		<0.011	< 0.0097	<0.010	<0.010	<0.012	<0.010	<0.010	< 0.0097	<0.011
Chrysene	2,100		< 0.011	< 0.0097	< 0.010	< 0.010	< 0.012	<0.010	< 0.010	< 0.0097	< 0.011
Dibenz(a,h)Anthracene	2.1		< 0.011	< 0.0097	< 0.010	< 0.010	< 0.012	<0.010	< 0.010	< 0.0097	< 0.011
Fluoranthene	3,000		< 0.011	< 0.0097	< 0.010	< 0.010	<0.012	<0.010	< 0.010	< 0.0097	< 0.011
Fluorene	3,000		< 0.011	< 0.0097	< 0.010	< 0.010	< 0.012	<0.010	< 0.010	< 0.0097	< 0.011
Indeno(1,2,3-c,d)Pyrene	21		< 0.011	< 0.0097	< 0.010	< 0.010	<0.012	< 0.010	< 0.010	< 0.0097	< 0.011
Naphthalene	17	-	<0.011	<0.0097	<0.010	<0.010	<0.012	<0.010	<0.010	<0.0097	<0.011
Phenanthrene	2,300		< 0.011	<0.0097	<0.010	<0.010	<0.012	<0.010	<0.010	<0.0097	<0.011
Pyrene Priority Pollutant (PP) Metals	2,300		<0.011	<0.0097	<0.010	0.010	<0.012	<0.010	<0.010	<0.0097	<0.011
Antimony	47	6.8	<3.0	<2.5	<2.9	<3.0	<3.4	<2.7	<2.3	<2.8	<2.3
Arsenic	3.0/26.8*	4.9	7.1	6.7	5.4	6.7	9.2	5.8	7.0	7.0	8.9
Beryllium	230	1.6	3.4	0.82	0.69	0.63	1.7	1.0	0.73	0.83	1.7
Cadmium	98	1.1	< 0.60	< 0.49	<0.59	<0.59	< 0.69	<0.53	<0.45	<0.56	< 0.46
Chromium (3)	6.3	30	26	37	30	47	32	28	28	25	57
Copper	4,700	42	39	11	16	18	24	11	16	24	28
Lead	550	61	13	19	12	13	24	16	18	14	17
Mercury	4.6	0.14	<0.12	<0.098	< 0.12	0.25	<0.14	< 0.11	<0.090	<0.11	<0.092
Nickel	2,200	22	77	16	23	22	35	16	17	23	31
Selenium	580 580	1.0	<0.60	<0.49	<0.59	<0.59 <0.59	<0.69	<0.53	< 0.45	<0.56	<0.46
Silver Thallium	1.2	1.5	<0.60 <0.60	<0.49 <0.49	<0.59 <0.59	<0.59	<0.69 <0.69	<0.53 <0.53	<0.45 <0.45	<0.56 <0.56	<0.46 <0.46
Zinc	35,000	73	130	42	37	43	68	43	45	44	58
Organochlorine Pesticides	33,000	,,,	150	72	3,	-3	J	43	73		36
4,4-DDD	2.5			<0.0048	-	<0.0049		< 0.0047		<0.0046	
4,4-DDE	9.3			<0.0048	-	< 0.0049	-	< 0.0047		< 0.0046	
4,4-DDT	8.5			< 0.0048	Á	<0.0049		< 0.0047		<0.0046	
Aldrin	0.18			< 0.0048	,da	<0.0049		< 0.0047		<0.0046	
Chlordane (n.o.s.)	7.7			<0.12		<0.12		< 0.12		< 0.11	
Dieldrin	7.7	-		<0.0048	-	< 0.0049		< 0.0047		<0.0046	
Endosulfan I	0.14			<0.0048		<0.0049		<0.0047		<0.0046	
Endosulfan II	700 NE			<0.0048 <0.0048		<0.0049 <0.0049		<0.0047 <0.0047		<0.0046 <0.0046	
Endosulfan Sulfate Endrin	NE NE		-	<0.0048		<0.0049		<0.0047		<0.0046	
Endrin Aldehyde	25	-		<0.0048		<0.0049		<0.0047		<0.0046	
Endrin Adenyde Endrin ketone	NE NE			<0.0048		< 0.0049		< 0.0047		<0.0046	
Gamma-BHC (Lindane)	NE NE	-		< 0.0048		< 0.0049		< 0.0047		< 0.0046	
Heptachlor	2.5	-		<0.0048		<0.0049		<0.0047		<0.0046	
Heptachlor Epoxide	7.7			<0.0048		< 0.0049		< 0.0047		<0.0046	
Methoxychlor	0.63	-		<0.0048		<0.0049		< 0.0047		<0.0046	
Toxaphene	0.33	-		<0.12		<0.12		<0.12		<0.11	
alpha-BHC	410			<0.0048		<0.0049		<0.0047		<0.0046	
beta-BHC	2.1	-		<0.0048		<0.0049		<0.0047		<0.0046	
cis-Chlordane	0.36	-	-	<0.0048 <0.0048		<0.0049 <0.0049		<0.0047 <0.0047		<0.0046 <0.0046	
delta-BHC trans-Chlordane	1.3 NE	-		<0.0048		<0.0049		<0.0047		<0.0046	
Chlorinated Herbicides	INE	-		\U.UU40		\U.UU43		\U.UU4/		\U.UU4U	-
2,4,5-T				<0.023		<0.023		<0.022		<0.022	
2,4,5-TP (Silvex)	1			<0.023		<0.023		<0.022		<0.022	
2,4-D				<0.23		<0.23		<0.22		<0.22	
2,4-DB		-		< 0.23		< 0.23		<0.22		<0.22	-
Dalapon				<0.55		<0.55		< 0.53		< 0.53	
Dicamba		-		<0.023		<0.023		<0.022		<0.022	
Dichloroprop		-		<0.23		<0.23		<0.22		<0.22	
Dinoseb		-		<0.12		<0.11		<0.11		<0.11	
MCPA				<23		<22		<22		<22	
				<23		<23		<22		<22	
MCPP											
MCPP Total Petroleum Hydrocarbons (TPH) TPH DRO	620										

Notes:

This table is only to be used in conjunction with the report for which it was prepared. See t Samples collected Between September 8, 2022 and September 15, 2022 Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm) NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Star ATC = Anticipated Typical Concentration for soils in Eastern Maryland Shaded and bold values represent exceedance of MDE RCS

NA = Not applicable

NE = MDE standard not established

* = Risk-based calculated value



Sample Interval Mode into Sample Interval	Sample Identification			GTA-SA4-C	GTA-SA4-C	GTA-SA4-D	GTA-SA4-D	GTA-SA4-E	GTA-SA4-E	GTA-SA4-F	GTA-SA4-F	GTA-SA4-G
Sample												
Comparison Com		MDE NRCS	ATC Central									
Anthony of the Company of the Comp				9/8/2022	9/8/2022	9/8/2022	9/8/2022	9/8/2022	9/8/2022	9/8/2022	9/8/2022	9/8/2022
Company Comp	Polycyclic Aromatic Hydrocarbons (PAHs)											
Secondary Seco												
Second Processes												
Second particular												
Proceedings												
Semonth/purpleme												
	Benzo(b)fluoranthene											
Description	Benzo(g,h,i)perylene	NE		<0.0098	< 0.012	< 0.0093	< 0.0099	< 0.0091	< 0.010	< 0.50	0.049	0.015
Discrete 1	Benzo(k)fluoranthene											
Notember 3,000	Chrysene											
House 3,000												
Nagembare 17												
Property												
Perfect Pollutaris Pollutaris Variety of 1970 10,000												
Notinony 47 6.8 2.8 -2.8 -2.8 -2.8 -2.8 -2.8 -2.8 -2.						< 0.0093		<0.0091	<0.010			
Assentic 30/26.8° 4.9	Priority Pollutant (PP) Metals		_									
Serginom 230	Antimony											
Cademium 98	Arsenic											
Chromatin												
Copper												
Lead												
Mercury												
Selentum	Mercury						4					
Silver	Nickel					14				40		
The state 1.2	Selenium											
Time												
A-DDD		35,000	/3	58	86	33	83	/1	/8	70	69	/5
14-DDE		2.5		<0.0045		<0.0045		<0.0042		<0.0046		<0.0046
A-DDT	4,4-DDE											
Chlordine (n.o.s.)	4,4-DDT			< 0.0045		< 0.0045		< 0.0042				< 0.0046
Dieldrin 7.7	Aldrin	0.18		< 0.0045		<0.0045		< 0.0042		<0.0046		< 0.0046
Endosulfan 0.14	Chlordane (n.o.s.)				-							
Endosulfian II 700 - 60.0046 - 40.0045 - 40.0042 - 40.0046 - 40.0046 - 40.00							~					
Sendosulfan Sulfate												
Sendrin NE												
Contain Aldehyde												
Sendrin Retone NE												
Heptachlor	Endrin ketone	NE		< 0.0045		<0.0045		< 0.0042		< 0.0046		< 0.0046
Heptachlor Epoxide	Gamma-BHC (Lindane)					V						
Methoxychlor	Heptachlor											
Company Comp											1	
Alpha-BHC												
Seed									-			
Color Colo	beta-BHC											
NE	cis-Chlordane	0.36	-									
Chlorinated Herbicides 2,4,5-T	delta-BHC											
2,4,5-T	trans-Chlordane	NE		<0.0045		<0.0045		<0.0042		<0.0046		<0.0046
2,4,5-TP (Silvex) - <0.022 - <0.021 - <0.021 - <0.023 - <0.023 2,4-D - <0.22 - <0.21 - <0.21 - <0.21 - <0.23 - <0.23 2,4-DB - <0.52 - <0.52 - <0.21 - <0.21 - <0.23 - <0.23 3- <0.23 3- 30alapon - <0.52 - <0.50 - <0.50 - <0.55 - <0.55 3- 30alapon - <0.022 - <0.021 - <0.021 - <0.023 - <0.25 3- 30alapon - <0.022 - <0.021 - <0.021 - <0.021 - <0.023 - <0.055 3- 30alapon - <0.022 - <0.021 - <0.021 - <0.021 - <0.023 - <0.023 3- 30alapon - <0.022 - <0.021 - <0.021 - <0.023 - <0.023 3- 30alapon - <0.023 - <0.023 3- 30alapon - <0.024 - <0.021 - <0.021 - <0.023 - <0.023 3- 30alapon - <0.025 - <0.025 3- 30alapon - <0.027 - <0.021 - <0.021 - <0.023 - <0.023 3- 30alapon - <0.028 - <0.029 3- 30alapon - <0.029 - <0.021 - <0.021 - <0.023 - <0.023 3- 30alapon - <0.029 3- 30alapon - <0.021 - <0.021 - <0.023 - <0.023 3- 30alapon - <0.023 - <0.023 3- 30ala	Chlorinated Herbicides	T		10.000		10.004		10.001		-0.000		10.022
-		 										
Color												
Columba Colu	2,4-DB											
Columba	Dalapon											
-	Dicamba											
MCPA - <21 - <20 - <21 - <22 - <22 MCPP - <21 - <21 - <23 - <23 - <23 Fotal Petroleum Hydrocarbons (TPH)	Dichloroprop											
MCPP - <22 - <21 - <21 - <23 - <23 Total Petroleum Hydrocarbons (TPH) - <21 - <23 - <23 Total Petroleum Hydrocarbons (TPH)	Dinoseb											
Total Petroleum Hydrocarbons (TPH)	MCPA											
		<u> </u>		<22		<21		<21		<23		<23
11110100 1020		620								-		-
	ITTI DILU	020		1	38	1	I			3.5		

Notes:

This table is only to be used in conjunction with the report for which it was prepared. See t Samples collected Between September 8, 2022 and September 15, 2022 Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm) NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Star ATC = Anticipated Typical Concentration for soils in Eastern Maryland Shaded and bold values represent exceedance of MDE RCS

NA = Not applicable

NE = MDE standard not established

* = Risk-based calculated value



Sample Identification			GTA-SA4-G	GTA-SA4-H	GTA-SA4-H	GTA-SA4-I	GTA-SA4-I	GTA-SA4-J	GTA-SA4-J	GTA-SA4-K	GTA-SA4-K
Sample Interval			1-15	0-1	1-11	0-1	1-15	0-1	1-9	0-1	1-15
Sample Type	MDE NRCS	ATC Central	Composite	Grab	Composite	Grab	Composite	Grab	Composite	Grab	Composite
Sampling Date			9/8/2022	9/8/2022	9/8/2022	9/8/2022	9/8/2022	9/8/2022	9/8/2022	9/8/2022	9/8/2022
Polycyclic Aromatic Hydrocarbons (PAHs)	•										
2-Methylnaphthalene	300		< 0.011	< 0.010	< 0.011	<0.0087	< 0.011	< 0.0093	< 0.011	< 0.0087	< 0.011
Acenaphthene	4,500		< 0.011	< 0.010	< 0.011	<0.0087	< 0.011	<0.0093	< 0.011	<0.0087	0.012
Acenaphthylene	NE		< 0.011	< 0.010	<0.011	<0.0087	< 0.011	<0.0093	< 0.011	<0.0087	< 0.011
Anthracene	23,000		<0.011	<0.010	<0.011	<0.0087	<0.011	<0.0093	<0.011	<0.0087	0.023
Benzo(a)anthracene	21		< 0.011	<0.010	<0.011	<0.0087	<0.011	<0.0093	<0.011	<0.0087	0.024
Benzo(a)pyrene Benzo(b)fluoranthene	2 21		<0.011 <0.011	<0.010 <0.010	<0.011 <0.011	<0.0087 <0.0087	<0.011 <0.011	0.010 0.0093	<0.011 <0.011	<0.0087 <0.0087	0.018 0.015
Benzo(g,h,i)perylene	NE		<0.011	<0.010	<0.011	<0.0087	<0.011	0.0093	<0.011	<0.0087	<0.013
Benzo(k)fluoranthene	210		<0.011	<0.010	<0.011	<0.0087	<0.011	<0.0093	<0.011	<0.0087	0.017
Chrysene	2,100		<0.011	< 0.010	<0.011	< 0.0087	< 0.011	<0.0093	<0.011	< 0.0087	0.022
Dibenz(a,h)Anthracene	2.1		< 0.011	<0.010	<0.011	<0.0087	<0.011	< 0.0093	< 0.011	< 0.0087	<0.011
Fluoranthene	3,000		< 0.011	< 0.010	< 0.011	< 0.0087	< 0.011	<0.0093	< 0.011	< 0.0087	0.069
Fluorene	3,000		< 0.011	< 0.010	< 0.011	< 0.0087	< 0.011	<0.0093	< 0.011	< 0.0087	0.019
Indeno(1,2,3-c,d)Pyrene	21		< 0.011	< 0.010	< 0.011	<0.0087	<0.011	0.011	< 0.011	<0.0087	< 0.011
Naphthalene	17		< 0.011	<0.010	<0.011	<0.0087	<0.011	<0.0093	<0.011	<0.0087	< 0.011
Phenanthrene	2,300	-	<0.011	<0.010	<0.011	<0.0087	<0.011	<0.0093	<0.011	<0.0087	0.085
Pyrene Pyrene Pyrene Pyrene Pyrene Pyrene	2,300		<0.011	<0.010	<0.011	<0.0087	<0.011	<0.0093	<0.011	<0.0087	0.053
Priority Pollutant (PP) Metals	47	6.8	<2.3	<2.9	<3.2	<2.1	<2.9	<2.5	<3.0	<2.1	<3.3
Antimony Arsenic	3.0/26.8*	4.9	4.7	6.4	3.3	2.7	9.4	3.1	4.7	2.6	<3.3 15
Beryllium	230	1.6	1.6	2.5	0.74	0.55	2.1	0.63	2.0	0.56	4.1
Cadmium	98	1.1	<0.46	<0.58	<0.63	<0.41	< 0.59	<0.51	<0.59	< 0.43	< 0.66
Chromium (3)	6.3	30	38	46	30	21	27	18	37	13	36
Copper	4,700	42	19	15	7.6	9.3	27	9.1	12	5.9	19
Lead	550	61	7.4	12	10	5.9	13	9.4	9.5	4.0	15
Mercury	4.6	0.14	< 0.093	< 0.12	< 0.13	<0.083	<0.12	< 0.10	<0.12	<0.085	< 0.13
Nickel	2,200	22	53	54	40	19	75	17	40	12	89
Selenium	580	1.0	<0.46	<0.58	<0.63	<0.41	< 0.59	< 0.51	<0.59	<0.43	< 0.66
Silver	580 1.2	1.0	<0.46	<0.58	< 0.63	<0.41	<0.59 <0.59	<0.51 <0.51	<0.59 <0.59	<0.43	<0.66
Thallium Zinc	35,000	1.5 73	<0.46 85	<0.58 100	<0.63 67	<0.41 35	120	54	70	<0.43 24	<0.66 170
Organochlorine Pesticides	33,000	/3	63	100	07	33	120	34	70	24	170
4,4-DDD	2.5			< 0.0049	-	<0.0041		<0.0046		<0.0042	
4,4-DDE	9.3			< 0.0049		<0.0041	<u> </u>	<0.0046		<0.0042	
4,4-DDT	8.5			< 0.0049		< 0.0041		< 0.0046		< 0.0042	
Aldrin	0.18			< 0.0049	4	<0.0041		<0.0046		< 0.0042	
Chlordane (n.o.s.)	7.7	-		<0.12		<0.10		< 0.11		< 0.11	
Dieldrin	7.7			< 0.0049	<i>y-</i>	<0.0041		<0.0046		< 0.0042	
Endosulfan I	0.14		-	<0.0049		< 0.0041		<0.0046		< 0.0042	
Endosulfan II	700			<0.0049		<0.0041		<0.0046		<0.0042	
Endosulfan Sulfate	NE NE			<0.0049		<0.0041		<0.0046		<0.0042	
Endrin	NE 25	-		<0.0049		<0.0041 <0.0041		<0.0046 <0.0046		<0.0042 <0.0042	
Endrin Aldehyde Endrin ketone	NE			<0.0049		<0.0041		<0.0046		<0.0042	
Gamma-BHC (Lindane)	NE NE			< 0.0049	-	<0.0041		<0.0046		<0.0042	
Heptachlor	2.5	-		<0.0049		<0.0041		<0.0046		< 0.0042	
Heptachlor Epoxide	7.7	-		<0.0049		< 0.0041		<0.0046		< 0.0042	
Methoxychlor	0.63			< 0.0049		<0.0041		<0.0046		< 0.0042	
Toxaphene	0.33	-		<0.12		<0.10		<0.11		<0.11	
alpha-BHC	410	-		<0.0049		< 0.0041		<0.0046		<0.0042	
beta-BHC	2.1			<0.0049		<0.0041		<0.0046		<0.0042	
cis-Chlordane	0.36		-	<0.0049		<0.0041		<0.0046		<0.0042	
delta-BHC	1.3 NE	-		<0.0049 <0.0049		<0.0041 <0.0041		<0.0046 <0.0046		<0.0042 <0.0042	
trans-Chlordane Chlorinated Herbicides	INE			<0.0049		\U.UU41		\U.UU40		\U.UU4Z	
2,4,5-T	1	-		<0.023		<0.020		<0.022		<0.020	
2,4,5-TP (Silvex)	1			<0.023		<0.020		<0.022		<0.020	
2,4-D				<0.23		<0.20		<0.21		<0.20	
2,4-DB				<0.23		<0.20		<0.22		<0.21	
Dalapon		-		< 0.55		< 0.47		< 0.52		< 0.49	
Dicamba				< 0.023		<0.020		< 0.021		< 0.020	
Dichloroprop		-		<0.23		<0.20		<0.21		<0.20	
Dinoseb		-		< 0.12		<0.099		< 0.11		<0.10	
				<23		<19		<21		<20	
MCPA											
MCPA MCPP				<23		<20		<21		<20	
МСРА	620					<20		<21		<20	

Notes:

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Sample Identification			GTA-SA4-L	GTA-SA4-L	GTA-SA4-M
Sample Interval	MDE NRCS	ATC Combinel	0-1	1-15	0-1
Sample Type	IVIDE NRCS	ATC Central	Grab	Composite	Grab
Sampling Date			9/8/2022	9/8/2022	9/8/2022
Polycyclic Aromatic Hydrocarbons (PAHs)		•			
2-Methylnaphthalene	300		<0.0100	<0.011	<0.0094
Acenaphthene	4,500		<0.0100	<0.011	<0.0094
Acenaphthylene Anthracene	NE 23,000	-	<0.0100 <0.0100	<0.011 <0.011	<0.0094 <0.0094
Benzo(a)anthracene	23,000		<0.0100	<0.011	<0.0094
Benzo(a)pyrene	2		<0.0100	<0.011	< 0.0094
Benzo(b)fluoranthene	21		<0.0100	<0.011	< 0.0094
Benzo(g,h,i)perylene	NE NE		<0.0100	< 0.011	< 0.0094
Benzo(k)fluoranthene	210		<0.0100	<0.011	< 0.0094
Chrysene	2,100		< 0.0100	< 0.011	< 0.0094
Dibenz(a,h)Anthracene	2.1		< 0.0100	< 0.011	< 0.0094
Fluoranthene	3,000		< 0.0100	<0.011	<0.0094
Fluorene	3,000		< 0.0100	< 0.011	<0.0094
Indeno(1,2,3-c,d)Pyrene	21		< 0.0100	<0.011	<0.0094
Naphthalene	17	-	<0.0100	<0.011	<0.0094
Phenanthrene	2,300	-	<0.0100	<0.011	<0.0094
Pyrene Priority Pollutant (PP) Metals	2,300		<0.0100	<0.011	<0.0094
Antimony	47	6.8	<2.9	<2.4	<2.5
Arsenic	3.0/26.8*	4.9	6.6	3.0	1.8
Beryllium	230	1.6	1.1	1.5	<0.49
Cadmium	98	1.1	<0.57	<0.48	< 0.49
Chromium (3)	6.3	30	33	21	8.5
Copper	4,700	42	18	14	6.2
Lead	550	61	17	8.5	3.9
Mercury	4.6	0.14	<0.11	<0.096	< 0.099
Nickel	2,200	22	23	54	8.3
Selenium	580	1.0	< 0.57	< 0.48	< 0.49
Silver	580	1.0	< 0.57	< 0.48	< 0.49
Thallium	1.2	1.5	< 0.57	< 0.48	< 0.49
Zinc	35,000	73	54	74	85
Organochlorine Pesticides					
4,4-DDD	2.5	-	<0.0046		<0.0044
4,4-DDE	9.3	-	<0.0046	·-	<0.0044
4,4-DDT	8.5	-	<0.0046		<0.0044
Aldrin	0.18	-	<0.0046		<0.0044
Chlordane (n.o.s.)	7.7		<0.11		<0.11 <0.0044
Dieldrin Endosulfan I	7.7 0.14		<0.0046 <0.0046		<0.0044
Endosulfan II	700		<0.0046		<0.0044
Endosulfan Sulfate	NE	-	<0.0046		<0.0044
Endrin	NE	-	<0.0046		< 0.0044
Endrin Aldehyde	25		<0.0046		<0.0044
Endrin ketone	NE		< 0.0046		< 0.0044
Gamma-BHC (Lindane)	NE	V	< 0.0046		< 0.0044
Heptachlor	2.5	-	< 0.0046		< 0.0044
Heptachlor Epoxide	7.7	-	< 0.0046		< 0.0044
Methoxychlor	0.63		<0.0046		<0.0044
Toxaphene	0.33		< 0.11		<0.11
alpha-BHC	410		<0.0046		<0.0044
beta-BHC	2.1		<0.0046		<0.0044
cis-Chlordane	0.36		<0.0046		<0.0044
delta-BHC	1.3		<0.0046		<0.0044
trans-Chlordane	NE		<0.0046		<0.0044
Chlorinated Herbicides		T	<0.022		<0.022
2,4,5-T 2,4,5-TP (Silvex)			<0.022		<0.022 <0.022
2,4,5-TP (SIIVEX) 2,4-D			<0.022		<0.022
2,4-D 2,4-DB			<0.21		<0.22
Dalapon			<0.52		<0.53
Dicamba			<0.021		<0.022
Dichloroprop			<0.21		<0.22
Dinoseb			<0.11		< 0.11
MCPA			<21		<22
MCPP			<21		<22
Total Petroleum Hydrocarbons (TPH)					
TPH DRO	620				
		•	•		

This table is only to be used in conjunction with the report for which it was prepared. See t Samples collected Between September 8, 2022 and September 15, 2022 Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm)
NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Stan ATC = Anticipated Typical Concentration for soils in Eastern Maryland Shaded and bold values represent exceedance of MDE RCS NA = Not applicable

NE = MDE standard not established

* = Risk-based calculated value



Sample Identification			GTA-SA4-M	GTA-SA4-N	GTA-SA4-N	GTA-SA4-O	GTA-SA4-O	GTA-SA5-A	GTA-SA5-A
Sample Interval	MDENDOS	ATC C+I	1-15	0-1	1-15	0-1	1-15	0-1	1-7.5
Sample Type	MDE NRCS	ATC Central	Composite	Grab	Composite	Grab	Composite	Grab	Composite
Sampling Date			9/8/2022	9/8/2022	9/8/2022	9/8/2022	9/8/2022	9/12/2022	9/12/2022
Polycyclic Aromatic Hydrocarbons (PAHs)									
2-Methylnaphthalene	300		< 0.011	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.011
Acenaphthene	4,500		<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.011
Acenaphthylene	NE 22.000		<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.011
Anthracene Benzo(a)anthracene	23,000		<0.011 <0.011	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	<0.011 <0.011
Benzo(a)pyrene	21		<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.011
Benzo(b)fluoranthene	21		<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.011
Benzo(g,h,i)perylene	NE NE		<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.011
Benzo(k)fluoranthene	210		< 0.011	< 0.010	< 0.010	< 0.010	< 0.010	<0.010	< 0.011
Chrysene	2,100		< 0.011	< 0.010	< 0.010	< 0.010	<0.010	< 0.010	< 0.011
Dibenz(a,h)Anthracene	2.1		< 0.011	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.011
Fluoranthene	3,000		< 0.011	< 0.010	< 0.010	<0.010	<0.010	< 0.010	< 0.011
Fluorene	3,000		< 0.011	< 0.010	< 0.010	< 0.010	<0.010	< 0.010	< 0.011
Indeno(1,2,3-c,d)Pyrene	21		< 0.011	< 0.010	< 0.010	<0.010	< 0.010	< 0.010	< 0.011
Naphthalene	17		<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.011
Phenanthrene	2,300		<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.011
Pyrene Priority Pollutant (PP) Metals	2,300		<0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.011
Antimony	47	6.8	<2.9	<2.7	<2.3	<3.0	<2.5	<2.3	<2.5
Arsenic	3.0/26.8*	4.9	4.8	3.6	8.0	6.4	5.5	5.2	6.2
Beryllium	230	1.6	1.9	1.6	4.0	0.94	1.9	1.0	0.90
Cadmium	98	1.1	<0.58	<0.54	<0.47	< 0.61	<0.51	<0.45	< 0.50
Chromium (3)	6.3	30	21	25	22	33	30	28	30
Copper	4,700	42	13	64	25	28	26	18	15
Lead	550	61	13	12	7.9	18	12	14	15
Mercury	4.6	0.14	< 0.12	< 0.11	<0.093	0.21	< 0.10	<0.090	< 0.10
Nickel	2,200	22	52	40	73	31	57	28	36
Selenium	580	1.0	<0.58	<0.54	<0.47	<0.61	<0.51	<0.45	<0.50
Silver	580 1.2	1.0 1.5	<0.58 <0.58	<0.54 <0.54	<0.47	<0.61 <0.61	<0.51 <0.51	<0.45 <0.45	<0.50 <0.50
Thallium Zinc	35,000	73	110	69	120	53	110	60	52
Organochlorine Pesticides	33,000	73	110	03	120	33	110	- 00	32
4,4-DDD	2.5			< 0.0050		<0.0048		<0.0049	
4,4-DDE	9.3			<0.0050		<0.0048		< 0.0049	
4,4-DDT	8.5			< 0.0050		< 0.0048		< 0.0049	
Aldrin	0.18			<0.0050	1	<0.0048		< 0.0049	
Chlordane (n.o.s.)	7.7		-	<0.12	-	< 0.12		< 0.12	
Dieldrin	7.7			<0.0050		<0.0048		< 0.0049	
Endosulfan I	0.14			<0.0050		<0.0048		<0.0049	
Endosulfan II	700	-		<0.0050		<0.0048		<0.0049	
Endosulfan Sulfate Endrin	NE NE			<0.0050 <0.0050		<0.0048 <0.0048		<0.0049 <0.0049	
Endrin Aldehyde	25			<0.0050		<0.0048		<0.0049	
Endrin Aldenyde Endrin ketone	NE			<0.0050		<0.0048		<0.0049	
Gamma-BHC (Lindane)	NE			<0.0050		<0.0048		< 0.0049	
Heptachlor	2.5			<0.0050		<0.0048		<0.0049	
Heptachlor Epoxide	7.7		-	<0.0050		<0.0048		< 0.0049	
Methoxychlor	0.63			<0.0050		<0.0048		<0.0049	
Toxaphene	0.33			<0.12		<0.12		<0.12	
alpha-BHC	410			<0.0050		<0.0048		<0.0049	
beta-BHC	2.1	-		<0.0050		<0.0048		<0.0049	
cis-Chlordane	0.36	-		<0.0050		<0.0048		<0.0049	
delta-BHC	1.3 NE			<0.0050		<0.0048		<0.0049	
trans-Chlordane Chlorinated Herbicides	NE			<0.0050		<0.0048		<0.0049	
2,4,5-T			I	<0.022		<0.025		<0.023	
2,4,5-TP (Silvex)				<0.022		<0.025		<0.023	
2,4-D				<0.22		<0.24		<0.23	
2,4-DB				<0.23		<0.25		<0.23	
Dalapon				< 0.54		< 0.59		<0.55	
Dicamba				< 0.022		< 0.024		< 0.023	
Dichloroprop				< 0.22		< 0.24		<0.23	
				< 0.11		<0.12		<0.12	
Dinoseb									
MCPA				<22		<24		<23	
MCPA MCPP				<22 <22		<24 <24		<23 <23	
MCPA	620								

Notes:

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Sample Identification			GTA-SA5-B	GTA-SA5-B	GTA-SA5-C	GTA-SA5-C	GTA-SA5-D	GTA-SA5-D	GTA-SA5-E	GTA-SA5-E	GTA-SA5-F
Sample Interval	1		0-1	1-10.5	0-1	1-11.5	0-1	1-14.25	0-1	1-8	0-1
Sample Type	MDE NRCS	ATC Central	Grab	Composite	Grab	Composite	Grab	Composite	Grab	Composite	Grab
Sampling Date			9/12/2022	9/12/2022	9/12/2022	9/12/2022	9/12/2022	9/12/2022	9/12/2022	9/12/2022	9/12/2022
Polycyclic Aromatic Hydrocarbons (PAHs)		•									
2-Methylnaphthalene	300		< 0.010	< 0.012	< 0.011	< 0.012	< 0.0097	< 0.011	< 0.011	< 0.011	< 0.011
Acenaphthene	4,500		< 0.010	< 0.012	< 0.011	< 0.012	< 0.0097	< 0.011	< 0.011	< 0.011	< 0.011
Acenaphthylene	NE		< 0.010	< 0.012	< 0.011	< 0.012	< 0.0097	< 0.011	< 0.011	< 0.011	<0.011
Anthracene	23,000	-	<0.010	<0.012	<0.011	<0.012	<0.0097	<0.011	<0.011	<0.011	<0.011
Benzo(a)anthracene	21		<0.010	<0.012	<0.011	<0.012	<0.0097	<0.011	<0.011	<0.011	<0.011
Benzo(a)pyrene Benzo(b)fluoranthene	2 21		<0.010 <0.010	<0.012 <0.012	<0.011 <0.011	<0.012 <0.012	<0.0097 <0.0097	<0.011 <0.011	<0.011 <0.011	<0.011 <0.011	<0.011 <0.011
Benzo(g,h,i)perylene	NE		<0.010	<0.012	<0.011	<0.012	<0.0097	<0.011	<0.011	<0.011	<0.011
Benzo(k)fluoranthene	210		<0.010	<0.012	<0.011	<0.012	<0.0097	<0.011	<0.011	<0.011	<0.011
Chrysene	2,100		< 0.010	< 0.012	<0.011	< 0.012	< 0.0097	<0.011	<0.011	< 0.011	<0.011
Dibenz(a,h)Anthracene	2.1		< 0.010	< 0.012	< 0.011	< 0.012	< 0.0097	< 0.011	< 0.011	< 0.011	< 0.011
Fluoranthene	3,000		< 0.010	< 0.012	< 0.011	< 0.012	< 0.0097	<0.011	< 0.011	< 0.011	< 0.011
Fluorene	3,000		< 0.010	< 0.012	< 0.011	< 0.012	< 0.0097	<0.011	< 0.011	< 0.011	< 0.011
Indeno(1,2,3-c,d)Pyrene	21		< 0.010	< 0.012	< 0.011	< 0.012	<0.0097	< 0.011	< 0.011	< 0.011	< 0.011
Naphthalene	17	-	< 0.010	< 0.012	< 0.011	< 0.012	< 0.0097	<0.011	< 0.011	< 0.011	< 0.011
Phenanthrene	2,300		< 0.010	<0.012	<0.011	<0.012	< 0.0097	< 0.011	< 0.011	< 0.011	<0.011
Pyrene	2,300		<0.010	<0.012	<0.011	<0.012	<0.0097	<0.011	<0.011	<0.011	<0.011
Priority Pollutant (PP) Metals	1 47	6.0	-25	-2.4	-2.2	-2 A	-2.4	×2.7	-2.0	-2.5	-0.4
Antimony	47	6.8 4.9	<2.5	<3.1	<2.2	<2.5 13	<2.1	<2.7	<3.0	<2.5 7.3	<2.4
Arsenic Beryllium	3.0/26.8* 230	4.9 1.6	6.7 1.1	5.5 1.9	8.6 1.4	2.6	5.3 1.2	8.7 1.5	8.7 1.5	7.3 1.9	8.0 3.2
Cadmium	98	1.1	<0.49	<0.62	<0.44	<0.50	<0.43	<0.53	<0.60	<0.49	<0.48
Chromium (3)	6.3	30	37	43	41	36	44	52	44	58	58
Copper	4,700	42	16	19	26	32	9.7	26	30	27	30
Lead	550	61	20	12	13	18	20	12	16	12	14
Mercury	4.6	0.14	< 0.099	< 0.12	0.089	0.15	<0.086	< 0.11	<0.12	< 0.099	0.17
Nickel	2,200	22	18	40	32	57	20	51	36	64	46
Selenium	580	1.0	< 0.49	< 0.62	<0.44	<0.50	< 0.43	< 0.53	< 0.60	< 0.49	< 0.48
Silver	580	1.0	< 0.49	< 0.62	<0.44	<0.50	< 0.43	< 0.53	< 0.60	< 0.49	< 0.48
Thallium	1.2	1.5	< 0.49	<0.62	< 0.44	<0.50	< 0.43	< 0.53	< 0.60	< 0.49	<0.48
Zinc	35,000	73	46	79	59	72	48	89	61	94	71
Organochlorine Pesticides	1										
4,4-DDD	2.5	-	<0.0049		<0.0051		<0.0047		<0.0053		<0.0050
4,4-DDE	9.3		<0.0049		<0.0051		<0.0047		<0.0053		<0.0050
4,4-DDT	8.5 0.18		<0.0049 <0.0049		<0.0051 <0.0051	- · ·	<0.0047 <0.0047		<0.0053 <0.0053		<0.0050 <0.0050
Aldrin Chlordane (n.o.s.)	7.7		<0.0049		<0.13		<0.12		<0.0055		<0.13
Dieldrin	7.7		< 0.0049		<0.0051		< 0.0047		<0.0053		<0.0050
Endosulfan I	0.14		< 0.0049		<0.0051		< 0.0047		< 0.0053		<0.0050
Endosulfan II	700		< 0.0049		<0.0051		< 0.0047		< 0.0053		< 0.0050
Endosulfan Sulfate	NE		< 0.0049	\	<0.0051		< 0.0047		< 0.0053		< 0.0050
Endrin	NE	-	< 0.0049	\	<0.0051		< 0.0047		< 0.0053		< 0.0050
Endrin Aldehyde	25		<0.0049		<0.0051		< 0.0047		<0.0053		<0.0050
Endrin ketone	NE		< 0.0049		<0.0051		< 0.0047		<0.0053		<0.0050
Gamma-BHC (Lindane)	NE	-	< 0.0049		<0.0051		< 0.0047		< 0.0053		< 0.0050
Heptachlor	2.5	-	<0.0049		<0.0051		<0.0047		<0.0053		<0.0050
Heptachlor Epoxide	7.7		<0.0049		<0.0051		<0.0047		<0.0053		<0.0050
Methoxychlor	0.63		<0.0049		<0.0051		<0.0047		<0.0053		<0.0050
Toxaphene alpha-BHC	0.33 410		<0.12 <0.0049		<0.13 <0.0051		<0.12 <0.0047		<0.13 <0.0053		<0.13 <0.0050
beta-BHC	2.1		<0.0049		<0.0051		<0.0047		<0.0053		<0.0050
cis-Chlordane	0.36	-	<0.0049		<0.0051		<0.0047		<0.0053		<0.0050
delta-BHC	1.3	-	< 0.0049		<0.0051		< 0.0047		< 0.0053		<0.0050
trans-Chlordane	NE NE	-	< 0.0049		<0.0051		<0.0047		<0.0053		<0.0050
Chlorinated Herbicides											
2,4,5-T			< 0.023	-	< 0.024		<0.023		<0.026		<0.024
2,4,5-TP (Silvex)			< 0.023		< 0.024		< 0.023		<0.026		< 0.024
2,4-D			< 0.23		<0.24		<0.22		<0.25		< 0.24
2,4-DB		/	<0.23		< 0.25		< 0.23		<0.26		< 0.24
Dalapon			<0.56		< 0.59		< 0.54		< 0.61		<0.58
Dicamba			<0.023		<0.024		<0.022		<0.025		<0.024
Dichloroprop			<0.23		<0.24		<0.22		<0.25		<0.24
Dinoseb		-	<0.12		<0.12		<0.11		<0.13		<0.12
MCPA			<23		<24		<22		<25		<24
MCPP	<u> </u>		<23		<24		<22		<25		<24
Total Petroleum Hydrocarbons (TPH)											
TPH DRO	620		<12		<13		<12		<13		<13

Notes:

This table is only to be used in conjunction with the report for which it was prepared. See t Samples collected Between September 8, 2022 and September 15, 2022 Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm) NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Star ATC = Anticipated Typical Concentration for soils in Eastern Maryland Shaded and bold values represent exceedance of MDE RCS

NA = Not applicable

NE = MDE standard not established * = Risk-based calculated value



Sample Identification			GTA-SA5-F	GTA-SA5-G	GTA-SA5-G	GTA-SA5-H	GTA-SA5-H	GTA-SA5-I	GTA-SA5-I	GTA-SA5-J	GTA-SA5-J
Sample Interval			1-9.8	0-1	1-9	0-1	1-15	0-1	1-13	0-1	1-8.5
Sample Type	MDE NRCS	ATC Central	Composite	Grab	Composite	Grab	Composite	Grab	Composite	Grab	Composite
Sampling Date			9/12/2022	9/13/2022	9/13/2022	9/13/2022	9/13/2022	9/13/2022	9/13/2022	9/13/2022	9/13/2022
Polycyclic Aromatic Hydrocarbons (PAHs)											
2-Methylnaphthalene	300		< 0.011	< 0.0090	< 0.011	< 0.010	< 0.010	< 0.011	< 0.011	< 0.0099	< 0.011
Acenaphthene	4,500		< 0.011	<0.0090	< 0.011	< 0.010	< 0.010	< 0.011	< 0.011	<0.0099	< 0.011
Acenaphthylene	NE		< 0.011	<0.0090	<0.011	<0.010	<0.010	<0.011	<0.011	<0.0099	<0.011
Anthracene	23,000	-	<0.011	<0.0090	<0.011	<0.010	<0.010	<0.011	<0.011	<0.0099	<0.011
Benzo(a)anthracene	21		< 0.011	<0.0090	<0.011	<0.010	<0.010	<0.011	<0.011	<0.0099	<0.011
Benzo(a)pyrene Benzo(b)fluoranthene	2 21		<0.011 <0.011	<0.0090 <0.0090	<0.011 <0.011	<0.010 <0.010	<0.010 <0.010	<0.011 <0.011	<0.011 <0.011	<0.0099 <0.0099	<0.011 <0.011
Benzo(g,h,i)perylene	NE		<0.011	<0.0090	<0.011	<0.010	<0.010	<0.011	<0.011	<0.0099	<0.011
Benzo(k)fluoranthene	210		<0.011	<0.0090	<0.011	<0.010	<0.010	<0.011	<0.011	<0.0099	<0.011
Chrysene	2,100		< 0.011	<0.0090	<0.011	<0.010	< 0.010	<0.011	<0.011	< 0.0099	< 0.011
Dibenz(a,h)Anthracene	2.1		< 0.011	< 0.0090	< 0.011	< 0.010	< 0.010	< 0.011	< 0.011	< 0.0099	< 0.011
Fluoranthene	3,000		< 0.011	< 0.0090	< 0.011	< 0.010	<0.010	<0.011	< 0.011	< 0.0099	< 0.011
Fluorene	3,000		< 0.011	< 0.0090	< 0.011	< 0.010	< 0.010	<0.011	< 0.011	< 0.0099	< 0.011
Indeno(1,2,3-c,d)Pyrene	21		< 0.011	<0.0090	< 0.011	< 0.010	<0.010	< 0.011	< 0.011	< 0.0099	< 0.011
Naphthalene	17		< 0.011	<0.0090	< 0.011	< 0.010	<0.010	< 0.011	< 0.011	<0.0099	< 0.011
Phenanthrene	2,300		< 0.011	<0.0090	<0.011	<0.010	<0.010	<0.011	< 0.011	<0.0099	< 0.011
Pyrene	2,300		<0.011	<0.0090	<0.011	<0.010	<0.010	<0.011	<0.011	<0.0099	<0.011
Priority Pollutant (PP) Metals	47	6.0	-2.0	-2.7	-2.4	-2.4	-2.0	-2.0	-2.4	-2.0	-2.4
Antimony Arsenic	47 3.0/26.8*	6.8 4.9	<2.6 14	<2.7 12	<2.4 13	<2.1 8.3	<3.0 10	<3.0 8.8	<2.4 8.4	<2.0 3.9	<2.4 7.7
Beryllium	230	1.6	5.3	6.8	5.0	1.9	3.7	2.0	2.7	1.3	2.2
Cadmium	98	1.1	< 0.53	< 0.54	<0.49	<0.43	<0.60	<0.60	<0.48	<0.40	<0.49
Chromium (3)	6.3	30	29	43	63	38	42	45	64	24	56
Copper	4,700	42	29	22	29	25	29	29	27	12	21
Lead	550	61	15	15	16	15	12	13	12	16	10
Mercury	4.6	0.14	< 0.11	< 0.11	<0.098	0.12	<0.12	0.14	< 0.095	<0.080	< 0.098
Nickel	2,200	22	53	45	53	33	51	38	55	18	49
Selenium	580	1.0	< 0.53	< 0.54	< 0.49	<0.43	< 0.60	< 0.60	<0.48	< 0.40	< 0.49
Silver	580	1.0	< 0.53	< 0.54	< 0.49	< 0.43	< 0.60	< 0.60	<0.48	<0.40	< 0.49
Thallium	1.2	1.5	<0.53	<0.54	<0.49	<0.43	<0.60	<0.60	<0.48	<0.40	<0.49
Zinc	35,000	73	68	53	77	53	73	58	76	49	72
Organochlorine Pesticides 4,4-DDD	2.5			<0.0043		<0.0050		<0.0050		< 0.0047	
4,4-DDE	9.3			<0.0043		<0.0050		<0.0050		<0.0047	
4,4-DDT	8.5			< 0.0043		<0.0050		< 0.0050		< 0.0047	
Aldrin	0.18			< 0.0043	4 /	<0.0050		<0.0050		< 0.0047	
Chlordane (n.o.s.)	7.7			<0.11		<0.13		< 0.12		< 0.12	
Dieldrin	7.7	-		< 0.0043	<i>y-</i>	< 0.0050		< 0.0050		< 0.0047	
Endosulfan I	0.14	-	-	< 0.0043		< 0.0050		< 0.0050		< 0.0047	
Endosulfan II	700			<0.0043		<0.0050		<0.0050		< 0.0047	
Endosulfan Sulfate	NE			<0.0043		<0.0050		<0.0050		< 0.0047	
Endrin	NE	-		<0.0043		<0.0050		<0.0050		<0.0047	
Endrin Aldehyde	25 NE			<0.0043		<0.0050		<0.0050		<0.0047	
Endrin ketone Gamma-BHC (Lindane)	NE NE	-		<0.0043		<0.0050 <0.0050		<0.0050 <0.0050		<0.0047 <0.0047	
Heptachlor	2.5	-		<0.0043		<0.0050		<0.0050		<0.0047	
Heptachlor Epoxide	7.7	-		<0.0043		<0.0050		<0.0050		< 0.0047	
Methoxychlor	0.63			< 0.0043		<0.0050		<0.0050		< 0.0047	
Toxaphene	0.33	-		<0.11		<0.13		<0.12		<0.12	
alpha-BHC	410	-		< 0.0043		< 0.0050		<0.0050		< 0.0047	
beta-BHC	2.1	-		< 0.0043		<0.0050		<0.0050		<0.0047	-
cis-Chlordane	0.36	-		< 0.0043		<0.0050		<0.0050		<0.0047	
delta-BHC	1.3			<0.0043		<0.0050		<0.0050		<0.0047	
trans-Chlordane	NE	-		<0.0043		<0.0050		<0.0050		<0.0047	
Chlorinated Herbicides	1			<0.020		<0.022		<0.024		-0.034	
2,4,5-T 2,4,5-TP (Silvex)				<0.020 <0.020		<0.023 <0.023		<0.024 <0.024		<0.024 <0.024	
2,4,5-1P (Silvex) 2,4-D				<0.020		<0.023		<0.024		<0.024	
2,4-DB				<0.20		<0.23		<0.24		<0.24	
				<0.47		<0.56		<0.59		<0.57	
				<0.020		<0.023		<0.024		<0.024	
Dalapon Dicamba			+	<0.20		<0.23		<0.24		<0.24	
Dicamba											
Dicamba Dichloroprop											
Dicamba				<0.099		<0.12 <23		<0.12 <24		<0.12 <23	
Dicamba Dichloroprop Dinoseb				<0.099		<0.12		<0.12		<0.12	10 III
Dicamba Dichloroprop Dinoseb MCPA				<0.099 <19		<0.12 <23		<0.12 <24		<0.12 <23	

Notes:

This table is only to be used in conjunction with the report for which it was prepared. See t Samples collected Between September 8, 2022 and September 15, 2022 Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm) NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Star ATC = Anticipated Typical Concentration for soils in Eastern Maryland Shaded and bold values represent exceedance of MDE RCS

NA = Not applicable

NE = MDE standard not established * = Risk-based calculated value



Sample Identification			GTA-SA5-K	GTA-SA5-K	GTA-SA5-L	GTA-SA5-L	GTA-SA6-A	GTA-SA6-A	GTA-SA6-B	GTA-SA6-B	GTA-SA6-C
Sample Interval	1		0-1	1-5.5	0-1	1-9	0-1	1-20	0-1	1-15	0-1
Sample Type	MDE NRCS	ATC Central	Grab	Composite	Grab	Composite	Grab	Composite	Grab	Composite	Grab
Sampling Date			9/13/2022	9/13/2022	9/15/2022	9/15/2022	9/12/2022	9/12/2022	9/12/2022	9/12/2022	9/13/2022
Polycyclic Aromatic Hydrocarbons (PAHs)		•									
2-Methylnaphthalene	300		< 0.010	<0.0098	< 0.012	< 0.010	< 0.011	< 0.012	< 0.010	< 0.012	< 0.010
Acenaphthene	4,500	-	< 0.010	<0.0098	< 0.012	< 0.010	< 0.011	< 0.012	< 0.010	< 0.012	< 0.010
Acenaphthylene	NE		< 0.010	<0.0098	< 0.012	< 0.010	< 0.011	< 0.012	< 0.010	< 0.012	< 0.010
Anthracene	23,000	-	<0.010	<0.0098	<0.012	<0.010	<0.011	<0.012	<0.010	<0.012	<0.010
Benzo(a)anthracene	21		<0.010	<0.0098	0.024	<0.010	<0.011	<0.012	<0.010	<0.012	<0.010
Benzo(a)pyrene Benzo(b)fluoranthene	2 21		<0.010 <0.010	<0.0098 <0.0098	0.030 0.024	<0.010 <0.010	<0.011 <0.011	<0.012 <0.012	<0.010 <0.010	<0.012 <0.012	<0.010 <0.010
Benzo(g,h,i)perylene	NE		<0.010	<0.0098	0.024	<0.010	<0.011	<0.012	<0.010	<0.012	<0.010
Benzo(k)fluoranthene	210		<0.010	<0.0098	0.022	<0.010	<0.011	<0.012	<0.010	<0.012	<0.010
Chrysene	2,100		< 0.010	<0.0098	0.025	< 0.010	< 0.011	<0.012	<0.010	<0.012	< 0.010
Dibenz(a,h)Anthracene	2.1		< 0.010	<0.0098	<0.012	<0.010	< 0.011	< 0.012	<0.010	< 0.012	<0.010
Fluoranthene	3,000		< 0.010	< 0.0098	0.031	< 0.010	<0.011	<0.012	< 0.010	< 0.012	< 0.010
Fluorene	3,000		< 0.010	<0.0098	< 0.012	< 0.010	< 0.011	<0.012	< 0.010	< 0.012	< 0.010
Indeno(1,2,3-c,d)Pyrene	21		< 0.010	<0.0098	0.021	< 0.010	<0.011	< 0.012	< 0.010	< 0.012	< 0.010
Naphthalene	17		< 0.010	<0.0098	< 0.012	< 0.010	<0.011	< 0.012	< 0.010	< 0.012	< 0.010
Phenanthrene	2,300		<0.010	<0.0098	0.012	<0.010	<0.011	<0.012	<0.010	<0.012	<0.010
Pyrene	2,300		<0.010	<0.0098	0.031	<0.010	<0.011	<0.012	<0.010	<0.012	<0.010
Priority Pollutant (PP) Metals	1 47	C 0	-2.0	-2.5	-2.4	-2 A	-2.2	r2 4	-2.4	-2.0	-2.0
Antimony Arsenic	47 3.0/26.8*	6.8 4.9	<2.9 7.3	<2.5 8.5	<3.4 6.4	<2.4 4.2	<2.3 6.7	<3.1 7.7	<2.4 8.2	<2.6 7.5	<2.8 9.3
Beryllium	230	1.6	2.6	3.8	1.6	0.66	1.2	2.0	1.2	2.2	2.5
Cadmium	98	1.1	<0.58	<0.51	<0.68	<0.48	< 0.46	<0.63	<0.48	< 0.53	< 0.57
Chromium (3)	6.3	30	48	47	21	20	28	12	38	29	52
Copper	4,700	42	27	28	12	16	26	32	22	24	24
Lead	550	61	17	13	23	12	17	21	15	12	18
Mercury	4.6	0.14	0.14	< 0.10	<0.14	<0.097	<0.092	< 0.13	< 0.097	< 0.11	< 0.11
Nickel	2,200	22	46	56	35	19	32	38	38	47	42
Selenium	580	1.0	<0.58	<0.51	<0.68	<0.48	< 0.46	< 0.63	0.59	< 0.53	< 0.57
Silver	580	1.0	<0.58	< 0.51	<0.68	<0.48	<0.46	< 0.63	<0.48	< 0.53	< 0.57
Thallium	1.2	1.5	<0.58	<0.51	<0.68	<0.48	<0.46	< 0.63	<0.48	<0.53	<0.57
Zinc	35,000	73	89	71	84	37	54	71	66	62	69
Organochlorine Pesticides 4,4-DDD	2.5		< 0.0047		< 0.0059		<0.0052		<0.0052		<0.0048
4,4-DDE	9.3		<0.0047		<0.0059	-	<0.0052		<0.0052		<0.0048
4,4-DDT	8.5		< 0.0047		< 0.0059		< 0.0052		< 0.0052		<0.0048
Aldrin	0.18		< 0.0047	1	< 0.0059		< 0.0052		< 0.0052		< 0.0048
Chlordane (n.o.s.)	7.7		< 0.12	-	< 0.15	-	< 0.13		< 0.13		< 0.12
Dieldrin	7.7	-	< 0.0047		< 0.0059		< 0.0052		< 0.0052		< 0.0048
Endosulfan I	0.14		< 0.0047	\	<0.0059		< 0.0052		<0.0052		<0.0048
Endosulfan II	700		< 0.0047		<0.0059		< 0.0052		<0.0052		<0.0048
Endosulfan Sulfate	NE		< 0.0047		<0.0059		<0.0052		< 0.0052		<0.0048
Endrin	NE		<0.0047		<0.0059		<0.0052		<0.0052		<0.0048
Endrin Aldehyde	25 NF		<0.0047	'	<0.0059		<0.0052		<0.0052		<0.0048
Endrin ketone Gamma-BHC (Lindane)	NE NE	-	<0.0047 <0.0047		<0.0059		<0.0052 <0.0052		<0.0052 <0.0052		<0.0048 <0.0048
Heptachlor	2.5	-	<0.0047		<0.0059		<0.0052		<0.0052		<0.0048
Heptachlor Epoxide	7.7	-	<0.0047		<0.0059		<0.0052		<0.0052		<0.0048
Methoxychlor	0.63		<0.0047				< 0.0052		<0.0052		<0.0048
Toxaphene	0.33		<0.12		< 0.15		<0.13		<0.13		<0.12
alpha-BHC	410		<0.0047		< 0.0059		< 0.0052		< 0.0052		<0.0048
beta-BHC	2.1		<0.0047		<0.0059		<0.0052		<0.0052		<0.0048
cis-Chlordane	0.36		<0.0047		<0.0059		<0.0052		<0.0052		<0.0048
delta-BHC	1.3		<0.0047		<0.0059		<0.0052		<0.0052		<0.0048
trans-Chlordane	NE		<0.0047		<0.0059		<0.0052		<0.0052		<0.0048
Chlorinated Herbicides	1		<0.000		<0.027		<0.024		<0.033		<0.024
2,4,5-T	1		<0.023 <0.023		<0.027 <0.027		<0.024 <0.024		<0.023		<0.024 <0.024
2,4,5-TP (Silvex) 2,4-D			<0.023		<0.027		<0.024		<0.023 <0.23		<0.024
2,4-D 2,4-DB			<0.23		<0.27		<0.23		<0.23		<0.24
Dalapon			<0.55		<0.64		<0.57		<0.55		<0.57
Dicamba			<0.023		<0.027		<0.023		<0.023		<0.024
			<0.23		<0.27		<0.23		<0.23		<0.24
Dichloroprop			<0.12		<0.13		<0.12		<0.11		<0.12
Dichloroprop Dinoseb						-		1		1	
			<23		<26		<23		<22		<23
Dinoseb			<23 <23		<26 <27		<23 <23		<22 <23		<23 <24
Dinoseb MCPA											

Notes:

This table is only to be used in conjunction with the report for which it was prepared. See t Samples collected Between September 8, 2022 and September 15, 2022 Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm) NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Star ATC = Anticipated Typical Concentration for soils in Eastern Maryland Shaded and bold values represent exceedance of MDE RCS

NA = Not applicable

NE = MDE standard not established

* = Risk-based calculated value



Sample Identification			GTA-SA6-C	GTA-SA6-D	GTA-SA6-D	GTA-SA6-E	GTA-SA6-E	GTA-SA6-F	GTA-SA6-F	GTA-SA7-A	GTA-SA7-A
Sample Interval	_		1-8.5	0-1	1-8.8'	0-1	1-15	0-1	1-15	0-1	1-5
Sample Type	MDE NRCS	ATC Central	Composite	Grab	Composite	Grab	Composite	Grab	Composite	Grab	Composite
Sampling Date			9/13/2022	9/13/2022	9/13/2022	9/8/2022	9/8/2022	9/14/2022	9/14/2022	9/14/2022	9/14/2022
Polycyclic Aromatic Hydrocarbons (PAHs)		•									
2-Methylnaphthalene	300		< 0.011	< 0.010	< 0.011	<0.086	< 0.010	< 0.010	< 0.011	< 0.010	< 0.010
Acenaphthene	4,500		< 0.011	< 0.010	< 0.011	<0.086	< 0.010	< 0.010	< 0.011	< 0.010	< 0.010
Acenaphthylene	NE		<0.011	<0.010	<0.011	<0.086	<0.010	<0.010	<0.011	<0.010	<0.010
Anthracene	23,000	-	<0.011	<0.010	<0.011	<0.086	<0.010	<0.010	<0.011	<0.010	<0.010
Benzo(a)anthracene	21		<0.011	<0.010	<0.011	0.11	<0.010	<0.010	<0.011	<0.010	<0.010
Benzo(a)pyrene Benzo(b)fluoranthene	2 21		0.011 <0.011	<0.010 <0.010	<0.011 <0.011	0.14 0.12	<0.010 <0.010	<0.010 <0.010	<0.011 <0.011	<0.010 <0.010	<0.010 <0.010
Benzo(g,h,i)perylene	NE		<0.011	<0.010	<0.011	0.12	<0.010	<0.010	<0.011	<0.010	<0.010
Benzo(k)fluoranthene	210		<0.011	<0.010	<0.011	0.10	<0.010	<0.010	<0.011	<0.010	<0.010
Chrysene	2,100		<0.011	<0.010	<0.011	0.11	<0.010	<0.010	<0.011	< 0.010	<0.010
Dibenz(a,h)Anthracene	2.1		< 0.011	< 0.010	< 0.011	<0.086	< 0.010	< 0.010	< 0.011	< 0.010	< 0.010
Fluoranthene	3,000		< 0.011	< 0.010	< 0.011	0.14	< 0.010	<0.010	< 0.011	< 0.010	< 0.010
Fluorene	3,000		< 0.011	< 0.010	< 0.011	<0.086	<0.010	<0.010	< 0.011	< 0.010	< 0.010
Indeno(1,2,3-c,d)Pyrene	21		< 0.011	< 0.010	< 0.011	0.097	<0.010	< 0.010	< 0.011	< 0.010	< 0.010
Naphthalene	17		< 0.011	<0.010	< 0.011	<0.086	<0.010	<0.010	<0.011	<0.010	<0.010
Phenanthrene	2,300		<0.011	<0.010	<0.011	<0.086	<0.010	<0.010	<0.011	<0.010	<0.010
Pyrene Priority Bollytont (PR) Matela	2,300		0.011	<0.010	<0.011	0.14	<0.010	<0.010	<0.011	<0.010	<0.010
Priority Pollutant (PP) Metals Antimony	47	6.8	<2.6	<2.3	<3.3	<2.1	<2.6	<1.9	<2.9	<2.0	<2.9
Arsenic	3.0/26.8*	4.9	10	7.2	<3.3 16	4.1	9.3	10	7.0	5.7	7.2
Beryllium	230	1.6	2.9	1.2	1.4	0.76	<0.52	1.1	2.0	0.84	1.1
Cadmium	98	1.1	<0.53	< 0.46	<0.65	<0.42	<0.52	<0.39	<0.58	< 0.41	<0.58
Chromium (3)	6.3	30	53	38	120	27	41	35	26	44	34
Copper	4,700	42	26	21	23	15	29	40	14	20	85
Lead	550	61	20	15	34	20	17	28	9.5	18	24
Mercury	4.6	0.14	< 0.11	<0.092	< 0.13	<0.085	<0.10	0.19	<0.12	0.21	0.15
Nickel	2,200	22	43	28	37	19	27	44	58	25	34
Selenium	580	1.0	< 0.53	<0.46	<0.65	<0.42	< 0.52	0.53	<0.58	0.61	<0.58
Silver	580 1.2	1.0	< 0.53	<0.46	< 0.65	<0.42	<0.52 <0.52	<0.39 0.44	<0.58 <0.58	<0.41 <0.41	<0.58
Thallium Zinc	35,000	1.5 73	<0.53 67	<0.46 58	<0.65 49	<0.42	60	60	90	40	<0.58 50
Organochlorine Pesticides	33,000	73	07	38	43	05	00	00	30	40	30
4,4-DDD	2.5			< 0.0049	-	<0.021		< 0.0049		< 0.0051	
4,4-DDE	9.3			< 0.0049	-	<0.021	2	< 0.0049		< 0.0051	
4,4-DDT	8.5			< 0.0049	Á	<0.021		< 0.0049		< 0.0051	
Aldrin	0.18			< 0.0049		<0.021		< 0.0049		< 0.0051	
Chlordane (n.o.s.)	7.7			<0.12		< 0.53		<0.12		< 0.13	
Dieldrin	7.7	-		<0.0049	-	<0.021		< 0.0049		<0.0051	
Endosulfan I	0.14		-	<0.0049		<0.021		<0.0049		<0.0051	
Endosulfan II	700 NE			<0.0049 <0.0049		<0.021 <0.021		<0.0049 <0.0049		<0.0051 <0.0051	
Endosulfan Sulfate Endrin	NE NE			<0.0049		<0.021		<0.0049		<0.0051	
Endrin Aldehyde	25	-		<0.0049		<0.021		<0.0049		<0.0051	
Endrin Aldenyde Endrin ketone	NE NE			<0.0049		<0.021		<0.0049		<0.0051	
Gamma-BHC (Lindane)	NE NE	-		<0.0049		<0.021		< 0.0049		< 0.0051	
Heptachlor	2.5	-		<0.0049		<0.021		<0.0049		<0.0051	
Heptachlor Epoxide	7.7	-		< 0.0049		< 0.021		< 0.0049		<0.0051	
Methoxychlor	0.63			< 0.0049		<0.021		< 0.0049		<0.0051	
Toxaphene	0.33	-		<0.12		< 0.53		<0.12		< 0.13	
alpha-BHC	410			<0.0049		<0.021		<0.0049		<0.0051	
beta-BHC	2.1	-		<0.0049		<0.021		<0.0049		<0.0051	
cis-Chlordane	0.36 1.3			<0.0049 <0.0049		<0.021 <0.021		<0.0049 <0.0049		<0.0051 <0.0051	
delta-BHC trans-Chlordane	1.3 NE	-		<0.0049		<0.021		<0.0049		<0.0051	
Chlorinated Herbicides	INE			NO.0045		\U.UZ1		\U.UU43		~U.UUJI	
2,4,5-T				< 0.024		<0.019		<0.023		<0.023	-
2,4,5-TP (Silvex)				<0.024		<0.019		<0.023		<0.023	
2,4-D				<0.24		<0.19		<0.23		<0.22	
2,4-DB				< 0.24		<0.19		<0.23		<0.23	
Dalapon		/		< 0.57		< 0.46		< 0.55		< 0.54	
Dicamba				< 0.024		< 0.019		<0.023		<0.022	
Dichloroprop				<0.24		<0.19		<0.23		<0.22	
Dinoseb				<0.12		<0.095		<0.12		<0.11	
MCPA				<23		<19		<23		<22	
	1			<24		<19		<23		<22	
MCPP											
Total Petroleum Hydrocarbons (TPH) TPH DRO	620	l	1								

Notes:

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NA = Not applicable

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* = Risk-based calculated value



Sample Identification			GTA-SA7-B	GTA-SA7-B	GTA-SA7-C	GTA-SA7-C	GTA-SA7-D	GTA-SA7-D	GTA-SA7-E	GTA-SA7-E	GTA-SA7-F
Sample Interval	1		0-1	1-5	0-1	1-5	0-1	1-5	0-1	1-5	0-1
Sample Type	MDE NRCS	ATC Central	Grab	Composite	Grab	Composite	Grab	Composite	Grab	Composite	Grab
Sampling Date			9/14/2022	9/14/2022	9/14/2022	9/14/2022	9/14/2022	9/14/2022	9/14/2022	9/14/2022	9/14/2022
Polycyclic Aromatic Hydrocarbons (PAHs)		•									
2-Methylnaphthalene	300		<0.0098	< 0.011	< 0.010	< 0.0094	< 0.011	< 0.011	< 0.0095	<0.0098	< 0.010
Acenaphthene	4,500		<0.0098	< 0.011	< 0.010	<0.0094	< 0.011	< 0.011	<0.0095	<0.0098	< 0.010
Acenaphthylene	NE		<0.0098	<0.011	<0.010	<0.0094	<0.011	<0.011	<0.0095	<0.0098	< 0.010
Anthracene	23,000	-	<0.0098	<0.011	<0.010	<0.0094	<0.011	<0.011	<0.0095	<0.0098	<0.010
Benzo(a)anthracene	21		<0.0098	<0.011	<0.010	<0.0094	<0.011	<0.011	<0.0095	<0.0098	<0.010
Benzo(a)pyrene Benzo(b)fluoranthene	2 21		<0.0098 <0.0098	<0.011 <0.011	<0.010 <0.010	<0.0094 <0.0094	<0.011 <0.011	<0.011 <0.011	<0.0095 0.0095	<0.0098 <0.0098	<0.010 <0.010
Benzo(g,h,i)perylene	NE		<0.0098	<0.011	<0.010	<0.0094	<0.011	<0.011	< 0.0095	<0.0098	<0.010
Benzo(k)fluoranthene	210		<0.0098	<0.011	<0.010	< 0.0094	<0.011	<0.011	<0.0095	<0.0098	<0.010
Chrysene	2,100		< 0.0098	<0.011	<0.010	< 0.0094	<0.011	<0.011	< 0.0095	<0.0098	< 0.010
Dibenz(a,h)Anthracene	2.1		<0.0098	<0.011	<0.010	< 0.0094	<0.011	< 0.011	< 0.0095	<0.0098	<0.010
Fluoranthene	3,000		<0.0098	< 0.011	< 0.010	< 0.0094	< 0.011	<0.011	< 0.0095	<0.0098	< 0.010
Fluorene	3,000		<0.0098	< 0.011	< 0.010	< 0.0094	< 0.011	<0.011	< 0.0095	<0.0098	< 0.010
Indeno(1,2,3-c,d)Pyrene	21		<0.0098	< 0.011	< 0.010	< 0.0094	<0.011	< 0.011	< 0.0095	<0.0098	< 0.010
Naphthalene	17	-	<0.0098	< 0.011	< 0.010	<0.0094	< 0.011	<0.011	<0.0095	<0.0098	< 0.010
Phenanthrene	2,300		<0.0098	<0.011	<0.010	<0.0094	<0.011	< 0.011	<0.0095	<0.0098	< 0.010
Pyrene	2,300		<0.0098	<0.011	<0.010	<0.0094	<0.011	<0.011	0.0095	<0.0098	<0.010
Priority Pollutant (PP) Metals	1 47	6.0	-2.0	-2.5	-2.4	-24	-2.5	-20	-2.0	-2.2	-2.7
Antimony Arsenic	47 3.0/26.8*	6.8 4.9	<2.8 8.9	<2.5 7.6	<2.4 4.3	<2.5 2.8	<2.5 3.9	<2.9 6.7	<2.6 3.8	<2.3 2.9	<2.7 4.8
Beryllium	230	1.6	0.63	1.1	1.3	0.92	1.6	1.7	1.2	1.3	0.97
Cadmium	98	1.1	< 0.56	<0.51	<0.48	<0.49	<0.50	<0.58	<0.52	<0.47	<0.54
Chromium (3)	6.3	30	45	32	24	31	26	51	32	27	46
Copper	4,700	42	29	57	12	9.3	14	21	9.9	7.4	22
Lead	550	61	24	18	17	13	21	19	16	11	21
Mercury	4.6	0.14	< 0.11	< 0.10	< 0.096	<0.098	<0.10	<0.12	< 0.10	< 0.093	< 0.11
Nickel	2,200	22	28	32	17	16	20	54	22	18	36
Selenium	580	1.0	0.56	< 0.51	<0.48	<0.49	< 0.50	<0.58	<0.52	< 0.47	< 0.54
Silver	580	1.0	<0.56	<0.51	<0.48	<0.49	<0.50	<0.58	<0.52	< 0.47	<0.54
Thallium	1.2	1.5 73	<0.56	<0.51	<0.48	<0.49 47	<0.50	<0.58	<0.52	<0.47	<0.54
Zinc Organochlorine Pesticides	35,000	/3	51	52	44	47	65	92	55	43	77
4,4-DDD	2.5		<0.0048		<0.0051		<0.0054		<0.0045		<0.0051
4,4-DDE	9.3		<0.0048		<0.0051		<0.0054		<0.0045		<0.0051
4,4-DDT	8.5		<0.0048		<0.0051		< 0.0054		< 0.0045		< 0.0051
Aldrin	0.18		<0.0048		<0.0051		< 0.0054		< 0.0045		< 0.0051
Chlordane (n.o.s.)	7.7		< 0.12		<0.13	-	< 0.13		< 0.11		< 0.13
Dieldrin	7.7		<0.0048		<0.0051	~	< 0.0054		<0.0045		< 0.0051
Endosulfan I	0.14		<0.0048	\	<0.0051		< 0.0054		<0.0045		< 0.0051
Endosulfan II	700		<0.0048		<0.0051		< 0.0054		< 0.0045		< 0.0051
Endosulfan Sulfate	NE		<0.0048		<0.0051		<0.0054		<0.0045		<0.0051
Endrin	NE 25	-	<0.0048		<0.0051		<0.0054		<0.0045		<0.0051
Endrin Aldehyde Endrin ketone	25 NE		<0.0048 <0.0048	'	<0.0051 <0.0051		<0.0054 <0.0054		<0.0045 <0.0045		<0.0051 <0.0051
Gamma-BHC (Lindane)	NE NE		<0.0048		<0.0051		<0.0054		<0.0045		<0.0051
Heptachlor	2.5	-	<0.0048		<0.0051		<0.0054		<0.0045		<0.0051
Heptachlor Epoxide	7.7	-	<0.0048		<0.0051		< 0.0054		< 0.0045		< 0.0051
Methoxychlor	0.63		<0.0048		<0.0051		< 0.0054		< 0.0045		<0.0051
Toxaphene	0.33	-	<0.12		< 0.13		< 0.13		<0.11		< 0.13
alpha-BHC	410	-	<0.0048		<0.0051		<0.0054		<0.0045		<0.0051
beta-BHC	2.1	-	<0.0048		< 0.0051		< 0.0054		< 0.0045		< 0.0051
cis-Chlordane	0.36		<0.0048		<0.0051		<0.0054		<0.0045		<0.0051
delta-BHC	1.3	-	<0.0048		<0.0051		<0.0054		<0.0045		<0.0051
trans-Chlordane	NE		<0.0048		<0.0051		<0.0054		<0.0045		<0.0051
Chlorinated Herbicides 2,4,5-T	1		<0.023		<0.022		<0.025		<0.023		<0.024
2,4,5-1 2,4,5-TP (Silvex)	1		<0.023		<0.022		<0.025		<0.023		<0.024
2,4,5-1P (Silvex) 2,4-D			<0.023		<0.022		<0.025		<0.023		<0.024
2,4-DB		-	<0.23		<0.22		<0.25		<0.23		<0.25
Dalapon		<i>j</i>	< 0.54		< 0.53		< 0.60		< 0.55		< 0.58
Dicamba			<0.022		<0.022		<0.025		<0.023		<0.024
Dichloroprop			<0.22		<0.22		< 0.25		< 0.23		< 0.24
0.			<0.11		<0.11		<0.12		<0.11		<0.12
Dinoseb		1	<22		<22		<24		<22		<24
MCPA											
MCPA MCPP			<22		<22		<25		<23		<24
МСРА	620										

Notes:

This table is only to be used in conjunction with the report for which it was prepared. See t Samples collected Between September 8, 2022 and September 15, 2022 Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm) NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Star ATC = Anticipated Typical Concentration for soils in Eastern Maryland Shaded and bold values represent exceedance of MDE RCS

NA = Not applicable

NE = MDE standard not established

* = Risk-based calculated value



Sample Identification			GTA-SA7-F	GTA-SA7-G	GTA-SA7-G	GTA-SA7-H	GTA-SA7-H	GTA-SA7-I	GTA-SA7-I	GTA-SA7-J	GTA-SA7-J
Sample Interval			1-5	0-1	1-5	0-1	1-5	0-1	1-5	0-1	1-5
Sample Type	MDE NRCS	ATC Central	Composite	Grab	Composite	Grab	Composite	Grab	Composite	Grab	Composite
Sampling Date			9/14/2022	9/14/2022	9/14/2022	9/14/2022	9/14/2022	9/9/2022	9/9/2022	9/9/2022	9/9/2022
Polycyclic Aromatic Hydrocarbons (PAHs)									, , ,		
2-Methylnaphthalene	300		< 0.0094	< 0.010	< 0.0095	< 0.0097	<0.0098	< 0.0098	< 0.0096	< 0.010	< 0.011
Acenaphthene	4,500		< 0.0094	< 0.010	< 0.0095	< 0.0097	<0.0098	<0.0098	<0.0096	< 0.010	< 0.011
Acenaphthylene	NE		< 0.0094	< 0.010	<0.0095	< 0.0097	<0.0098	<0.0098	<0.0096	< 0.010	< 0.011
Anthracene	23,000		< 0.0094	< 0.010	<0.0095	<0.0097	<0.0098	<0.0098	<0.0096	< 0.010	< 0.011
Benzo(a)anthracene	21		<0.0094	0.029	<0.0095	<0.0097	<0.0098	<0.0098	<0.0096	<0.010	<0.011
Benzo(a)pyrene	2		<0.0094	0.036	<0.0095	<0.0097	<0.0098	<0.0098	<0.0096	<0.010	<0.011
Benzo(b)fluoranthene Benzo(g,h,i)perylene	21 NE		<0.0094 <0.0094	0.034 0.030	<0.0095 <0.0095	<0.0097 <0.0097	<0.0098 <0.0098	<0.0098 <0.0098	<0.0096 <0.0096	<0.010 <0.010	<0.011 <0.011
Benzo(k)fluoranthene	210		<0.0094	0.030	<0.0095	<0.0097	<0.0098	<0.0098	<0.0096	<0.010	<0.011
Chrysene	2,100		< 0.0094	0.032	< 0.0095	< 0.0097	<0.0098	<0.0098	<0.0096	<0.010	<0.011
Dibenz(a,h)Anthracene	2.1		< 0.0094	<0.010	< 0.0095	< 0.0097	<0.0098	<0.0098	<0.0096	< 0.010	<0.011
Fluoranthene	3,000		< 0.0094	0.038	< 0.0095	< 0.0097	<0.0098	<0.0098	< 0.0096	< 0.010	< 0.011
Fluorene	3,000		< 0.0094	< 0.010	< 0.0095	< 0.0097	<0.0098	<0.0098	< 0.0096	< 0.010	< 0.011
Indeno(1,2,3-c,d)Pyrene	21		< 0.0094	0.028	< 0.0095	< 0.0097	<0.0098	<0.0098	<0.0096	< 0.010	< 0.011
Naphthalene	17		< 0.0094	< 0.010	<0.0095	< 0.0097	<0.0098	<0.0098	<0.0096	< 0.010	< 0.011
Phenanthrene	2,300		< 0.0094	0.012	<0.0095	<0.0097	<0.0098	<0.0098	<0.0096	< 0.010	< 0.011
Pyrene	2,300		<0.0094	0.040	<0.0095	<0.0097	<0.0098	<0.0098	<0.0096	<0.010	<0.011
Priority Pollutant (PP) Metals		6.0	-0.0	-2.2	-0.4	.0.4	10.0		.0.0	-0.0	.0.1
Antimony	47 2.0/26.9*	6.8 4.9	<2.3	<2.3	<2.4	<2.4	<2.2	<2.3 5.4	<2.2 4.4	<2.2	<3.1
Arsenic Beryllium	3.0/26.8* 230	4.9 1.6	3.2 0.92	3.5 1.1	3.2 1.0	4.5 1.8	5.9 1.9	1.5	1.6	5.5 1.4	5.1 0.99
Cadmium	98	1.1	<0.45	<0.46	<0.48	<0.47	<0.44	<0.47	<0.44	<0.44	<0.62
Chromium (3)	6.3	30	29	35	44	56	55	22	28	21	17
Copper	4,700	42	12	11	8.7	18	24	27	22	31	27
Lead	550	61	15	16	13	22	24	11	11	7.9	8.3
Mercury	4.6	0.14	< 0.091	<0.091	<0.096	<0.094	< 0.087	< 0.093	< 0.089	< 0.087	<0.12
Nickel	2,200	22	21	31	28	52	46	32	34	30	25
Selenium	580	1.0	< 0.45	< 0.46	<0.48	<0.47	< 0.44	< 0.47	< 0.44	< 0.44	< 0.62
Silver	580	1.0	< 0.45	< 0.46	<0.48	< 0.47	< 0.44	< 0.47	< 0.44	< 0.44	< 0.62
Thallium	1.2	1.5	< 0.45	< 0.46	< 0.48	< 0.47	< 0.44	< 0.47	< 0.44	< 0.44	< 0.62
Zinc	35,000	73	44	75	61	120	110	58	62	42	34
Organochlorine Pesticides		1									
4,4-DDD	2.5			<0.0051	-	<0.0047 <0.0047		<0.0047		<0.0051	
4,4-DDE 4,4-DDT	9.3 8.5			<0.0051 <0.0051	-	<0.0047		<0.0047 <0.0047		<0.0051 <0.0051	
Aldrin	0.18			<0.0051	-	<0.0047		<0.0047		<0.0051	
Chlordane (n.o.s.)	7.7			<0.13		<0.12		<0.12		<0.13	
Dieldrin	7.7			<0.0051		< 0.0047		< 0.0047		< 0.0051	
Endosulfan I	0.14		_	<0.0051		< 0.0047		< 0.0047		< 0.0051	
Endosulfan II	700			< 0.0051		< 0.0047		< 0.0047		< 0.0051	
Endosulfan Sulfate	NE	-		<0.0051		< 0.0047		< 0.0047		< 0.0051	
Endrin	NE	_		<0.0051		< 0.0047		< 0.0047		< 0.0051	
Endrin Aldehyde	25			< 0.0051		< 0.0047		< 0.0047		<0.0051	
Endrin ketone	NE			<0.0051		< 0.0047		< 0.0047		<0.0051	
Gamma-BHC (Lindane)	NE 2.5			<0.0051		<0.0047		<0.0047		<0.0051	
Heptachlor	2.5	-	-	<0.0051		<0.0047		<0.0047		<0.0051	
Heptachlor Epoxide	7.7			<0.0051		<0.0047		<0.0047		<0.0051	
Methoxychlor	0.63			<0.0051 <0.13		<0.0047 <0.12		<0.0047 <0.12		<0.0051 <0.13	
Toxaphene alpha-BHC	410	-		<0.13		<0.12		<0.12		<0.13	
beta-BHC	2.1		-	<0.0051		<0.0047		<0.0047		<0.0051	-
cis-Chlordane	0.36	-		<0.0051		< 0.0047		<0.0047		<0.0051	
delta-BHC	1.3	-	-	<0.0051		< 0.0047		< 0.0047		< 0.0051	
trans-Chlordane	NE	-		< 0.0051		< 0.0047		< 0.0047		< 0.0051	
Chlorinated Herbicides											
2,4,5-T				< 0.023		<0.021		< 0.022		< 0.023	
2,4,5-TP (Silvex)				< 0.023		<0.021		< 0.022		< 0.023	
2,4-D				<0.23		<0.21		<0.22		<0.23	
2,4-DB				<0.23		<0.21		<0.22		<0.23	
Dalapon				<0.55		<0.51		< 0.53		<0.55	
Dicamba				<0.023		<0.021		<0.022		<0.023	
Dichloroprop		-		<0.23		<0.21		<0.22		<0.23	
Dinoseb				<0.12		<0.11		<0.11		<0.12	
MCPA				<23		<21		<22		<23	
MCPP Total Petroleum Hydrocarbons (TPH)				<23	-	<21		<22		<23	-
i i otar r eti oleulli rivui otal bolis (I Pri)											
TPH DRO	620										

Notes:

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Mode	Sample Identification			GTA-SA7-K	GTA-SA7-K	GTA-SA8-A	GTA-SA8-A	GTA-SA8-B	GTA-SA8-B	GTA-SA8-C	GTA-SA8-C	GTA-SA8-D
Company Comp	•	MDE NIDCE	ATC Combuni									
Newcold Annexis Print (Print Print (Print Print (Print Print (Print Print (Print Print Print Print (Print Print Print Print Print Print (Print Print Print Print Print Print Print Print Print (Print Print Prin	Sample Type	IVIDE NRCS	ATC Central									
Aberhytepsthetere				9/9/2022	9/9/2022	9/13/2022	9/13/2022	9/13/2022	9/13/2022	9/13/2022	9/13/2022	9/13/2022
Accordant Acco		200	ı	.0.0004	.0.044	0.0000	.0.0005	0.0007	.0.0000	0.0007	0.0004	0.0007
Accessor No. -												
Martine												
Secret 1												
Secrotic Part Common C												
Service Net												
Browder 10	Benzo(b)fluoranthene	21		0.11	0.018	< 0.0099	<0.0095	< 0.0097	< 0.0093	< 0.0097	< 0.0094	< 0.0097
Cheysene												
Disertish Anothering 2.1 - 0.012 0.015 0.009 0.0097												
Floorantee												
House 3,000 - - - - - - - - - - - - - - - -												
Indemod 1,2 4												
Naphthalene									9			
Pennanthrene												
Pyrene 2,300 0,648 0,063 0,0099 0,0099 0,0097 0	•											
Priority Politicant (PP) Netials												
Anthonoy 47 6.8 C23 C23 C24 C28 C24 C25 C27 C22 C28 Annexe 3.076.6* 4.9 4.3 11 3.4 4.33 C23 C24 C25 C27 C25 C28	Priority Pollutant (PP) Metals											
Beryllium 230			6.8	<2.5	<2.3	<2.4		<2.4		<2.2	<2.2	<2.8
Caffmain												
Chromium												
Copper												
September Sept												
Mercury												
Nickel 2,200 22 21 44 56 17 47 59 41 42 36 Selenium 580 1.0 40.50 40.66 40.49 40.56 C.0.49 C.0.42 C.0.44 C.0.44 C.0.55 Thailium 1.2 1.5 40.50 40.66 40.49 40.56 C.0.49 C.0.42 C.0.44 C.0.44 C.0.55 Thailium 1.2 1.5 40.50 40.66 40.49 40.56 C.0.49 C.0.42 C.0.44 C.0.44 C.0.55 Thailium 1.2 1.5 40.50 40.66 40.49 40.56 C.0.49 C.0.42 C.0.44 C.0.44 C.0.55 Thailium 1.2 1.5 40.50 40.66 40.49 40.56 C.0.49 C.0.42 C.0.44 C.0.44 C.0.55 Thailium 1.2 1.5 40.50 40.66 40.49 40.56 C.0.49 C.0.42 C.0.44 C.0.44 C.0.55 Thailium 1.2 1.5 40.50 40.66 C.0.49 T.0.55 C.0.49 C.0.42 C.0.44 C.0.44 C.0.55 Thailium 1.2 1.5 40.50 C.0.45 C.0.							4					
Selenim S80												
Sher										71	72	30
Zinc										< 0.44	< 0.44	< 0.56
Oganochlorine Pesticides												
4.4-DDD	Zinc	35,000	73	71	70	70	52	96	130	100	92	94
44-DDE	Organochlorine Pesticides											
A-DDT	,				1 =							
Aldrin 0.18 - 40.021 - 40.045 - 60.045 - 60.0045 - 60.0046 - 60.	,											
Chlordane (n.o.s.)												
Delatrin 7.7												
Endosulfan												
Endosulfan II												
Endosulfan Sulfate												
Endrin Aldehyde		NE		<0.021	\	<0.0047		< 0.0045		< 0.0045		< 0.0046
Endrin ketone	Endrin	NE	-	<0.021		<0.0047		< 0.0045		< 0.0045		< 0.0046
Gamma-BHC (Lindane)	Endrin Aldehyde	25			\	< 0.0047		< 0.0045		< 0.0045		< 0.0046
Heptachlor												
Heptachlor Epoxide					-							
Methoxychlor												
Toxaphene							-				-	
alpha-BHC												
beta-BHC 2.1 <0.021 <0.0047 <0.0045 <0.0045 <0.0046 cis-Chlordane 0.36 <0.021 <0.0047 <0.0045 <0.0045 <0.0046 class HC 1.3 <0.021 <0.0047 <0.0045 <0.0045 <0.0045 <0.0045 <0.0045 <0.0045 <0.0045 <0.0045 <0.0045 <0.0045 <0.0045 <0.0045 <0.0045 <0.0045 <0.0045 <0.0045 <0.0046 <0.0045 <0.0045 <0.0046 <0.0046 <0.0045 <0.0046 <0.0046 <0.0046 <0.0040 <0.0040 <0.0023 <0.0023												
cis-Chlordane 0.36 < 0.021 < 0.0047 < 0.0045 < 0.0045 < 0.0046 delta-BHC 1.3 < 0.021 < 0.0047 < 0.0045 < 0.0045 < 0.0045 < 0.0046 Trans-Chlordane NE < 0.021 < 0.0047 < 0.0045 < 0.0045 < 0.0045 < 0.0046 Chlorinated Herbicides 2,4,5-T 2,4,5-T < 0.021 < 0.022 < 0.021 < 0.023 < 0.023 2,4,5-T(Silvex) < 0.021 < 0.022 < 0.021 < 0.023 < 0.023 2,4-DB < 0.21 < 0.22 < 0.021 < 0.022 < 0.021 < 0.023 2,4-DB < 0.21 < 0.22 < 0.021 < 0.022 < 0.021 Diamba < 0.051 < 0.52 < 0.51 < 0.55 Dicamba < 0.021 < 0.022 < 0.021 < 0.022 < 0.021 Dichloroprop < 0.021 < 0.022 < 0.021 < 0.022 < 0.021 < 0.050 < 0.050 < 0.051 < 0.52 < 0.51 < 0.54 < 0.55 Dicamba < 0.021 < 0.022 < 0.021 < 0.022 < 0.021 < 0.022 < 0.021 MCPA < 21 < 21 < 21 < 21 < 22 < 22 < 22 Total Petroleum Hydrocarbons (TPH)												
delta-BHC 1.3 <0.021 <0.0047 <0.0045 <0.0045 <0.0046 trans-Chlordane NE <0.021 <0.0047 <0.0045 <0.0046 <0.0046 Chlorinated Herbicides <0.021 <0.022 <0.023 <0.023 <0.023 <0.023 <0.023 <0.023 <0.023 <0.023 <0.023 <0.023 <0.023 <0.023 <0.023 <0.023 <0.023 <0.023 <0.023 <0.023 <0.023 <0.023 <0.023 <0.023 <0.023 <0.023 <0.023 <0.023 <0.023 <0.023 <0.023 <0.023												
Chlorinated Herbicides 2,4,5-T			-			< 0.0047		< 0.0045		< 0.0045		< 0.0046
2,4,5-T - <0.021	trans-Chlordane	NE		< 0.021		< 0.0047		< 0.0045		< 0.0045		<0.0046
2,4,5-TP (Silvex) - <0.021 - <0.022 - <0.021 - <0.023 - <0.023 2,4-D - <0.21 - <0.22 - <0.21 - <0.22 - <0.23 2,4-DB - <0.21 - <0.22 - <0.21 - <0.22 - <0.23 2,4-DB - <0.51 - <0.51 - <0.52 - <0.51 - <0.54 - <0.55 Dicamba - <0.021 - <0.022 - <0.021 - <0.022 - <0.021 - <0.023 Dichloroprop - <0.021 - <0.022 - <0.021 - <0.022 - <0.021 - <0.022 - <0.023 Dichloroprop - <0.021 - <0.022 - <0.021 - <0.022 - <0.021 - <0.022 - <0.023 Dichloroprop - <0.021 - <0.022 - <0.021 - <0.022 - <0.021 - <0.022 - <0.023 Dichloroprop - <0.011 - <0.11 - <0.11 - <0.11 - <0.11 - <0.11 - <0.12 MCPA MCPA - <21 - <21 - <21 - <22 - <23 Total Petroleum Hydrocarbons (TPH)												
2,4-D												
2,4-DB - < 0.21 - < 0.22 - < 0.22 - < 0.23 - < 0.23 Dalapon - < 0.51 - < 0.52 - < 0.51 - < 0.54 - < 0.55 Dicamba - < 0.021 - < 0.022 - < 0.021 - < 0.022 - < 0.021 Dichloroprop - < 0.21 - < 0.022 - < 0.021 - < 0.022 - < 0.021 Dichloroprop - < 0.01 - < 0.02 - < 0.021 - < 0.022 - < 0.021 MCPA - < 0.11 - < 0.11 - < 0.11 - < 0.11 - < 0.11 - < 0.11 MCPP - < 0.21 - < 0.21 - < 0.21 - < 0.22 - < 0.21 - < 0.23 Total Petroleum Hydrocarbons (TPH)												
Dalapon												
Dicamba - <0.021 - <0.022 - <0.021 - <0.022 - <0.023 Dichloroprop - <0.021 - <0.022 - <0.023 Dichloroprop - <0.21 - <0.22 - <0.21 - <0.22 - <0.23 Dinoseb - <0.11 - <0.11 - <0.11 - <0.11 - <0.11 - <0.12 MCPA - <21 - <21 - <21 - <22 - <23 Total Petroleum Hydrocarbons (TPH)	,											
Dichloroprop - <0.21												
Dinoseb - <0.11 - <0.11 - <0.11 - <0.11 - <0.12 MCPA - <21												
MCPA - <21 - <21 - <21 - <22 - <23 MCPP - <21 - <22 - <23 Total Petroleum Hydrocarbons (TPH)												
MCPP - <21 - <22 - <21 - <22 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 - <23 -												
Total Petroleum Hydrocarbons (TPH)												
, , , , , , , , , , , , , , , , , , ,												
	, , ,	620										

Notes:

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Sample Identification			GTA-SA8-D	GTA-SA8-E	GTA-SA8-E	GTA-SA8-F	GTA-SA8-F	GTA-SA8-G	GTA-SA8-G	GTA-SA8-H	GTA-SA8-H
Sample Interval			1-4	0-1	1-4	0-1	1-4	0-1	1-4	0-1	1-4
Sample Type	MDE NRCS	ATC Central	Composite	Grab	Composite	Grab	Composite	Grab	Composite	Grab	Composite
Sampling Date			9/13/2022	9/13/2022	9/13/2022	9/13/2022	9/13/2022	9/13/2022	9/13/2022	9/13/2022	9/13/2022
Polycyclic Aromatic Hydrocarbons (PAHs)	•										
2-Methylnaphthalene	300		< 0.0099	< 0.010	< 0.010	< 0.0097	< 0.0097	< 0.0099	< 0.010	< 0.0099	< 0.010
Acenaphthene	4,500		<0.0099	< 0.010	< 0.010	<0.0097	<0.0097	< 0.0099	< 0.010	<0.0099	< 0.010
Acenaphthylene	NE		<0.0099	<0.010	< 0.010	< 0.0097	< 0.0097	<0.0099	<0.010	<0.0099	< 0.010
Anthracene	23,000		<0.0099	<0.010	<0.010	<0.0097	< 0.0097	<0.0099	<0.010	<0.0099	<0.010
Benzo(a)anthracene	21		<0.0099	<0.010	<0.010	<0.0097	<0.0097	<0.0099	<0.010	<0.0099	<0.010
Benzo(a)pyrene Benzo(b)fluoranthene	2 21		<0.0099 <0.0099	<0.010 <0.010	<0.010 <0.010	<0.0097 <0.0097	<0.0097 <0.0097	<0.0099 <0.0099	<0.010 <0.010	<0.0099 <0.0099	<0.010 <0.010
Benzo(g,h,i)perylene	NE		<0.0099	<0.010	<0.010	<0.0097	<0.0097	<0.0099	<0.010	<0.0099	<0.010
Benzo(k)fluoranthene	210		<0.0099	<0.010	<0.010	<0.0097	<0.0097	<0.0099	<0.010	<0.0099	<0.010
Chrysene	2,100		< 0.0099	<0.010	<0.010	< 0.0097	< 0.0097	<0.0099	<0.010	< 0.0099	< 0.010
Dibenz(a,h)Anthracene	2.1		< 0.0099	< 0.010	< 0.010	< 0.0097	< 0.0097	< 0.0099	< 0.010	< 0.0099	< 0.010
Fluoranthene	3,000		< 0.0099	< 0.010	< 0.010	< 0.0097	< 0.0097	<0.0099	< 0.010	< 0.0099	< 0.010
Fluorene	3,000		< 0.0099	< 0.010	< 0.010	< 0.0097	< 0.0097	<0.0099	< 0.010	< 0.0099	< 0.010
Indeno(1,2,3-c,d)Pyrene	21		<0.0099	< 0.010	< 0.010	<0.0097	<0,0097	<0.0099	< 0.010	<0.0099	< 0.010
Naphthalene	17		<0.0099	<0.010	<0.010	<0.0097	< 0.0097	<0.0099	<0.010	<0.0099	<0.010
Phenanthrene	2,300	-	<0.0099	<0.010	<0.010	<0.0097	<0.0097	<0.0099	<0.010	<0.0099	<0.010
Pyrene	2,300		<0.0099	<0.010	<0.010	<0.0097	<0.0097	<0.0099	<0.010	<0.0099	<0.010
Priority Pollutant (PP) Metals Antimony	47	6.8	<2.4	<2.3	<2.6	<2.2	<2.3	<2.1	<2.4	<2.4	<2.1
Arsenic	3.0/26.8*	4.9	3.9	6.3	4.9	6.4	5.0	7.8	7.0	6.8	6.1
Beryllium	230	1.6	1.6	1.8	2.2	1.4	1.9	1.4	2.4	1.4	1.0
Cadmium	98	1.1	<0.48	< 0.47	<0.53	<0.44	< 0.46	<0.42	<0.49	< 0.47	< 0.42
Chromium (3)	6.3	30	44	27	41	46	61	49	35	55	43
Copper	4,700	42	15	11	27	18	27	23	31	19	17
Lead	550	61	20	15	19	26	23	25	13	18	15
Mercury	4.6	0.14	<0.096	< 0.094	< 0.11	<0.088	<0.091	<0.085	<0.098	< 0.094	<0.085
Nickel	2,200	22	37	26	72	35	52	36	40	26	23
Selenium	580	1.0	0.40	.0.47	0.50	<0.44	<0.46	0.49	<0.49	0.60	<0.42
Silver	580 1.2	1.0	<0.48	< 0.47	<0.53	<0.44	<0.46 <0.46	<0.42 <0.42	<0.49 <0.49	<0.47 <0.47	<0.42
Thallium Zinc	35,000	1.5 73	<0.48 91	<0.47 69	<0.53 130	<0.44 87	100	83	82	64	<0.42 66
Organochlorine Pesticides	33,000	73	91	03	130	87	100	83	82	04	00
4,4-DDD	2.5			< 0.0049	-	<0.0045		<0.0045		< 0.0047	
4,4-DDE	9.3			< 0.0049		<0.0045	-	< 0.0045		< 0.0047	
4,4-DDT	8.5			< 0.0049	1	<0.0045		< 0.0045		< 0.0047	
Aldrin	0.18			< 0.0049		<0.0045		< 0.0045		< 0.0047	
Chlordane (n.o.s.)	7.7			<0.12		<0.11		< 0.11		<0.12	
Dieldrin	7.7	-		<0.0049	-	< 0.0045		<0.0045		<0.0047	
Endosulfan I	0.14		-	<0.0049		<0.0045		<0.0045		<0.0047	
Endosulfan II	700 NE			<0.0049 <0.0049		<0.0045 <0.0045		<0.0045 <0.0045		<0.0047 <0.0047	
Endosulfan Sulfate	NE NE		-	<0.0049		<0.0045		<0.0045		<0.0047	
Endrin Endrin Aldehyde	25	-		<0.0049		<0.0045		<0.0045		<0.0047	
Endrin Adenyde Endrin ketone	NE NE			<0.0049		<0.0045		<0.0045		< 0.0047	
Gamma-BHC (Lindane)	NE NE	-		<0.0049		< 0.0045		<0.0045		< 0.0047	
Heptachlor	2.5	-		<0.0049		<0.0045		<0.0045		<0.0047	
Heptachlor Epoxide	7.7	-		<0.0049		<0.0045		< 0.0045		< 0.0047	
Methoxychlor	0.63	-		< 0.0049		<0.0045		< 0.0045		< 0.0047	
Toxaphene	0.33	-		<0.12		<0.11		< 0.11		<0.12	
alpha-BHC	410			<0.0049		<0.0045		<0.0045		<0.0047	
beta-BHC	2.1	-		<0.0049		<0.0045		<0.0045		<0.0047	
cis-Chlordane	0.36	-	-	<0.0049 <0.0049		<0.0045 <0.0045		<0.0045 <0.0045		<0.0047 <0.0047	
delta-BHC trans-Chlordane	1.3 NE	-		<0.0049	-	<0.0045		<0.0045		<0.0047	
Chlorinated Herbicides	INE			NO.0045		\U.UU43		\U.UU43		\U.UU4/	
2,4,5-T				<0.025		<0.022		<0.023		<0.022	
2,4,5-TP (Silvex)	1			<0.025		<0.022		<0.023		<0.022	
2,4-D				<0.25		<0.22		<0.23		<0.22	
2,4-DB				<0.26		<0.22		< 0.23	-	<0.23	
Dalapon		-		< 0.61		< 0.53		< 0.55		< 0.54	
Dicamba				<0.025		<0.022		< 0.023		<0.022	
Dichloroprop		-		<0.25		<0.22		< 0.23		<0.22	
1		-		< 0.13		<0.11		<0.11		<0.11	
		1		<25	1	<21		<22		<22	
Dinoseb MCPA		-									
MCPA MCPP		-		<25		<22		<23		<22	
МСРА	620										

Notes:

This table is only to be used in conjunction with the report for which it was prepared. See t Samples collected Between September 8, 2022 and September 15, 2022 Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm) NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Star ATC = Anticipated Typical Concentration for soils in Eastern Maryland Shaded and bold values represent exceedance of MDE RCS

NA = Not applicable

NE = MDE standard not established

* = Risk-based calculated value



Sample Identification			GTA-SA8-I	GTA-SA8-I	GTA-SA8-J	GTA-SA8-J	GTA-SA8-K	GTA-SA8-K	GTA-SA8-L	GTA-SA8-L	GTA-SA8-M
Sample Interval	MDE NRCS	ATC Combined	0-1	1-4	0-1	1-4	0-1	1-4	0-1	1-4	0-1
Sample Type	IVIDE NRCS	ATC Central	Grab	Composite	Grab	Composite	Grab	Composite	Grab	Composite	Grab
Sampling Date			9/9/2022	9/9/2022	9/9/2022	9/9/2022	9/9/2022	9/9/2022	9/9/2022	9/9/2022	9/9/2022
Polycyclic Aromatic Hydrocarbons (PAHs)		1									
2-Methylnaphthalene Acenaphthene	300 4,500		<0.0099 <0.0099	<0.010 <0.010	<0.010 <0.010	<0.010	<0.010 <0.010	<0.010	<0.0098 <0.0098	<0.010 <0.010	<0.0098 <0.0098
Acenaphthylene	4,500 NE		<0.0099	<0.010	<0.010	<0.010 <0.010	<0.010	<0.010 <0.010	<0.0098	<0.010	<0.0098
Anthracene	23,000		<0.0099	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0098	<0.010	<0.0098
Benzo(a)anthracene	21		< 0.0099	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0098	<0.010	<0.0098
Benzo(a)pyrene	2		< 0.0099	< 0.010	<0.010	< 0.010	<0.010	< 0.010	<0.0098	<0.010	<0.0098
Benzo(b)fluoranthene	21		< 0.0099	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.0098	< 0.010	< 0.0098
Benzo(g,h,i)perylene	NE		< 0.0099	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	<0.0098	< 0.010	<0.0098
Benzo(k)fluoranthene	210		<0.0099	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	<0.0098	< 0.010	<0.0098
Chrysene	2,100		<0.0099	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0098	<0.010	<0.0098
Dibenz(a,h)Anthracene	2.1		<0.0099	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0098	<0.010	<0.0098
Fluoranthene Fluorene	3,000		<0.0099	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0098	<0.010	<0.0098
Indeno(1,2,3-c,d)Pyrene	3,000 21		<0.0099 <0.0099	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	<0.010 <0.010	<0.0098 <0.0098	<0.010 <0.010	<0.0098 <0.0098
Naphthalene	17		<0.0099	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0098	<0.010	<0.0098
Phenanthrene	2,300		<0.0099	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0098	<0.010	<0.0098
Pyrene	2,300		< 0.0099	< 0.010	<0.010	<0.010	<0.010	<0.010	<0.0098	<0.010	<0.0098
Priority Pollutant (PP) Metals											
Antimony	47	6.8	<2.2	<2.4	<2.7	<3.1	<2.8	<2.8	<2.3	<3.1	<2.9
Arsenic	3.0/26.8*	4.9	2.4	6.7	7.2	3.1	9.9	14	4.5	6.9	8.7
Beryllium	230	1.6	1.1	1.6	1.3	1.1	1.4	1.7	0.65	0.75	0.93
Cadmium	98	1.1	<0.43	<0.48	<0.54	<0.63	<0.55	<0.55	<0.46	<0.63	<0.58
Chromium (3)	6.3	30	33	47	46	40	48	50	29	43	44
Copper	4,700 550	42 61	9.5 11	26 16	21 15	15 13	22 17	23 16	8.6 13	18 14	19 22
Lead Mercury	4.6	0.14	< 0.086	< 0.097	<0.11	<0.13	<0.11	<0.11	<0.092	<0.13	<0.12
Nickel	2,200	22	19	52	29	27	29	35	13	24	22
Selenium	580	1.0	< 0.43	< 0.48	< 0.54	<0.63	< 0.55	< 0.55	0.48	< 0.63	< 0.58
Silver	580	1.0	< 0.43	< 0.48	< 0.54	< 0.63	<0.55	< 0.55	< 0.46	< 0.63	< 0.58
Thallium	1.2	1.5	< 0.43	< 0.48	< 0.54	< 0.63	< 0.55	< 0.55	< 0.46	< 0.63	< 0.58
Zinc	35,000	73	50	76	68	55	86	83	29	39	56
Organochlorine Pesticides											
4,4-DDD	2.5		<0.0046		<0.0048		<0.0047		< 0.0047		< 0.0046
4,4-DDE	9.3		<0.0046		<0.0048		<0.0047		<0.0047		<0.0046
4,4-DDT	8.5		<0.0046		<0.0048		<0.0047		<0.0047		<0.0046
Aldrin	0.18 7.7		<0.0046 <0.12	-	<0.0048	-	<0.0047 <0.12		<0.0047 <0.12		<0.0046 <0.12
Chlordane (n.o.s.) Dieldrin	7.7		<0.0046		<0.0048		<0.0047		<0.0047		<0.0046
Endosulfan I	0.14	-	< 0.0046		<0.0048		< 0.0047		< 0.0047		< 0.0046
Endosulfan II	700	-4	< 0.0046		<0.0048		< 0.0047		< 0.0047		< 0.0046
Endosulfan Sulfate	NE		< 0.0046		<0.0048		< 0.0047		< 0.0047		< 0.0046
Endrin	NE	-	< 0.0046		<0.0048		< 0.0047		< 0.0047		< 0.0046
Endrin Aldehyde	25	-	<0.0046	'	<0.0048		< 0.0047		< 0.0047		<0.0046
Endrin ketone	NE		<0.0046		<0.0048		< 0.0047		< 0.0047		<0.0046
Gamma-BHC (Lindane)	NE 2.5		<0.0046		<0.0048		<0.0047		< 0.0047		<0.0046
Heptachlor	2.5 7.7	-	<0.0046 <0.0046	-	<0.0048 <0.0048		<0.0047 <0.0047		<0.0047 <0.0047		<0.0046 <0.0046
Heptachlor Epoxide Methoxychlor	0.63	-	<0.0046		<0.0048		<0.0047		<0.0047		<0.0046
Toxaphene	0.33		<0.12		<0.12		<0.12		<0.12		<0.12
alpha-BHC	410	-	<0.0046		<0.0048		<0.0047		< 0.0047		< 0.0046
beta-BHC	2.1		<0.0046		<0.0048		< 0.0047		< 0.0047		<0.0046
cis-Chlordane	0.36		<0.0046		<0.0048		< 0.0047		< 0.0047		< 0.0046
delta-BHC	1.3		<0.0046		<0.0048		< 0.0047		< 0.0047		<0.0046
trans-Chlordane	NE		<0.0046		<0.0048		< 0.0047		<0.0047		<0.0046
Chlorinated Herbicides	_										
2,4,5-T	1		<0.023		<0.022		< 0.025		<0.023		<0.022
			<0.023		<0.022		<0.025		<0.023		<0.022
2,4,5-TP (Silvex)			< 0.23		<0.22		<0.24 <0.25		<0.23 <0.23		<0.21 <0.22
2,4-D			<0.33								~U.ZZ
2,4-D 2,4-DB			<0.23 <0.56		< 0.22						<0.52
2,4-D 2,4-DB Dalapon			< 0.56		< 0.53		< 0.59		<0.55		<0.52 <0.021
2,4-D 2,4-DB Dalapon Dicamba			<0.56 <0.023				<0.59 <0.024		<0.55 <0.023		<0.021
2,4-D 2,4-DB Dalapon		 	< 0.56		<0.53 <0.022		< 0.59		<0.55		
2,4-D 2,4-DB Dalapon Dicamba Dichloroprop			<0.56 <0.023 <0.23		<0.53 <0.022 <0.22		<0.59 <0.024 <0.24		<0.55 <0.023 <0.23		<0.021 <0.21
2,4-D 2,4-DB Dalapon Dicamba Dichloroprop Dinoseb MCPA MCPP			<0.56 <0.023 <0.23 <0.12		<0.53 <0.022 <0.22 <0.11	40 Hz	<0.59 <0.024 <0.24 <0.12		<0.55 <0.023 <0.23 <0.11	=======================================	<0.021 <0.21 <0.11
2,4-D 2,4-DB Dalapon Dicamba Dichloroprop Dinoseb MCPA	620		<0.56 <0.023 <0.23 <0.12 <23		<0.53 <0.022 <0.22 <0.11 <22	40 Hz	<0.59 <0.024 <0.24 <0.12 <24	## 100 ## 100 ## 100	<0.55 <0.023 <0.23 <0.11 <22	# # # # # # # # # # # # # # # # # # #	<0.021 <0.21 <0.11 <21

Notes:

This table is only to be used in conjunction with the report for which it was prepared. See t Samples collected Between September 8, 2022 and September 15, 2022 Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm) NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Star ATC = Anticipated Typical Concentration for soils in Eastern Maryland Shaded and bold values represent exceedance of MDE RCS

NA = Not applicable

NE = MDE standard not established

* = Risk-based calculated value



Sample Identification			GTA-SA8-M	GTA-SA9-A	GTA-SA9-A	GTA-SA9-B	GTA-SA9-B	GTA-SA9-C	GTA-SA9-C	GTA-SA9-D	GTA-SA9-D
Sample Interval			1-4	0-1	1-5	0-1	1-5	0-1	1-5	0-1	1-5
Sample Type	MDE NRCS	ATC Central	Composite	Grab	Composite	Grab	Composite	Grab	Composite	Grab	Composite
Sampling Date			9/9/2022	9/14/2022	9/14/2022	9/14/2022	9/14/2022	9/14/2022	9/14/2022	9/14/2022	9/14/2022
Polycyclic Aromatic Hydrocarbons (PAHs)											
2-Methylnaphthalene	300		< 0.011	< 0.0099	< 0.0099	< 0.0100	< 0.0099	< 0.010	< 0.010	< 0.011	< 0.011
Acenaphthene	4,500		< 0.011	<0.0099	<0.0099	< 0.0100	<0.0099	< 0.010	< 0.010	< 0.011	< 0.011
Acenaphthylene	NE		< 0.011	<0.0099	<0.0099	<0.0100	<0.0099	< 0.010	< 0.010	< 0.011	< 0.011
Anthracene	23,000		<0.011	<0.0099	<0.0099	<0.0100	<0.0099	<0.010	<0.010	<0.011	<0.011
Benzo(a)anthracene	21		<0.011	<0.0099	<0.0099	<0.0100	<0.0099	<0.010	<0.010	<0.011	<0.011
Benzo(a)pyrene Benzo(b)fluoranthene	2 21		<0.011 <0.011	<0.0099 <0.0099	<0.0099 <0.0099	<0.0100 <0.0100	<0.0099 <0.0099	<0.010 <0.010	<0.010 <0.010	<0.011 <0.011	<0.011 <0.011
Benzo(g,h,i)perylene	NE		<0.011	<0.0099	<0.0099	<0.0100	<0.0099	<0.010	<0.010	<0.011	<0.011
Benzo(k)fluoranthene	210		<0.011	<0.0099	<0.0099	<0.0100	<0.0099	<0.010	<0.010	<0.011	<0.011
Chrysene	2,100		<0.011	< 0.0099	< 0.0099	<0.0100	< 0.0099	<0.010	< 0.010	<0.011	< 0.011
Dibenz(a,h)Anthracene	2.1		< 0.011	<0.0099	<0.0099	<0.0100	<0.0099	<0.010	< 0.010	< 0.011	< 0.011
Fluoranthene	3,000		< 0.011	< 0.0099	< 0.0099	< 0.0100	<0.0099	<0.010	< 0.010	< 0.011	< 0.011
Fluorene	3,000		< 0.011	< 0.0099	< 0.0099	< 0.0100	<0.0099	<0.010	< 0.010	< 0.011	< 0.011
Indeno(1,2,3-c,d)Pyrene	21		< 0.011	< 0.0099	< 0.0099	< 0.0100	<0.0099	< 0.010	< 0.010	< 0.011	< 0.011
Naphthalene	17		< 0.011	<0.0099	<0.0099	< 0.0100	< 0.0099	< 0.010	< 0.010	< 0.011	< 0.011
Phenanthrene	2,300		< 0.011	<0.0099	<0.0099	<0.0100	<0.0099	< 0.010	< 0.010	< 0.011	< 0.011
Pyrene	2,300		<0.011	<0.0099	<0.0099	<0.0100	<0.0099	<0.010	<0.010	<0.011	<0.011
Priority Pollutant (PP) Metals	47		-2.0	-27 F	-2.0	-20	<2.4	r2 4	-2.0	-2.0	<2.7
Antimony Arsenic	47 3.0/26.8*	6.8 4.9	<2.8 7.4	<2.5 8.1	<2.6 9.6	<2.0 6.9	6.8	<2.4 5.7	<2.6 7.0	<2.9 6.8	5.3
Beryllium	230	1.6	0.82	1.4	1.9	0.95	1.0	1.3	1.5	1.9	2.8
Cadmium	98	1.1	< 0.55	<0.49	<0.51	<0.41	<0.48	<0.49	<0.52	<0.58	< 0.54
Chromium (3)	6.3	30	33	33	50	54	41	34	36	35	37
Copper	4,700	42	23	15	22	14	20	14	19	32	31
Lead	550	61	13	22	17	17	13	17	13	15	12
Mercury	4.6	0.14	0.14	< 0.099	< 0.10	<0.082	<0.096	< 0.097	< 0.10	< 0.12	< 0.11
Nickel	2,200	22	28	24	30	19	28	24	27	40	49
Selenium	580	1.0	< 0.55	< 0.49	<0.51	<0.41	<0.48	< 0.49	<0.52	<0.58	< 0.54
Silver	580	1.0	<0.55	< 0.49	<0.51	< 0.41	<0.48	< 0.49	<0.52	<0.58	<0.54
Thallium	1.2	1.5	< 0.55	<0.49	<0.51	<0.41	<0.48	<0.49	<0.52	<0.58	<0.54
Zinc	35,000	73	48	59	60	43	53	52	48	71	75
Organochlorine Pesticides 4,4-DDD	2.5	I		<0.0047		<0.0046		<0.0051		<0.0053	
4,4-DDE	9.3		-	<0.0047		<0.0046		<0.0051		<0.0053	
4,4-DDT	8.5			< 0.0047	-	<0.0046	-	<0.0051		< 0.0053	
Aldrin	0.18			< 0.0047		<0.0046		<0.0051		< 0.0053	
Chlordane (n.o.s.)	7.7			<0.12		<0.11		< 0.13		< 0.13	
Dieldrin	7.7			< 0.0047	1	< 0.0046		< 0.0051		< 0.0053	
Endosulfan I	0.14	-		< 0.0047		< 0.0046		< 0.0051		< 0.0053	
Endosulfan II	700	-		< 0.0047		<0.0046		< 0.0051		< 0.0053	
Endosulfan Sulfate	NE			<0.0047		<0.0046		< 0.0051		< 0.0053	
Endrin	NE			<0.0047		<0.0046		<0.0051		<0.0053	
Endrin Aldehyde	25		-	<0.0047		<0.0046		<0.0051		<0.0053	
Endrin ketone	NE			<0.0047		<0.0046		<0.0051		< 0.0053	
Gamma-BHC (Lindane) Heptachlor	NE 2.5	-		<0.0047 <0.0047		<0.0046 <0.0046		<0.0051 <0.0051		<0.0053 <0.0053	
Heptachlor Epoxide	7.7	-		<0.0047		<0.0046		<0.0051		<0.0053	
Methoxychlor	0.63	-		< 0.0047		<0.0046		<0.0051		< 0.0053	
Toxaphene	0.33	-		<0.12		<0.11		<0.13		< 0.13	
alpha-BHC	410			< 0.0047		< 0.0046		< 0.0051		< 0.0053	
beta-BHC	2.1			< 0.0047		<0.0046		<0.0051		< 0.0053	
cis-Chlordane	0.36	-	-	< 0.0047		<0.0046		< 0.0051		< 0.0053	
delta-BHC	1.3	-		< 0.0047		<0.0046		<0.0051		< 0.0053	
trans-Chlordane	NE			<0.0047		<0.0046		<0.0051		<0.0053	
Chlorinated Herbicides				0.000		0.000		0.000		0.004	
2,4,5-T				<0.022		<0.023		<0.023		<0.024	
2,4,5-TP (Silvex)				<0.022		<0.023		<0.023		<0.024	
2,4-D				<0.22 <0.23		<0.23 <0.23		<0.23 <0.23		<0.24 <0.24	
2,4-DB				<0.23		<0.23		<0.23		<0.24	
Dalapon				<0.022		<0.023		<0.023		<0.024	
Dicamba				<0.022		<0.023		<0.023		<0.024	
Dicamba Dichloroprop					1	-0.20					-
Dichloroprop				< 0.11		< 0.11		< 0.11		< 0.12	
Dichloroprop Dinoseb				<0.11 <22		<0.11 <22		<0.11 <22		<0.12 <23	
Dichloroprop				<0.11 <22 <22		<0.11 <22 <23		<0.11 <22 <23		<0.12 <23 <24	
Dichloroprop Dinoseb MCPA				<22		<22		<22		<23	

Notes:

This table is only to be used in conjunction with the report for which it was prepared. See t Samples collected Between September 8, 2022 and September 15, 2022 Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm) NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Star ATC = Anticipated Typical Concentration for soils in Eastern Maryland Shaded and bold values represent exceedance of MDE RCS

NA = Not applicable

NE = MDE standard not established

* = Risk-based calculated value



Sample Identification			GTA-SA9-E	GTA-SA9-E	GTA-SA9-F	GTA-SA9-F	GTA-SA10	GTA-SA10
Sample Interval	MADE NIDGE	ATC Countries	0-1	1-5	0-1	1-5	0-1	1-10
Sample Type	MDE NRCS	ATC Central	Grab	Composite	Grab	Composite	Grab	Composite
Sampling Date			9/14/2022	9/14/2022	9/14/2022	9/14/2022	9/9/2022	9/9/2022
Polycyclic Aromatic Hydrocarbons (PAHs)								
2-Methylnaphthalene	300		< 0.010	<0.0098	< 0.010	< 0.010	<0.0098	< 0.011
Acenaphthene	4,500		<0.010	<0.0098	<0.010	<0.010	<0.0098	<0.011
Acenaphthylene	NE 22.000		<0.010	<0.0098	<0.010	<0.010	<0.0098	<0.011
Anthracene Benzo(a)anthracene	23,000		<0.010	<0.0098	<0.010	<0.010	<0.0098	<0.011
Benzo(a)pyrene	21		0.010 0.012	<0.0098 <0.0098	<0.010 <0.010	<0.010 <0.010	<0.0098 <0.0098	<0.011 <0.011
Benzo(b)fluoranthene	21		0.012	<0.0098	<0.010	<0.010	<0.0098	<0.011
Benzo(g,h,i)perylene	NE NE		<0.011	<0.0098	<0.010	<0.010	<0.0098	<0.011
Benzo(k)fluoranthene	210		<0.010	< 0.0098	< 0.010	<0.010	<0.0098	< 0.011
Chrysene	2,100		0.011	< 0.0098	< 0.010	<0.010	<0.0098	< 0.011
Dibenz(a,h)Anthracene	2.1		< 0.010	< 0.0098	< 0.010	< 0.010	<0.0098	< 0.011
Fluoranthene	3,000		0.013	<0.0098	< 0.010	< 0.010	<0.0098	< 0.011
Fluorene	3,000		< 0.010	<0.0098	< 0.010	< 0.010	<0.0098	< 0.011
Indeno(1,2,3-c,d)Pyrene	21		< 0.010	<0.0098	< 0.010	<0.010	<0.0098	< 0.011
Naphthalene	17		< 0.010	<0.0098	<0.010	<0.010	<0.0098	<0.011
Phenanthrene	2,300		< 0.010	<0.0098	<0.010	<0.010	<0.0098	<0.011
Pyrene	2,300		0.013	<0.0098	<0.010	<0.010	<0.0098	<0.011
Priority Pollutant (PP) Metals Antimony	47	6.8	<2.9	<2.8	<2.0	<2.7	<2.6	<2.8
Arsenic	3.0/26.8*	4.9	5.2	6.3	5.6	4.3	6.2	5.4
Beryllium	230	1.6	1.0	1.8	1.2	1.4	1.1	2.3
Cadmium	98	1.1	<0.58	< 0.55	< 0.41	< 0.53	<0.52	< 0.56
Chromium (3)	6.3	30	22	7.8	23	20	34	17
Copper	4,700	42	21	24	23	22	13	20
Lead	550	61	16	19	15	12	17	14
Mercury	4.6	0.14	< 0.12	<0.11	< 0.081	< 0.11	< 0.10	< 0.11
Nickel	2,200	22	26	39	27	28	23	30
Selenium	580	1.0	<0.58	< 0.55	<0.41	< 0.53	0.53	< 0.56
Silver	580	1.0	<0.58	<0.55	<0.41	<0.53	<0.52	<0.56
Thallium	1.2	1.5	<0.58	<0.55	<0.41	<0.53	<0.52	<0.56
Zinc Organochlorine Pesticides	35,000	73	45	95	43	41	49	54
4,4-DDD	2.5		<0.0047		<0.0049		< 0.0047	
4,4-DDE	9.3		< 0.0047		< 0.0049		< 0.0047	
4,4-DDT	8.5		<0.0047		< 0.0049		< 0.0047	
Áldrin	0.18		< 0.0047	/	< 0.0049		< 0.0047	
Chlordane (n.o.s.)	7.7		<0.12		<0.12		< 0.12	
Dieldrin	7.7		<0.0047		< 0.0049		< 0.0047	
Endosulfan I	0.14		< 0.0047		< 0.0049		< 0.0047	
Endosulfan II	700	-	< 0.0047		<0.0049		<0.0047	
Endosulfan Sulfate	NE		< 0.0047		<0.0049		<0.0047	
Endrin	NE 25		<0.0047		<0.0049		<0.0047	
Endrin Aldehyde	25 NE		<0.0047		<0.0049		<0.0047	
Endrin ketone Gamma-BHC (Lindane)	NE NE		<0.0047 <0.0047		<0.0049 <0.0049		<0.0047 <0.0047	
Heptachlor	2.5		<0.0047		<0.0049		<0.0047	
Heptachlor Epoxide	7.7	-	<0.0047		<0.0049		<0.0047	
Methoxychlor	0.63		< 0.0047		< 0.0049		< 0.0047	
Toxaphene	0.33		<0.12		<0.12		<0.12	
alpha-BHC	410		< 0.0047		< 0.0049		< 0.0047	
beta-BHC	2.1	-	< 0.0047		< 0.0049		< 0.0047	
cis-Chlordane	0.36		< 0.0047		< 0.0049		< 0.0047	
delta-BHC	1.3	-	< 0.0047		< 0.0049		< 0.0047	
trans-Chlordane	NE	-	<0.0047		<0.0049		<0.0047	
Chlorinated Herbicides			0.004		0.000		0.000	
2,4,5-T			<0.024		<0.023		<0.022	
2,4,5-TP (Silvex)			<0.024		<0.023		<0.022	
2,4-D 2.4-DB			<0.23 <0.24		<0.22 <0.23		<0.22 <0.23	
Dalapon			<0.24		<0.23		<0.23	
Dicamba			<0.023		<0.022		<0.022	
Dichloroprop			<0.23		<0.22		<0.022	
Dinoseb			<0.12		<0.11		<0.11	
MCPA			<23		<22		<22	
MCPP			<23		<22		<22	
Total Petroleum Hydrocarbons (TPH)								
TPH DRO	620							

This table is only to be used in conjunction with the report for which it was prepared. See t Samples collected Between September 8, 2022 and September 15, 2022

Results in milligrams per kilogram (mg/kg), equivalent to parts per million (ppm)
NRCS = MDE Non Residential Cleanup Standards for soil as presented in MDE's Cleanup Stan

ATC = Anticipated Typical Concentration for soils in Eastern Maryland

Shaded and bold values represent exceedance of MDE RCS

NA = Not applicable

NE = MDE standard not established

* = Risk-based calculated value



Appendix B

Analytical Data for Groundwater Collected at Pump Station



Certificate of Analysis

6630 Baltimore National Pike Baltimore, MD 21228 410-747-8770 800-932-9047 www.phaseonline.com

Project Name: 31222314 PSS Project No.: 23052316

May 23, 2023

Kevin Plocek GTA - Baltimore1414 Key Highway, Ste. 201P
Baltimore, MD 21230

Reference: PSS Project No: 23052316

Project Name: 31222314

Project Location: Frederick, MD

Project ID.: 31222314



Dear Kevin Plocek:

This report includes the analytical results from the analyses performed on the samples received under the project name referenced above and identified with the Phase Separation Science (PSS) Project number(s) 23052316.

All work reported herein has been performed in accordance with current NELAP standards, referenced methodologies, PSS Standard Operating Procedures and the PSS Quality Assurance Manual unless otherwise noted in the Case Narrative Summary. PSS is limited in liability to the actual cost of the sample analysis done.

PSS reserves the right to return any unused samples, extracts or related solutions. Otherwise, the samples are scheduled for disposal, without any further notice, on June 27, 2023, with the exception of air canisters which are cleaned immediately following analysis. This includes any samples that were received with a request to be held but lacked a specific hold period. It is your responsibility to provide a written request defining a specific disposal date if additional storage is required. Upon receipt, the request will be acknowledged by PSS, thus extending the storage period.

This report shall not be reproduced except in full, without the written approval of an authorized PSS representative. A copy of this report will be retained by PSS for at least 5 years, after which time it will be disposed of without further notice, unless prior arrangements have been made.

We thank you for selecting Phase Separation Science, Inc. to serve your analytical needs. If you have any questions concerning this report, do not hesitate to contact us at 410-747-8770 or info@phaseonline.com.

Sincerely,

Cathy Thompson

QA Officer





Explanation of Qualifiers

6630 Baltimore National Pike Baltimore, MD 21228 410-747-8770 800-932-9047 www.phaseonline.com

Project Name: 31222314 PSS Project No.: 23052316

Project ID: 31222314

The following samples were received under chain of custody by Phase Separation Science (PSS) on 05/23/2023 at 02:20 pm

PSS Sample ID	Sample ID	Matrix	Date/Time Collected	
23052316-001	EMP-GW1	GROUND WATER	05/23/23 00:00	
23052316-002	EMP-GW2	GROUND WATER	05/23/23 00:00	
23052316-003	EMP-GW3	GROUND WATER	05/23/23 00:00	

Please reference the Chain of Custody and Sample Receipt Checklist for specific container counts and preservatives. Any sample conditions not in compliance with sample acceptance criteria are described in Case Narrative Summary.

Notes:

- 1. The presence of a common laboratory contaminant such as methylene chloride may be considered a possible laboratory artifact. Where observed, appropriate consideration of data should be taken.
- 2. Unless otherwise noted in the case narrative, results are reported on a dry weight basis with the exception of pH, flashpoint, moisture, and paint filter test.
- 3. Drinking water samples collected for the purpose of compliance with SDWA may not be suitable for their intended use unless collected by a certified sampler [COMAR 26.08.05.07.C.2].
- 4. The analyses of 1,2-dibromo-3-chloropropane (DBCP) and 1,2-dibromoethane (EDB) by EPA 524.2 and calcium, magnesium, sodium and iron by EPA 200.8 are not currently promulgated for use in testing to meet the Safe Drinking Water Act and as such cannot be used for compliance purposes. The listings of the current promulgated methods for testing in compliance with the Safe Drinking Water Act can be found in the 40 CFR part 141.1, for the primary drinking water contaminates, and part 141.3, for the secondary drinking water contaminates.
- 5. Sample prepared under EPA 3550C with concentrations greater than 20 mg/Kg should employ the microtip extraction procedure if required to meet data quality objectives.
- 6. The analysis of acrolein by EPA 624 must be analyzed within three days of sampling unless pH is adjusted to 4-5 units [40 CFR part 136.3(e)].
- 7. Method 180.1, The Determination of Turbidity by Nephelometry, recommends samples over 40 NTU be diluted until the turbidity falls below 40 units. Routine samples over 40 NTU may not be diluted as long as the data quality objectives are not affected.
- 8. Alkalinity results analyzed by EPA 310.2 that are reported by dilution are estimated and are not in compliance with method requirements.

Standard Flags/Abbreviations:

- B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- C Results Pending Final Confirmation.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- Fail The result exceeds the regulatory level for Toxicity Characteristic (TCLP) as cited in 40 CFR 261.24 Table 1.
- The target analyte was positively identified below the reporting limit but greater than the MDL.
- MDL This is the Laboratory Method Detection Limit which is equivalent to the Limit of Detection (LOD). The LOD is the minimum result, which can be reliably discriminated from a blank with a predetermined confidence level. This value will remain constant across multiple similar instrumentation and among different analysts. An LOD is analyte and matrix specific. instrumentation and among different analysts. An LOD is analyte and matrix specific.
- ND Not Detected at or above the reporting limit.
- RL PSS Reporting Limit.
- U Not detected.

Certifications:

NELAP Certifications: PA 68-03330, VA 460156

State Certifications: MD 179, WV 303 Regulated Soil Permit: P330-12-00268 NSWC USCG Accepted Laboratory LDBE MWAA LD1997-0041-2015



Certificate of Analysis

6630 Baltimore National Pike Baltimore, MD 21228 410-747-8770 800-932-9047 www.phaseonline.com

Project Name: 31222314 PSS Project No.: 23052316

Sample ID: EMP-GW1 Date/Time Sampled: 05/23/2023 00:00 PSS Sample ID: 23052316-001

Matrix: GROUND WATER Date/Time Received: 05/23/2023 14:20

Inorganic Anions: Fluoride Analytical Method: EPA 300.0 Preparation Method: E300.0P

Qualifier(s): See Sample Receipt section on Case Narrative.

Result Units RL Flag Dil **Prepared Analyzed** Analyst Fluoride 0.25 J 1 0.04 05/23/23 05/23/23 14:41 1053 0.14 mg/L

Sample ID: EMP-GW2 Date/Time Sampled: 05/23/2023 00:00 PSS Sample ID: 23052316-002

Matrix: GROUND WATER Date/Time Received: 05/23/2023 14:20

Inorganic Anions: Fluoride Analytical Method: EPA 300.0 Preparation Method: E300.0P

Qualifier(s): See Sample Receipt section on Case Narrative.

 Result
 Units
 RL
 Flag
 Dil
 MDL
 Prepared
 Analyzed
 Analyst

 Fluoride
 5.6
 mg/L
 0.25
 1
 0.04
 05/23/23
 05/23/23
 15:04
 1053

Sample ID: EMP-GW3 Date/Time Sampled: 05/23/2023 00:00 PSS Sample ID: 23052316-003

Matrix: GROUND WATER Date/Time Received: 05/23/2023 14:20

Inorganic Anions: Fluoride Analytical Method: EPA 300.0 Preparation Method: E300.0P

Qualifier(s): See Sample Receipt section on Case Narrative.

 Result
 Units
 RL
 Flag
 Dil
 MDL
 Prepared
 Analyzed
 Analyst

 Fluoride
 0.36
 mg/L
 0.25
 1
 0.04
 05/23/23
 05/23/23
 15:27
 1053



Case Narrative

6630 Baltimore National Pike Baltimore, MD 21228 410-747-8770 800-932-9047 www.phaseonline.com

Project Name: 31222314

PSS Project No.: 23052316

Any holding time exceedances, deviations from the method specifications, regulatory requirements or variations to the procedures outlined in the PSS Quality Assurance Manual are outlined below.

Matrix spike and matrix spike duplicate analyses may not be performed due to insufficient sample quantity. In these instances, a laboratory control sample and laboratory control sample duplicate are analyzed unless otherwise noted or specified in the method.

Sample Receipt:

No sampling time recorded on COC or container labels.

NELAP accreditation was held for all analyses performed unless noted below. See www.phaseonline.com for complete PSS scope of accreditation.





Lab Chronology

6630 Baltimore National Pike Baltimore, MD 21228 410-747-8770 800-932-9047 www.phaseonline.com

Project Name: 31222314
PSS Project No.: 23052316

Method	Client Sample ID	Analysis Type	PSS Sample ID	Mtx	Prep Batch	Analytical Batch	Prepared	Analyzed
EPA 300.0	EMP-GW1	Initial	23052316-001	W	95542	203706	05/23/2023 14:32	05/23/2023 14:41
	EMP-GW2	Initial	23052316-002	W	95542	203706	05/23/2023 14:32	05/23/2023 15:04
	EMP-GW3	Initial	23052316-003	W	95542	203706	05/23/2023 14:32	05/23/2023 15:27
	95542-1-BKS	BKS	95542-1-BKS	W	95542	203706	05/23/2023 10:24	05/23/2023 12:00
	95542-1-BLK	BLK	95542-1-BLK	W	95542	203706	05/23/2023 10:24	05/23/2023 11:37
	20230522-104 S	MS	23052218-002 S	W	95542	203706	05/23/2023 10:59	05/23/2023 13:09
	20230522-104 SD	MSD	23052218-002 S	W	95542	203706	05/23/2023 10:59	05/23/2023 13:32



QC Summary

6630 Baltimore National Pike Baltimore, MD 21228 410-747-8770 800-932-9047 www.phaseonline.com

Project Name 31222314 PSS Project No.: 23052316

Analytical Method: EPA 300.0 Prep Method: E300.0P Seq Number: 203706 Matrix: Water Date Prep: 05/23/23

MB Sample Id: 95542-1-BLK LCS Sample Id: 95542-1-BKS

LCS LCS Limits Units MB **Spike Parameter** Flag Result Amount Result %Rec 90-110 Fluoride < 0.04000 2.500 2.466 99 mg/L

F = RPD exceeded the laboratory control limits

X = Recovery of MS, MSD or both outside of QC Criteria

H= Recovery of BS,BSD or both exceeded the laboratory control limits

L = Recovery of BS,BSD or both below the laboratory control limits





QC Summary

6630 Baltimore National Pike Baltimore, MD 21228 410-747-8770 800-932-9047 www.phaseonline.com

Units

Flag

Flag

31222314 Project Name PSS Project No.: 23052316

Parameter

Parameter

Analytical Method: EPA 300.0

Seq Number: 203706

CCV-01

Matrix: Water

Analyzed Date: 05/23/23 10:51

CCV Sample Id: Spike CCV CCV Limits Units

%Rec

Fluoride 2.500 2.508 100 90-110 mg/L

Result

Analytical Method: EPA 300.0

Seq Number: 203706 Matrix: Water

Amount

Analyzed Date: 05/23/23 13:55 CCV Sample Id: CCV-02

Spike CCV CCV Limits Units **Parameter** Flag Amount Result %Rec

Fluoride 2.500 2.557 102 90-110 mg/L

Analytical Method: EPA 300.0

Seq Number: 203706 Matrix: Water Analyzed Date: 05/23/23 15:50 CCV Sample Id: CCV-03

Spike CCV CCV

Amount Result %Rec Fluoride 2.500 2.530 101 90-110 mg/L

Analytical Method: EPA 300.0

Matrix: Water Seq Number: 203318

ICV Sample Id: ICV-01 Parent Sample Id: ICV-01 Analyzed Date: 05/08/23 16:22

ICV ICV Spike Limits Units Flag **Parameter** Result Amount %Rec

Fluoride 100 90-110 2.500 2.491 mg/L

X = Recovery outside of QC Criteria

Limits

PHASE SEPARATION SCIENCE

CHAIN OF CUSTODY FORM

All fields must be completed accurately. Shaded sections for lab use only.

www.phaseonline.com ~ info@phaseonline.com

6630 Baltimore National Pike • Suite 103-A • Baltimore, Maryland 21228 • (410) 747-8770 • (800) 932-9047

PSS CLIENT: OFFICE LOCAT	ON: BAUTINORE PS: 3 286 5566 Mars w.	SS Work Order #	2305	52316		PAGEC	DF_L
BILL TO (if different): PHONE #: 44	3 2865566 Mar sw	atrix Codes: V=Surface Water	DW=Drinking Water	GW=Ground Water WW=	-Waste Water 0=0	Oil S =Soil SOL =Solid I	A =Air WI =Wipe
CONTACT: GENTLAND FOREL EMAIL: GP	ocele glacing, con	4.	Preservatives Use Codes			John German John John John John John John John Joh	Preservative Codes
PROJECT NAME: 31222 34 PROJE	CT #: 2(2)22211/	rs S	Analysis/ Method		//	////	1 - HCL 2 - H,SO,
	20.#: 31722314	INERS	Required 3	////	///		3 - HNO ₃ 4 - NaOH
SAMPLER(S): DW CI	RT #:	ONTA MPOS			//	////	5 - E624KIT 6 - ICE 7 - Sodium
PSS ID SAMPLE IDENTIFICATION DAT SAMP	E TIME MATRIX C	# OF CONTAINERS SAMPLE TYPE: C=COMPOSITE G=	12/	////	///		Thiosulfate 8 - Ascorbic Acid
1 FMP-GWI 512	1 - 1	16					9 - TerraCore Kit
		1 3	1				
2 EMP-GWZ J	/ 1	1 6					
O (M) ONS							A BL COMP
Relinquished By. (1) Date Time	Received By:	4	Requested TAT (O	ne TAT per COC)	Ice Present	t: ARC	
510303 210	DOFM RE		□ 5-Day □ 3	B-Day 2-Day Emergency Other		eal: ABS	
Relinquished By: (2) Date Time	Received By:	1000000	STATE RESULTS R	EPORTED TO:	# Coolers:		29-24.3
Pull-ruiched Pur (9)	8 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		OTHER		Shipping C	Carrier: Client	
Relinquished By: (3) Date Time	Received By:		COMPLIANCE?	Special Instructions:			
Relinquished By: (4) Date Time	Received By:	- 17.7	EDD FORMAT TYPE				

This chain of custody is a legal document. The client (PSS Client), by signing, or having client's agent sign, this "Chain of Custody Form", agrees to pay for the above requested services per the latest version of the Service Brochure or PSS-provided quotation including any and all attorney's or other reasonable fees if collection becomes necessary.



Sample Receipt Checklist

6630 Baltimore National Pike Baltimore, MD 21228 410-747-8770 800-932-9047 www.phaseonline.com

Project Name: 31222314
PSS Project No.: 23052316

Client Name GTA - Baltimore Received By Tyler Enwright

Delivered By Client

Tracking No Not Applicable

Logged In By Tyler Enwright

Shipping Container(s)

No. of Coolers 0

Custody Seal(s) Intact?

N/A

Temp (deg C)

24.3

Seal(s) Signed / Dated?

N/A

Temp Blank Present

No

Documentation Sampler Name Kevin Plocek

COC agrees with sample labels? Yes MD DW Cert. No. N/A

Chain of Custody Yes

Sample Container Custody Seal(s) Intact? Not Applicable

Appropriate for Specified Analysis? Yes Seal(s) Signed / Dated Not Applicable

Intact? Yes

Labeled and Labels Legible? Yes

Holding Time Total No. of Samples Received 3

All Samples Received Within Holding Time(s)? Yes Total No. of Containers Received 3

Preservation

Total Metals (pH<2)N/A Dissolved Metals, filtered within 15 minutes of collection (pH<2)N/A Orthophosphorus, filtered within 15 minutes of collection N/A Cyanides (pH>12)N/A Sulfide (pH>9)N/A TOC, DOC (field filtered), COD, Phenols N/A (pH<2)TOX, TKN, NH3, Total Phos (pH<2)N/A VOC, BTEX (VOA Vials Rcvd Preserved) (pH<2)N/A Do VOA vials have zero headspace? N/A 624 VOC (Rcvd at least one unpreserved VOA vial) N/A 524 VOC (Rcvd with trip blanks) (pH<2)N/A

Comments: (Any "No" response must be detailed in the comments section below.)

For any improper preservation conditions, list sample ID, preservative added (reagent ID number) below as well as documentation of any client notification as well as client instructions. Samples for pH, chlorine and dissolved oxygen should be analyzed as soon as possible, preferably in the field at the time of sampling. Samples which require thermal preservation shall be considered acceptable when received at a temperature above freezing to 6°C. Samples that are hand delivered on the day that they are collected may not meet these criteria but shall be considered acceptable if there is evidence that the chilling process has begun such as arrival on ice.

No sampling time recorded on COC or container labels.

Samples Inspected/Checklist Completed By: Date: 05/23/2023

PM Review and Approval:

Lynn Jackson
Page 9 of 9

Tyler Enwright

Date: 05/23/2023

Version 1.000

Appendix C

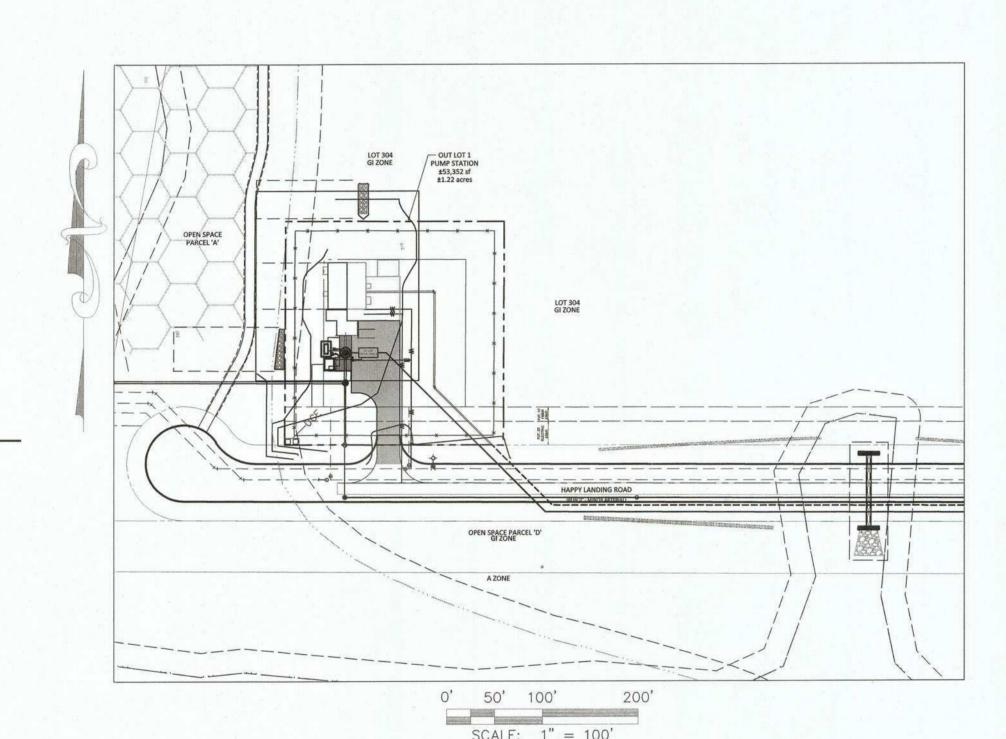
Pump Station Improvement Plan Drawings

COMBINED SWM DEVELOPMENT AND IMPROVEMENT PLAN FOR QUANTUM FREDERICK

OUT LOT 1 FOR 1 MGD SEWER PUMP STATION (SPS) DWSU # 601-S

PREPARED FOR:

QUANTUM MARYLAND, LLC 500 E 4TH STREET SUITE 333 **AUSTIN, TX 78701** DECEMBER 2022



Project Summary: The purpose of this site plan is for the layout and design of a temporary MGD interim pump station, associated gravity sewer, force main, driveway entrance from the temporary 12' wide access drive, pavement and associated infrastructure; and a future one story, 5 MGD sewer pump station (Future

Total area of the Site Plan = +/-1.22 Acres and is zoned GI and is in the Adamstown Planning Region with a land use designation of General Industrial per the 2010 Comprehensive Plan.
 This Site Plan is comprised of Outlot 1, Tax Map 94 recorded in Liber 15038 at folio 393.

The property is located on Frederick County Tax Maps 94 and Frederick County Soils Maps 94.

Boundary information as shown on this plan was taken from August 2021 field boundary surveys conducted by Rodgers Consulting, Inc., and other available

Survey datum is the Maryland Coordinate System [NAD83(2011), SPCS zone 1900(MD), U.S. Survey Feet], based on static GPS observations post-processed by the National Geodetic Survey's Online Positioning User Service (OPUS). Measured points include RCI control points 9501 and 9504. The average combined

Vertical datum is NAVD88, based on static GPS observations post-processed by the National Geodetic Survey's Online Positioning User Service (OPUS).

This property is to be served by public water & sewer. The current water & sewer classification for the GI zoned property is W/3 and S/4.

The 100 Year Floodplain as shown is a compilation of several sources of data per Section 1-19-9.100 of the Frederick County Zoning Code. The line shown represents the greatest extent of the following: FEMA, Frederick County Floodplain Soils, and wetlands adjacent to other floodplain sources. A minimum setback of 25 feet shall be provided from all Floodplain district boundaries, except as otherwise approved through the mitigation process described in

areas shall be maintained or planted with natural vegetation. A floodplain revision is currently under review.

Wetlands were delineated in September of 1996 and reconfirmed in Spring 2021 by RCI staff, in conformance with the 1987 U.S.Corps of Engineers' delineation

 A Final Forest Conservation Plan was approved under F271158 on 2022.07.27. provided because many drainage areas associated with the permitted uses may not be small enough for treatment by micro-scale practices. Qp10 Control will be provided in end of line facilities. ESDv proposed where practicable.

. Existing roadways are bituminous material, depth varies. 3. Although on-site water quality may be provided with the site plan, water quality for public roads will be required with Improvement Plans. 14. The Ballenger Mckinney Waste Water Treatment Facility provides sanitary sewage treatment for this project & the New Design Water Treatment Plant provides

The location, orientation, grading through and around all water and sewer easements outside of the public right of way are subject to approval by the Division of Water and Sewer Utilities with the Improvement Plans. In the event of conflicting requirements between agencies, the developer agrees that a revision of this

6. Non-governmental users shall dedicate the floodplain areas to a Lot Owners Association in open space parcels. 17. This site is subject to the overall Quantum Frederick Project APFO (A266569 & PP266504) requirements for roads, water and sewer, this site is exempt from schools. The overall development is projected to generate 3317 am and 2877 pm weekday peak hour trips, as outlined in the traffic impact analysis (TIA) submitted by Wells & Associates, dated November 11,2021, and meets the threshold for APFO testing (1-20-30). The proposed development will require multiple mitigation measures to address traffic related issues. These mitigation measures will be constructed in a phased schedule as defined in the Letter of

Understanding associated with the project. 18. All signage and markings will be in accordance to Maryland MUTCD. 19. No buildings, structures, or impervious surfaces, and no activities requiring clearing or grading over 5,000 square feet will be permitted in waterbody buffers,

except for stormwater management facilities, structures and appurtenant conveyances; environmental restoration or mitigation projects; utilities; public and private roads; driveways; bikeways, and trails unless otherwise permitted per1-19-9.400.

20. The waterbody buffers shown on this plan were delineated based on Section 1-19-9.400(C) of the Frederick County Code (the waterbody buffer ordinance).

First, a minimum 100' buffer was delineated on each side of intermittent and perennial streams. Second, 175-foot cross-sections were taken at 50-foot intervals along each stream. The buffer was expanded to 150 feet along these cross sections when 60% of the cross-section contained slopes between 15%->25%. The buffer was expanded to 175 feet along these cross sections when 60% of the cross-section contained slopes 25% and greater. The buffer was adjusted to the top of the crest per the waterbody buffer ordinance when applicable. The streams shown on this plan are located outside of the Linganore Watershed Protection Area. After the cross-sections were taken the waterbody buffer was expanded to include wetlands and floodplains, including flooding soils, that extend outside of the calculated waterbody buffer area. 1. All easements necessary to provide public access/maintenance/etc will be recorded and referenced on the final plats.

23. MDE Permit numbers for gravity sewer construction: 202260706/22-NT-3094 & 202260907/22-NT-3124.

24 MDF NOI #MDRCK06AA

Fire & Rescue Notes:

1. Fire Department access roads shall be accessible during all types of veather and at all times.

2. Fire Department access roads shall be capable of supporting Fire apparatus at all times and be a minimum of 20 feet wide (with the exception of the 12'

wide access drive as approved on IP # PW273379). 3. Fire Department access shall be provided and maintained to all structures

undergoing construction, alteration, or demolition.
The access roadways shall provide a minimum turning radii of 40 to 45 feet. 5. Fire lanes shall be established by the Fire Marshall.

File #: SP22-04 A/P #: PW273866 Due Dates:

EASTALCO ALUMINUM COMPANY

SCALE: 1"=2000' TAX MAP: 94; PARCEL: 70 TAX ACCOUNT #01-000152 ADC MAP 4685

VICINITY MAP @ ADC - KAPPA MAP GROUP LLC **GIS INTEGRATED SOLUTIONS LLC 2014**

"I hereby certify that the p ordinances, COMAR 26." for Soil and Segment Cor	17.01, and 2011 Man	ned in accordance with loca land Standards and Specifi
NU/	00004	10/25/2022
MIV	29891	10/25/2022

I/We hereby certify that any clearing, grading, construction and/or development will be done pursuant to this plan and that any responsible personnel involved in the construction project will have a certificate of attendance at a Department of Natural Resources approved training program for the control of sediment and erosion before beginning the Project. Quantum Maryland, LLC A.D Robison Owner/Developer (Name & Title Printed)

(Signature) DISTURBED AREA QUANTITIES

I hereby certify that the estimated total amount of excavation and fill as shown on these plans has been computed to be 173 c.y. of excavation, 1,260 c.y. of fill and

the total area to be disturbed as shown on these plans has been determined to be 80,430 square feet or 1.85 acres. 02/16/2023

Registration Number Note: These figures are estimated quantities for Sediment Control purposes only,

i.e., Not for bidding purposes.

Dewberry*

Dewberry Engineers, Inc. 321 Ballenger Center Drive Frederick, MD 21703

documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland

License No. 29891 Expiration Date: 01/14/2024

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC

500 E 4TH STREET, SUITE 333 **AUSTIN, TX 78701** CONTACT: AD ROBISON PHONE: 530-417-7496

SCALE

No.	DATE	BY	Description

DRAWN BY DESIGNED B CHECKED BY

TITLE

PROJECT NO. 50151771

530-417-7496

Telephone

1 OF 37

3/1/2023 DISTRICT MANAGER REVIEWED FOR FREDERICK S.C.D. & MEETS TECHNICAL REQUIREMENTS

SCD APPROVAL FOR SEDIMENT & EROSION CONTROL IS CONTINGENT UPON ISSUANCE OF ALL APPLICABLE REGULATORY PERMITS

SHEET 30 E-005 SHEET 31 E-006 E-007 SHEET 32 E-008 SHEET 33 SHEET 34 E-009 SHEET 35 E-010 SHEET 36 E-011 SHEET 37 E-012

EX TOPOGRAPHY

EX PARCEL LINES

EX SOIL TYPE

EX SEWER

EX 100 YR FLOODPLAIN

EX EDGE OF PAVEMENT

PROP RIGHT-OF-WAY

PROP FORCE MAIN

SHEET INDEX

C-2

C-4A

WATER & SEWER PLANS & PROFILES

C-5

C-7

C-9

C-11

C-13

S-1

S-2

PM-2

PM-3

PM-4

PM-5

PM-6

MP-2

E-001

PROCESS MECHANICAL

EASEMENT PLAN

SHEET 14

SHEET 20

SHEET 21

SHEET 22

SHEET 23

SHEET 24

SHEET 25

ELECTRICAL

SHEET 26

DIMENSION, PAVING, & SIGNAGE PLANS & PROFILES

STORMWATER MANAGEMENT PLANS & PROFILES

DETAILS

C-3

SHEET 27 E-002 SITE PLAN SHEET 28 E-003 ELECTRICAL BUILDING PLAN VALVE VAULT & WET WELL PLANS E-004 SHEET 29 SINGLE LINE & RISER DIAGRAM PANELBOARD & FIXTURE SCHEDULES CONTROL ONE-LINE DIAGRAMS **ELEMENTARY CONTROL SCHEMATICS ELEMENTARY CONTROL SCHEMATICS** CONDUIT & WIRE SCHEDULES STANDARD DETAILS STANDARD DETAILS

SECTION **SECTION & DETAILS** DETAILS DETAILS DESIGN CRITERIA 1 MGD SPS PLANS AND SECTIONS MGD EQUIPMENT SCHEDULES LEGEND, ABBREVIATIONS & GENERAL NOTES

PUMP STATION ELECTRICAL ENCLOSURE PLANS & ELEVATIONS

COVER SHEET, VICINITY MAP & INDEX

SEDIMENT CONTROL NOTES & DETAILS

WATER & SEWER NOTES AND DETAILS

STREET TREE & LIGHTING PLANS

STREET TREE & LIGHTING NOTES & DETAILS

STRUCTURAL GENERAL NOTES & DETAILS

STORMWATER MANAGEMENT - DRAINAGE AREA MAP

STORMWATER MANAGEMENT PLANS - NOTES & DETAILS

SEDIMENT CONTROL PLANS

DIMENSION & PAVING PLAN

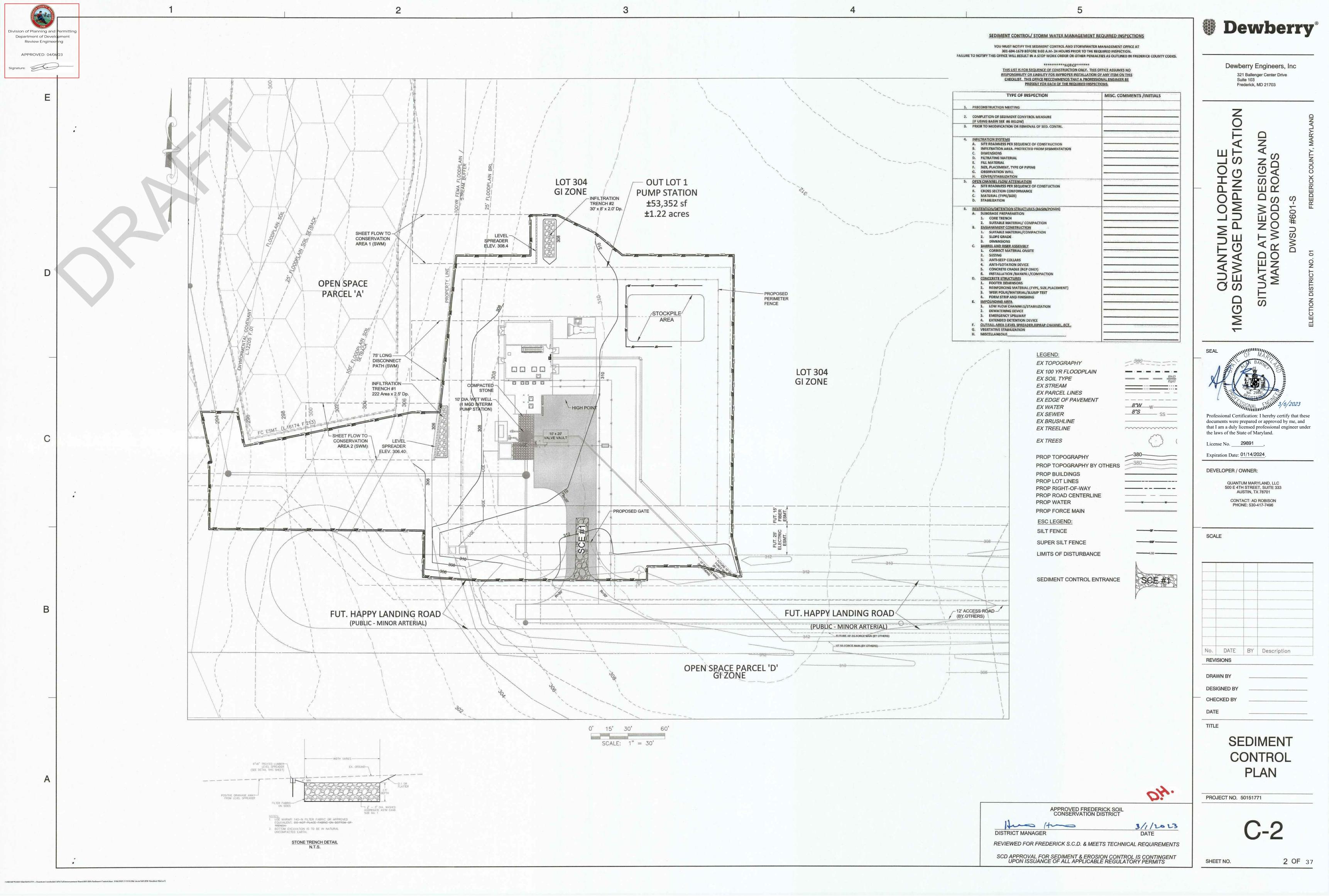
WATER & SEWER PLAN WATER & SEWER PROFILES

EASEMENT PLAN

INTENTIONALLY BLANK

STRUCTURAL SITE PLAN

LOWER & GROUND LEVEL PLANS



STOCKPILE NOTES

NO STOCKPILING ALLOWED ON ASPHALT.

2. ALL STOCKPILES LEFT AT THE END OF THE WEEK (7 DAYS)NEED TO BE STABILIZED UNTIL THE NEXT RE-DISTURBANCE.

GENERAL NOTE

DEPENDING ON SITE CONDITIONS, PHASING OR CONSTRUCTION SEQUENCING, AND STABILIZATION METHODS, ADDITIONAL SEDIMENT CONTROLS (OTHER THAN AS SHOWN HEREON) MAY BE REQUIRED BY THE INSPECTOR.

TEMPORARY SEEDING NOTES

GENERAL

1. SCOPE: PLANTING SHORT TERM VEGETATION TO STABILIZED, CLEARED OR GRADED AREAS SUBJECT TO EROSION FOR A PERIOD OF 14 DAYS OR MORE.

2. STANDARDS: TEMPORARY SEEDING SHALL CONFORM TO ALL REQUIREMENTS OF "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION SEDIMENT CONTROL" PUBLISHED JOINTLY BY WATER RESOURCES ADMINISTRATION, NATURAL RESOURCES CONSERVATION SERVICE, AND THE STATE SOIL CONSERVATION COMMITTEE.

3. SEDIMENT & EROSION CONTROL: ALL PERIMETER CONTROL MUST BE STABILIZED IN 3 DAYS, ALL INTERIOR CONTROLS MUST BE STABILIZED IN 7 DAYS.

SPECIFICATIONS

 A.) PRIOR TO SEEDING INSTALL ALL REQUIRED SEDIMENT AND EROSION CONTROL MEASURES. B.) FINAL GRADING NOT REQUIRED FOR TEMPORARY SEEDING.

A.) FERTILIZER SHALL BE APPLIED AT THE RATE OF 800 LBS/ACRES USING 10-10-10 OR EQUIVALENT B.) ACID SOILS SHALL BE LIMED.

3. SEEDBED PREPARATION: A.) SOIL SHALL BE LOOSENED TO A DEPTH OF 3 INCHES BY RAKING, DISKING, OR OTHER ACCEPTABLE MEANS PRIOR TO SEEDING.

4. SEEDING:

A.) SELECT A MIXTURE FROM TABLE 23, 25 OR 26 IN STANDARD

SPECIFICATIONS. B.) APPLY SEED UNIFORMLY WITH A CYCLONE SEEDER DRILL, CULTIPACKER OR HYDRO SEEDER.

5. MULCHING:

A.) MULCH SHALL BE APPLIED IMMEDIATELY AFTER SEEDING. MULCH MATERIALS AND APPLICATIONS SHALL CONFORM TO THE STANDARD SPECIFICATIONS.

PERMANENT SEEDING & SOD NOTES

GENERAL

1. SCOPE: PLANTING PERMANENT, LONG LIVED VEGETATIVE COVER ON GRADED OR CLEARED AREAS.

2. STANDARDS: PERMANENT SEEDING SHALL CONFORM TO ALL REQUIREMENTS OF "2011 MARYLAND" STANDARDS AND SPECIFICATIONS FOR SOIL EROSION SEDIMENT CONTROL" PUBLISHED JOINTLY BT WATER RESOURCES ADMINISTRATION, NATURAL RESOURCES CONSERVATION SERVICE, AND THE STATE SOIL CONSERVATION COMMITTEE.

SPECIFICATIONS

1. SITE PREPARATIONS:

A.) PRIOR TO SEEDING INSTALL ALL REQUIRED SEDIMENT AND EROSION CONTROL MEASURES. B.) FINAL GRADING NOT REQUIRED FOR TEMPORARY SEEDING.

2. SOIL AMENDMENTS:

A.) FERTILIZER SHALL BE APPLIED AT THE RATE OF 1000 LBS/ACRES USING 10-10-10 OR EQUIVALENT. B.) ACID SOILS SHALL BE LIMED.

3. SEEDBED PREPARATION:

A.) SOIL SHALL BE LOOSENED TO A DEPTH OF 3 INCHES BY RAKING, DISKING, OR OTHER ACCEPTABLE MEANS PRIOR TO SEEDING. B.) APPLY SEED UNIFORMLY WITH A CYCLONE SEEDER DRILL, CULTIPACKER OR HYDRO SEEDER (SLURRY

INCLUDES SEED AND FERTILIZER ON A FIRM, MOIST SEEDBED.) MAXIMUM SEEDING DEPTH SHOULD BE 1/4" INCH ON CLAYEY SOILS AND 1/2 INCH ON SANDY SOILS, WHEN USING OTHER THAN HYDROSEEDER METHOD OF APPLICATION. NOTE: IF HYDROSEEDING IS USED AND THE SEED AND FERTILIZER IS MIXED, THEY WILL BE MIXED ON SITE AND THE SEEDING SHALL BE IMMEDIATE WITHOUT INTERRUPTION.

PERMANENT STABILIZATION WITH SOD

1. ALL SPECIFICATIONS, SITE PREPARATION, INSTALLATION AND MAINTENANCE OF SOD FOR PERMANENT, LONG LIVED VEGETATIVE COVER SHALL CONFORM TO SECTION B-4-5.B OF "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION SEDIMENT CONTROL" PUBLISHED JOINTLY BY WATER RESOURCES ADMINISTRATION, NATURAL RESOURCES CONSERVATION

STANDARD STABILIZATION NOTE

FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION MUST BE COMPLETED WITHIN:

A.) THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND

B.) SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON PROJECT SITE NOT UNDER ACTIVE GRADING.

FOR UTILITY WORK & OFF-SITE UTILITY WORK

- DISTURBANCE OUTSIDE OF THE LOD CANNOT EXCEED 5,000 SQUARE FEET.
- PLACE ALL EXCAVATED MATERIAL ON THE HIGH SIDE OF THE TRENCH.
- 3. ONLY DO AS MUCH WORK AS CAN BE DONE ON ONE DAY SO BACKFILLING, FINAL GRADING, SEEDING AND MULCHING CAN OCCUR.
- 4. ANY SEDIMENT CONTROL MEASURES DISTURBED BY CONSTRUCTION SHALL BE REPAIRED THE SAME DAY.

FOR SECONDARY UTILITY WORK

- ALL DISTURBANCE FROM SECONDARY UTILITIES SUCH AS PHONE, CABLE, ELECTRICAL CABLE, T.V. CABLE, ETC. WILL BE SUBCONTRACTORS RESPONSIBILITY TO BRING WORK AREA BACK TO GRADE LEVEL THAT WAS EXISTING AND SEED AND MULCH ANY DISTURBANCE FROM INSTALLATION OF LINES OR CONDUITS.
- 2. SUBCONTRACTORS WILL BE RESPONSIBLE FOR RE-INSTALLING OR REPAIRING ANY SILT FENCE OR SEDIMENT CONTROLS THAT WERE EXISTING TO MAINTAIN PROPER SEDIMENT CONTROL.

EROSION AND SEDIMENT CONTROL NOTES

- 1. ALL EROSION / SEDIMENT CONTROL MEASURES SHALL COMPLY WITH THE LATEST VERSION OF THE MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL PUBLISHED BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT, WATER MANAGEMENT ADMINISTRATION IN ASSOCIATION WITH THE MARYLAND ASSOCIATION OF SOIL CONSERVATION DISTRICTS AND AS APPROVED BY FREDERICK COUNTY. (REFERENCED HEREIN AS THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS)
- 2. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN CONTINUOUS COMPLIANCE WITH THE LATEST VERSION OF THE MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
- 3. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AT THE INITIATION OF GRADING.
- 4. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTRUBANCE, PERMANENT OR TEMPORARY STABILIZATION MUST BE COMPLETED WITHIN:
- 4.1. THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN THREE HORIZONTAL TO ONE VERTICAL (3:1); AND
- 4.2. SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING. THIS DOES NOT APPLY TO THOSE AREAS THAT ARE ACTIVELY BEING USED FOR MATERIAL STORAGE OR FOR THOSE AREAS ON WHICH ACTUAL CONSTRUCTION ACTIVITIES ARE CURRENTLY BEING PERFORMED. MAINTENANCE SHALL BE PERFORMED AS NECESSARY TO ENSURE THAT STABILIZED AREAS CONTINUOUSLY MEET THE APPROPRIATE REQUIREMENTS OF THE LATEST VERSION OF THE MARYLAND STANDARDS AND SPECIFICATIONS.
- 5. ALL EARTH BERMS AND SEDIMENT EMBANKMENTS ARE TO BE SEEDED AND MULCHED WITHIN THREE (3) CALENDAR DAYS AFTER GRADING, ALL SOIL STOCKPILES NOT SUBJECT TO ACTIVE GRADING ARE TO BE SEEDED AND MULCHED WITHIN THREE (3) CALENDAR DAYS.
- 6. ALL UTILITIES, SUCH AS STORM DRAIN, PUBLIC WATER, SANITARY SEWER, ELECTRIC POWER, TELEPHONE, CABLE AND GAS LINES, THAT ARE NOT IN PAVED AREAS AND ARE NOT UNDERGOING ACTIVE GRADING SHALL BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 3 DAYS OF INITIAL DISTURBANCE.
- NO SLOPE SHALL BE GREATER THAN TWO HORIZONTAL TO ONE VERTICAL (2:1).
- 8. AFTER FINE GRADING, ALL DISTURBED AREAS ARE TO BE PERMANENTLY SEEDED AND MULCHED IN ACCORDANCE WITH THE REQUIREMENTS OF THE LATEST VERSION OF THE MARYLAND STANDARDS AND SPECIFICATIONS.
- 9. FOR SPECIFICATIONS OF PERMANENT OR TEMPORARY STABILIZATION, SEE SECTION B-4-4 AND B-4-5 OF THE LATEST EDITION OF THE MARYLAND STANDARDS AND SPECIFICATIONS.
- 10. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL SEDIMENT AND EROSION CONTROL MEASURES UNTIL THE DISTURBED AREAS ARE PERMANENTLY STABILIZED.
- 11. THE OWNER/DEVELOPER OR THEIR DESIGNATE IS RESPONSIBLE FOR CONDUCTING ROUTINE INSPECTIONS AND REQUIRED MAINTENANCE. THE SITE AND CONTROLS SHOULD BE INSPECTED WEEKLY AND THE NEXT DAY AFTER EACH RAIN EVENT**. ANY ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISPOSED OF IN A SUITABLE AREA AND SHALL BE TEMPORARILY OR PERMANENTLY STABILIZED.
- 12. ALL DISTURBED AREAS THAT DO NOT DRAIN TO AN APPROVED SEDIMENT CONTROL DEVISE MUST BE STABILIZED THE SAME DAY.

**ANY PROJECT THAT HAS A STATE ISSUED N.O.I. PERMIT MUST DOCUMENT EACH INSPECTION AND MAINTAIN AN INSPECTION LOG (PLEASE SEE THE N.O.I. FOR DETAILS.)

SEQUENCE OF CONSTRUCTION

- OBTAIN ALL REQUIRED PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES. CONTRACTOR SHALL CONTACT MISS UTILITY AT 800-257-7777, FREDERICK COUNTY ENVIRONMENTAL COMPLIANCE SECTION AT 301-600-3507, TO SET UP A PRE-CONSTRUCTION MEETING AT LEAST FIVE (5) DAYS PRIOR TO BEGINNING CONSTRUCTION. THE LIMITS OF DISTURBANCE SHALL BE STAKED IN THE FIELD PRIOR TO THE PRE-CONSTRUCTION MEETING. ADDITIONAL SEDIMENT CONTROL MEASURES MAY BE REQUIRED AS A RESULT OF THE PRE-CONSTRUCTION MEETING. STOCKPILE AND/OR STAGING LOCATIONS TO BE DISCUSSED DURING THE PRE-CONSTRUCTION MEETING.
- NOI MUST BE OBTAINED AND FURNISHABLE PRIOR TO STARTING OF ANY CONSTRUCTION TO SOIL CONSERVATION DISTRICT (SCD).
- CONTRACTOR SHALL HAVE ALL LIMITS OF DISTURBANCE, TREE SAVE MEASURES, AND ALL SEDIMENT CONTROL MEASURES STAKED OUT PRIOR TO THE PRE-CONSTRUCTION MEETING.
- 4. INSTALL THE STABILIZED CONSTRUCTION ENTRANCE AS SHOWN ON THE PLAN.
- 5. UPON INSPECTOR'S APPROVAL, CLEAR AND GRUB AS NECESSARY FOR THE INSTALLATION OF THE SEDIMENT CONTROL MEASURES. INSTALL PERIMETER CONTROLS - SUPER SILT FENCE. PROVIDE TEMPORARY STABILIZATION FOR ALL DISTURBED AREAS; SEE TEMPORARY STABILIZATION NOTES, THIS SHEET.
- 6. STABILIZE ALL DISTURBED AREAS. PERMANENTLY STABILIZE ALL DISTURBED AREAS OF THE SITE; SEE PERMANENT STABILIZATION NOTES, THIS SHEET.
- 7. WITH INSPECTOR'S APPROVAL AND NOTICE TO PROCEED GRANTED, COMPLETE ALL REMAINING CLEARING AND GRUBBING WITHIN THE LOD AND BEGIN MASS GRADING EFFORTS.
- 8. WITH INSPECTOR'S APPROVAL AND NOTICE TO PROCEED GRANTED, BEGIN INSTALLATION OF PROPOSED WATER AND SEWER. BEGIN PUMP STATION CONSTRUCTION CONCURRENTLY WITH THE UTILITIES; IF DESIRED.
- INSTALL PAVING ON APPROVED SUB-GRADE.
- ONCE ALL CONTRIBUTING DRAINAGE AREAS ARE PERMANENTLY STABILIZED (SEE PERMANENT SEEDING AND SOD NOTES, THIS SHEET), BEGIN INSTALLATION OF THE PROPOSED STORMWATER MANAGEMENT FACILITIES (INFILTRATION TRENCHES AND LEVEL SPREADERS).
- 11. UPON COMPLETION OF THE STORMWATER MANAGEMENT FACILITY INSTALLATIONS, NOTIFY THE SEDIMENT CONTROL INSPECTOR AND OBTAIN PERMISSION TO REMOVE THE REMAINING SEDIMENT CONTROL MEASURES. PERMANENTLY STABILIZE ALL DISTURBED AREAS FOR THE SITE TO BE DEEMED COMPLETE.

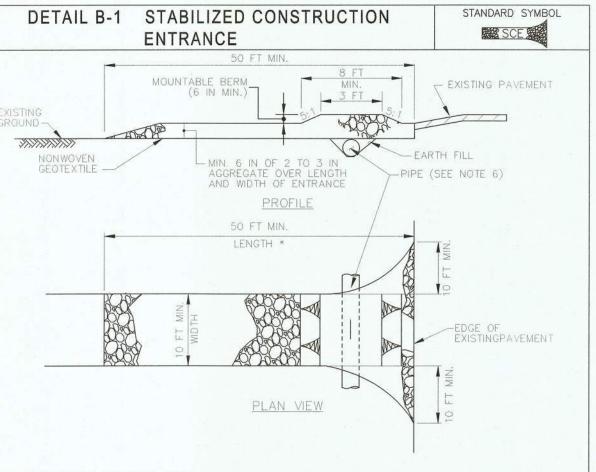
FOR SITES 1.0 ACRE OR MORE, THE FOLLOWING ARE REQUIRED:

- MARYLAND DEPARTMENT OF THE ENVIRONMENT, GENERAL PERMIT FOR STORMWATER WITH A CONSTRUCTION ACTIVITY, NPDES PERMIT NUMBER MDR10, STATE DISCHARGE PERMIT NUMBER
- 09GP, OR AN INDIVIDUAL PERMIT 2. THE MARYLAND DEPARTMENT OF THE ENVIRONMENT (GENERAL / INDIVIDUAL PERMIT - NOTICE OF INTENT - NOI) APPLICATION AND PERMIT SHALL BE POSTED AND/ OR AVAILABLE ON-SITE AT
- 3. DURING CONSTRUCTION, ALL SOIL EROSION AND SEDIMENT CONTROL PRACTICES (BMP'S) SHALL BE INSPECTED AND RECORDED ON THE "STANDARD INSPECTION FORM, GENERAL PERMIT FOR STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITY" PER THE MARYLAND DEPARTMENT OF THE ENVIRONMENT (GENERAL/ INDIVIDUAL PERMIT- NOTICE OF INTENT - NOI). 4. ONCE ALL PORTIONS OF A SITE HAVE BEEN PERMANENTLY STABILIZED, AND ALL STORMWATER

DISCHARGES FROM CONSTRUCTION SITES THAT ARE AUTHORIZED BY THE PERMIT ARE

ENVIRONMENT, GENERAL/ INDIVIDUAL PERMIT- NOTICE OF TERMINATION- NOT.

ELIMINATED, THE AUTHORIZED PERMITTEE SHALL SUBMIT THE MARYLAND DEPARTMENT OF THE



CONSTRUCTION SPECIFICATIONS

PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN, VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.

- PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE, PROVIDE PIPE A SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT
- PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS. . PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOU REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
- MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT, ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

36 IN MIN. FENCE

CROSS SECTION

JOINING TWO ADJACENT SILT

FENCE SECTIONS (TOP VIEW)

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

WOVEN SLIT FILM ---

EMBED GEOTEXTILE

STAPLE-

U.S. DEPARTMENT OF AGRICULTURE

IATURAL RESOURCES CONSERVATION SERVICE

STEP 3

MIN. OF 8 IN VERTICALLY

INTO THE GROUND, BACKFIL

BOTH SIDES OF GEOTEXTILE

YELLINE.

16 IN MIN. HEIGHT OF

FENCE POST 18 IN MIN.

TWIST POSTS TOGETHER

STAPLE -

---STAPLE

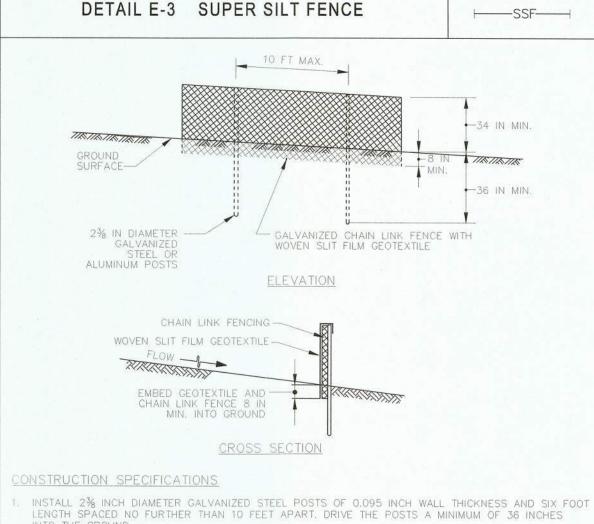
MARYLAND DEPARTMENT OF ENVIRONMENT

WATER MANAGEMENT ADMINISTRATION

▼ WOVEN SLIT FILM GEOTEXTILE

U.S. DEPARTMENT OF AGRICULTURE MARYLAND DEPARTMENT OF ENVIRONMENT U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE WATER MANAGEMENT ADMINISTRATION ATURAL RESOURCES CONSERVATION SERVICE STANDARD SYMBOL DETAIL E-1 SILT FENCE DETAIL E-1 SILT FENCE _36 IN MIN. FENCE POST LENGTH DRIVEN MIN. 16 IN INTO GROUND ENTER TO CENTER CONSTRUCTION SPECIFICATIONS "USE WOOD POSTS 11/4 X 11/4 ± 1/6 INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.

- USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND . PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE
- EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN
- ACCORDANCE WITH THIS DETAIL. 7. EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS
- REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS,



- FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2% INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
- FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
- FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS. EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT

WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES,

45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT

GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.

REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL MARYLAND DEPARTMENT OF ENVIRONMENT

WATER MANAGEMENT ADMINISTRATION STANDARD SYMBOL -----SF----rofessional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART. the laws of the State of Maryland.

STANDARD SYMBOL

License No. ____29891 Expiration Date: 01/14/2024

7

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC 500 E 4TH STREET, SUITE 333 **AUSTIN, TX 78701** CONTACT: AD ROBISON

PHONE: 530-417-7496

Dewberry Engineers, Inc.

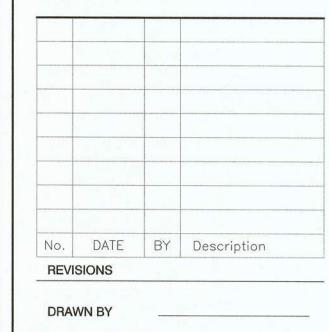
321 Ballenger Center Drive

S

Frederick, MD 21703

Suite 103

SCALE



SEDIMENT

CONTROL NOTES

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL MARYLAND DEPARTMENT OF ENVIRONMENT ATURAL RESOURCES CONSERVATION SERVICE WATER MANAGEMENT ADMINISTRATION

& DETAILS

PROJECT NO. 50151771

DESIGNED BY

CHECKED B

TITLE

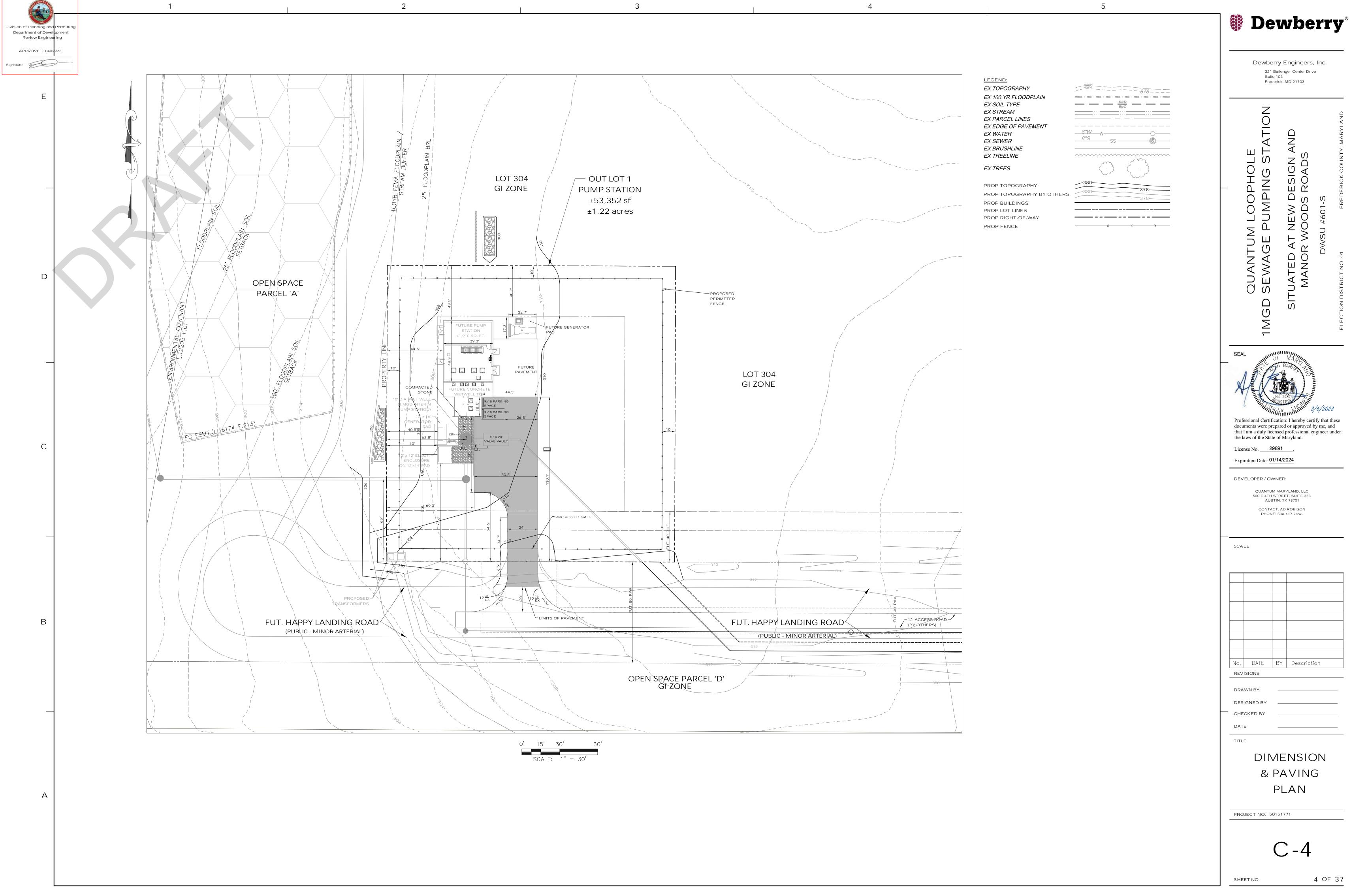
SHEET NO.

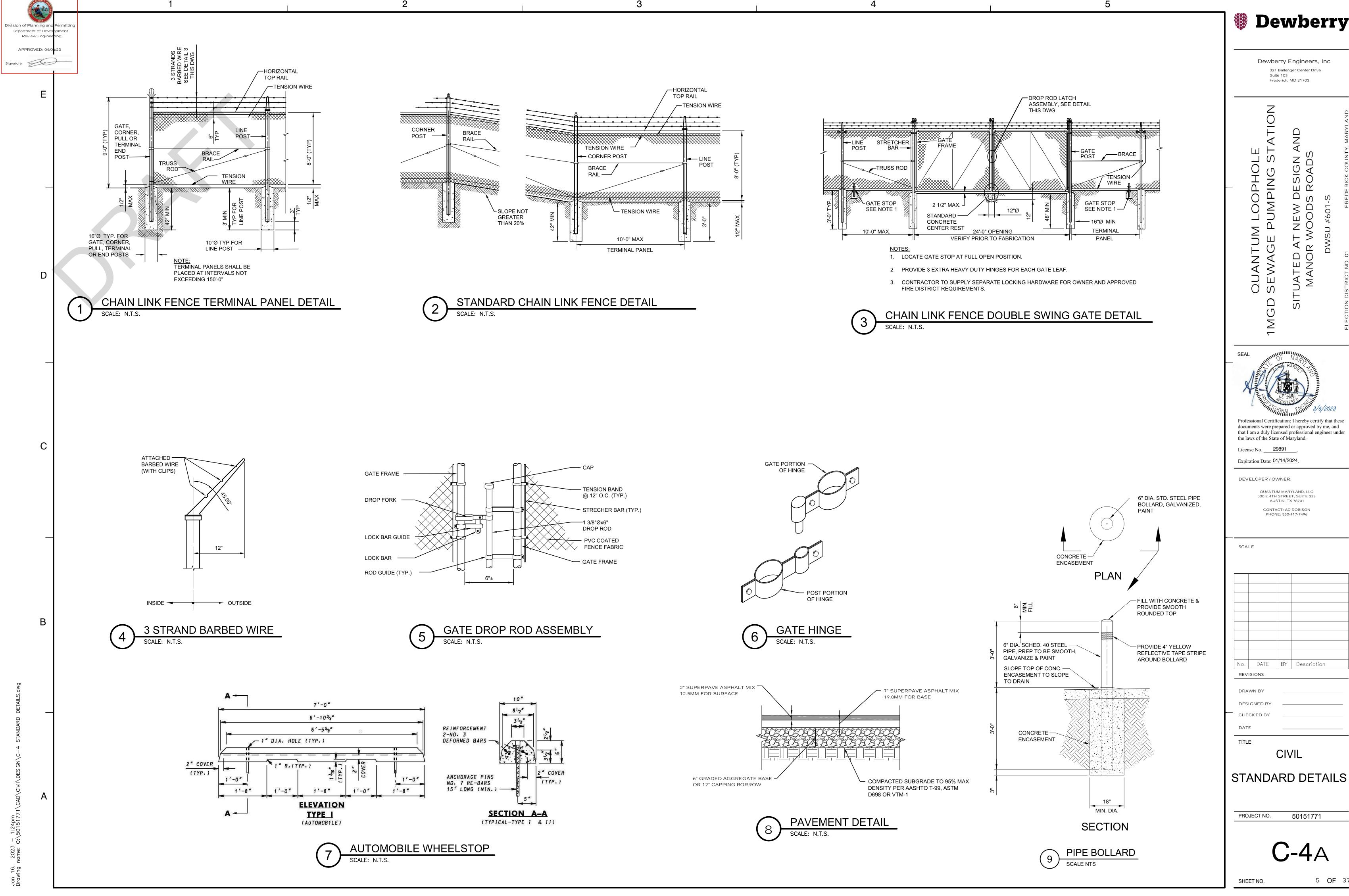
3/1/2023

REVIEWED FOR FREDERICK S.C.D. & MEETS TECHNICAL REQUIREMENTS SCD APPROVAL FOR SEDIMENT & EROSION CONTROL IS CONTINGENT UPON ISSUANCE OF ALL APPLICABLE REGULATORY PERMITS

DISTRICT MANAGER

1 how 14mo





Dewberry®

Dewberry Engineers, Inc 321 Ballenger Center Drive

Frederick, MD 21703

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

Expiration Date: 01/14/2024.

DEVELOPER / OWNER:

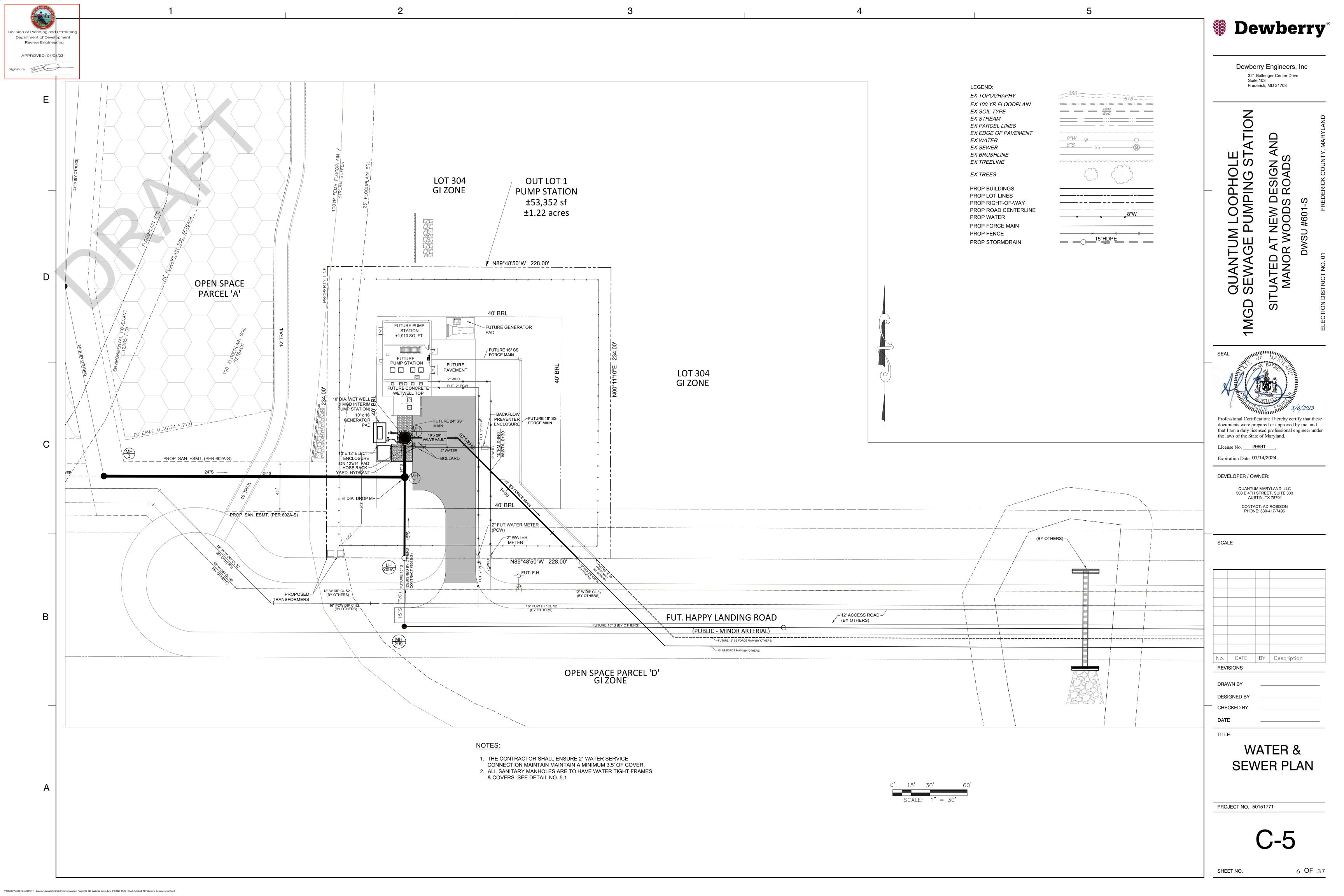
QUANTUM MARYLAND, LLC 500 E 4TH STREET, SUITE 333 AUSTIN, TX 78701

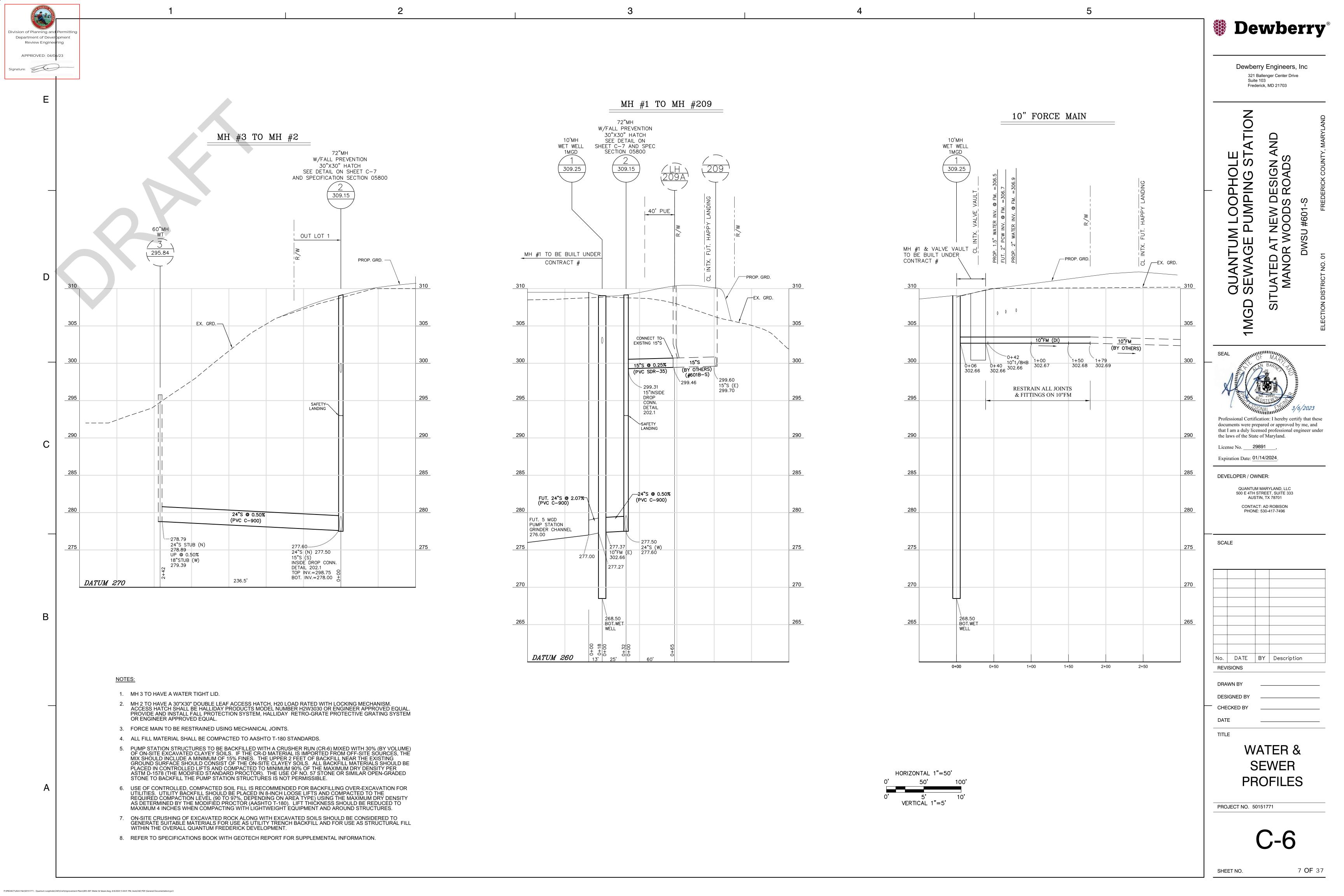
CONTACT: AD ROBISON PHONE: 530-417-7496

No. DATE BY Description

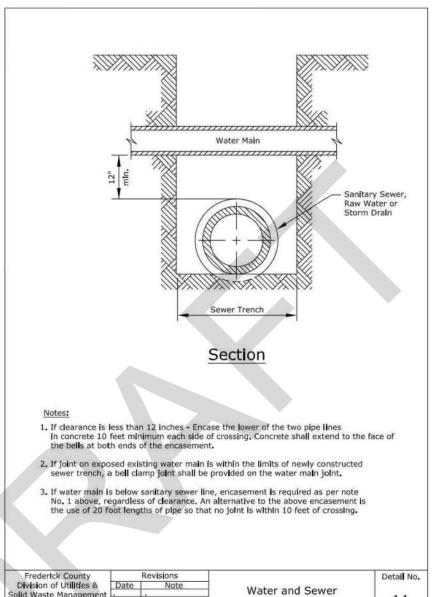
CIVIL

50151771









ngineering & Planning

Plastic Covered Steel

Manhole Step

Exterior shall be painted with Bitumastic

Standard MH frame & cover

deep on a 34" dia

"O" ring joint flexible

gasket shall conform w/ A.S.T.M. designatior

-361 for rubber type

48" manhole riser pipe

ft., 2 ft., 3 ft. &

monolithic base

Extended base

slab is optional

3 lifting eyes in bas

section optional (1/2

Fill space with approved

recommended by mfg

bolt circle. —

Steel dowels from manhole

All joints to be "Chem" patched on interior and exterior.

Line Crossing

23/32" dia "O" ring

7/16

Joint detail only. Reinforcing

JOINT DESIGN

Bring to grade per Detail 5.3

sections. Rubber plug and

mortar to seal hole. Exterio

accordance with A.S.T.M. C-478. shall be manufactured in

Channels shall be formed in accordance with Detail No 203.1 with brick and conc

per Md. mix No.1 with GF

Concrete shall be made

-Standard opening for pip

with type II cement.

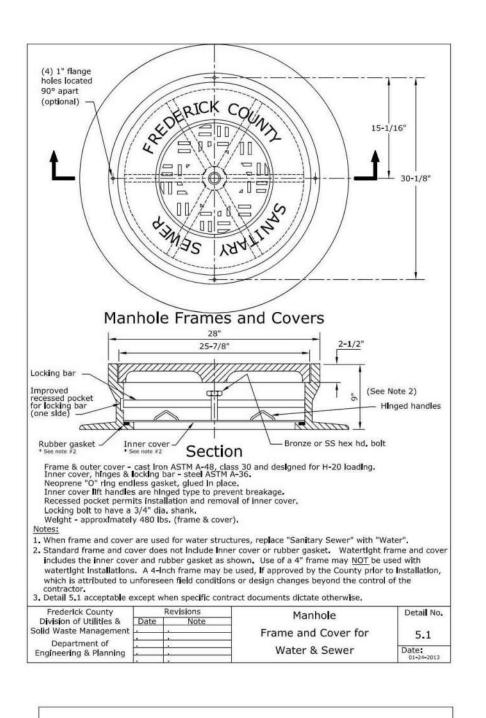
greater than O.D.. Fo

8" pipe larger than 24" use 6 ft. diameter manholes.

Set Manhole on #57

aggregate and type II

recast concrete MH sections



Aluminum bird screen

non-shrink

100 yr. flood elevation or at

debris barricade for flood conditions

lead or plastic ancho

Enlarged Sectional

View

Sewer Manhole

r 1/2" x 3" bolt se

Bring to grade per Detail No. 5.3

Wood Block Treated-Rate

Detail No.

207.1

Pipe Spring

For pay widths and formulas see Detail No. 2.3

Sewer pipe shall be installed from spigot to bel

in direction with flow.

Division of Utilities & Date Note

Frederick County

Engineering & Planning

4" schedule 40 galv.

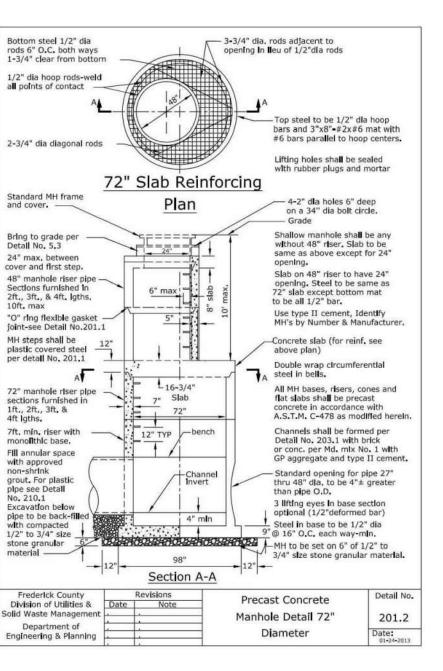
steel pipe (N.P.T.)

per Detail No. 5.1 -

12" mir

Frederick County Revisions
Division of Utilities & Date Note

Engineering & Planning



Maximum payment width (P.W.) = Pipe Barrel O.D. + 2E

Nominal Pipe size

 Place backfill and compact to density required in the

Standard Specification

with a mechanical

Select backfill shall

ompacted with a

by the Standard

and tamper to the

Specifications, or cov

stone in lieu of hand

material shall be

place to a point 6

all backfill shall meet requirements of General

2.1

If ductile iron pipe watermain, stone backfill not required.

Typical Trench for Sewer

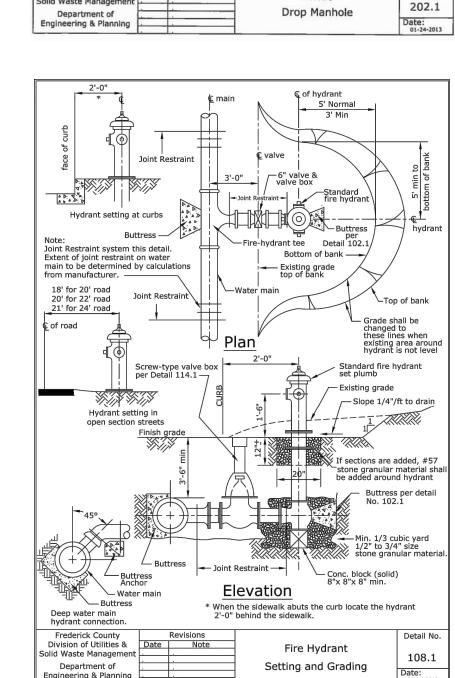
or Water Lines

tamper, or as require by the approved pern

6" to 24"

27" to 36"

39" to 72"



48" diameter Manhole may be used with one (1) 8" inside drop.

2. 72" diameter Manhole required when two (2) or more inside drop

3. Drop pipe dia. same as incoming pipe dia. (up to 8"Ø), for larger pipe downsize

per standards

"RELINER" (or equal) inside drop bowl

- SDR-35 P.V.C. drop pipe sections,

2' to 4' down from influent pipe,

Stainless steel strap (1" wide min.)

All drops require a 90° sweep fitting

at the bottom of the drop to aid in flow

Soffit to match where possible

and stainless steel anchor bolts

two (2) minimum required

ermediate joint (no gasket) placed

secured with stainless

steel fasteners

to allow for rotation

bell section facing up.

Influent pipe

Max incoming pipe

Type II cement

Frederick County

Solid Waste Manageme

Division of Utilities & Date Note

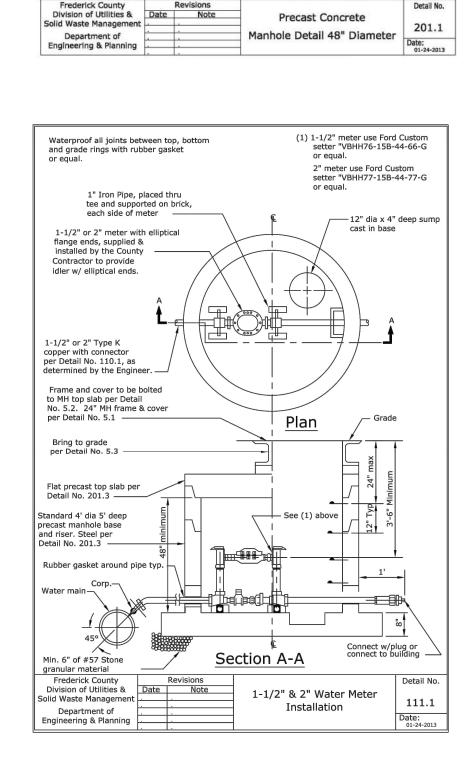
or brick fill to 0.8

between PVC pipe and

concrete and brick —

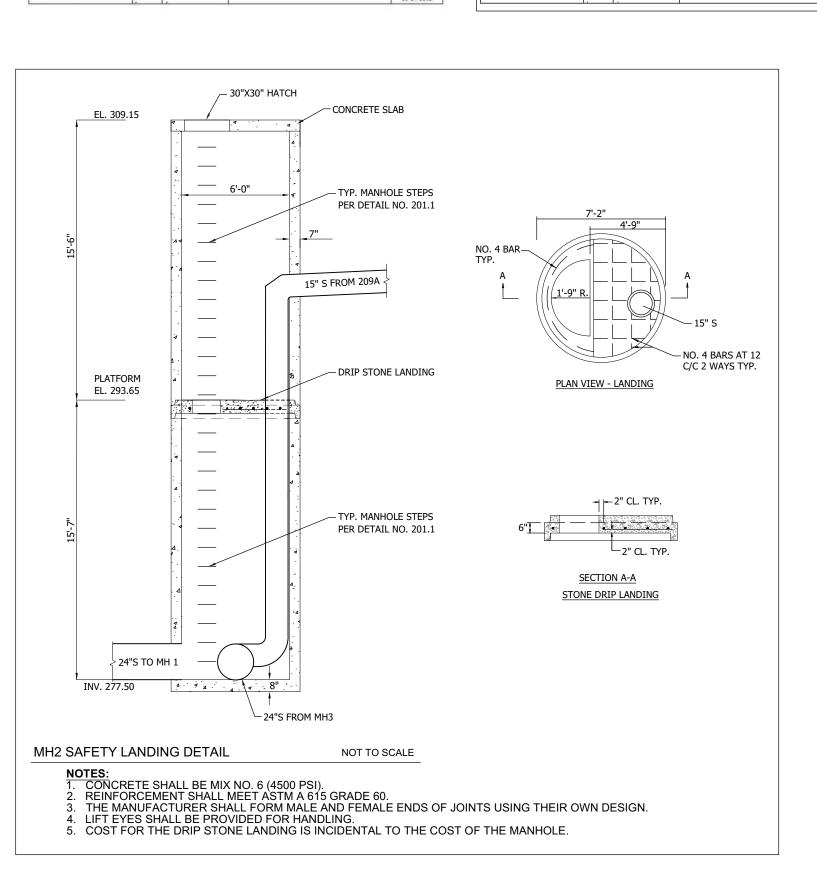
Precast manhole

slope of 5%



Manhole Section/Elevation

48" MH shall be used with 24" and smaller pipe at a max. depth of 20 feet (Top of rim to invert)



Quantum Frederick - Proposed Sewer Pump Station Report of Geotechnical Exploration March 3, 2023 GTA Project No. 31201536 SUMMARY OF FREDERICK COUNTY TRENCH BACKFILL REQUIREMENTS*

Area Designation/Description*	Material Requirements	Max. Stone Size	Minimum, Max. Dry Density	Compaction and Moisture Requirements and other requirements
Pipe Embedment Zone				
Bedding/haunches (to spring line)	No. 57 Stone	N/A	N/A	Wrap No.57 stone with geotextile, required in
Initial Backfill (spring line to 6" to 12" above the pipe)	No. 57 Stone allowed in lieu of Select Fill; required in Wet areas	N/A	N/A	Type IV and wet areas
	Select Fill allowed in non-wet areas	1 in.	100 PCF	See below
Type I Area – Paved areas, public right of ways and areas within five feet of structures.				
Initial Backfill above pipe springline to 2 feet above pipe	No. 57 Stone, or Select Fill	1 in.	100 PCF	92% per T-180, +/-2% of
Above Pipe Embedment Zone to 12" below final subgrade	Select Fill, Well Graded, <25% retained on #4 Sieve	3.99 in.	100 PCF	Optimum moisture 92% per T-180, +/- 2% of Optimum moisture
Top 12" of subgrade	Select Fill, Well Graded, <25% retained on #4 Sieve, LL<40, PI<15	3.0 in.	105 PCF	97% per T-180, +/-2% of Optimum moisture
Type II - Unimproved areas and Type III - Nonpaved improved areas				
Above Pipe Embedment Zone	Select Fill, Well Graded, <25% retained on #4 Sieve	3.99 in.	100 PCF	90% per T-180
Type IV -Wetlands or wetland buffers				
Above Pipe Embedment Zone	Excavated native soils including organic matter free of deleterious materials	3.99 in.	N/A	Place and compact in 12" loose lifts**

* This is a general summary of the County requirements. Refer to the County Specifications for additional * Compaction to 90% per T-180 should be considered and is recommended by GTA to meet the County N/A - Not applicable or specified; LL= Liquid Limit, PI = Plasticity Index.

- UTILITY BEDDING AND INITIAL BACKFILL EXTENDING TO A MINIMUM OF 12" ABOVE THE TOP OF THE PIPE SHOULD CONSIST OF NO. 57 CRUSHED STONE. DUE TO WET CONDITIONS, GTA RECOMMENDS THAT STONE SHOULD BE WRAPPED IN A HIGH STRENGTH, NON-WOVEN GEOTEXTILE. SUCH AS MIRAFI 1100N OR EQUIVALENT.
- 2. REFER TO SPECIFICATIONS BOOK WITH GEOTECH REPORT FOR

SUPPLEMENTAL INFORMATION.

WATER AND SEWER NOTES

- 1. ALL SEWER PIPE DEEPER THAN 14 FEET TO BE PVC C-900, ALL OTHER SEWER PIPE TO BE PVC SDR35 PER FREDERICK COUNTY STANDARD
- 2. ALL 10" FORCE MAIN TO BE DUCTILE IRON CL.52 -DOUBLE CEMENT LINED.
- 3. ALL WATER SERVICE CONNECTIONS TO BE 2" TYPE "K" COPPER TUBING. CONFORM TO STANDARD DETAIL 110.4 UNLESS OTHERWISE NOTED ON THIS PLAN. WATER SERVICE METERS TO BE SET 1'-0" INSIDE PROPERTY LINE OR EASEMENT LINE.
- 4. ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS UNLESS OTHERWISE INDICATED.
- 5. DEVELOPER SHALL SET ALL PROPERTY PIPES AND C/L STATIONS NECESSARY TO STAKE OUT THIS CONSTRUCTION.
- 6. ALL WATER AND SEWER CONSTRUCTION SHALL BE IN ACCORDANCE WITH FREDERICK COUNTY (DUSWM) GENERAL CONDITIONS AND STANDARD SPECIFICATIONS AND DETAILS FOR WATER MAINS, SANITARY SEWERS AND RELATED STRUCŤURES, SPECIAL PROVISIONS AND AMENDMENTS THERETO. FOR DETAILS NOT SHOWN ON THE CONTRACT DRAWINGS, SEE FREDERICK COUNTY (DUSWM) STANDARD DETAILS.
- 7. THE CONTRACTOR SHALL NOT TAP OR PENETRATE EXISTING WATER AND/ OR SEWER MAINS WITHOUT APPROVAL FROM FREDERICK COUNTY DIVISION OF UTILITIES AND SOLID WASTE MANAGEMENT (DSWU).
- 8. THE CONTRACTOR SHALL NOT OPERATE VALVES ON EXISTING COUNTY OWNED MAINS.
- 9. THE CONTRACTOR IS RESPONSIBLE TO AVOID THE SPILLAGE OF RAW SEWAGE. THE CONTRACTOR SHALL FURNISH NECESSARY EQUIPMENT (SEWER PLUGGING, PUMPING, CONTAINMENT, ETC.) TO PREVENT SPILLAGE.
- 10. CONTRACTOR TO ASSUME ALL RESPONSIBILITY IN VERIFYING LOCATIONS AND ELEVATIONS OF ALL EXISTING UNDERGROUND UTILITIES IN THE VICINITY OF THIS CONSTRUCTION. THE CONTRACTOR SHALL LOCATE EXISTING UTILITIES A MINIMUM OF TWO WEEKS IN ADVANCE OF
- CONSTRUCTION OPERATIONS IN THE VICINITY OF PROPOSED UTILITIES AND AT HIS OWN EXPENSE. 11. EXISTING UTILITIES ARE SHOWN FROM BEST AVAILABLE RECORDS. THE CONTRACTOR SHALL TEST PIT IN THE AREA OF KNOWN UTILITIES TO VERIFY SIZE, ELEVATION, LOCATION, AND TYPE PRIOR TO PERFORMING ANY WORK. ANY UTILITY, WHETHER SHOWN OR NOT, THAT IS DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED IMMEDIATELY AT NO EXPENSE TO THE OWNER SHOULD THE CONTRACTOR DISCOVER

DISCREPANCIES BETWEEN THE PLANS AND FIELD CONDITIONS. THE OWNER/ENGINEER IS TO BE NOTIFIED IMMEDIATELY. SHOULD THE CONTRACTOR MAKE FIELD CORRECTIONS OR ADJUSTMENTS WITHOUT THE AUTHORIZATION OF THE OWNER, THEN THE CONTRACTOR

- ASSUMES THE RESPONSIBILITY FOR SAID CORRECTIONS OR ADJUSTMENTS. 12. CLEAR ALL UTILITIES BY A MINI MUM OF 1'-0" VERTICALLY. CLEAR ALL POLES BY 7'-0" HORIZONTALLY OR TUNNEL AS REQUIRED. COST FOR TUNNELING OR BRACING AT POLES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR WATER & SEWER CONSTRUCTION.
- 13. ANY NECESSARY ADJUSTMENTS TO EXISTING MANHOLES, VALVE BOXES, ETC., ARE TO BE DONE SO BY THE CONTRACTOR THE CONTRACTOR IS RESPONSIBLE FOR REMOVING AND REPLACING ANY EXÍSTING FENCES, DRIVEWAYS, SIGNS, DRAINAGE PIPES, MAILBOXES, SHRUBS, TREES, "DAMAGED OR REMOVED DURING CONSTRUCTION. ALL DISTURBED AREAS SHALL BE RETURNED TO THEIR ÓRIGINAL CONDITION ÓR
- 14. THE CONTRACTOR SHALL NOTIFY MISS UTILITY (1-800-257-7777) 5 DAYS PRIOR TO START OF CONSTRUCTION.
- 15. ALL MATERIAL STOCKPILES LEFT AT THE END OF EACH WORK DAY REQUIRE STABILIZATION UNTIL THE NEXT RE-DISTURBANCE.
- 16. CONTRACTOR SHALL REPAIR/REPLACE ANY DAMAGED SEDIMENT CONTROL DEVICES DURING THE SAME WORKING DAY
- 17. MAINTAIN A MINIMUM OF 10'-0" HORIZONTAL CLEARANCE BETWEEN WATER AND SEWER MAINS, AND 5'-0" HORIZONTAL BETWEEN ALL OTHER
- 18. FOR DETAILS NOT SHOWN ON THE CONTRACT DRAWINGS, SEE FREDERICK COUNTY STANDARD DETAILS
- 19. FOR MATERIALS AND CONSTRUCTION METHODS, USE FREDERICK COUNTY STANDARD SPECIFICATIONS OR CONTRACT DOCUMENTS.
- 20. DURING PUMPING OPERATION, NO WATER WILL BE DISCHARGED DIRECTLY ACROSS THE GROUND OR INTO ANY EXISTING BODY OF WATER OR STREAM, WITHOUT FIRST BEING PUMPED TO AN APPROVED TEMPORARY SEDIMENT TRAP/DESILTING STRUCTURE. SEE SCD APPROVED SEDIMENT CONTROL PLAN.
- 21. FOR REQUIRED SEDIMENT CONTROL MEASURES SEE SCD APPROVED SEDIMENT CONTROL PLAN. 22. ALL VALVES SPECIFIED MUST BE RESILIENT SEAT GATE VALVES. MINIMUM DISTANCE BETWEEN VALVE AND TEE OR CROSS IS 18 INCHES.
- 23. THE DEVELOPER SHALL ROUGH GRADE TO WLTH-IN ONE HALF FOOT OF FINISHED SUB-GRADE IN AREAS OF WATER AND SEWER INSTALLATION PRIOR TO STARTING ANY TRENCHING WORK FOR THE WATER AND SEWER LINES.
- 24. OWNER/ DEVELOPER/ CONTRACTOR RESPONSIBILITIES FOR SUB-GRADE A.THE CONTRACTOR SHALL ENSURE THAT THE GROUND ELEVATION OVER THE WATER AND/OR SEWER LINE LOCATIONS, IS WITHIN SIX (6) INCHES OF FINISHED GRADE (OUTSIDE ROADWAY) OR AT THE ROAD SUB-GRADE ELEVATION (WITHIN ROADWAY) PRIOR TO THE START OF ANY EXCAVATION OR TRENCHING OF WATER AND/ OR SEWER LINES. CUT SHEETS PREPARED BY THE CONTRACTOR SHALL BE PRESENTED TO THE INSPECTOR SUFFICIENTLY IN ADVANCE OF THE WORK BEING DONE (THIS ADVANCE NOTICE TO BE DETERMINED BY THE INSPECTOR DURING THE PRE-CONSTRUCTION MEETING). THE INSPECTOR RESERVES THE RIGHT TO WITHHOLD PAYMENT AND/OR TO STOP WORK IF CUT SHEETS ARE NOT PROVIDED IN A TIMELY FASHION
- B. IF AFTER INSTALLATION OFWATERAND/OR SEWER FACILITIES THERE EXISTS A CONFLICT WITH OTHER UTILITIES (SHOWN AS FUTURE), THE RELOCATION, ADJUSTMENT, REPLACEMENT, ETC. OF SAID WATER AND SEWER WILL BE AFFECTED PURSUANT TO ARTICLE 16 OF THE GENERAL CONDITIONS AND STANDARD SPECIFICATIONS.
- C.IF SUB-GRADE IS SHOWN AS CONTROLLED FILL OR FILL BENEATH THE WATER AND/OR SANITARY SEWER. THE MASS GRADING ENGINEER OF RECORD SHALL CERTIFY THE ENTIRE PORTION OF THE MASS GRADED AREA HAS BEEN INSTALLED PURSUANT TO THE SECTION 2200 WHERE WATER AND/OR SEWER LINES ARE TO BE INSTALLED.
- 28. ALL WATER LINE TO BE BUILT TO THREE AND ONE HALF FOOT MINIMUM COVER BELOW FINISHED GRADE.
- 29. ALL PROPOSED WATER AND SEWER SHOWN ON THIS PLAN TO BE INSTALLED BY OPEN CUT METHOD.
- 30. EXCAVATION WITHIN A COUNTY ROAD RIGHT OF WAY FOR THE PURPOSE OF THE INSTALLATION OF UTILITIES, STORM DRAINS, ETC. SHALL BE PERFORMED IN ACCORDANCE WITH THE PROVISIONS IN THE PERMIT ISSUED BY THE FREDERICK COUNTY DIVISION OF HIGHWAY OPERATIONS
- 31. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING SILT AND DEBRIS OUT OF THE STORM DRAINAGE SYSTEM FOR THE DURATION OF
- 32. ALL MANHOLES CALLED OUT TO BE WATERTIGHT ARE TO UTILIZE A FRAME AND COVER BY EAST JORDAN IRONWORKS. THE FRAME MENTIONED IS A STRAIGHT THROUGH DESIGN. CONTRACT MARK BAUM AT EAST JORDAN IRONWORKS AT 800-418-3549 OR WWW.EJIW.COM FOR MORE
- 33. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL PROPERTY OWNERS AT ALL TIMES.THECONTRACTOR, WITH OWNER APPROVAL, WILL COORDINATE WITH PROPERTY OWNERS IF ACCESS MUST BE INTERRUPTED FOR SHORT TIME PERIODS.
- 34. REQUIREMENTS FOR TELEVISING SANITARY SEWER LINES: ALL PUBLIC GRAVITY SEWER LINES AND LATERALS SHALL BE TELEVISED AS A CONDITION OF INSPECTION IN ORDER TO OBTAIN CONDITIONAL/OPERATIONAL ACCEPTANCE. TELEVISING SHALL BE DONE IN ACCORDANCE WITH SECTION 2571. II.A.2. TELEVISING FIRMS MUST BE SUBMITTED AND APPROVED BY THE DUSWM PRIOR TO THEIR USE. THE DVD MUST BE VIEWED AND APPROVED BY THE DUSWM PRIOR TO ACCEPTANCE OF THE SEWER MAINS AND LATERALS AND PLACING ANY PORTION OF THE SYSTEM INTO SERVICE. THE FOLLOWING PROCEDURES MUST BE FOLLOWED: 1) ALL SEWER MAINS AND LATERALS FOR THE PROJECT MUST BE NSTALLED. BACKFILLED AND COMPACTION TESTS REVIEWED AND APPROVED BY THE DUSWM PRIOR TO TELEVISING.2) COMPLETE ALL PRESSURE TESTS, DEFLECTION TESTS AND MH VACUUM TESTS PRIOR TO TELEVISING. 3) ALL MAINS AND LATERALS SHALL BE FLUSHED IN A MANNER SUFFICIENT TO REMOVE ALL DIRT AND DEBRIS AND PROVIDE ENOUGH WATER TO DISCERN ANY STANDING WATER FLUSHING WILL TAKE PLACE NO EARLIER THAN 48 HR PRIOR TO TELEVISING AND WILL BE WITNESSED BY THE DUSWM INSPECTOR. CONTRACTOR SHALL ENSURE THAT NO CONSTRUCTION DEBRIS IS FLUSHED INTO THE RECEIVING SEWER. 4) STAND PIPES TO LATERALS WILL BE LABELED WITH LOT #, ETC.WITH A BOLD, BLACK, PERMANENT MARKER BY THE CONTRACTOR AND VERIFIED BY THE INSPECTOR AS CORRECT. PAN THE LOT # WITH THE CAMERA PRIOR TO INSERTING CAMERA INTO THE CLEAN-OUT STACK. 5) PROJECT NAME, NUMBER, DATE, TIME, TYPE AND SIZE OF PIPE AND MH#-MH # OR LOT # WILL BE DISPLAYED ON THE SCREEN AT ALL TIMES AND NOT OBSCURE THE VIEW OF THE SEWER PIPE. THERE WILL BE A RUNNING COUNT OF THE LINEAR FOOTAGE SHOWN ON THE SCREEN. 6) AFTER TELEVISING AND PRIOR TO CONDITIONAL ACCEPTANCE, IF THE DUSWM DETERMINES THAT ANY INFILTRATION, DEBRIS OR DAMAGE MAY HAVE OCCURRED TO ANY MAIN OR LATERAL THEY WILL BE FLUSHED AND TELEVISED AGAIN. 7) ALL LINES AND LATERALS WILL BE PLACED ON ONE DVD IF SPACE PERMITS (IF NOT, PLACE MAINS ON ONE DVD AND LATERALS ON ANOTHER) IN A FORMAT THAT CAN BE VIEWED ON WINDOWS MEDIA PLAYER OR REAL PLAYER A WRITTEN REPORT WILL BE PROVIDED FROM THE TÉLEVISING COMPANY CONTAINING A LOG NOTING THE INFORMATION IN ITEM 5 ABOVE, THE GENERAL CONDITION OF THE LINE/LATERAL AND ANY SPECIFIC FEATURES. THE MAINLINES AND LATERALS LOG WILL BE IN THE SAME SEQUENCE AS SHOWN ON THE DVD.8) TOLERANCES: NO DIRT, STONE OR OTHER DEBRIS PERMITTED IN MAINS OR LATERALS -NO STANDING WATER IN LATERALS -THE DECISÍON TO ALLOW ANY STANDING WATER IN MAINS WILL BE DETERMINED BY THE DUSWM BASED ON PIPE DIAMETER, % SLOPE AND/OR OTHER FACTORS AS DETERMINED BY THE DUSWM.
- 35. WATERLINE BACTERIAL TESTING REQUIREMENT: DISINFECTION AND VERIFICATION TESTING WILL BE PERFORMED IN ACCORDANCE WITH AWWA C651-05, OR LATEST EDITION. THE CONTRACTOR SHALL BE REQUIRED TO HAVE BACTERIAL TESTING PERFORMED ON ALL NEW WATER MAINS TO DEMONSTRATE BACTERIAL LEVELS MEET STATE MDE REQUIREMENTS PRIOR TO THE COUNTY GRANTING CONDITIONAL ACCEPTANCE OF THE CONTRACT. REQUIREMENTS INCLUDE BUT ARE NOT LIMITED TO OBTAINING TWO CONSECUTIVE SETS OF ACCEPTABLE SAMPLES THAT ARE COLLECTED A MINIMUM OF 24 HOURS APART. ONE SAMPLE SHALL BE COLLECTED FOR EVERY 1200 FEET, END OF EACH BRANCH, AND THE END OF THE LINE FOR RESIDUAL CHLORINE, TOTAL CHLOROFORM, AND E.COLI ANALYSIS. AFTER DISINFECTION THE LINE MUST BE FLUSHED. CHLORINE RESIDUAL SAMPLES MUST YIELD A RESULT OF 1.0 PPM OR LESS BEFORE TOTAL CHLOROFORM OR E.COLI ANALYSIS MAY BE PERFORMED. ALL SAMPLE COLLECTIONS SHALL BE PERFORMED BY INDIVIDUALS CERTIFIED FOR DRINKING WATER SAMPLE COLLECTION BY THE MARYLAND DEPARTMENT OF ENVIRONMENT. LABORATORIES UTILIZED FOR THE ANALYSIS SHALL BE CERTIFIED BY THE MARYLAND DEPARTMENT OF ENVIRONMENT FOR TOTAL CHLOROFORM AND E.COLI ANALYSIS. IF THE CONTRACTOR HAS ALLOWED CONTAMINANTS TO ENTER THE PIPE DURING CONSTRUCTION (THIS SHALL BE DETERMINED BY INSPECTOR) THEN SAMPLING MAY BE REQUIRED AT REDUCED DISTANCE INTERVALS AS DETERMINED BY THE DUSWM. DISINFECTED WATER (OF CHLORINE RESIDUAL 1.0 PPM OR LESS) WILL STAND IN THE LINE FOR AT LEAST 16 HOURS AFTER A FINAL FLUSH. CERTIFIED BACTERIAL TEST RESULTS SHALL BE PROVIDED TO THE DUSWM AND SHALL INCLUDE CERTIFICATION INFORMATION FOR BOTH THE SAMPLE COLLECTOR AND LABORATORY.

Dewberry

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Suite 103 Frederick, MD 21703

SEAL

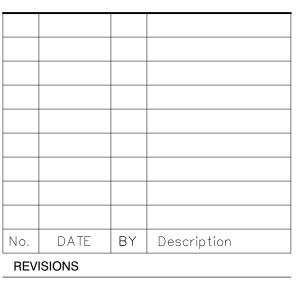
Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. ____29891 Expiration Date: 01/14/2024

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC 500 E 4TH STREET, SUITE 333 AUSTIN, TX 78701

> CONTACT: AD ROBISON PHONE: 530-417-7496



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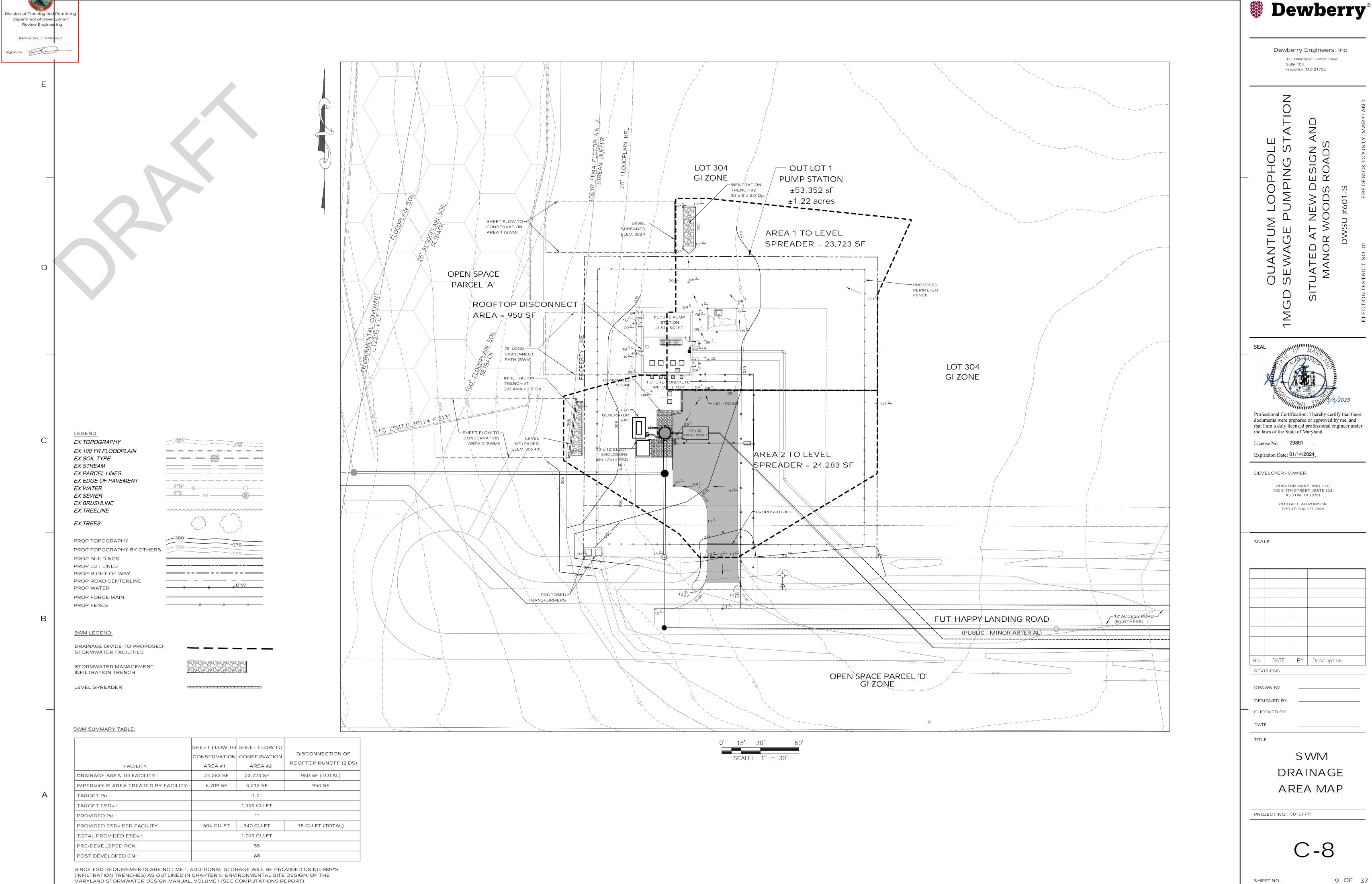
WATER & SEWER NOTES & DETAILS

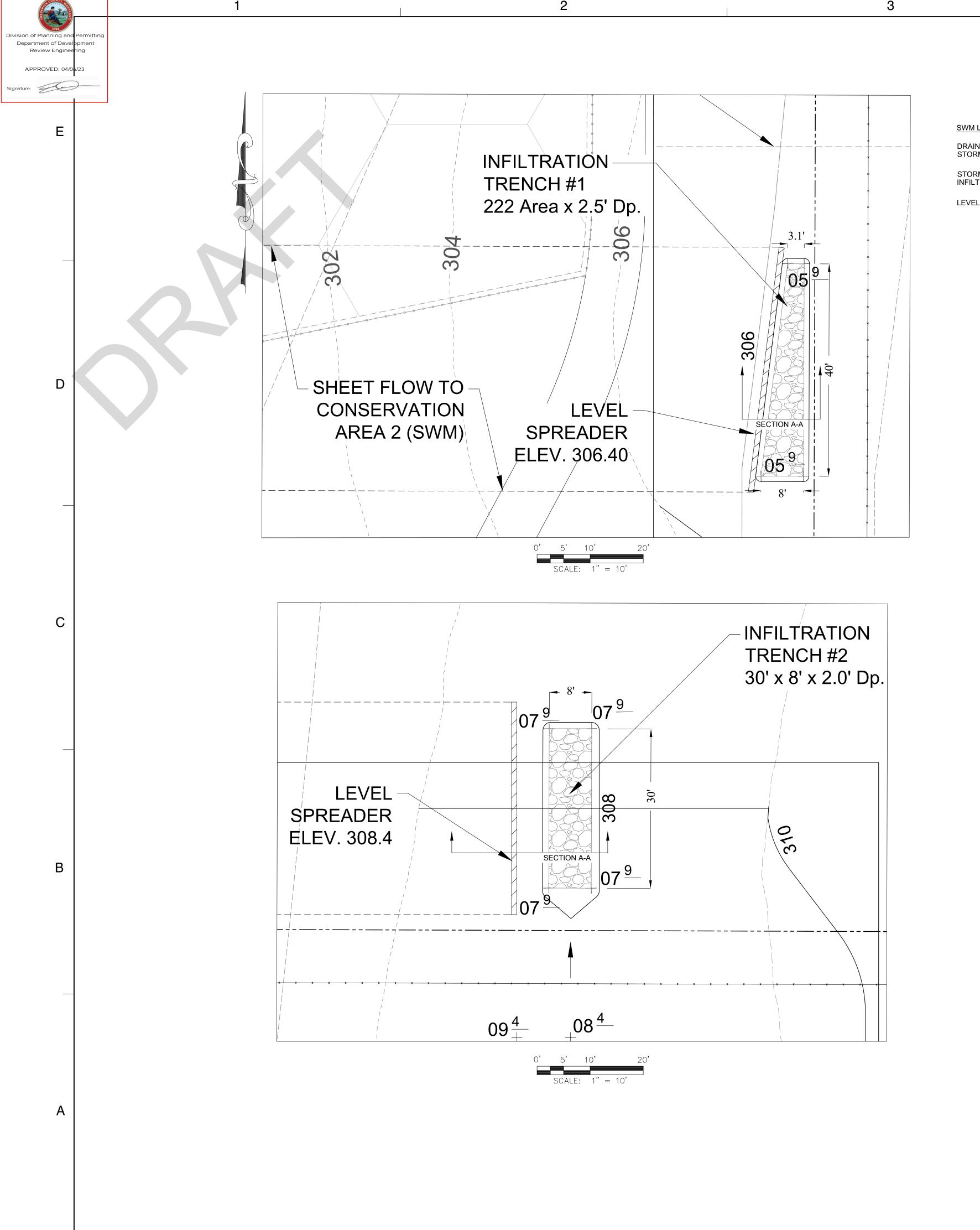
PROJECT NO. 50151771

8 **OF** 37

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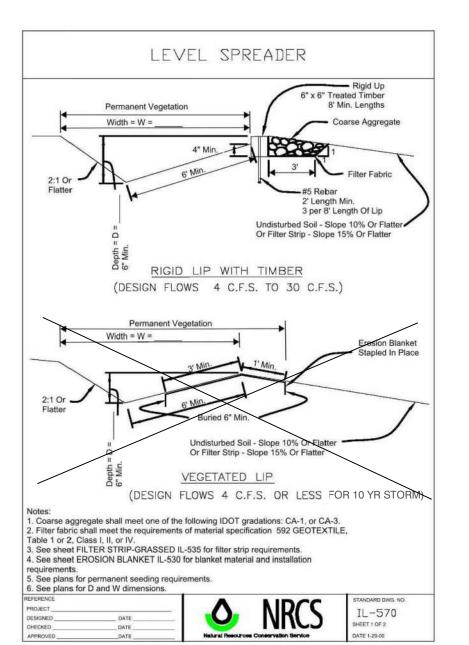
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SWM LEGEND:

DRAINAGE DIVIDE TO PROPOSED STORMWATER FACILITIES

STORMWATER MANAGEMENT INFILTRATION TRENCH

LEVEL SPREADER







- 1. STORMWATER QUALITY MANAGEMENT SHALL BE ADDRESSED THROUGH THE USE OF VEGETATED FILTERING AND OTHER BEST MANAGEMENT PRACTICES AS OUTLINED IN THE MARYLAND STORMWATER DESIGN MANUAL, CHAPTER 5 (LATEST REVISION)
- 2. THE AREA DISTURBED SHALL NOT INFRINGE UPON WOODED AREA OR DEGRADE THE CURRENT LAND USE.
- 3. ALL DISTURBED AREA SHALL BE RETURNED TO COMPARABLE OR BETTER CONDITION
- THAN WHAT PREVIOUSLY EXISTED.
 RE-GRADED AREAS SHALL NOT FURTHER IMPACT OTHER PROPERTIES WITH
- RESPECT TO DRAINAGE.

5. THE TOP SIX-INCH BACKFILL LAYER LOCATED WITHIN GRASS AND/OR PERVIOUS AREAS IS NOT TO BE COMPACTED.

6"x6" TREATED LUMBER— LEVEL SPREADER (SEE DETAIL THIS SHEET) EX. GROUND— POSITIVE DRAINAGE AWAY— FROM LEVEL SPREADER FILTER FABRIC— ON SIDES & BOTTOM 1 ½" - 3" DIA. WASHED AGGREGATE ASTM D448 SIZE No. 1 NOTES:

1. USE MARAFI 140-N FILTER FABRIC OR APPROVED EQUIVALENT.

2. BOTTOM EXCAVATION IS TO BE IN NATURAL UNCOMPACTED EARTH. $\frac{\text{STONE TRENCH DETAIL}}{\text{N.T.S.}}$ SECTION A-A

Dewberry®

Dewberry Engineers, Inc

321 Ballenger Center Drive Suite 103 Frederick, MD 21703

'ATION M LOOPHOLE PUMPING STA QUANTUM I SEWAGE PI

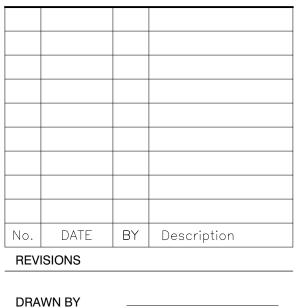
Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. _____29891 Expiration Date: <u>01/14/2024</u>.

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC 500 E 4TH STREET, SUITE 333 AUSTIN, TX 78701

CONTACT: AD ROBISON PHONE: 530-417-7496



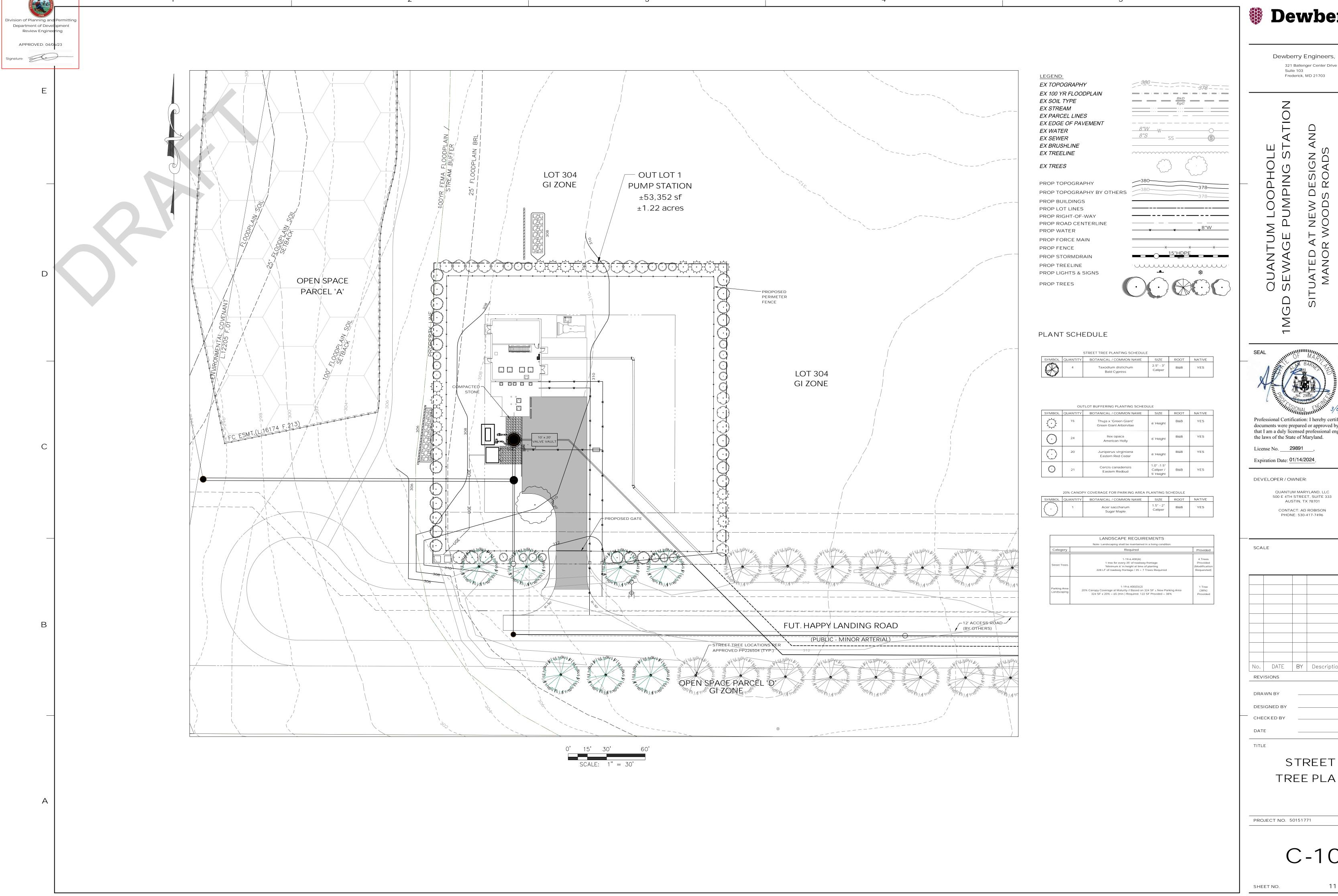
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SWM PLAN -NOTES & **DETAILS**

PROJECT NO. 50151771

SHEET NO.



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Dewberry Engineers, Inc 321 Ballenger Center Drive

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under

No. DATE BY Description

TREE PLAN

PLANTING NOTES

A) Landscape specifications shall be outlined below. Any item or procedure not mentioned below shall be as specified in the Landscape Specification Guidelines published by the Landscape Contractors Association (latest edition).

B) Plant Materials

The landscape contractor shall furnish and intall and/or dig, ball, burlap, and transplant all of the plant materials call for on the drawings or listed on the plant schedule.

All plant materials shall be equal to or better than the requirements of the "American Standard for Nursery Stock" (latest edition), as published by the American Association of Nurserymen (hereafter referred to as the 'AAN Standards'). All plants shall be typical of their species and variety, shall have a normal habit of growth, and shall be first quality, with a sound, vigorous, well-branched and healthy root system. All plants shall be free of disease, insects or other pests, and any mechanical issues.

- a) All plants shall be nursery grwon and have been grown under the same climate conditions as the location of this project for at least 2 years before planting. Neither heeled-in plants nor plants from cold storage will be accepted
- b) Collected plants or transplanted trees may be call for by the Landscape Architect and used, provided that the locations and the soil conditions will permit proper balling.

2) Plant Measurements

All plants shall conform to the measurements specified in the plant schedule.

a) Caliper measurements shall be taken six inches (6") above grade for trees under four inches (4") caliper and twelve inches (12") above grade for trees four inches (4") in caliper and over. b) Minimum branching height for all shade trees shall six feet (6').

C) Planting Methods

All proposed plant material that meets the specifications in Section B: (1)(A)(B), 2(A)(B), as shown above are to be planted in accordnace with the following planting methods during the proper seasons as described below.

1) Planting Seasons

A professional horticulturalist / nurserymen shall be consulted to determine the proper time, based on plant species and weather conditions, to move and install particular plant material to minimize stree to the plant. Planting of decidious material may be continues during the winter months provided there is no frost in the ground and frost-free top soil planting mixtures are

2) Digging

All plant material shall be dug, balled, and burlapped (B&B) or bare root in accordance with the 'AAN Standards'

3) Excavation of Plant Pits

- The landscape contractor shall excavate all plant pits, vine pits, hedge trenches, and shrub beds as follows:
- a) All pits shall be circular in outline, with vertical sides. The tree pit shall be deep enough to allow 1/8 of the ball to be above the existing grade. Plants shall be rest on undisturbed existing soil or well compacted backfill. The tree pit must be a minimum of nine (9) inches larger on every side than the ball of the tree.
- b) If areas are designated as shrub beds or hedge trenches, they shall be cultivated to at least 18" depth minimum. Areas designated for ground covers and vines shall be cultivated to at least 12" depth minimum.

4) Staking, Guying, and Wrapping - See the 'AAN Standards' Landscape Specification Guidelines

5) Plant Pruning, Edging, and Mulching

- a) Each tree, shrub or vine shall be pruned in an appropriate manner to its particular requirements, in accordance with accepted standard practice. Broken or bruised branches shall be removed with clean cuts made on an angle from the bark ridge to the branch collar, no flush cuts, to minimize the area cut. All cuts shall be made with sharp tools. Trim edges smooth. No tree wound dressing shall be applied.
- b) All trenches and shrub beds shall be edged and cultivated to the lines shown on the drawing. The areas around isolated plants shall be edges and cultivated to the full diameter of the pit. Sod which has been removed and stacked shall be used to trim the edges of all excavated areas to the neat lines of the plant pit saucers, the edges of shrub areas, hedge trenches, and vine pockets.
- c) After installation, all plant materials shall be mulched with 2"-3" layer of bark mulch, shredded hardwood mulch, or another approved material over the entire area of the bed or

D) Seeding and Sodding

All seeding and sodding shall be per the Landscape Contractor's Association and Landscape Specifications Guidelines (latest edition).

E) Warranty

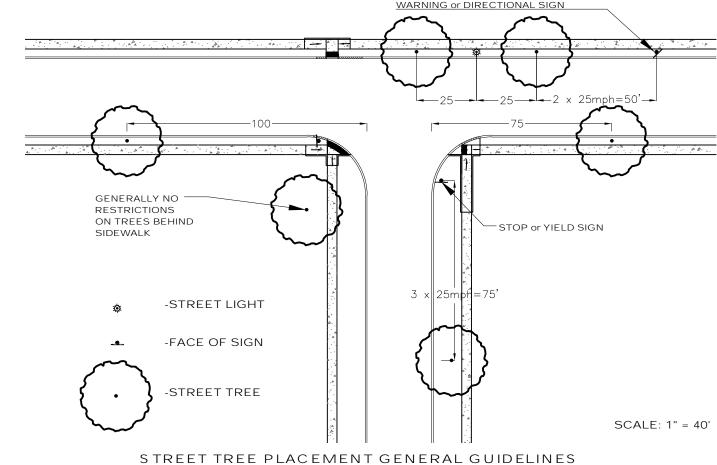
- 1) Warranty trees, shrubs, plants, and all lawn areas for a period of one year after date of written acceptance by the owner, against defects including death and unstatisfactory growth, except for defects resulting in neglect by owner, abuse or damage by others, or unsual phenomena or incidents beyond the installer's control.
- 2) Remove and replace trees, shrubs, plants, and lawn areas found to be dead or unhealthy condition during warranty period. Make replacements during growth season following the end of warranty period. Replace any plants which are in doubtful condition at the end of the warranty period. Replace any plants which are in doubtful condition at the end of the warranty period; unless in opinion of owner, it is advisable to extend warranty period for a full growing season. Warranty extension contingent on contract terms of landscape contractor.

F) Maintenance

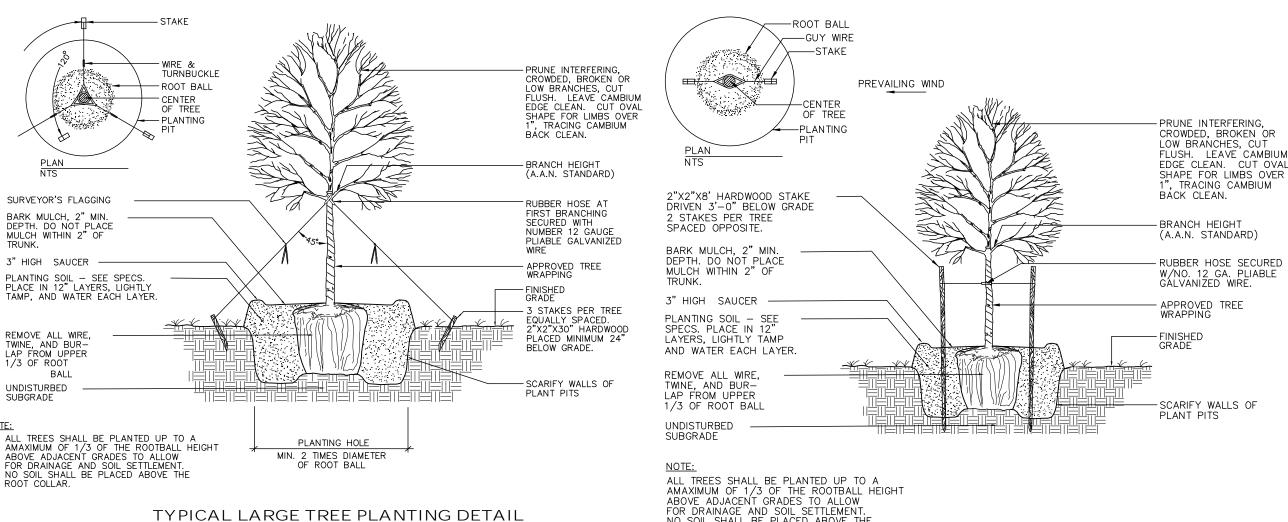
- 1) Plantings must be watered immediately following installation.
- 2) Plantings must be watered at least once per week for 45 days following the installation to insure that the plant material gets established.
- 3) All landscaping shall be kepy in a living condition for 18 months after planting.

GENERAL LANDSCAPE PLAN NOTES

- A) This landscape plan has been prepared by Dewberry. Changes shall not be made to this plan without permission from Dewberry. Any unauthorized changes from other parties will not be the
- responsibility of Dewberry. B) This plan is for landscape purposes only.
- C) All plants (B&B or Container) shall be properly identified by weatherproof labels securely attached thereto before delivery to project site. Labels shall identify plants by name, species, and size. Labels shall not be removed until the final inspection by the landscape architect.
- D) Any materials and/or work may be rejected by the landscape architect if it does not meet the requirements of the specifications. All rejected materials shall be removed from the site by the contractor.
- E) Plant quantities shown in the plant schedule are for landscape architects convenience only or for jurisdictional review. Prior to submitting a bid or estimate, the contractor shall verify that total quantities shown on the plan match the quantities shown in the plant list. Should discrepancies occur, plan information shall take priority and the landscape architect shall be notified immediately. F) The contractor shall furnish all plants to complete the work as indicated on the plan and specified in
- the plant schedule. G) Substitutions in plant species or size shall not be premitted except with the written approval of the
- H) All soil areas not shown to receive plant materials shall be seeded for lawn.
- 1) The contractor shall contact Miss Utility (1-800-257-7777) prior to any excavation and shall take all necessary precautions to protect the existing utilities and maintain uninterrupted services. Any damage incurred due to the contractors operation shall be repaired immediately at the contractor's expense.
- J) The contractor shall verify all utility locations prior to construction. Should any conflicts occur between proposed construction or plantings and actual utility locations, the owner and the landscape architect must be notified prior to any excavation or grading. All entrance walls, piers, and planting bed locations must be field staked by the contractor and the location approved by the owner prior to construction.
- K) Plants shall be located as shown on the drawings and by scaling or as designated in the field by the landscape architect. All locations of plants and planting beds are to be staked and approved by landscape architect prior to installation.
- L) If utility lines are encountered in excavation of tree pits, other locations for trees shall be selected by landscape architet. Such changes shall be made by the contractor without additional compensation. No changes of location shall be made without the approval of the landscape
- M) No work is public right-of-way shall be done unless all the required permits are obtained.
- N) All equipment and tools shall be placed so not to interfere or hinder the pedestrian and vehicular
- O) During planting operations excess and waste materials shall be disposed of properly offsite at no extra cost to the owner.



TAKEN FROM FIG. 2 OF "G UIDELINES FOR TRAFFIC CONTROL DEVICES, STREET LIGHTS AND STREET TREES FOR NEW DEVELOPMENTS



RUBBER HOSE SECURED W/NO. 12 GA. PLIABLE

ALL TREES SHALL BE PLANTED 4" MIN. ABOVE ADJACENT GRADES TO

ALLOW FOR DRAINAGE AND SOIL SETTLEMENT

NO SOIL SHALL BE PLACED ABOVE THE ROOT COLLAR.

3" HIGH SAUCER

REMOVE ALL WIRE, TWINE, AND BUR-LAP FROM UPPER 1/3 OF ROOT

GÁLVANIZED WIRE.

NOT TO SCALE

PLANTING HOLE MIN. 2 TIMES DIAMETER OF ROOT BALL

STREET TREE NOTES & DETAILS

TYPICAL EVERGREEN TREE PLANTING DETAIL

NOT TO SCALE

__GUY WIRE —STAKE

-PLANTING

BARK MULCH

SURVEYOR'S FLAGGING

2" MINIMUM DEPTH, DO NOT PLACE MULCH

2 STAKES PER TREE

PLACED MINIMUM 24 BELOW GRADE.

PLANTING SOIL -

SEE SPECS.
PLACE IN 12" LAYERS.
LIGHTLY TAMP AND
WATER EACH LAYER.

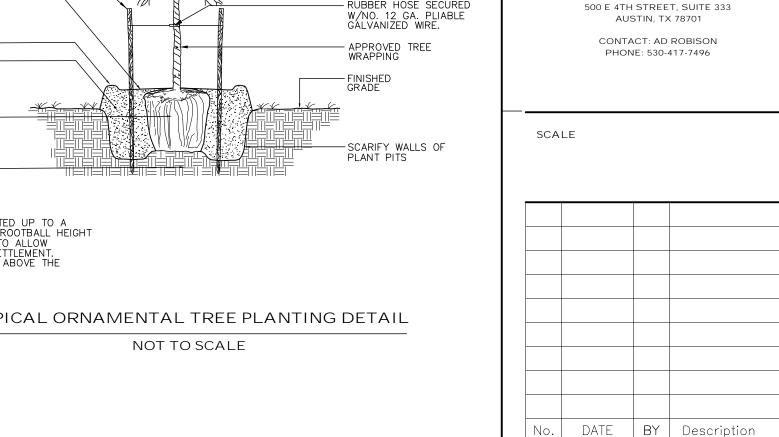
ALL TREES SHALL BE PLANTED 6" MIN. ABOVE ADJACENT GRADES TO ALLOW FOR DRAINAGE AND SOIL SETTLEMENT.

FINISHED GRADE

UNDISTURBED SUBGRADE

NOTE:

TYPICAL ORNAMENTAL TREE PLANTING DETAIL



LANDSCAPE DETAILS

Dewberry

Dewberry Engineers, Inc.

321 Ballenger Center Drive

Frederick, MD 21703

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A)

Professional Certification: I hereby certify that these

that I am a duly licensed professional engineer under

documents were prepared or approved by me, and

QUANTUM MARYLAND, LLC

the laws of the State of Maryland.

License No. 29891

Expiration Date: 01/14/2024.

DEVELOPER / OWNER:

PROJECT NO. 50151771

REVISIONS

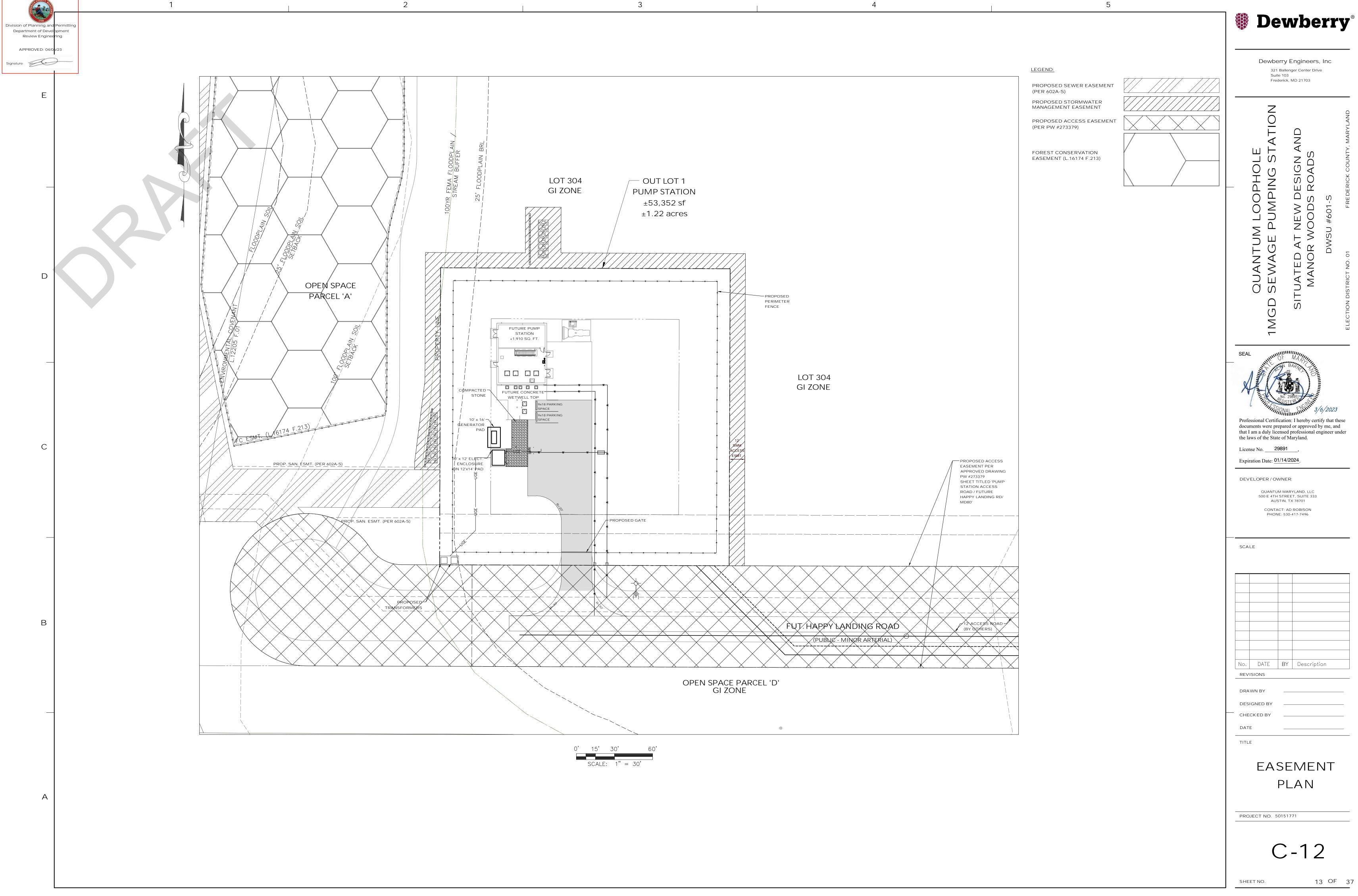
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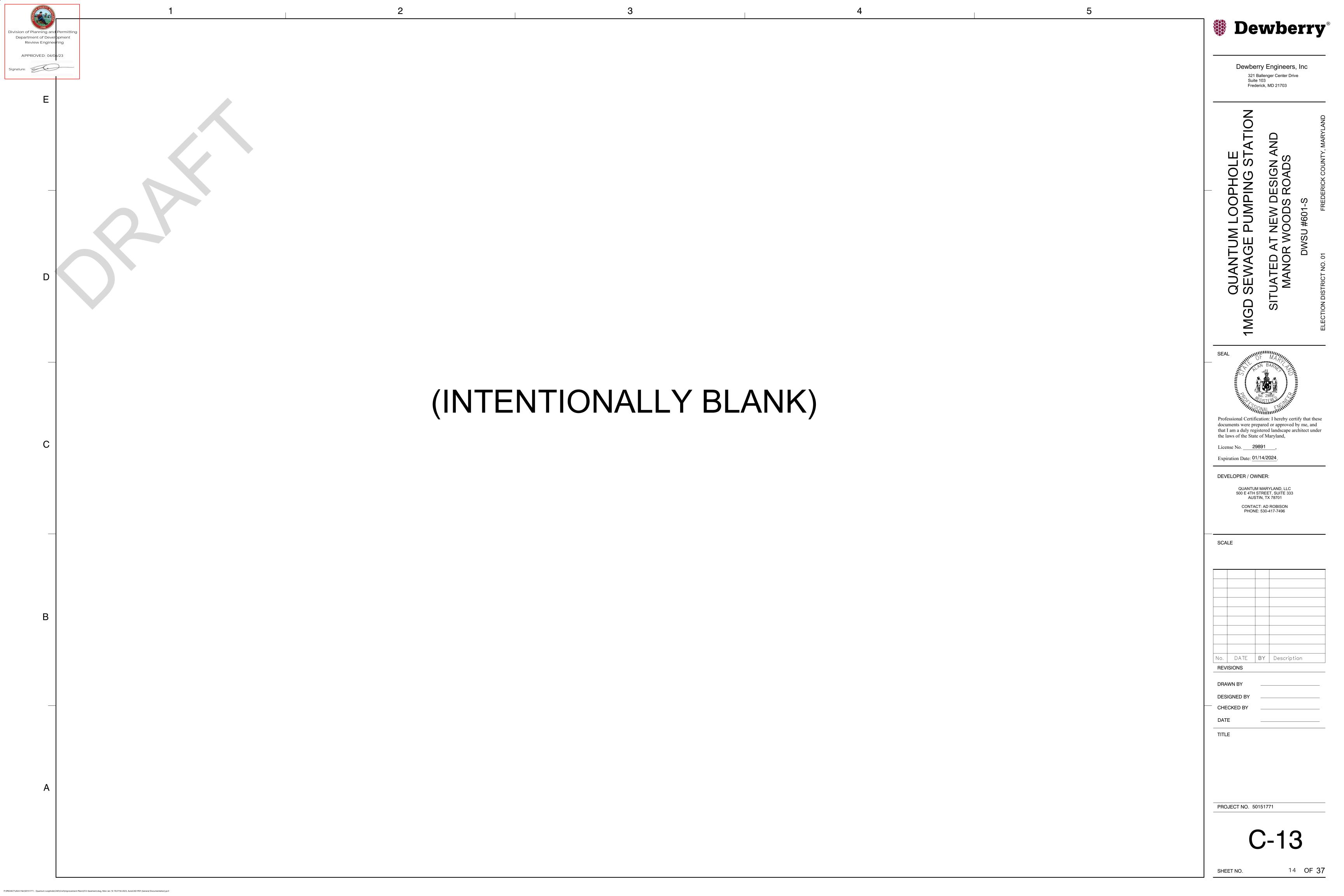
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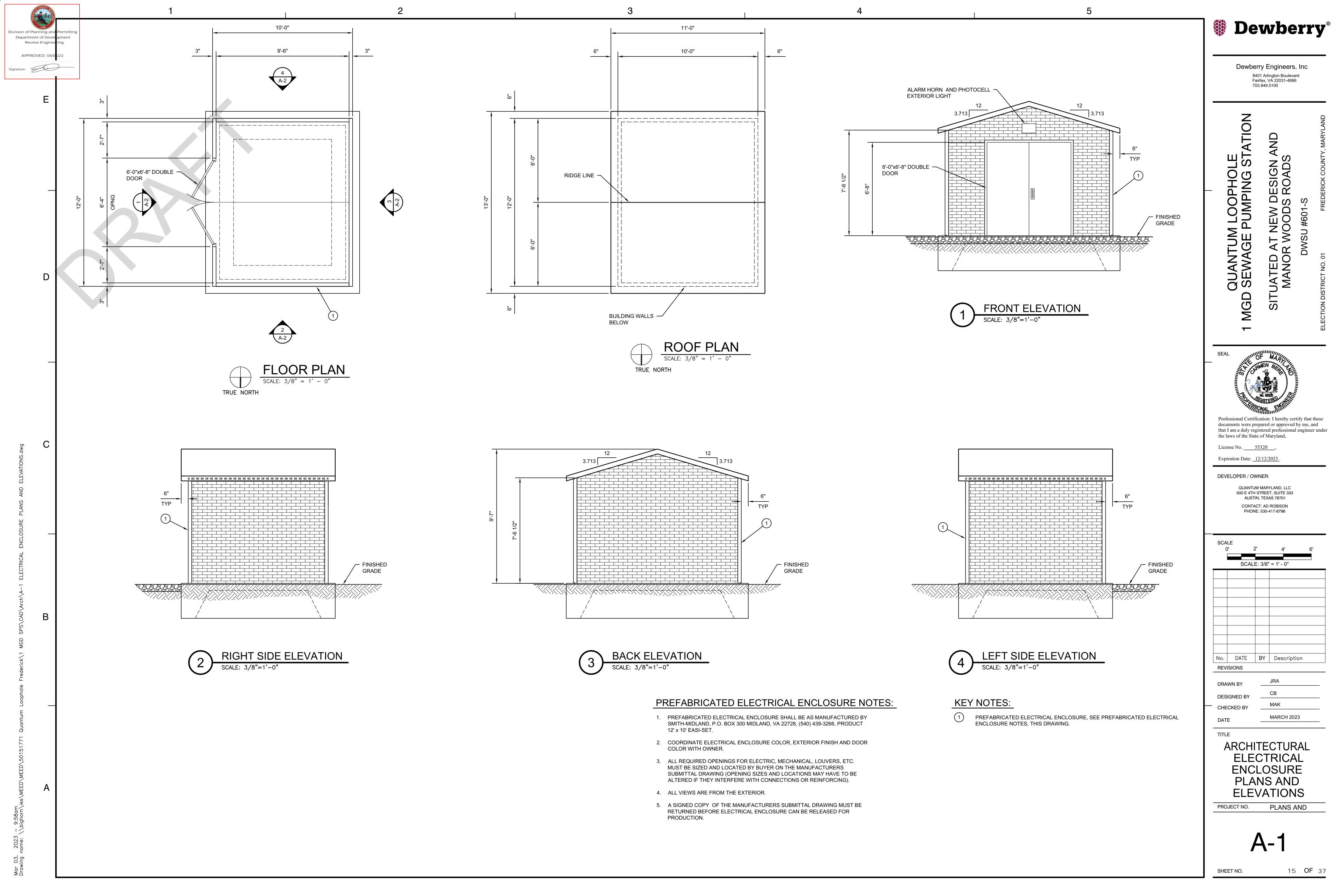
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TITLE

12 OF 37 SHEET NO.







EXT.

FIN.

GALV.

GA.

INT.

HORIZ.

EXTERIOR

GALVANIZED

HORIZONTAL

INTERIOR

J.B. JOIST BEARING

HSS HOLLOW STRUCTURAL SECTION

FINISH

GAUGE

FTG. FOOTING

Review Engine

APPROVED: 04/0

Signature:

DESIGN:

B. ROOF LIVE LOAD:

THE GENERAL STRUCTURAL NOTES ARE INTENDED TO AUGMENT THE DRAWINGS AND

GENERAL STRUCTURAL NOTES, THE STRICTEST PROVISION SHALL GOVERN.

DESIGN LOADS AND DESIGN DATA FOR NEW CONSTRUCTION ARE AS FOLLOWS:

MARYLAND (IBC 2018 WITH MARYLAND AMENDMENTS).

FLOOR LIVE LOADS:

ROOF SNOW LOAD:

GROUND SNOW LOAD (Pg)

FLAT ROOF SNOW LOAD (Pf)

BUILDING RISK CATEGORY

WIND EXPOSURE CATEGORY

SEISMIC DESIGN DATA:

SPECTRAL RESPONSE COEFF. SDS

SPECTRAL RESPONSE COEFF. SD1

MAT FOUNDATIONS ON SOIL

THAN 4 INCHES IN DIAMETER.

DENSITY PER ASTM D-1578.

COMPACTION HAS BEEN ACHIEVED.

AND MOISTURE CONDITIONED.

SUBGRADE SOILS.

ENCAPSULATED WITH FILTER FABRIC.

BUILDING RISK CATEGORY

THERMAL FACTOR (Ct)

WIND LOAD:

(ENCLOSED)

SITE CLASS

DOCUMENTS.

FOUNDATIONS:

SNOW EXPOSURE FACTOR (Ce)

SNOW LOAD IMPORTANCE FACTOR (I)

BASIC WIND SPEED (3 SECOND GUST)

SEISMIC IMPORTANCE FACTOR (ALL BUILDINGS)

SEISMIC DESIGN CATEGORY (ALL BUILDINGS)

JUNE 17, 2022 (GTA PROJECT NUMBER 31201536).

5. COMPACTED STRUCTURAL FILL SHALL BE AS FOLLOWS:

PERCENT FINES (SOILS PASSING THE #200 SIEVE).

MAPPED SPECTRAL RESPONSE ACCELERATIONS, Sa

MAPPED SPECTRAL RESPONSE ACCELERATIONS, S1

INTERNAL PRESSURE COEFFICIENT

SPECIFICATIONS. SHOULD CONFLICTS EXIST BETWEEN THE DRAWINGS, SPECIFICATIONS, AND

STRUCTURAL DESIGN CONFORMS TO THE REQUIREMENTS OF THE BUILDING CODE 2018 OF

1. FOUNDATION DESIGN IS BASED ON A SUBSURFACE EXPLORATION REPORT BY GTA, INC. DATED

CONDITIONS ENCOUNTERED IN THE FIELD CONTRARY TO THOSE ASSUMED FOR DESIGN.

4. ALL COMPACTED FILL. EXCAVATIONS, AND SUBGRADES SHALL BE OBSERVED AND TESTED BY

A GEOTECHNICAL ENGINEER REGISTERED IN THE STATE OF MARYLAND (OR A QUALIFIED

ENGINEER) TO VERIFY SPECIFIED GEOTECHNICAL CONFORMANCE REQUIREMENTS.

GEOTECHNICAL TECHNICIAN WORKING UNDER THE DIRECT SUPERVISION OF A REGISTERED

CONTRACTOR SHALL COORDINATE TESTING WITH OWNER AS DECLARED IN THE CONTRACT

DIRTY CRUSHER RUN (CR-D) APPROVED BY THE PROJECT GEOTECHNICAL ENGINEER SHALL BE USED AS BACKFILL. CR-D SHALL BE COMPRISED OF CRUSHER RUN (CR-6) AND MINIMUM OF

30 PERCENT (BY VOLUME) OF ON-SITE CLAYEY (CL. CH. ML. AND MH), IF THE CR-D BACKFILL

SUITABLE, NON-ORGANIC ON-SITE SOILS APPROVED BY THE PROJECT GEOTECHNICAL

THEIR MASS SHOULD NOT BE USED IN STRUCTURAL FILLS UNLESS PROPERLY

FREE OF ORGANIC MATTER, DEBRIS, AND SHOULD CONTAIN NO PARTICLE SIZES GREATER

WALL BACKFILL SHALL BE COMPACTED TO MINIMUM 90 PERCENT OF THE MAXIMUM DRY

7. FILL MATERIALS SHALL NOT BE PLACED ON FROZEN SOILS, ON FROST-HEAVED SOILS, AND/OR

ON EXCESSIVELY WET SOILS. BORROW FILL MATERIALS SHOULD NOT CONTAIN FROZEN

DRAINAGE OF ANY PRECIPITATION AND THE SURFACE SHOULD BE SEALED BY USE OF A

SO THAT A WEAK PLANE WILL NOT BE FORMED BETWEEN THE NEW FILL AND EXISTING

9. DRYING AND COMPACTION OF WET SOILS IS TYPICALLY DIFFICULT DURING THE COLD, WINTER

EARTHWORK PHASES OF CONSTRUCTION TO PREVENT PONDING OF WATER WHICH HAS A TENDENCY TO DEGRADE SUBGRADE SOILS. ALTERNATIVELY, IF THESE SOILS CANNOT BE

MODIFICATIONS TO THE SUBGRADE SOILS SUCH AS LIME OR CEMENT STABILIZATION MAY BE

QUANTITY OF ADDITIVE AND MIXING AND CURING PROCEDURES, BEFORE IMPLEMENTATION.

UTILIZED TO ADJUST THE MOISTURE CONTENT. IF LIME OR CEMENT ARE UTILIZED TO CONTROL MOISTURE CONTENTS AND/OR FOR STABILIZATION, QUICK LIME, CALCIMENT, OR REGULAR

STABILIZED BY CONVENTIONAL METHODS AS PREVIOUSLY DISCUSSED, ADDITIONAL

TYPE 1 CEMENT CAN BE USED. THE CONSTRUCTION TESTING LABORATORY SHOULD

EVALUATE PROPOSED LIME OR CEMENT SOIL MODIFICATION PROCEDURES, SUCH AS

MONTHS. ACCORDINGLY, EARTHWORK SHOULD BE PERFORMED DURING THE WARMER, DRIER

TIMES OF THE YEAR, IF PRACTICAL. PROPER DRAINAGE SHOULD BE MAINTAINED DURING THE

SMOOTH-DRUM ROLLER TO LIMIT INFILTRATION OF SURFACE WATER. DURING PLACEMENT

AND COMPACTION OF NEW FILL AT THE BEGINNING OF EACH WORKDAY, THE CONTRACTOR

MAY NEED TO SCARIFY EXISTING SUBGRADES TO A DEPTH ON THE ORDER OF FOUR INCHES

REMOVED PRIOR TO PLACEMENT OF STRUCTURAL FILL OR OTHER FILL SOILS AND

8. AT THE END OF EACH WORK DAY, ALL FILL AREAS SHOULD BE GRADED TO FACILITATE

MATERIALS AT THE TIME OF PLACEMENT, AND ALL FROZEN OR FROST-HEAVED SOILS SHALL BE

AGGREGATES. EXCESSIVELY WET SOILS OR AGGREGATES SHOULD BE SCARIFIED, AERATED,

MOISTURE CONTENT AND PLASTICITY INDEX AS RECOMMENDED BY GEOTECHNICAL

6. THE GEOTECHNICAL ENGINEER OF RECORD SHALL DOCUMENT THAT PROPER FILL

OPEN GRADED MATERIALS, SUCH AS GRAVELS (GW AND GP), WHICH CONTAIN VOID SPACE IN

MATERIAL IS IMPORTED FROM OFFSITE SOURCES. THE MIX SHALL INCLUDE A MINIMUM OF 15

2. THE STRUCTURAL ENGINEER OF RECORD IS NOT RESPONSIBLE FOR SUBSURFACE

3. FOUNDATION BEARING PRESSURE USED IN DESIGN (POUNDS PER SQUARE FOOT):

MAT FOUNDATIONS ON UNWEATHERED BEDROCK (PRECAST VAULT)

A. INSPECTED AND APPROVED BY THE PROJECT GEOTECHNICAL ENGINEER

PLACED IN LOOSE LIFTS NOT EXCEEDING 8 INCHES IN THICKNESS.

GENERAL STRUCTURAL NOTES

200 PSF

0.9

1.1

1.0

21 PSF

118 MPH

±0.18

1.25

0.132

0.043

0.211

0.120

2,000 PSF

10,000 PSF

20 PSF

CONTROL MEASURES, AS REQUIRED.

321 Ballenger Center Drive Frederick, MD 21703

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under

License No. _____56615 Expiration Date: 10/27/2024

DEVELOPER / OWNER:

AUSTIN, TX 78701 CONTACT: AD ROBISON

DATE BY Description

REVISIONS DRAWN BY **DESIGNED BY** CHECKED BY

TITLE

3/3/2023

STRUCTURAL **GENERAL NOTES** AND DETAILS

PROJECT NO. 50151771

Dewberry Engineers, Inc.

Z

the laws of the State of Maryland.

UAN

 $Q \overline{S}$

QUANTUM MARYLAND, LLC 500 E 4TH STREET, SUITE 333

PHONE: 530-417-7496

SCHEDULE ON SHEET S-1 UNLESS NOTED OTHERWISE

AROUND SLEEVE AS MUCH AS PRACTICABLE. STEEL SHALL NOT BE CUT UNLESS SHOWN OTHERWISE ON THE DRAWINGS, OR UNLESS AGREED TO BY THE OWNER'S REPRESENTATIVE ON A CASE BY CASE BASIS.

COORDINATION:

- 1. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH, AND COORDINATED WITH CIVIL, MECHANICAL, ELECTRICAL, ARCHITECTURAL, AND OTHER CONTRACT DOCUMENTS.
- COORDINATE THE EXACT SIZE AND LOCATION OF ALL SLEEVED OPENINGS THROUGH CONCRETE SLABS AND CONCRETE WALLS WITH CIVIL, MECHANICAL, AND ELECTRICAL DRAWINGS. SLEEVES SHALL BE ASTM A 53 SCHEDULE 40 STEEL WITH A DIAMETER NOT GREATER THAN 12 INCHES AND SHALL BE GALVANIZED AFTER CUTTING. SEE DETAIL 5/S-003
- 3. THE DRAWINGS HAVE BEEN PREPARED USING SOME DIMENSIONS AND ELEMENTS FROM A PARTICULAR EQUIPMENT MANUFACTURER. AS ALLOWED IN THE CONTRACT DOCUMENTS, THE CONTRACTOR MAY IN FACT PROVIDE A DIFFERENT PIECE OF EQUIPMENT WHICH HAS DIFFERENT DIMENSIONS AND ELEMENTS. THE CONTRACTOR SHALL VERIFY ALL HOIST BEAM DIMENSIONS WITH HOIST MANUFACTURER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR GAINING APPROVAL OF THE DIFFERENT DIMENSIONS AND ELEMENTS PRIOR TO ANY CONSTRUCTION AND ALL CHANGES SHALL BE MADE AT THE CONTRACTOR'S EXPENSE. THE SALIENT FEATURES SHALL NOT BE COMPROMISED. THE HYDRAULIC PERFORMANCE OF THE

STRUCTURAL ABBREVIATION LIST							
A.F.F.	ABOVE FINISHED FLOOR	KSI	KIPS PER SQUARE INCH				
ARCH.	ARCHITECTURAL	LLH	LONG LEG HORIZONTAL				
B.S.	BOTH SIDES	LLV	LONG LEG VERTICAL				
BOT.	ВОТТОМ	MAX.	MAXIMUM				
C=	CAMBER=	MECH.	MECHANICAL				
CF	CUBIC FOOT	MIN.	MINIMUM				
CMU	CONCRETE MASONRY UNIT	MPH	MILES PER HOUR				
CLR.	CLEAR	N.T.S.	NOT TO SCALE				
COL.	COLUMN	NO.	NUMBER				
CONC.	CONCRETE	#	NUMBER				
CONT.	CONTINUOUS	O.C.	ON CENTER				
DET.	DETAIL	OPP.	OPPOSITE				
DIA.	DIAMETER	PSI	POUNDS PER SQUARE INCH				
DIM.	DIMENSION	PSF	POUNDS PER SQUARE FOOT				
EA.	EACH	R	RADIUS				
ELEV.	ELEVATION	REINF.	REINFORCING				
EQ.	EQUAL	REQ'D	REQUIRED				
EQUIP.	EQUIPMENT	SIM.	SIMILAR				
EXIST.	EXISTING	S.S.	STAINLESS STEEL				
EXP.	EXPANSION	STD.	STANDARD				

STRU. STRUCTURAL

TS TUBE STEEL

TYPICAL

V.I.F. VERIFY IN FIELD

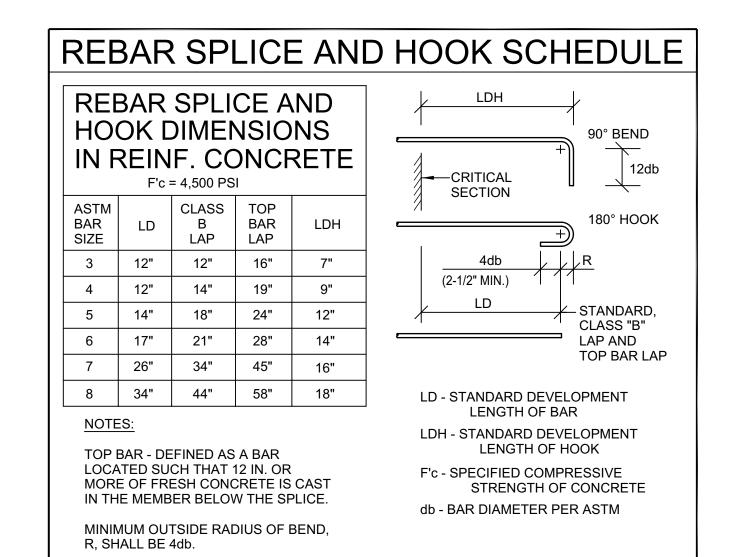
W.P. WORK POINT

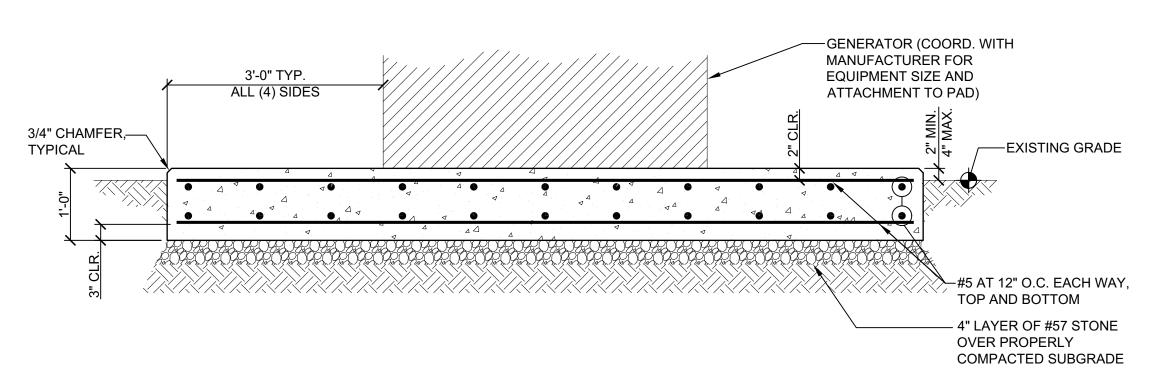
W.W.F. WELDED WIRE FABRIC

VERT. VERTICAL

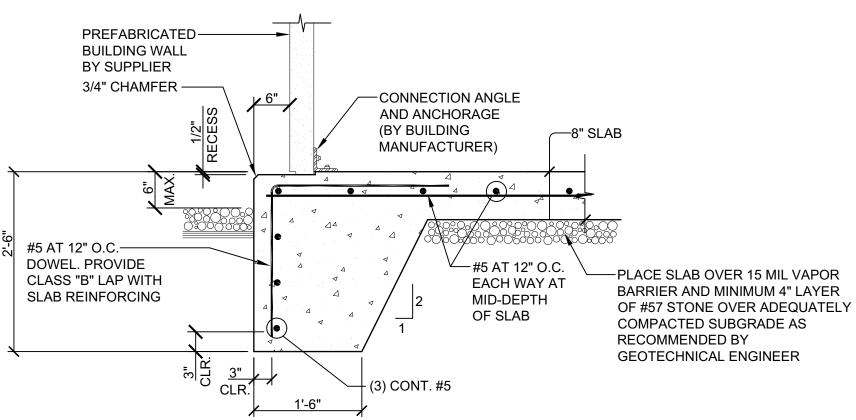
U.N.O. UNLESS NOTED OTHERWISE

T.O.S. TOP OF STEEL









PRE-ENGINEERED BUILDING SLAB DETAIL

VERIFY SPECIFIED COMPACTION AND MOISTURE CONTENT REQUIREMENTS WITH A MINIMUM OF ONE TEST PER 2,500 SQUARE FEET. 11. CARE SHALL BE EXERCISED DURING EXCAVATION FOR FOUNDATIONS SO THAT AS LITTLE DISTURBANCE AS POSSIBLE OCCURS AT THE FOUNDATION LEVEL. LOOSE OR SOFT SOILS

THE CONTRACTOR SHOULD BE REQUIRED TO MINIMIZE DUSTING OR IMPLEMENT DUST

DURING FILLING AND BACKFILLING. DENSITY TESTING SHALL BE MADE IN ACCORDANCE WITH ASTM D-1556 (OR EQUIVALENT) TO MONITOR COMPACTION LEVELS AND MOISTURE CONTENTS

FREQUENCY OF DENSITY TESTING SHALL BE AS DIRECTED BY GEOTECHNICAL ENGINEER TO

SHALL BE CAREFULLY CLEANED FROM THE BOTTOM OF THE EXCAVATIONS BEFORE PLACING CONCRETE, AFTER REMOVING ALL UNSUITABLE SURFACE MATERIALS, CUTTING TO THE PROPOSED GRADE. AND PRIOR TO THE PLACEMENT OF ANY STRUCTURAL FILL OR OTHER CONSTRUCTION MATERIALS, THE EXPOSED SUBGRADE SHALL BE OBSERVED BY THE PROJECT GEOTECHNICAL ENGINEER OR THEIR AUTHORIZED REPRESENTATIVE. THE EXPOSED SUBGRADE SHALL BE THOROUGHLY PROOFROLLED WITH PREVIOUSLY APPROVED CONSTRUCTION EQUIPMENT HAVING A MINIMUM AXLE LOAD OF TEN TONS (E.G. A FULLY LOADED TANDEM-AXLE DUMP TRUCK).

12. PRIOR TO THE PLACEMENT OF STRUCTURAL FILL, SUBGRADES BELOW PROPOSED FOUNDATIONS, SLABS, AND PAVEMENTS SHALL BE PROOF-ROLLED WITH A LOADED. TANDEM-AXLE DUMP TRUCK OR MINIMUM 10-TON SMOOTH DRUM ROLLER. THE PROOF ROLLING SHALL BE PERFORMED IN THE PRESENCE OF A GEOTECHNICAL ENGINEER. ANY UNSUITABLE MATERIALS ENCOUNTERED SHALL BE OVER-EXCAVATED TO A COMPETENT BEARING STARTUM PRIOR TO THE PLACEMENT OF STRUCTURAL FILL.

13. EXPOSURE TO THE ENVIRONMENT MAY WEAKEN THE SOILS AT THE FOOTING BEARING LEVEL IF THE FOUNDATION EXCAVATIONS REMAIN OPEN FOR TOO LONG A TIME. THEREFORE. FOUNDATION CONCRETE SHOULD BE PLACED THE SAME DAY THAT EXCAVATIONS ARE MADE. IF THE BEARING SOILS ARE SOFTENED BY SURFACE WATER INTRUSION OR EXPOSURE. THE SOFTENED SOILS MUST BE REMOVED FROM THE FOUNDATION EXCAVATION BOTTOM IMMEDIATELY PRIOR TO PLACEMENT OF CONCRETE. IF THE EXCAVATION MUST REMAIN OPEN OVERNIGHT, OR IF RAINFALL BECOMES IMMINENT WHILE THE BEARING SOILS ARE EXPOSED, A ONE TO THREE INCH THICK "MUD MAT" OF LEAN CONCRETE SHOULD BE PLACED ON THE BEARING SOILS BEFORE THE PLACEMENT OF REINFORCING STEEL

14. MOST OF THE SOILS AT THE FOUNDATION BEARING ELEVATION ARE ANTICIPATED TO BE SUITABLE FOR SUPPORT OF THE PROPOSED STRUCTURE. IT WILL BE IMPORTANT TO HAVE THE GEOTECHNICAL ENGINEER OF RECORD OBSERVE THE FOUNDATION SUBGRADE PRIOR TO PLACING FOUNDATION CONCRETE, TO CONFIRM THE BEARING SOILS ARE WHAT WAS ANTICIPATED. IF SOFT OR UNSUITABLE SOILS ARE OBSERVED AT THE FOOTING BEARING ELEVATIONS, THE UNSUITABLE SOILS SHOULD BE UNDERCUT AND REMOVED. ANY UNDERCUT SHOULD BE BACKFILLED WITH SUITABLE LIFTS OF COMPACTED STRUCTURAL FILL OR LEAN CONCRETE (F'C > 1,000 PSI AT 28 DAYS) UP TO THE ORIGINAL DESIGN BOTTOM OF FOOTING ELEVATION; THE ORIGINAL FOOTING SHALL BE CONSTRUCTED ON TOP OF THE HARDENED LEAN CONCRETE.

15. CONTRACTOR SHALL CONTROL SITE GROUNDWATER AND/OR SURFACE WATER BY ALL MEANS NECESSARY TO MAINTAIN A WATER LEVEL ONE FOOT BELOW SLAB SUBGRADE SO AS TO NOT DAMAGE FOUNDATION EXCAVATIONS.

16. ANY SUBGRADE SOILS WHICH HAVE BEEN WEAKENED DUE TO SATURATION OR DISTURBANCE SHALL BE RECOMPACTED OR REMOVED AND REPLACED WITH STRUCTURAL FILL AS DIRECTED BY THE GEOTECHNICAL ENGINEER. CONCRETE STRUCTURES SHALL BE CONSTRUCTED IN AN EXPEDIENT MANNER ONCE EXCAVATIONS ARE MADE TO AVOID WEATHER DAMAGE.

17. ALL EXCAVATIONS SHALL CONFORM TO APPLICABLE OSHA REGULATIONS.

REINFORCED CONCRETE:

1. UNLESS NOTED OTHERWISE, ALL CONCRETE WORK, DETAILING, FABRICATION, AND PLACING OF REINFORCING AND CONCRETE SHALL BE GOVERNED BY THE LATEST REVISIONS OF:

A. ACI 301, ACI 315, AND ACI 318.

CRSI RECOMMENDED PRACTICE OF PLACING REINFORCING BARS.

ALL CONCRETE SHALL BE NORMAL WEIGHT WITH A MAXIMUM UNIT WEIGHT OF 150 POUNDS PER CUBIC FOOT AND SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4.500 PSI

ACI 306 AND ACI 305 FOR COLD AND HOT WEATHER CONCRETING, RESPECTIVELY.

3. PROVIDE A 3/4" CHAMFER AT ALL EXPOSED CONCRETE CORNERS.

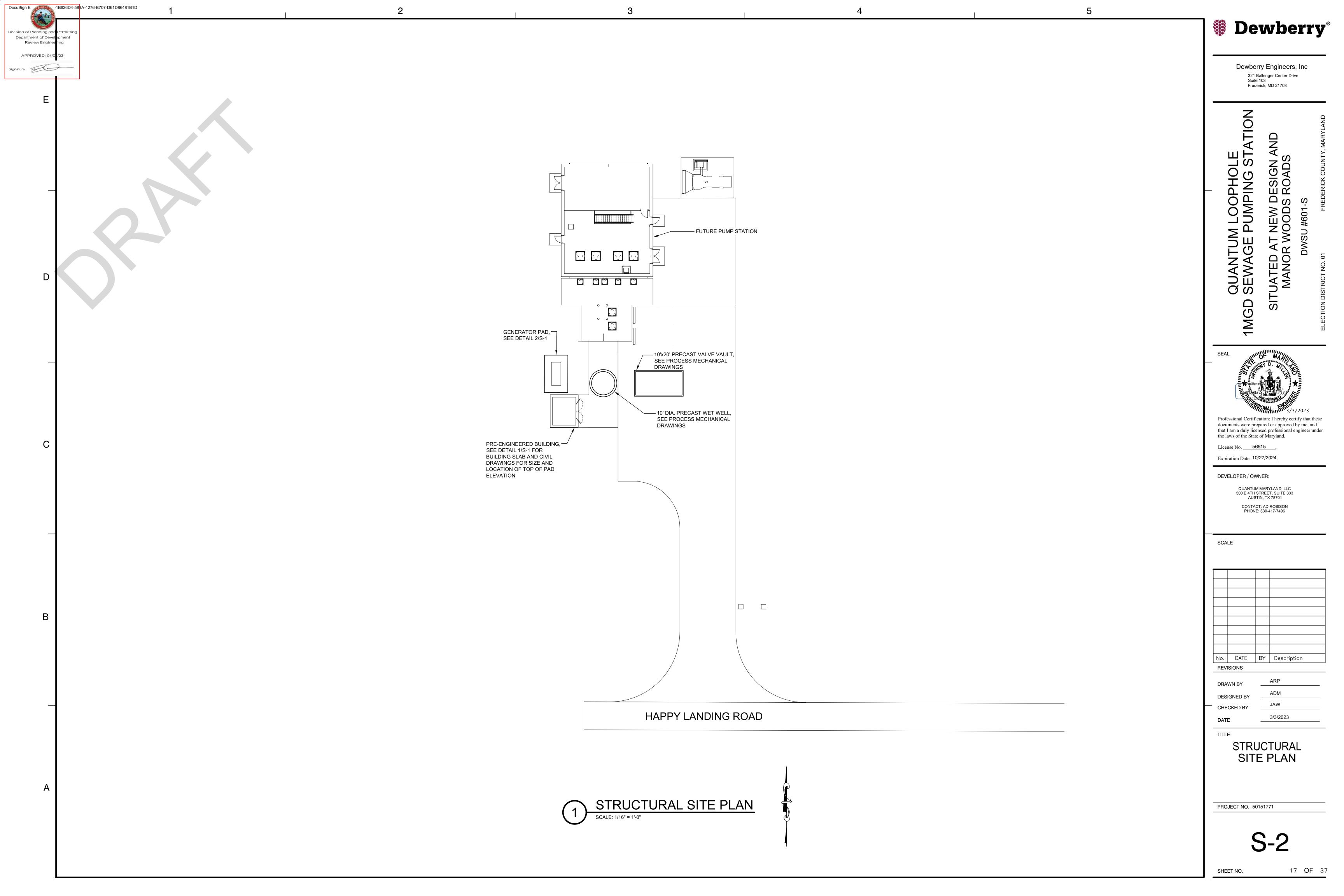
4. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, AND SHALL BE GRADE 60 U.N.O.

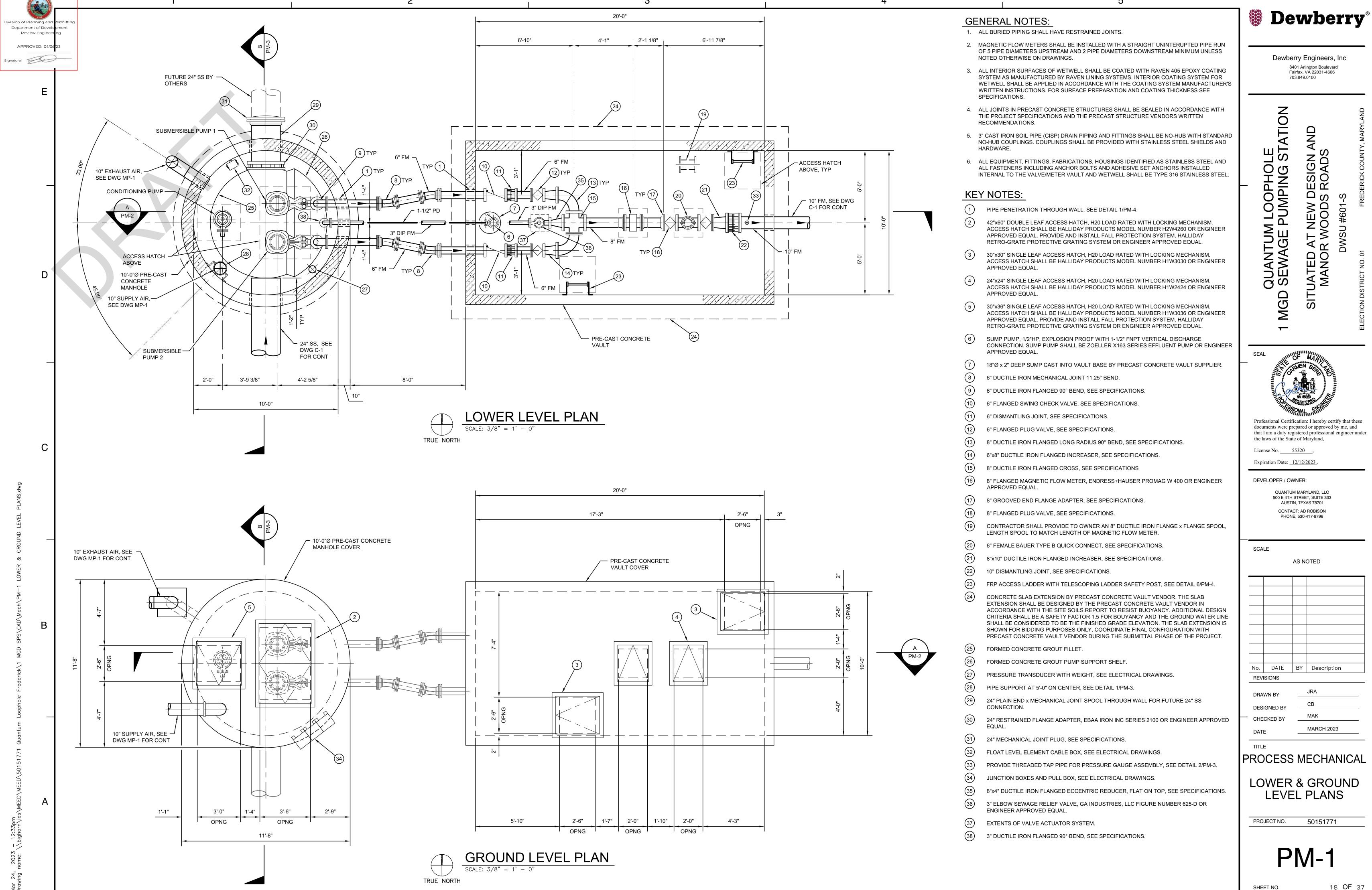
REINFORCING BAR LAP SPLICES AND HOOK DIMENSIONS SHALL BE AS REQUIRED PER THE

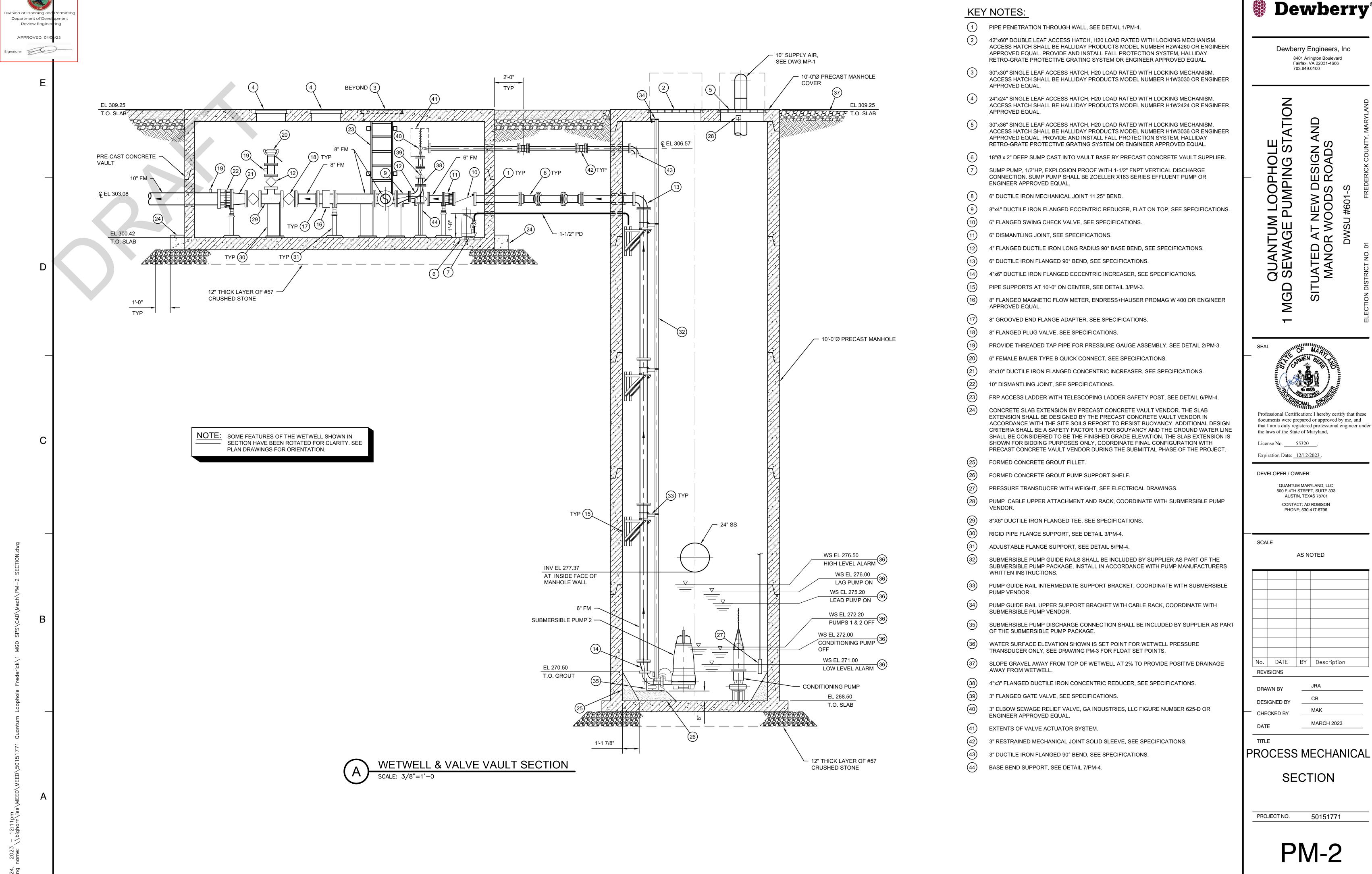
WHERE SLEEVES ARE SHOWN. CONTRACTOR SHALL SLIGHTLY ADJUST STEEL LOCATION

FOR REINFORCING REQUIREMENTS FOR OPENINGS LARGER THAN 12 INCHES IN DIAMETER.

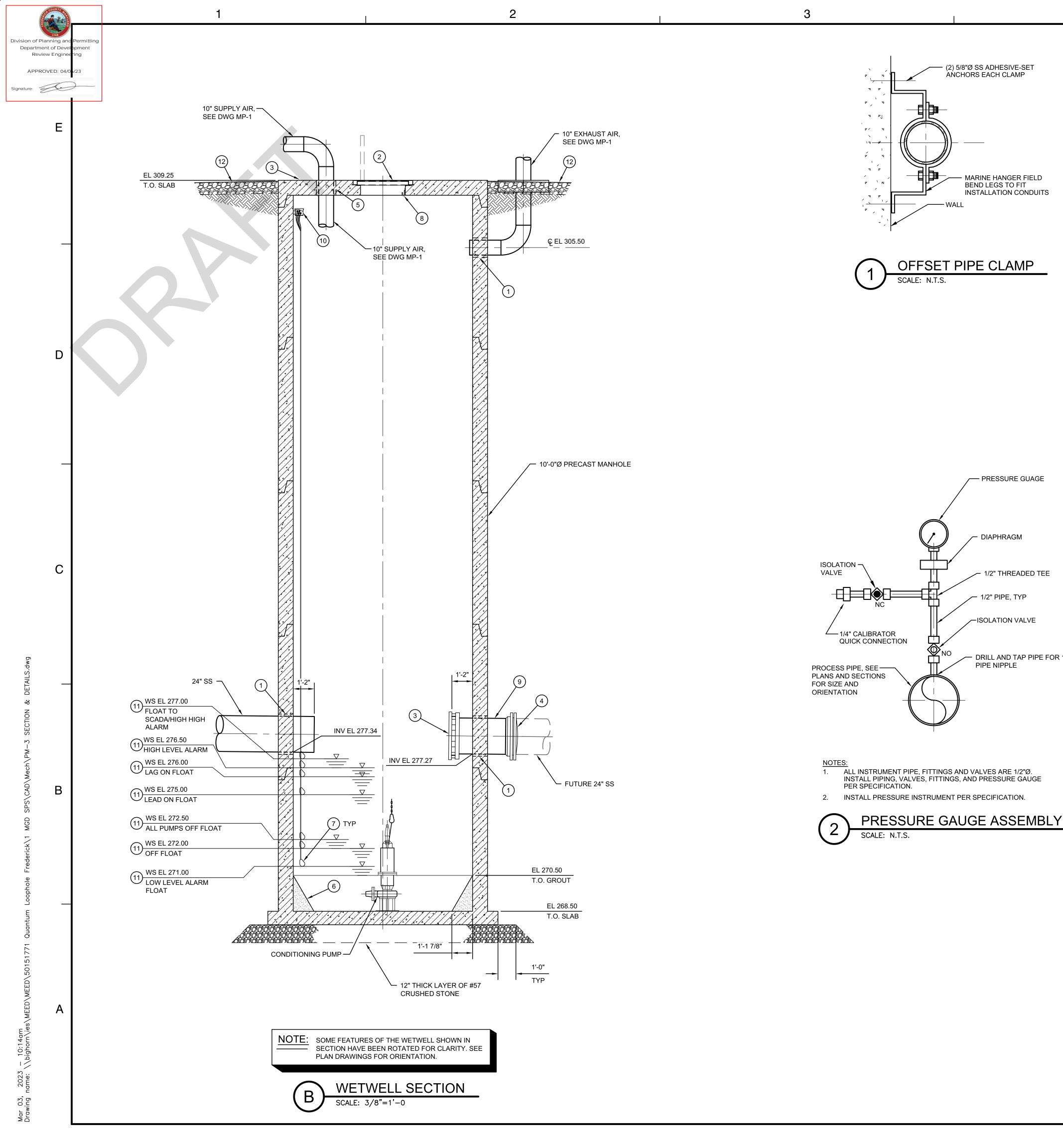
PLANT SHALL NOT BE CHANGED.







Dewberry[®]





- (2) 5/8"Ø SS ADHESIVE-SET

- MARINE HANGER FIELD

INSTALLATION CONDUITS

— PRESSURE GUAGE

DIAPHRAGM

/ 1/2" PIPE, TYP

✓ISOLATION VALVE

PIPE NIPPLE

- 1/2" THREADED TEE

- DRILL AND TAP PIPE FOR 1/2" NPT

BEND LEGS TO FIT

OFFSET PIPE CLAMP

ÀNCHORS EACH CLAMP

PIPE PENETRATION THROUGH WALL, SEE DETAIL 1/PM-4.

30"x36" SINGLE LEAF ACCESS HATCH, H20 LOAD RATED WITH LOCKING MECHANISM. ACCESS HATCH SHALL BE HALLIDAY PRODUCTS MODEL NUMBER H1W3036 OR ENGINEER APPROVED EQUAL. PROVIDE AND INSTALL FALL PROTECTION SYSTEM, HALLIDAY RETRO-GRATE PROTECTIVE GRATING SYSTEM OR ENGINEER APPROVED EQUAL.

24" RESTRAINED FLANGE ADAPTER, EBAA IRON INC SERIES 2100 OR ENGINEER APPROVED

24" MECHANICAL JOINT PLUG, SEE SPECIFICATIONS.

PIPE PENETRATION THROUGH SLAB, SEE DETAIL 7/PM-4.

FORMED CONCRETE GROUT FILLET.

FLOAT LEVEL ELEMENT, SEE ELECTRICAL DRAWINGS.

PUMP CABLE UPPER ATTACHMENT AND RACK, COORDINATE WITH SUBMERSIBLE PUMP VENDOR.

24" PLAIN END x MECHANICAL JOINT SPOOL THROUGH WALL FOR FUTURE 24" SS CONNECTION, SEE SPECIFICATIONS.

FLOAT LEVEL ELEMENT CABLE BOX, SEE ELECTRICAL DRAWINGS.

WATER SURFACE ELEVATION SHOWN IS SET POINT FOR BACKUP FLOAT CONTROLS ONLY, SEE DRAWING PM-2 FOR PRESSURE TRANSDUCER SET POINTS.

SLOPE GRAVEL AWAY FROM TOP OF WETWELL AT 2% TO PROVIDE POSITIVE DRAINAGE AWAY FROM WETWELL

- 3/4"x2"x0'-2" SS PLATE W/ 5/8"Ø DRILLED HOLE CTRD IN PLATE, TYP OF PRECAST CONC -2, EACH BRACKET MANHOLE WALL - 1/2"Ø SS NUTS & BOLTS, TYP SS STANDARD RISER CLAMP, B-LINE PART NO 3/4"Ø SS ADHESIVE SET -B3373-6 OR ENGINEER ANCHOR BOLT W/ 6" APPROVED EQUAL EMBED, TYP OF 2 EACH BRACKET SS MEDIUM DUTY ANGLE BRACKET, B-LINE PART NO B3066-1 OR ENGINEER APPROVED EQUAL, TYP SS STANDARD RISER CLAMP, B-LINE PART NO B3373-6 OR ENGINEER APPROVED EQUAL PRECAST CONC — MANHOLE WALL 3/4"x2"x0'-2" SS PLATE W/ 5/8"Ø DRILLED HOLE CTRD IN PLATE, TYP OF

PIPE SUPPORT DETAIL

3/4"Ø SS ADHESIVE SET ANCHOR BOLT W/ 6"

EMBED, TYP OF 2 EACH

BRACKET



Dewberry Engineers, Inc 8401 Arlington Boulevard Fairfax, VA 22031-4666

703.849.0100

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly registered professional engineer under the laws of the State of Maryland,

License No. <u>55320</u>, Expiration Date: <u>12/12/2023</u>.

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC 500 E 4TH STREET, SUITE 333 AUSTIN, TEXAS 78701

CONTACT: AD ROBISON PHONE; 530-417-8796

SCALE

2, EACH BRACKET

─ 1/2"Ø SS NUTS &

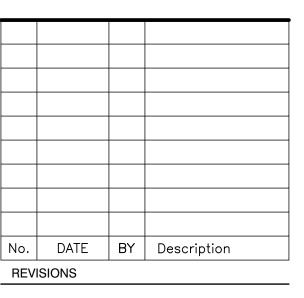
BOLTS, TYP

- SS MEDIUM DUTY ANGLE BRACKET,

ENGINEER APPROVED EQUAL, TYP

B-LINE PART NO B3066-1 OR

AS NOTED



DRAWN BY **DESIGNED BY** CHECKED BY

MARCH 2023 DATE

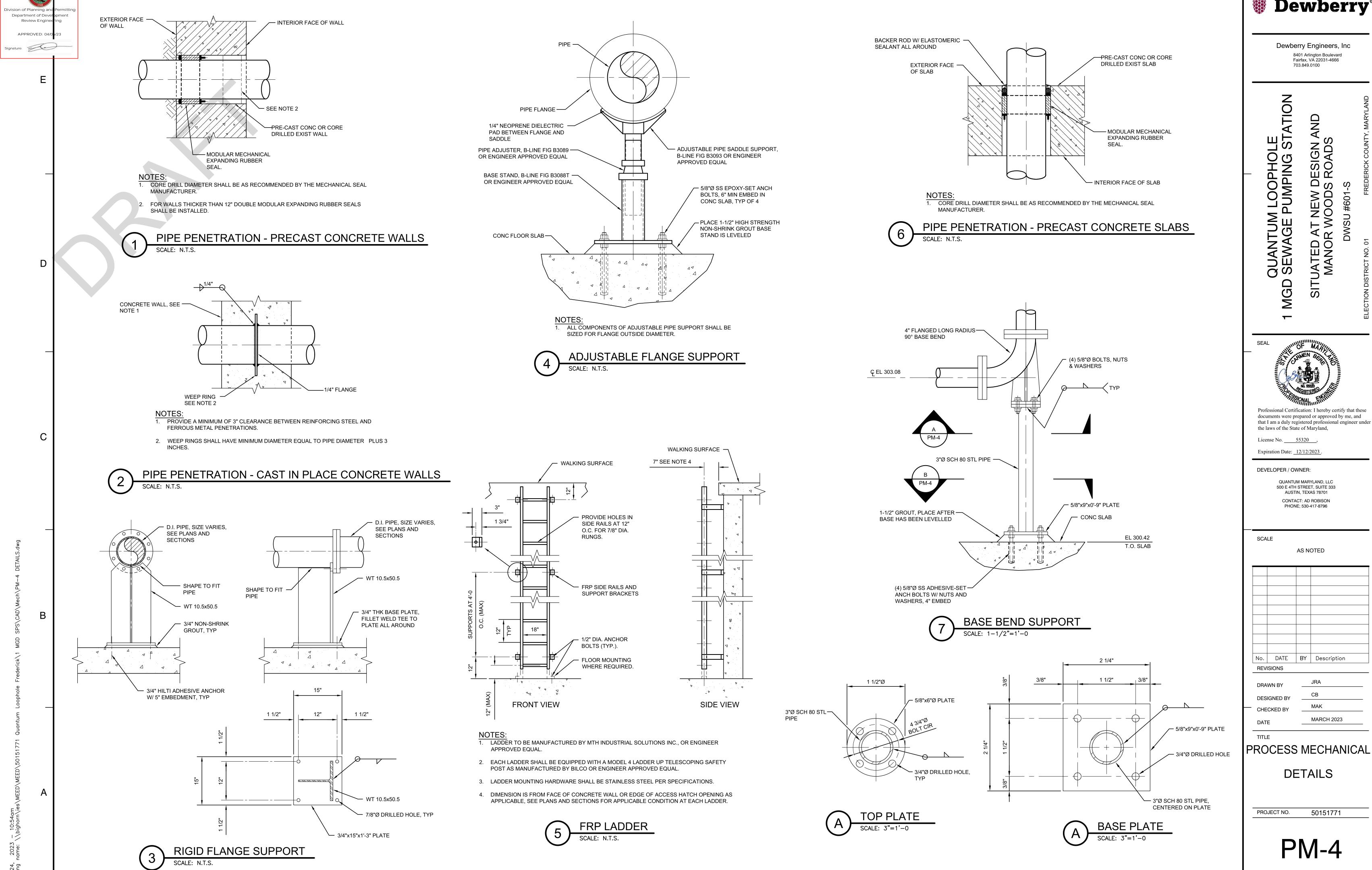
PROCESS MECHANICAL SECTION &

DETAILS

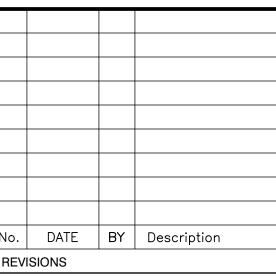
PROJECT NO. 50151771

PM-3

SHEET NO.



Dewberry*



PUMP STATION DESIGN CRITERIA

Dewberry

Dewberry Engineers, Inc
8401 Arlington Boulevard

8401 Arlington Boulevard Fairfax, VA 22031-4666 703.849.0100

703.849.0100

QUANTUM LOOPHOLE
SEWAGE PUMPING STATI
UATED AT NEW DESIGN AND
MANOR WOODS ROADS

OF MADON SIGNATURE NO. 55320 O

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Expiration Date: <u>12/12/2023</u>.

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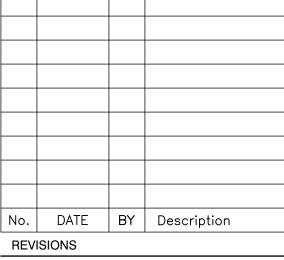
QUANTUM MARYLAND, LLC 500 E 4TH STREET, SUITE 333 AUSTIN, TEXAS 78701

AUSTIN, TEXAS 78701

CONTACT: AD ROBISON
PHONE; 530-417-8796

ALE

AS NOTED



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MARCH 2023

-

PROCESS MECHANICAL
DESIGN CRITERIA

DESIGN CIXITEIXIA

PROJECT NO. 50151771

PM-6

23 **OF** 37

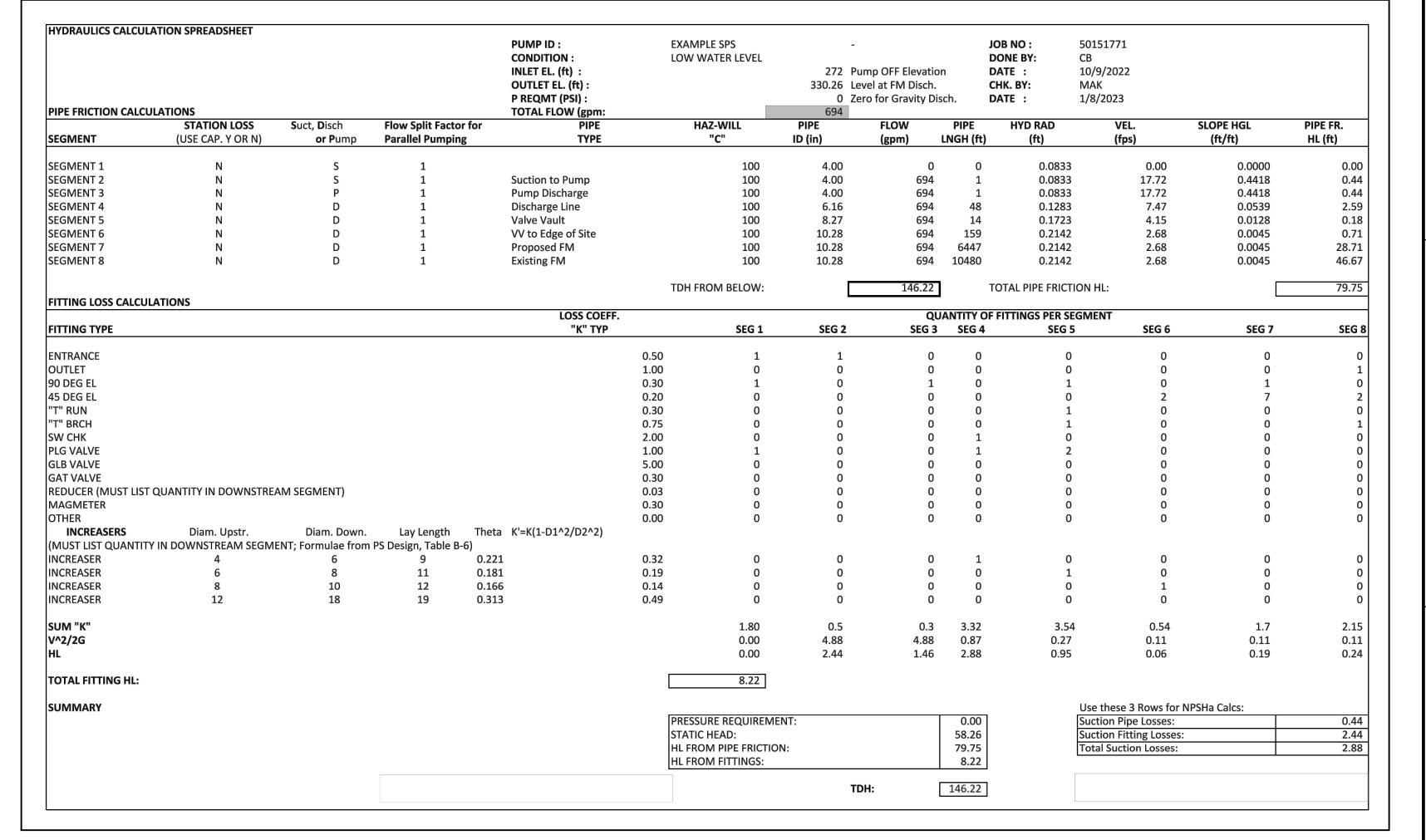
I IVI-C

PUMP STATION DISCHARGE PIPING MATERIAL	CLASS 52 DIP
PUMP STATION DISCHARGE PIPING SIZE	10"
PUMP STATION DISCHARGE PIPING INNER DIAMETER	10.28"
TOTAL LENGTH OF FORCEMAIN ("C" VALUE 100)	17,086 FT
ELEVATION OF FORCEMAIN AT TERMINAL MANHOLE	330.26 FT
PUMP "OFF" ELEVATION	272.00 FT
TOTAL STATIC HEAD	58.26 FT

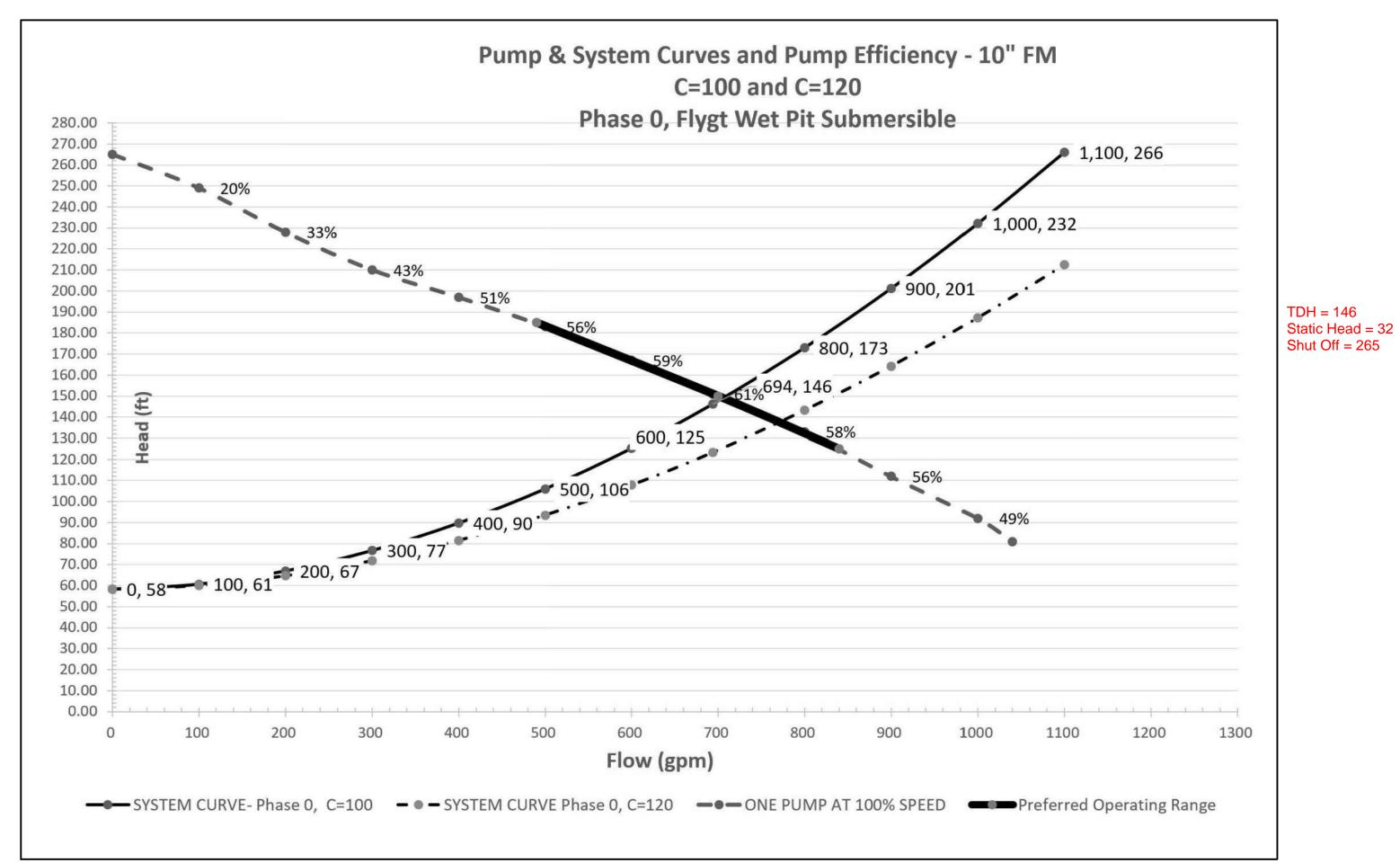
PUMP STATION DESIGN CALCULATIONS - DIP FORCE MAIN

WET WELL DESIGN CALCULATIONS

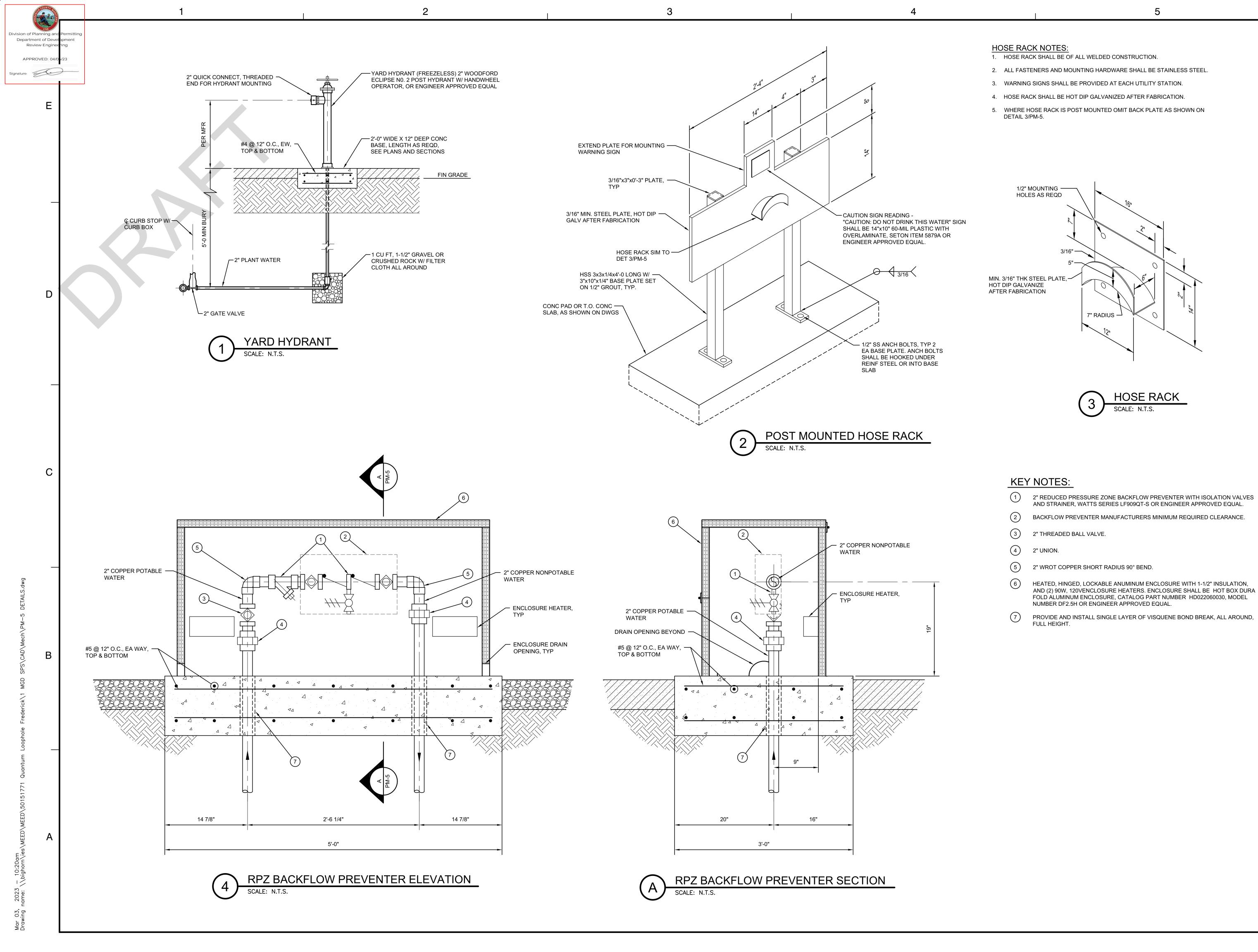
VVLT VVLLL DEGIGIN OALOOLATIO	110
WET WELL DIAMETER	10 FT
TOP SLAB ELEVATION	309.25 FT
GRADE ELEVATION	309.17 FT
TOP ELEVATION - INSIDE	308.41 FT
SEWER INVERT IN	278.00 FT
HIGH WATER LEVEL	277.00 FT
LAG PUMP "ON"	276.00 FT
LEAD PUMP "ON"	275.20 FT
PUMP "OFF"	272.20 FT
MINIMUM WATER LEVEL	271.00 FT
BOTTOM ELEVATION	268.50 FT
REQUIRED VOLUME (BETWEEN ON AND OFF)	1735 GAL
AVAILABLE VOLUME (BETWEEN ON AND OFF)	1762 GAL
GALLON PER FOOT	587 GAL
PUMP RATE	694 GPM



TOTAL DYNAMIC HEAD CALCULATIONS - DIP FORCE MAIN - "C" VALUE 100



PUMP AND SYSTEM CURVE - DIP FORCE MAIN





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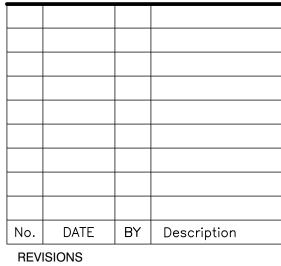
Expiration Date: <u>12/12/2023</u>.

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC 500 E 4TH STREET, SUITE 333 AUSTIN, TEXAS 78701

CONTACT: AD ROBISON PHONE; 530-417-8796

AS NOTED



DRAWN BY

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MARCH 2023 DATE

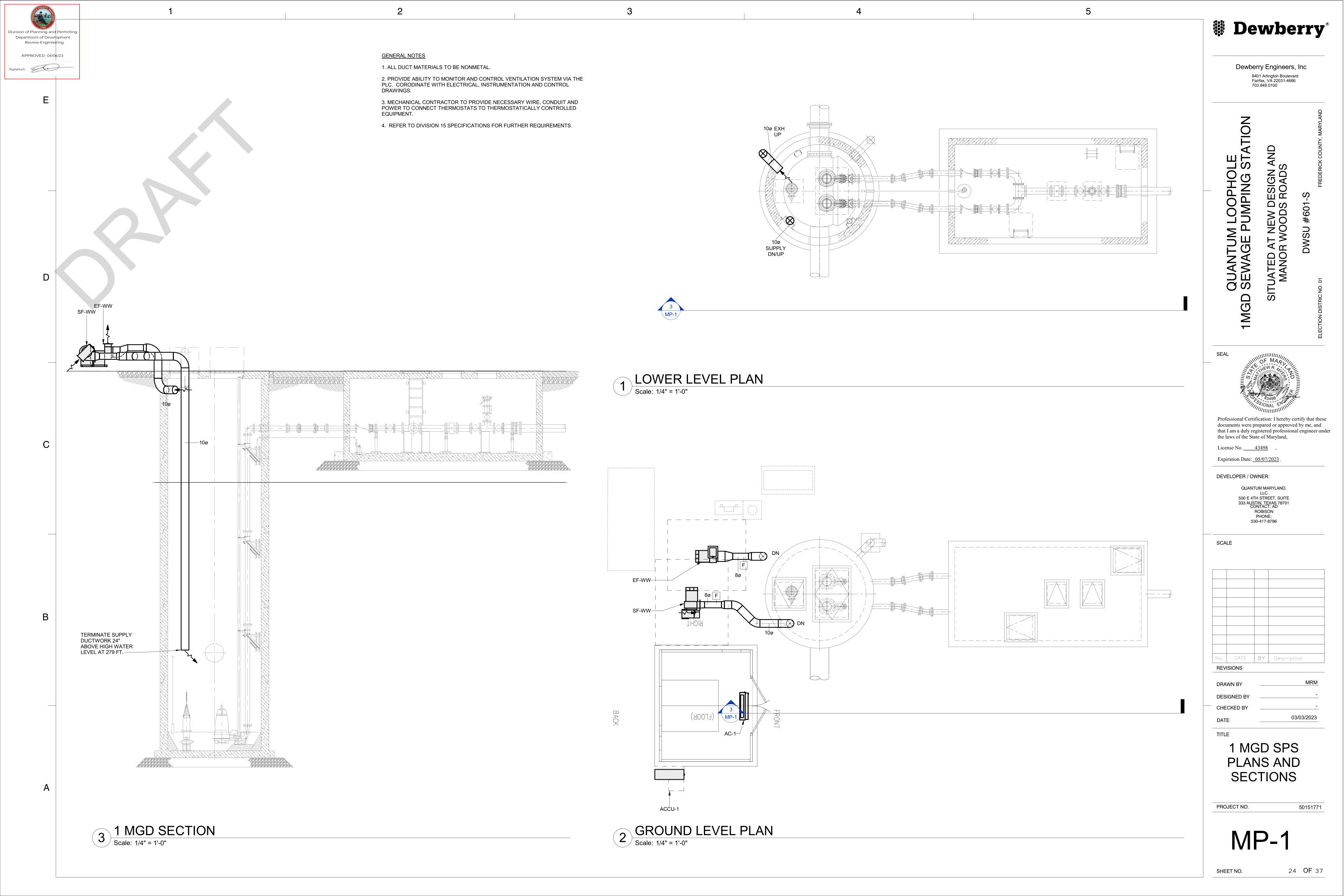
PROCESS MECHANICAL

DETAILS

PROJECT NO. 50151771

PM-5

22 **OF** 37 SHEET NO.



SCHEDULE OF FANS											
EQUIPMENT ID	SERVICE	FAN TYPE	DRIVE TYPE	AIR FLOW (CFM)	TOTAL STATIC PRESSURE (IN WG)	FAN SPEED (RPM)	FAN POWER (BHP) (WATTS)	MOTOR (HP)	VOLTAGE	PHASE	ACCESSORIES
SF-WW	WET WELL	USF	BELT	630	0.25	1,082	0.09	1/4	120	1	VFC
EF-WW	WET WELL	USF	BELT	630	0.25	1,082	0.09	1/4	120	1	VFC

NOTES:

- 1. REFER TO SPECIFICATION 15838.
- 2. EQUIPMENT SHALL HAVE AMCA TYPE B SPARK-RESISTANT CONSTRUCTION.

FAN TY	<u> PE:</u>
AXF	AXIAL FAN
CF	CABINET FAN
CGEF	CEILING EXHAUST FAN
CREF	CENTRIFUGAL ROOF EXHAUST FA
CRSF	CENTRIFUGAL ROOF SUPPLY FAN
MFF	MIXED FLOW FAN
PTF	PROPELLER TRANSFER FAN

PROPELLER WALL FAN SQUARE CENTRIFUGAL FAN

TUBULAR CENTRIFUGAL FAN

USF UTILITY SET FAN

TCF

- AUTOMATIC DAMPER BOTTOM INLET WITH BOTTOM INLET GRILLE
- BIRDSCREEN BACKDRAFT DAMPER
- DISCHARGE CONE
- DISCHARGE SILENCER
- ELECTRONICALLY COMMUTATED MOTOR FLAT FILTER FRAME WITH TYPE B MEDIA
- INLET BELL
- INLET CONE INLET GUARD
- INLET SILENCER
- PREFABRICATED ROOF CURB
- SC SOUND ATTENUATING CURB
- SSSC SOLID STATE SPEED CONTROLLER VARIABLE FREQUENCY CONTROLLER
- VARIABLE PITCH FAN BLADES
- WEATHERPROOF MOTOR HOUSING



INDOOR UNIT DESIGNATION	<u>AC-1</u>
SUPPLY AIR VOLUME - CFM OUTSIDE AIR VOLUME - CFM FAN TYPE FAN QUANTITY EXTERNAL STATIC PRESSURE INCL. FILTERS - IN WG FAN MOTOR HP FAN CONTROL TYPE	431 0 FC 1 N/A N/A CS
COOLING COIL AIR VOLUME - CFM MAXIMUM COIL FACE VELOCITY - FPM ROOM DESIGN TEMPERATURE - °F DB ROOM SENSIBLE HEAT, COOLING - BTU/HR ROOM LATENT HEAT, COOLING - BTU/HR RETURN AIR SENSIBLE HEAT, COOLING - BTU/HR SENSIBLE HEAT CREDIT, COOLING - BTU/HR OUTSIDE AIR TEMPERATURE - °F DB/WB OUTSIDE AIR SENSIBLE HEAT, COOLING - BTU/HR OUTSIDE AIR LATENT HEAT, COOLING - BTU/HR TOTAL SENSIBLE HEAT, COOLING - BTU/HR GRAND TOTAL HEAT, COOLING - BTU/HR COOLING COIL LEAVING AIR TEMPERATURE - °F DB	431 500 80 8550 250 500 -500 N/A N/A N/A 8,900 8,900 55
OUTSIDE AIR TEMPERATURE - °F DB HEATING CAPACITY - BTU/HR	17 5,700
UNIT ARRAGEMENT TYPE FILTER TYPE CONTROL SEQUENCE TYPE CASING TYPE UNIT DIMENSIONS - IN (L x W x H) SERVICE INDOOR UNIT VOLTAGE / PHASE INDOOR UNIT FLA	HDT MERV 8 N/A N/A 12x31x10 ELEC 208/1 0.30
OUTDOOR UNIT DESIGNATION	ACCU-1
CONDENSER FAN QUANTITY COMPRESSOR QUANTITY AMBIENT AIR TEMPERATURE - °F DB ENERGY EFFICIENCY RATIO - EER OUTDOOR UNIT VOLTAGE / PHASE OUTDOOR UNIT FLA OUTDOOR UNIT MOP	1 95 12 208 / 1 0.36

NOTES:

- 1. FAN TYPE: FC - FORWARD CURVED FAN
 BI - BACKWARD INCLINED FAN
 PLENUM - PLENUM FAN
- 2. FAN SPEED CONTROL TYPE:
- VS VARIABLE SPEED CS CONSTANT SPEED
- TS TWO SPEED
- 3. UNIT ARRANGEMENT TYPE (FAN POSITION WITH RESPECT TO COOLING COIL POSITION): HDT - HORIZONTAL DRAW-THROUGH
- VDT VERTICAL DRAW-THROUGH
- HBT HORIZONTAL BLOW-THROUGH VBT - VERTICAL BLOW-THROUGH

4. CASING TYPE:

- 1 1 INCH THICK UNIT CONSTRUCTION 2 - 2 INCH THICK UNIT CONSTRUCTION
- 3 3 INCH THICK UNIT CONSTRUCTION 4 - 4 INCH THICK UNIT CONSTRUCTION
- 5. EXTERNAL STATIC PRESSURE INCLUDES AIR FILTER LOSSES.
- 6. UNIT SHALL HAVE SINGLE POINT ELECTRICAL CONNECTION. 7. UNIT SHALL HAVE FACTORY INSTALLED INTEGRAL CONDENSATE PUMP.
- 8. UNIT SHALL DUAL INDEPENDENTLY CIRCUITED COMPRESSORS EACH WITH SUCTION LINE ACCUMULATOR, LIQUID REFRIGERANT STORAGE RECEIVER, HOT GAS BYPASS, MODULATING HOT GAS REHEAT COIL, AND FLOODED CONDENSER HEAD PRESSURE CONTROLS.
- 9. UNIT SHALL BE PROVIDED WITH MANUFACTURER'S MICROPROCESSOR BASED CONTROLLER WITH OUTSIDE AIR DEW POINT TEMPERATURE CONTROL LOGIC WITH REHEAT/HEAT CONTROL.
- 10. UNIT SHALL BE PROVIDED WITH WATER LEAK DETECTOR FOR FIELD INSTALLATION IN AUXILIARY DRAIN PAN.
- 11. CONDENSING UNIT SHALL BE PROVIDED BY THE SAME MANUFACTURER AS THAT OF THE INDOOR EVAPORATOR
- 12. *PROVIDE WITH HOT GAS BYPASS, LOW AMBIENT OPERATION CONTROLS, FAN DELAY RELAY KITS, REFRIGERANT PIPING AND CHARGE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

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QUANTUM LOOPHOLE SEWAGE PUMPING STATION

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License No. <u>43498</u>

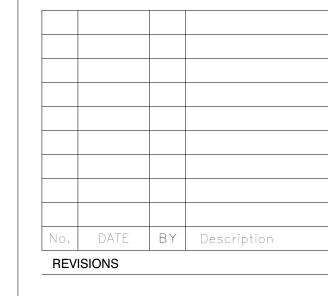
Expiration Date: <u>05/07/2023</u>.

DEVELOPER / OWNER:

QUANTUM MARYLAND, 500 E 4TH STREET, SUITE 333 AUSTIN, TEXAS 78701 CONTACT: AD ROBISON

PHONE; 530-417-8796

SCALE



DRAWN BY DESIGNED BY

CHECKED BY

PROJECT NO.

1 MGD **EQUIPMENT** SCHEDULES

03/03/2023

50151771

25 **OF** 37

SHEET NO.

Review Engine

APPROVED: 04/0

Signature:

8401 Arlington Boulevard Fairfax, VA 22031-4666 703.849.0100

MPING ШÃ S

Professional Certification: I hereby certify that these

documents were prepared or approved by me, and that I am a duly registered professional engineer under the laws of the State of Maryland,

License No. 59922, Expiration Date: 09/15/2024

DEVELOPER / OWNER:

<u>Q</u> w

QUANTUM MARYLAND, LLC 500 E 4TH STREET, SUITE 333 AUSTIN, TEXAS 78701

CONTACT: AD ROBISON

PHONE; 530-417-8796

SCALE

No.	DATE	BY	Description					
REV	REVISIONS							

S. BLUCHER

DRAWN BY **DESIGNED BY**

S. BLUCHER M. FERGEN CHECKED BY MARCH 2023 DATE

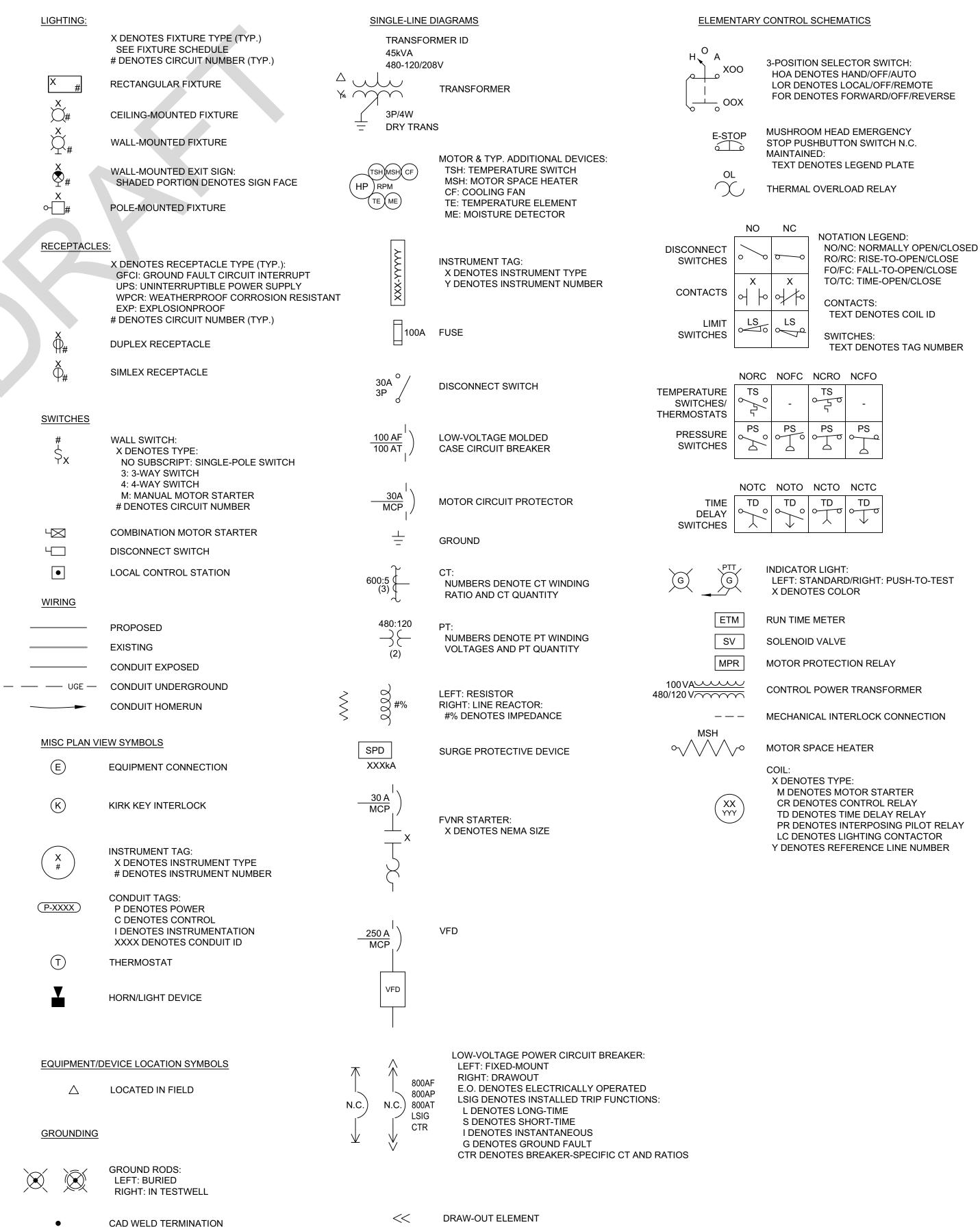
TITLE

LEGEND, ABBREVIATIONS, & **GENERAL NOTES**

PROJECT NO.

26 **OF** 37





AIC	AMPERE INTERRUPTING CAPACITY
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASME AF	AMERICAN SOCIETY OF MECHANICAL ENGINEERS AMPERE FRAME
AFF	AMPERE FRAME ABOVE FINISHED FLOOR
AT	AMPERE TRIP
BCC	BARE COPPER CONDUCTOR
BKR	BREAKER
CJB	CONTROL JUNCTION BOX
CMS	COMBINATION MOTOR STARTER
CPT	CONTROL POWER TRANSFORMER
СТ	CURRENT TRANSFORMER
CP	CONTROL PANEL
CV	CHECK VALVE
DB	DUCTBANK
DSW	DISCONNECT SWITCH
ECB	ENCLOSED CIRCUIT BREAKER
EHH	ELECTRICAL HANDHOLE
ETU	ELECTRONIC TRIP UNIT
EX	EXISTING
EXP	EXPLOSIONPROOF
FE	FLOW ELEMENT
FIT	FLOW INDICATING TRANSMITTER
FVNR	FULL VOLTAGE NON-REVERSING
G/GND	GROUND
GFCI	GROUND FAULT CIRCUIT INTERRUPT
IEEE	INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEER
ISO	INTERNATIONAL ORGANIZATION FOR STANDARDIZATION
HOA	HAND-OFF-AUTO
JBX	JUNCTION BOX
LCS	LOCAL CONTROL STATION
LP	LIGHTING PANEL
LS	LEVEL SWITCH/LIMIT SWITCH LEVEL SWITCH LOW
LSL	
LSLL	LEVEL SWITCH LIGH
LSH LSHH	LEVEL SWITCH HIGH LEVEL SWITCH HIGH-HIGH
MANUF	MANUFACTURER
MCP	MOTOR CIRCUIT PROTECTOR
MSH	MOTOR SPACE HEATER
MTD	MOUNTED
MTS	MANUAL TRANSFER SWITCH
MWTS	MOTOR WINDING TEMPERATURE SWITCH
N4X	NEMA 4X SST
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NTS	NOT TO SCALE
OL	OVERLOAD
PBX	PULLBOX
PC	PHOTOCELL
PIT	PRESSURE INDICATING TRANSMITTER
PLC	PROGRAMMABLE LOGIC CONTROLLER
PM	POWER MONITOR
PP	POWER PANEL
PSH	PRESSURE SWITCH HIGH
PSL	PRESSURE SWITCH LOW
PT	POTENTIAL TRANSFORMER/PRESSURE TRANSDUCER
QLPS	QUANTUM LOOP PUMP STATION
RECP	RECEPTACLE
RTU	REMOTE TELEMETRY UNIT
RVSS	REDUCED VOLTAGE SOFT STARTER
S.E.	SERVICE ENTRANCE
SP C.	SPARE CONDUIT
SPD	SURGE PROTECTIVE DEVICE
SST	STAINLESS STEEL
SV	SOLENOID VALVE
TSP	TWISTED SHIELDED PAIR
TX	TRANSFORMER
TYP	TYPICAL
VAP	VENTILATION ALARM PANEL
VED	VARIABLE FREQUENCY DRIVE
VFD	

TRANSFORMER

WET WELL

WEATHER PROOF CORROSION RESISTANT

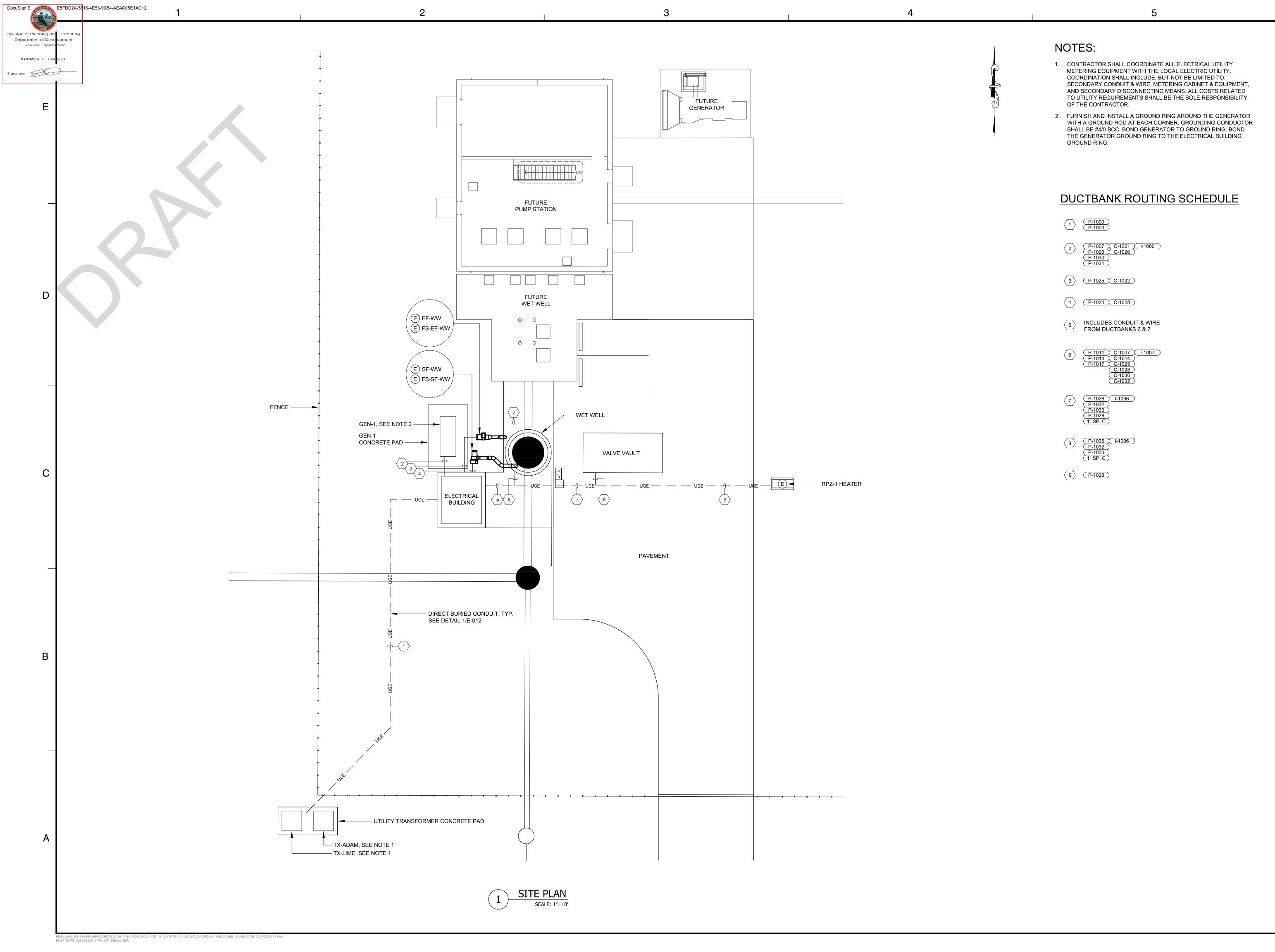
GENERAL NOTES:

- 1. THESE DRAWINGS ARE GENERALLY DIAGRAMMATIC AND DO NOT SHOW ALL DETAILS REQUIRED FOR THE COMPLETE SYSTEM. THEY SHOULD HOWEVER BE FOLLOWED AS CLOSELY AS POSSIBLE IN THE GENERAL ARRANGEMENT AND LOCATION OF EQUIPMENT. ALL DIMENSIONS SHALL BE CHECKED AT THE BUILDING AND ALL STRUCTURAL AND FINISH CONDITIONS INVESTIGATED. THE CONTRACTOR SHALL ARRANGE HIS WORK TO MEET THESE CONDITIONS AND PROVIDED SUCH EQUIPMENT AND ACCESSORIES AS MAY BE REQUIRED.
- 2. PROPERLY SUPPORT ALL WORK AND EQUIPMENT INSTALLED UNDER THIS CONTRACT PLUMB AND PARALLEL. STUDY ALL GENERAL, STRUCTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS, SHOP DRAWINGS, AND CATALOG DATA TO DETERMINE HOW EQUIPMENT, ACCESSORIES, PIPING, FIXTURES, AND RELATED ITEMS ARE TO BE SUPPORTED, MOUNTED, OR SUSPENDED. PROVIDE ALL BOLTS, INSERTS, PIPE STANDS, BRACKETS, STRUCTURAL SUPPORTS, AND ACCESSORIES FOR PROPER SUPPORT OF EQUIPMENT FURNISHED UNDER THIS CONTRACT, COORDINATE THE ELECTRICAL WORK WITH ALL OTHER CONTRACTORS BEFORE BEGINNING WORK TO ENSURE THAT THE ELECTRICAL WORK DOES NOT INTERFERE WITH OTHER
- 3. NOTIFY THE ENGINEER IN WRITING IMMEDIATELY UPON DISCOVERY OF ANY DISCREPANCY OR POINTS OF CONFLICT IN THE DRAWINGS OR THE SPECIFICATIONS.
- 4. UNLESS SPECIFICALLY NOTED OTHERWISE, ALL UNDERGROUND CONCRETE ENCASED ELECTRICAL CONDUITS SHALL BE PER STANDARD DETAILS.
- 5. THE INSTALLATION OF ALL CONCRETE ENCASED ELECTRICAL CONDUITS SHALL COMPLY WITH ACI 318, SECTION 6.3. CONTRACTOR SHALL SUPPLY EXPANSION JOINT FITTINGS AS REQUIRED FOR THERMAL EXPANSION AND DEFLECTION.
- 6. BOND ALL CONCRETE ENCASED GROUND CONDUCTORS TO EXISTING GROUND CONDUCTORS IN ALL MANHOLES, PULL BOXES, CABLE TRAYS, AND SIMILAR LOCATIONS WHERE APPLICABLE.
- 7. UNLESS OTHERWISE SPECIFIED OR NOTED, ALL WALL MOUNTED ELECTRICAL PANELS, ENCLOSURES, AND SIMILAR EQUIPMENT SHALL BE MOUNTED 6'-6" (MAX) FROM THE TOP OF THE PANEL TO FINISHED FLOOR OR GRADE.
- 8. UNLESS OTHERWISE NOTED. ALL LIGHTING SWITCHES, CONTROL SWITCHES, AND SIMILAR EQUIPMENT SHALL BE MOUNTED WITH THEIR CENTERLINE APPROXIMATELY 4'-0" ABOVE FINISHED FLOOR, SLAB, OR GRADE. THERMOSTATS SHALL BE MOUNTED 4'-4" ABOVE
- 9. A SEPARATE EQUIPMENT GROUNDING CONDUCTOR SHALL BE PROVIDED FOR EACH CIRCUIT (SEPARATE CONDUCTOR IN THE CONDUIT). THE CONDUCTOR SHALL BE TERMINATED AT THE PROPER DEVICE, TERMINAL, OR LUG AT THE POWER SOURCE (MCC GROUND BUS, PANELBOARD GROUND BUS, ETC.). GROUND CONDUCTOR SIZE SHALL BE PER THE LATEST EDITION OF THE NEC.
- 10. ELECTRICAL SYSTEMS INSTALLED IN HAZARDOUS LOCATIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH CHAPTER 5, ARTICLE 500 OF THE LATEST EDITION OF THE NEC. CONTRACTOR SHALL SEAL ALL CONDUITS LEAVING HAZARDOUS AREAS. WALL AND FLOOR OPENINGS SHALL BE SEALED WITH FIREPROOF COMPOUND.
- 11. ALL EQUIPMENT LOCATED IN HAZARDOUS AREAS SHALL BE SUITABLE FOR THE CLASS, DIVISION, AND GROUP RATING OF THE LOCATION.
- 12. ALL CONDUIT HOMERUNS ARE NOT SHOWN ON DRAWINGS. CONTRACTOR SHALL REFER TO CONDUIT AND WIRE SCHEDULE, RISER DIAGRAMS, SINGLE LINE DIAGRAMS, AND OTHER DRAWINGS FOR CONDUIT AND WIRE REQUIREMENTS.

Dewberry Engineers, Inc

SHEET NO.

#4/0 BCC





Dewberry Engineers, Inc

8401 Arlington Boulevard Fairfax, VA 22031-4666 703.849.0100

QUANTUM LOOPHOLE SEWAGE PUMPING STATION SITUATED AT NEW DESIGN AND MANOR WOODS ROADS

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly registered professional engineer under the laws of the State of Maryland,

License No. _____59922____,

Expiration Date: <u>09/15/2024</u>.

DEVELOPER / OWNER:

GD

QUANTUM MARYLAND, LLC 500 E 4TH STREET, SUITE 333 AUSTIN, TEXAS 78701

CONTACT: AD ROBISON PHONE; 530-417-8796

SCALE: 1" = 10'

No. DATE BY Description REVISIONS

S. BLUCHER DRAWN BY S. BLUCHER **DESIGNED BY** M. FERGEN CHECKED BY MARCH 2023

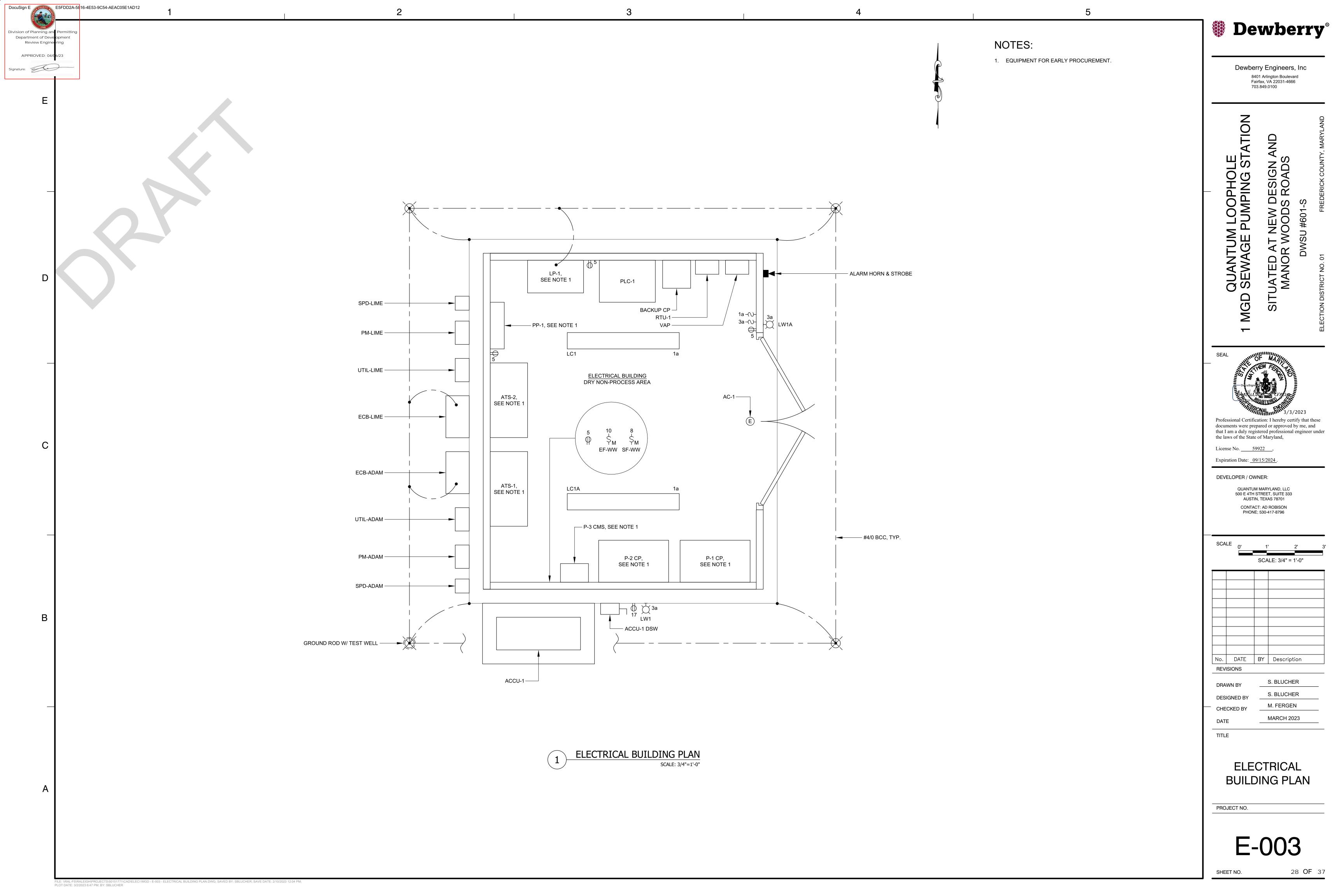
DATE

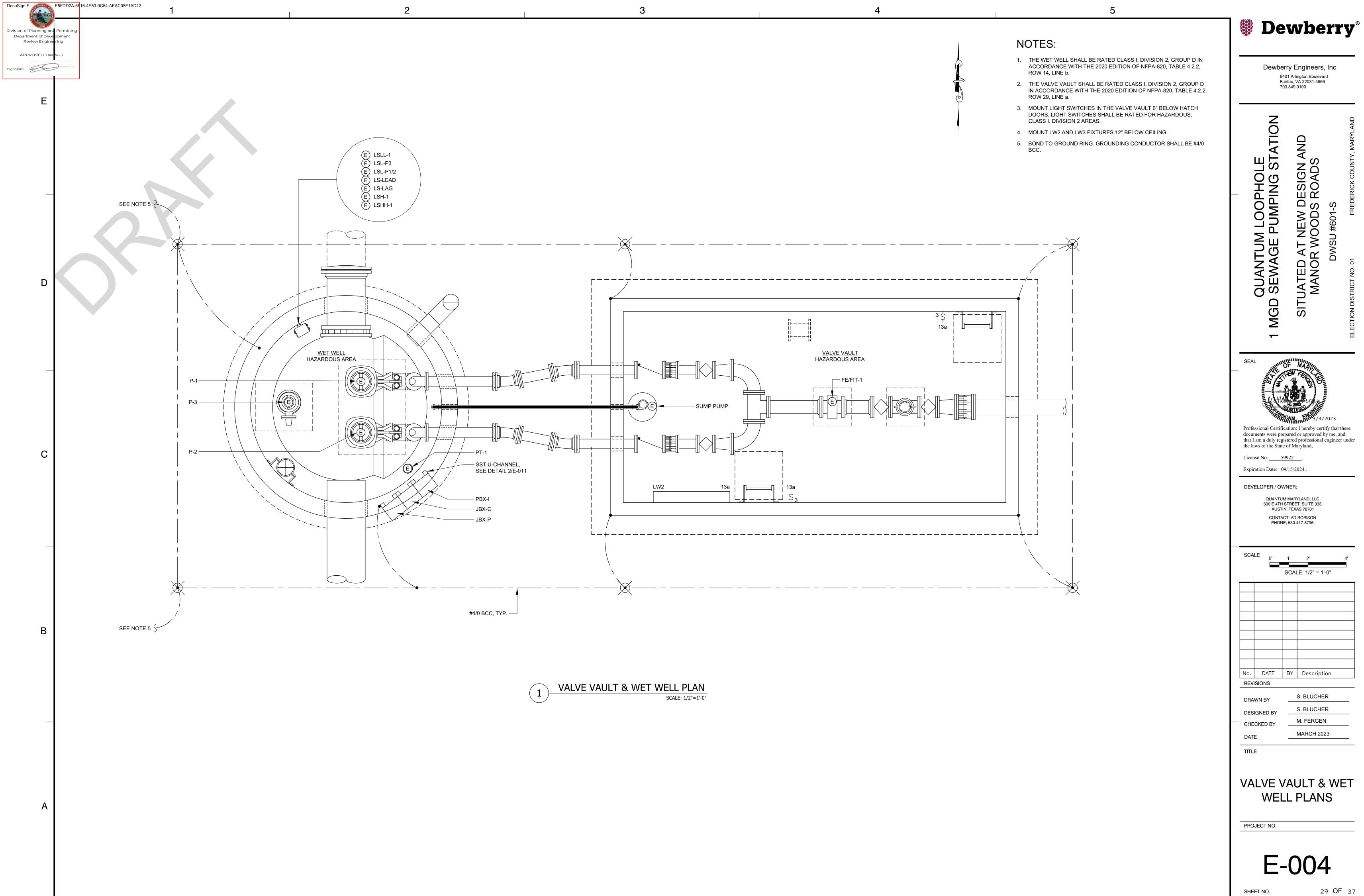
TITLE

SITE PLAN

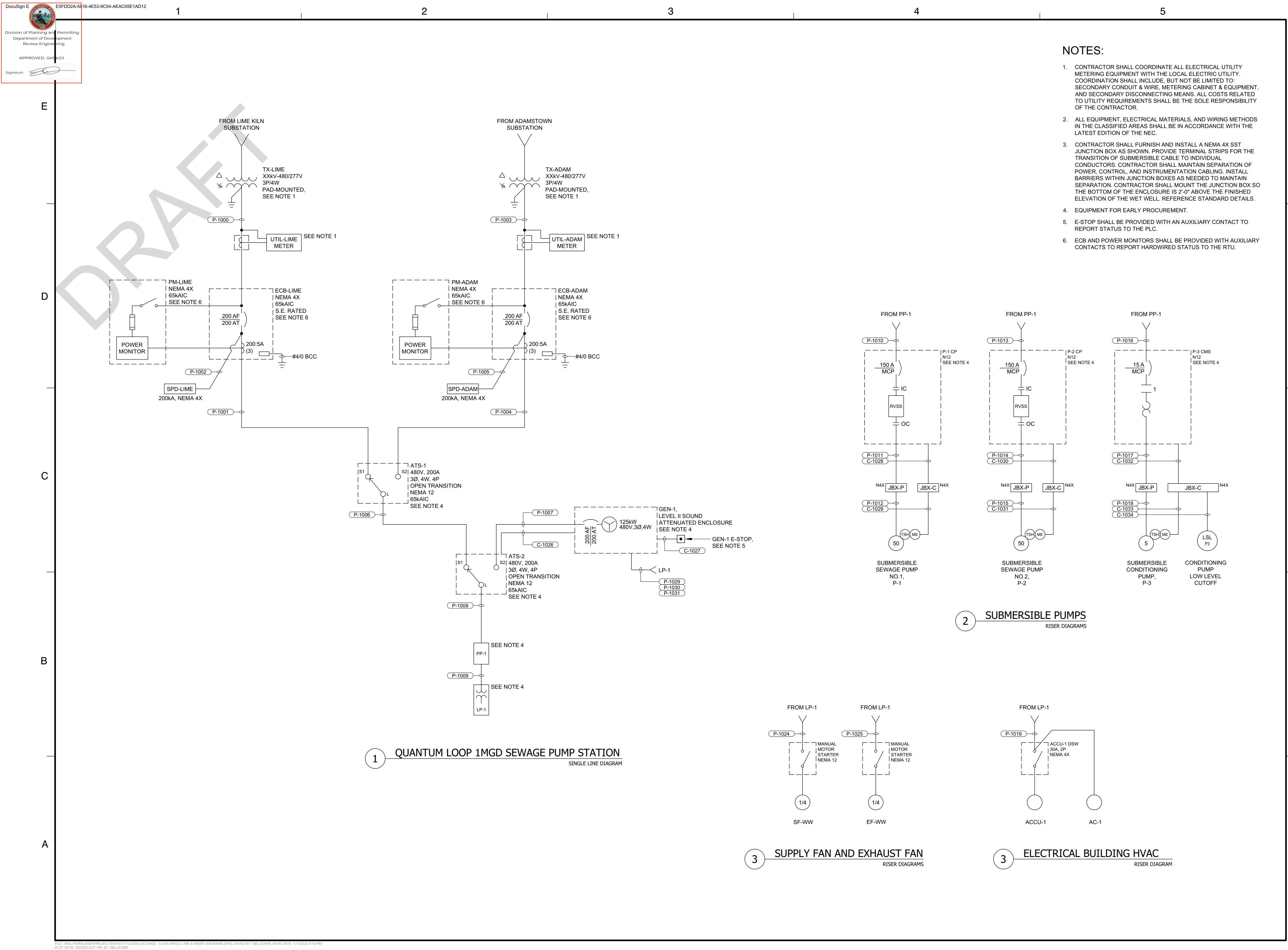
PROJECT NO.

27 **OF** 37 SHEET NO.





PLOT DATE: 3/2/2023 6:47 PM; BY: SBLUCHER





Dewberry Engineers, Inc 8401 Arlington Boulevard

Fairfax, VA 22031-4666 703.849.0100

QUANTUM LOOPHOLE SEWAGE PUMPING ST й́ Х \Box \Diamond EW OOD

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly registered professional engineer under the laws of the State of Maryland,

License No. _____59922____, Expiration Date: <u>09/15/2024</u>.

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC 500 E 4TH STREET, SUITE 333 AUSTIN, TEXAS 78701 CONTACT: AD ROBISON

PHONE; 530-417-8796

SCALE

No. DATE BY Description REVISIONS

S. BLUCHER DRAWN BY S. BLUCHER **DESIGNED BY** CHECKED BY

M. FERGEN MARCH 2023 DATE

TITLE

SINGLE LINE & RISER DIAGRAMS

PROJECT NO.

E-005

30 **OF** 37

SHEET NO.



Dewberry Engineers, Inc

8401 Arlington Boulevard Fairfax, VA 22031-4666 703.849.0100

QUANTUM LOOPHOLE MGD SEWAGE PUMPING STATION

SITUATED AT NEW DESIGN AND MANOR WOODS ROADS

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly registered professional engineer under the laws of the State of Maryland,

License No. <u>59922</u>, Expiration Date: <u>09/15/2024</u>.

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC 500 E 4TH STREET, SUITE 333 AUSTIN, TEXAS 78701 CONTACT: AD ROBISON PHONE; 530-417-8796

SCALE

No.	DATE	BY	Description

REVISIONS DRAWN BY

DESIGNED BY CHECKED BY DATE

TITLE

PANELBOARD & **FIXTURE** SCHEDULES

S. BLUCHER

S. BLUCHER

M. FERGEN

MARCH 2023

PROJECT NO.

SHEET NO.		

						PANEL	_ FF-I						111	PE: NEMA 12	<u> </u>		
						MAIN BR	REAKER						MOUN	NT: SURFAC	E		
					200A 3P						SPD: 200kA						
WIRE	TRID	POLE	No	VOLT-AMPERES VOLT-AMPERES							POI E	TRID	TRIP WIRE		DESCRIPTION		
VVIICE	11311	I OLL	INO.	Α	В	С	Α	В	С	INO.	, oll	11311	VVIIVE		DESCRIPTION		
			1	18,000						2							
P-1010	100	3	3		18,000					4	3	20		SPARE			
						18,000				6							
				18,000						8							
P-1013	100	3			18,000					10	3	20		SPARE			
						18,000											
				2,200						-							
P-1016	20	3			2,200					4				SPACE			
						2,200											
										-							
										-				SPACE			
										-				00405			
										4				SPACE			
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								1,010	3.010	-	2	40	P-1009	LP-1			
									3,0.0	74							
		TO	TAL	38,200	38,200	38,200	0	4,340	3,010	TO	TAL]					
			-			L					-	J			TOTAL LOAD (AMPS)		
				38,200				121,950		1					146.7		
					•	,		·		1					73.3%		
	WIRE P-1010 P-1013 P-1016	P-1010 100 P-1013 100	P-1010 100 3 P-1013 100 3 P-1016 20 3	P-1010 100 3 3 5 7 7 P-1013 100 3 9 11 13	WIRE TRIP POLE No. A 1 18,000 P-1010 100 3 3 5 7 18,000 P-1013 100 3 9 11 P-1016 20 3 15 17 19 21 23 25 27 29 31 33 35 37 39 41 TOTAL 38,200 P-101A	WIRE TRIP POLE No. A B 1 18,000 P-1010 100 3 3 3 18,000 P-1013 100 3 9 18,000 P-1016 20 3 15 2,200 P-1016 20 3 15 2,200 17 19 21 23 27 29 31 33 35 37 39 41 TOTAL 38,200 38,200 PHASE TOT.	WIRE	WIRE TRIP POLE No. VOLT-AMPERES VO P-1010 100 3 3 18,000 P-1013 100 3 9 18,000 P-1016 20 3 15 2,200 P-1016 20 3 15 2,200 19 21 25 27 29 31 33 39 41 TOTAL 38,200 38,200 38,200 0 PHASE TOTAL T T	Wire Trip Pole No. Volt-Amperes A B C A B C C C C C C C C C	Wire Trip Pole No. Trip Pole No. A B C C C C C C C C C	Wire Trip Pole No. Volt-Amperes No. A B C A B C C C C C C C C C	Wire Trip Pole No. A B C A B C C C C C C C C C	WIRE TRIP POLE No. TRIP POLE No. A B C C C C C C C C C	Mire Trip Pole No. A B C C C C C C C	Wire Trip Pole No. 18,000 18,000 18,000		

480-240/120 VOLTS						PANE	L LP-1					TYP	E: NEMA 3R	
1 PHASE, 3 WIRE					PRIMA	ARY MAIN E	BREAKER: 4	0A 2P				MOUN	T: SURFACE	
10kAIC					SECON	DARY MAIN	BREAKER:	80A 2P				SP	D: 100kA	
DECODIDATION	MIDE	VOLT-A	MPERES	VOLT-AN	//PERES	NI-	DOL E	TDID	MIDE	DESCRIPTION				
DESCRIPTION	WIRE	IRIP	POLE	No.	Α	В	А	В	No.	POLE	TRIP	WIRE	DESCRIPTION	
ELEC BLDG RECEPTACLES	2#12, #12G, 3/4"C	20	1	1	720		1,000		2	1	20	P-1021	PLC-1	
ELEC BLDG INTERIOR LIGHTS	2#12, #12G, 3/4"C	20	1	3		60		250	4	1	20	P-1022	BACKUP CP	
ELEC BLDG EXTERIOR LIGHTS	2#12, #12G, 3/4"C	20	1	5	30		250		6	1	20	P-1023	RTU-1	
AC-1	P-1019	20	_	7		1,100		150	8	1	20	P-1024	SF-WW	
AC-1	P-1019	20	2	9	1,100		150		10	1	20	P-1025	EF-WW	
SPARE		20	1	11				100	12	1	20	P-1026	FE/FIT-1	
VALVE VAULT LIGHT	P-1032	20	1	13	60		100		14	1	20	P-1027	VENTILATION ALARM PANEL	
VALVE VAULT SUMP PUMP	P-1033	20	1	15		250		100	16	1	20	P-1028	RPZ-1 HEATER	
ACCU-1 CONVENIENCE RECEPT.	2#12, #12G, 3/4"C	20G	1	17	180				18	1	20		SPARE	
SPARE		20	1	19					20	1	20		SPARE	
SPARE		20	1	21					22	1	20		SPARE	
SPARE		20	1	23				500	24	1	20	P-1029	GEN-1 SHORE POWER	
SPARE		20	1	25			250		26	1	20	P-1030	GEN-1 BATTERY CHARGER	
SPARE		20	1	27				500	28	- 2	20	P-1031	GEN-1 JACKET HEATER	
SPARE		20	1	29			500		30		20	P-1031	GEN-1 JACKET HEATER	
NOTES:			TO	TAL	2,090	1,410	2,250	1,600	ТО	TAL				
COMBINATION POWER UNIT - 15kVA						TOTAL	TOTAL						TOTAL LOAD (AMPS)	
G: GFCI BREAKER					4,340	3,010	7,350						30.6	
													38.3%	

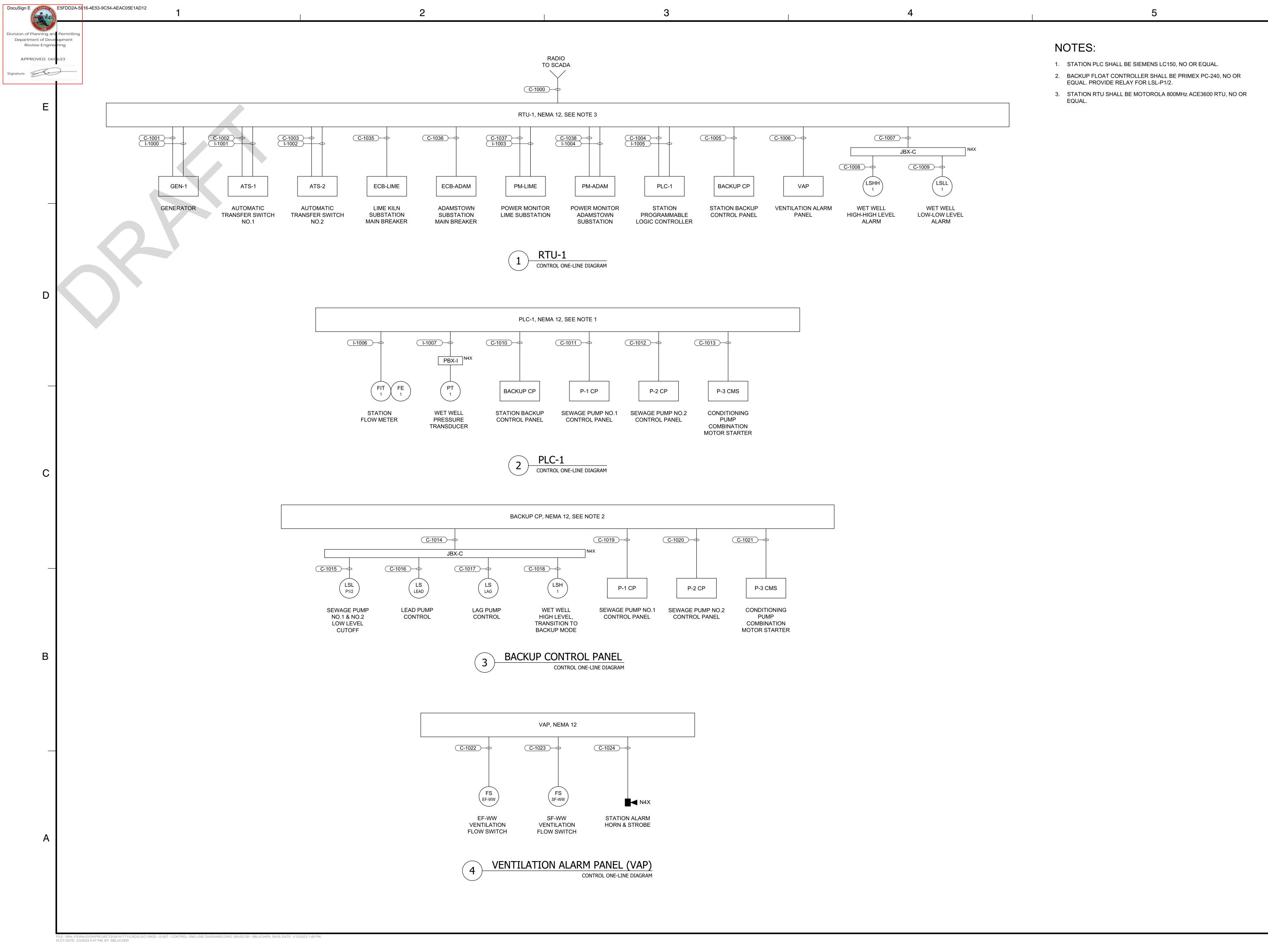
	FIXTURE SCHEDULE										
FIXTURE TYPE	FIXTURE WATTAGE	DESCRIPTION	MANUFACTURER AND MODEL								
LC1	1	CEILING-MOUNTED, 120-277Vac, LED LIGHT FIXTURE, COLOR TEMPERATURE OF 4000K, LINEAL RIBBED FROSTED ACRYLIC LENS, SPREAD DISTRIBUTION, GASKETED FIBERGLASS HOUSING, STAINLESS STEEL LATCHES, 4FT, 4,000 LUMEN MINIMUM, AND WET LOCATION LISTED.	HOLOPHANE EMS LED SERIES, COOPER VAPORTITE LED SERIES, OR LITHONIA FEM LED SERIES.								
LC1A	31W (max)	SIMILAR TO TYPE LC1 EXCEPT EQUIPPED WITH EMERGENCY BATTERY BACKUP.	SAME AS LC1								
LW1A	28W (max)		HOLOPHANE WALLPACK FULL CUTOFF LED, HUBBELL LMC SERIES, OR APPROVED EQUAL								
LW2	40W (max)	WALL-MOUNTED AT 45 DEGREES, 120-277Vac, LED LIGHT FIXTURE, COLOR TEMPERATURE OF 4000K, LINEAL FROSTED POLYCARBONATE LENS, SPREAD DISTRIBUTION, POLYESTER POWDER COATED CAST & EXTRUDED ALUMINUM ENCLOSURE, MOLDED SILICONE GASKETING, STAINLESS STEEL LATCHES, 4FT, 6,000 LUMEN MINIMUM, 80 CRI, UL LISTED FOR USE IN CLASS I, DIVISION 2, GROUP D AREAS.	HOLOPHANE EMXH LED SERIES OR ENGINEER APPROVED EQUAL								

APPROVED: 04/06/23

Signature:

FILE: \RAL-FS\RALEIGH\PROJECTS\50151771\CA PLOT DATE: 3/2/2023 6:47 PM; BY: SBLUCHER

31 **OF** 37



Dewberry

Dewberry Engineers, Inc 8401 Arlington Boulevard Fairfax, VA 22031-4666

703.849.0100

QUANTUM LOOPHOLE SEWAGE PUMPING STATION UATED AT NEW DESIGN AND MANOR WOODS ROADS

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly registered professional engineer under the laws of the State of Maryland,

License No. <u>59922</u>,

Expiration Date: <u>09/15/2024</u>.

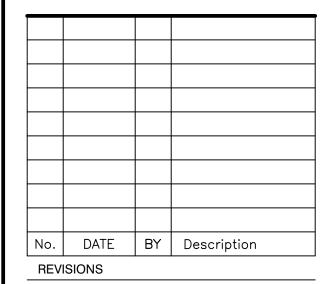
DEVELOPER / OWNER:

GD

QUANTUM MARYLAND, LLC 500 E 4TH STREET, SUITE 333 AUSTIN, TEXAS 78701

CONTACT: AD ROBISON PHONE; 530-417-8796

SCALE



DRAWN BY **DESIGNED BY** CHECKED BY

S. BLUCHER M. FERGEN MARCH 2023

S. BLUCHER

TITLE

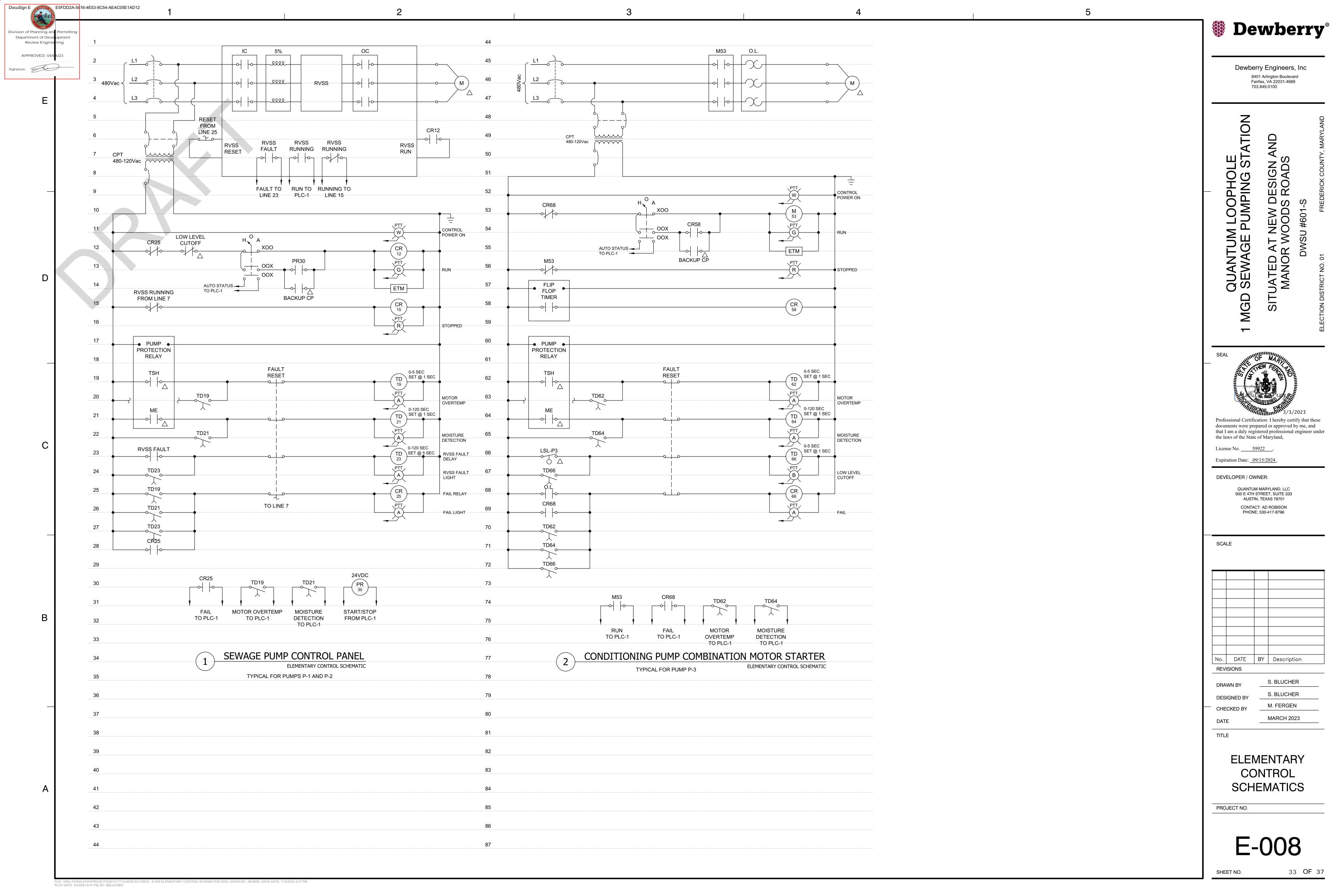
DATE

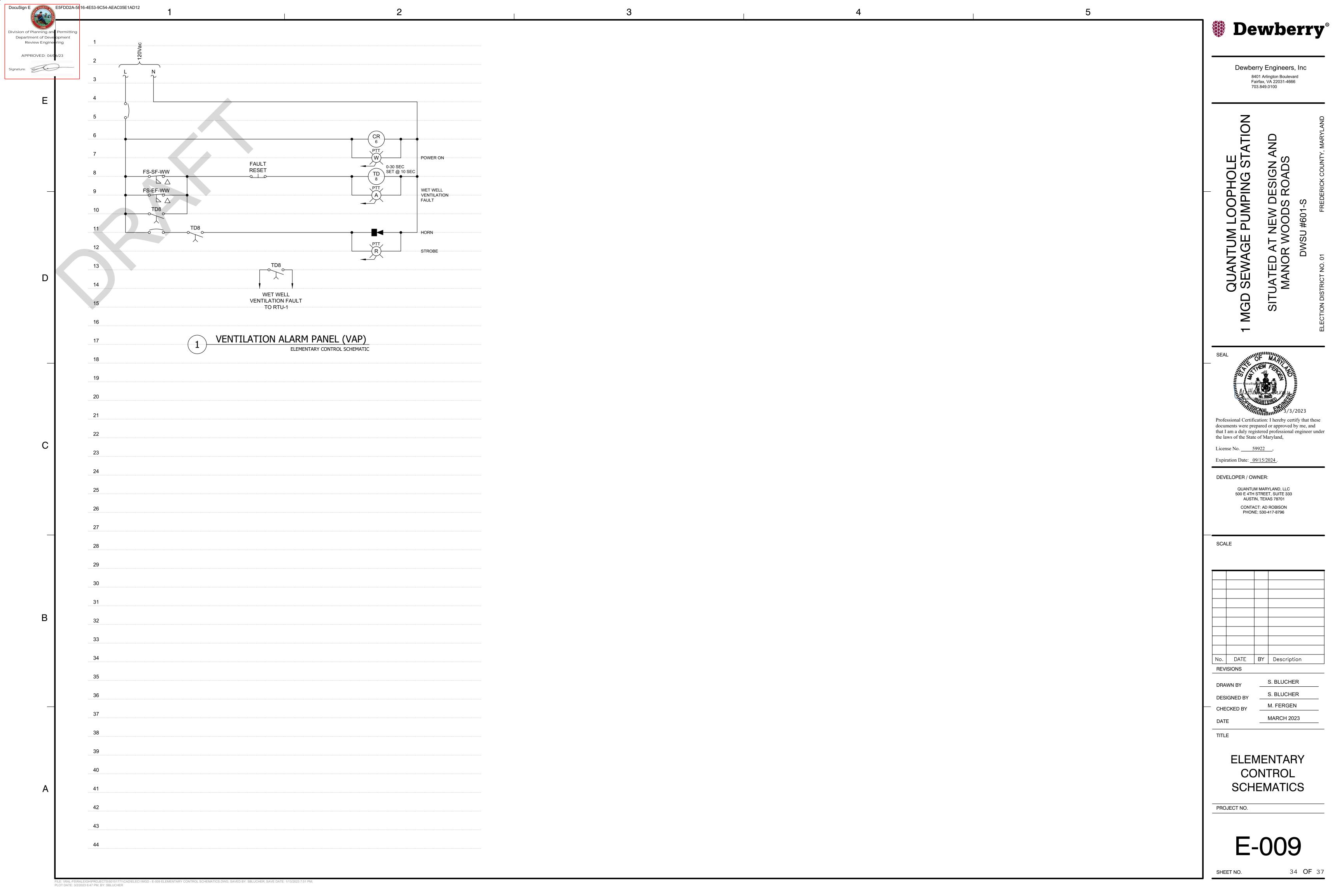
CONTROL ONE-LINE DIAGRAMS

PROJECT NO.

32 **OF** 37

SHEET NO.





DocuSign E E5FDD2A-5816-4E53-9C54-AEAC05E1AD12 Department of Developmer Review Engineering APPROVED: 04/06/23 Signature:

CONDUIT NO.	SIZE	FROM	TO	CONDUCTORS	REMARKS
P-1000	2"	TX-LIME	ECB-LIME	4#4/0	VIA UTILITY METER
P-1001	2"	ECB-LIME	ATS-1	4#4/0, #6G	
P-1002	1"	SPD	ECB-LIME	4#6, #10G	
P-1003	2"	TX-ADAM	ECB-ADAM	4#4/0	VIA UTILITY METER
P-1004	2"	ECB-ADAM	ATS-1	4#4/0, #6G	
P-1005	1"	SPD	ECB-ADAM	4#6, #10G	
P-1006	2"	ATS-1	ATS-2	4#4/0, #6G	
P-1007	2"	GEN-1	ATS-2	4#4/0, #6G	
P-1008	2"	ATS-2	PP-1	4#4/0, #6G	
P-1009	1"	PP-1	LP-1	2#8, #10G	
P-1010	1-1/2"	PP-1	P-1 CP	3#2, #8G	
P-1011	1-1/2"	P-1 CP	JBX-P	3#2, #8G	
P-1012		JBX-P	P-1	CABLE BY MANUF.	
P-1013	1-1/2"	PP-1	P-2 CP	3#2, #8G	
P-1014	1-1/2"	P-2 CP	JBX-P	3#2, #8G	
P-1015		JBX-P	P-2	CABLE BY MANUF.	
P-1016	1"	PP-1	P-3 CMS	3#12, #12G	
P-1017	1"	P-3 CMS	JBX-P	3#12, #12G	
P-1018		JBX-P	P-3 CMS	CABLE BY MANUF.	
P-1019	1"	LP-1	ELEC BLDG AC UNIT	2#12, #12G	
P-1020				NOT USED	
P-1021	1"	LP-1	PLC-1	2#12, #12G	
P-1022	1"	LP-1	BACKUP CP	2#12, #12G	
P-1023	1"	LP-1	RTU-1	2#12, #12G	
P-1024	1"	LP-1	SF-WW	2#12, #12G	VIA MANUAL MOTOR STARTER
P-1025	1"	LP-1	EF-WW	2#12, #12G	VIA MANUAL MOTOR STARTER
P-1026	1"	LP-1	FE/FIT-1	2#12, #12G	
P-1027	1"	LP-1	VENTILATION ALARM PANEL	2#12, #12G	
P-1028	1"	LP-1	RPZ-1 HEATER	2#12, #12G	
P-1029	1"	LP-1	GEN-1 SHORE POWER	2#12, #12G	
P-1030	1"	LP-1	GEN-1 BATTERY CHARGER	2#12, #12G	
P-1031	1"	LP-1	GEN-1 JACKET HEATER	2#12, #12G	
P-1032	1"	LP-1	VALVE VAULT LIGHT	2#12, #12G	
P-1033	1"	LP-1	VALVE VAULT SUMP PUMP	2#12, #12G	
P-1034				NOT USED	
P-1035				NOT USED	

ONDUIT NO.	SIZE	FROM	ТО	CONDUCTORS	REMARKS
C-1000	2"	SCADA	RTU-1	COORD. WITH SYS. INTEGRATOR	
C-1001	1"	RTU-1	GEN-1	8#14, #14G	
C-1002	1"	RTU-1	ATS-1	14#14, #14G	
C-1003	1"	RTU-1	ATS-2	14#14, #14G	
C-1004	2"	RTU-1	PLC-1	40#14, #14G	
C-1005	1"	RTU-1	BACKUP CP	6#14, #14G	
C-1006	1"	RTU-1	VAP	4#14, #14G	
C-1007	1"	RTU-1	JBX-C	6#14, #14G	
C-1008		JBX-C	LSHH-1	CABLE BY MANUF.	
C-1009		JBX-C	LSLL-1	CABLE BY MANUF.	
C-1010	1"	PLC-1	BACKUP CP	6#14, #14G	
C-1011	1"	PLC-1	P-1 CP	14#14, #14G	
C-1012	1"	PLC-1	P-2 CP	14#14, #14G	
C-1013	1"	PLC-1	P-3 CMS	14#14, #14G	
C-1014	1"	BACKUP CP	JBX-C	10#14, #14G	
C-1015		JBX-C	LSL-P1/2	CABLE BY MANUF.	
C-1016		JBX-C	LS LEAD	CABLE BY MANUF.	
C-1017		JBX-C	LS LAG	CABLE BY MANUF.	
C-1018		JBX-C	LSH-1	CABLE BY MANUF.	
C-1019	1"	BACKUP CP	P-1 CP	4#14, #14G	
C-1020	1"	BACKUP CP	P-2 CP	4#14, #14G	
C-1021	1"	BACKUP CP	P-3 CMS	4#14, #14G	
C-1022	1"	VAP	FS-EF-WW	4#14, #14G	
C-1023	1"	VAP	FS-SF-WW	4#14, #14G	
C-1024	1"	VAP	ALARM HORN & STROBE	4#14, #14G	
C-1025				NOT USED	
C-1026	1"	GEN-1	ATS-2	14#14, #14G	
C-1027	1"	GEN-1	GEN-1 E-STOP	4#14, #14G	
C-1028	1"	P-1 CP	JBX-C	6#14, #14G	
C-1029		JBX-C	P-1	CABLE BY MANUF.	
C-1030	1"	P-2 CP	JBX-C	6#14, #14G	
C-1031		JBX-C	P-2	CABLE BY MANUF.	
C-1032	1"	P-3 CMS	JBX-C	8#14, #14G	
C-1033		JBX-C	P-3	CABLE BY MANUF.	
C-1034		JBX-C	LSL-P3	CABLE BY MANUF.	
C-1035	3/4"	ECB-LIME	RTU-1	4#14, #14G	
C-1036	3/4"	ECB-ADAM	RTU-1	4#14, #14G	
C-1037	3/4"	PM-LIME	RTU-1	1-CAT6 ENET, #14G	
C-1038	3/4"	PM-ADAM	RTU-1	1-CAT6 ENET, #14G	
C-1039				NOTUSED	
C-1040				NOT USED	

CONDUIT NO.	SIZE	FROM	ТО	CONDUCTORS	REMARKS
I-1000	1"	RTU-1	GEN-1	EMPTY W/ PULLSTRING	
I-1001	1"	RTU-1	ATS-1	EMPTY W/ PULLSTRING	
I-1002	1"	RTU-1	ATS-2	EMPTY W/ PULLSTRING	
I-1003	1"	RTU-1	PM-LIME	1-CAT6 ENET, #14G	
I-1004	1"	RTU-1	PM-ADAM	1-CAT6 ENET, #14G	
I-1005	1"	RTU-1	PLC-1	1-CAT6 ENET, #14G	
I-1006	1"	PLC-1	FE/FIT-1	2#16TSP, #14G	
I-1007	1"	PLC-1	PT-1	2#16TSP, #14G	
I-1008				NOT USED	
I-1009				NOT USED	



Dewberry Engineers, Inc

8401 Arlington Boulevard Fairfax, VA 22031-4666 703.849.0100

QUANTUM LOOPHOLE MGD SEWAGE PUMPING STATION SITUATED AT NEW DESIGN AND MANOR WOODS ROADS



Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly registered professional engineer under the laws of the State of Maryland,

Expiration Date: <u>09/15/2024</u>.

License No. <u>59922</u>,

DEVELOPER / OWNER:

QUANTUM MARYLAND, LLC 500 E 4TH STREET, SUITE 333 AUSTIN, TEXAS 78701

CONTACT: AD ROBISON PHONE; 530-417-8796

SCALE

No.	DATE	BY	Description
REVI	SIONS	•	

S. BLUCHER DRAWN BY S. BLUCHER DESIGNED BY M. FERGEN CHECKED BY MARCH 2023 DATE

TITLE

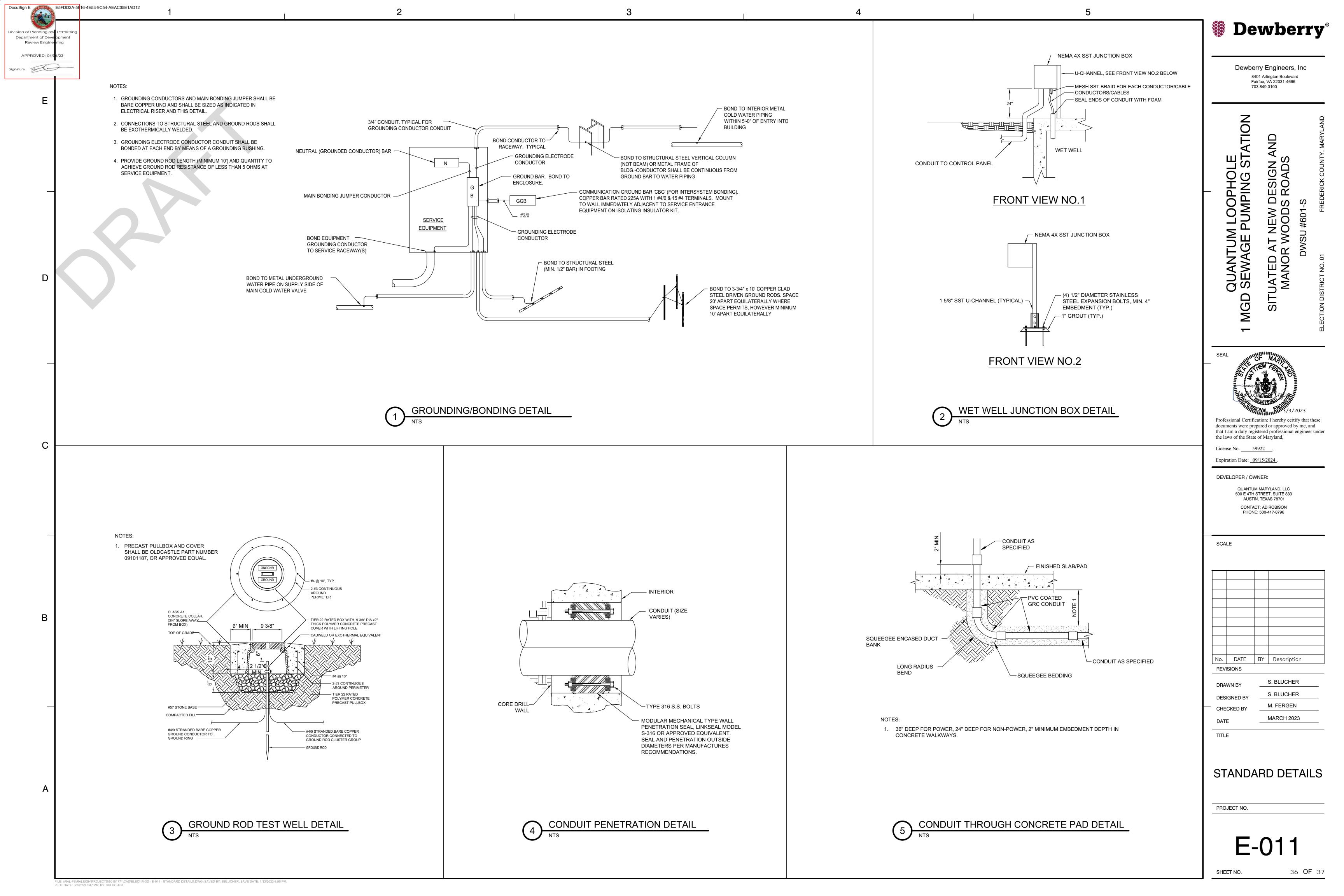
CONDUIT & WIRE SCHEDULES

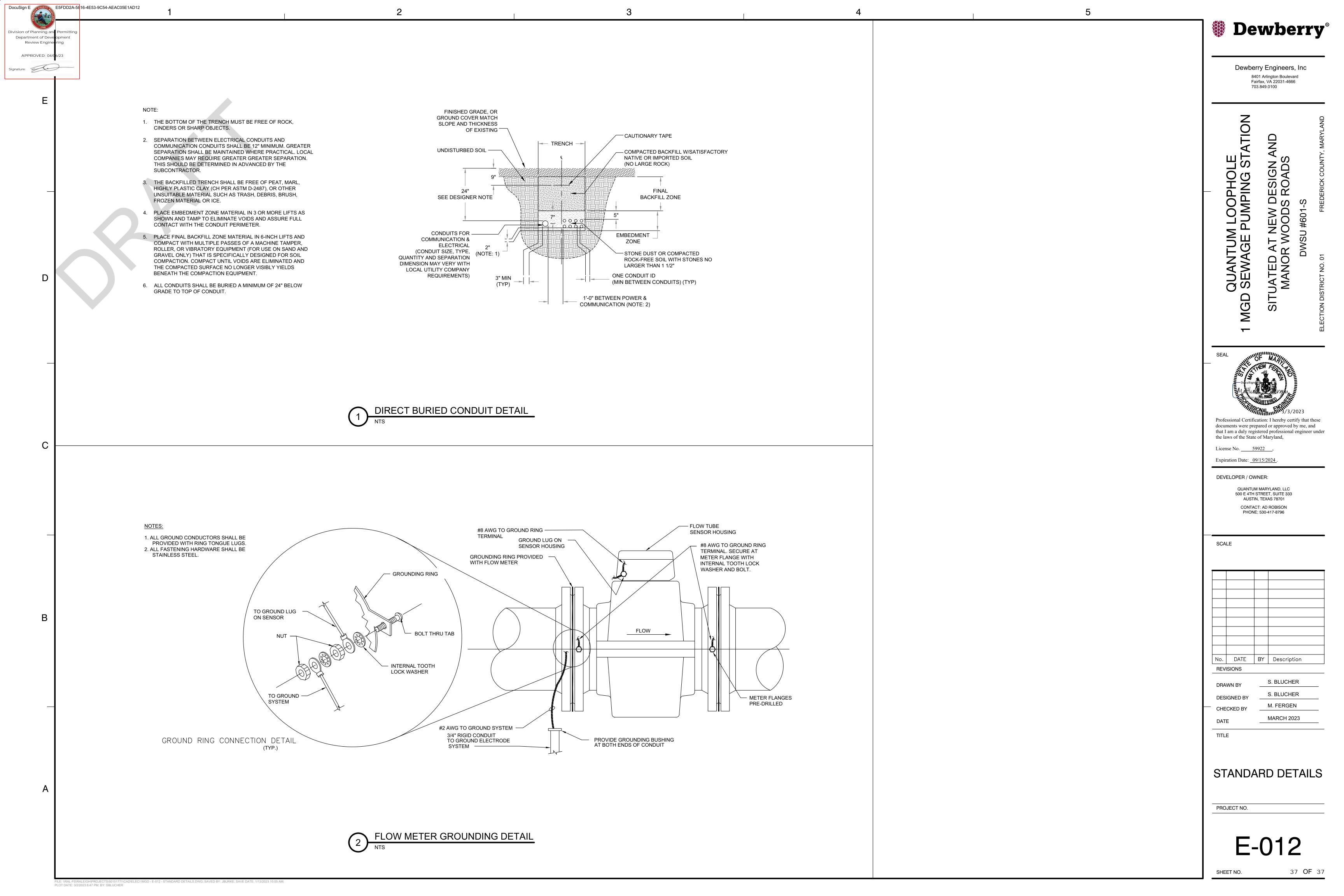
PROJECT NO.

SHEET NO.

35 **OF** 37

FILE: \\RAL-FS\\RALEIGH\\PROJECTS\\50151771\C/ PLOT DATE: 3/2/2023 6:47 PM; BY: SBLUCHER





Appendix D

Seepage Analysis Memo with Pump Station SOE Design

Memo



To: Peter McCabe (STO Mission Critical)

From: Christophe Locussol, P.E. (GEI)

Giovanni Bonita, Ph.D., P.E.; Albin Rosado, EIT (GEI)

Date: October 13, 2023

Re: Dewatering Assessment – 1 MGD Pump Station SOE

Quantum Maryland, LLC

Frederick, MD

This memorandum describes the design approach used to estimate the volume of groundwater and associated drawdown associated with the extraction of water within the proposed temporary Support of Excavation (SOE) systems in the 1MGD Sewage Pumping Station area. One SOE system is proposed around MH-1 and MH-2, with MH-1 serving as the wet well for the temporary 1 MGD sewage pumping station. Another SOE system is proposed around the existing MH-3, located approximately 240 feet west of MH-2. The two SOE systems will also serve as launch and retrieval shafts for microtunneling activities. The analysis considers the engineering control measures developed for the project that limit groundwater pumping and discharge in these areas.

Our design was based on the subsurface information provided in the Geo-Technology Associates, Inc. (GTA) geotechnical reports titled *Report of Geotechnical Exploration – Quantum Frederick Property Proposed Sewer Pump Station* dated March 3, 2023 and *Report of Geotechnical Exploration – Quantum Frederick Property Proposed Sewer Outfall A* dated August 29, 2022.

Existing Conditions

The proposed development is located within the larger Quantum Maryland, LLC property consisting of approximately 2,200 acres. The proposed pump station is located approximately 2,500 feet north of the intersection of Mountville Road and Adamstown Road. The site was previously agricultural farmland prior to start of grading operations. Construction was halted by regulatory agencies due to permitting issues relating to dewatering after grading operations started. The excavations had not reached subgrade elevations but had encountered groundwater. Steep slopes in the proposed MH-1 and MH-2 area are currently present, with the excavation filled with water up to El. +295 feet.

Subsurface Conditions

Subsurface conditions throughout the site were developed from the soil borings advanced for the project and presented in the GTA geotechnical reports. One geotechnical boring was drilled at the existing MH-3 location, and one geotechnical boring drilled at the proposed MH-1/MH-2 location. Air track probes within the footprint of MH-1 were also advanced into the bedrock to identify cavities in the rock. The top of rock elevation varies significantly across the site and GEI has requested additional subsurface investigation within the proposed work area to better understand the conditions.

The following provides a brief summary of the typical subsurface stratigraphy at the site:

Stratum 1 - Residual Soils (El. +311 feet to El. +277 feet):

The residual layer generally consists of moderate to high-plasticity cohesive soils classified as lean clay (CL), fat clay (CH), elastic silt (ML) and high-plasticity silt (MH). SPT N-values in this layer ranged from 5 blows per foot (bpf) to 17 bpf. Soft layers were encountered at depth near the transition between residual soils and weathered rock.

Based on the air-track probes, the bottom of the residual soils vary significantly in the vicinity of the proposed MH-1 and MH-2 locations. The boring advanced within the MH-1 and MH-2 footprint has bottom of residual soils at El. +277 feet. The boring advanced within the MH-3 footprint has bottom of residual soils at El. +285.5 feet.

Stratum 2 – Highly Weathered Rock (El. +277 feet to El. +274.5 feet):

The Residual Soils are underlain by a thin layer of highly weathered rock, defined as Stratum 1 soils with SPT N-values between 51 bpf and 50 blows for 1 inch of split spoon penetration. Borings within the MH-1/MH-2 footprint and within the MH-3 footprint encountered 2.5 feet and 3 feet of highly weathered rock, respectively.

<u>Stratum 3 –Rock (El. +274.5 feet):</u>

The Highly Weathered Rock is underlain by the Cambrian-age Frederick Formation, which consists of thin-bedded, laminated limestone. This formation is particularly susceptible to developing karst features. Top of rock is defined as auger refusal. Rock coring was not performed in either of the borings advanced within the footprint of the proposed work. However, from other borings advanced within the proposed Pump Station, Rock Quality Designation (RQD) for the rock ranged from 0% to 100%, with the majority of the rock above El. +265 feet with RQDs less than 50%.

Air track probes were also advanced within the MH-1 footprint and encountered cavities up to 10 feet in depth below the top of rock.

Groundwater was encountered within the Residual Soils layer at elevations ranging between El. +295.3 feet and El. +291 feet.

Relevant boring logs and subsurface data are included as Attachment 1 for reference.

Proposed Construction

The proposed construction consists of a new manhole (MH-2), a wet well, and approximately 275 lineal feet of 24-inch diameter sewer pipe. The wet well will be 10-foot in diameter and will serve as a 1 million gallon per day (MGD) temporary pump station. The 24-inch diameter sewer pipe connects MH-2 to the wet well and MH-2 to the existing MH-3, which was installed under a previous contract.

Watertight SOE systems in conjunction with a low-mobility grouting (LMG) program are proposed to minimize the amount of groundwater that will be extracted during construction.

A secant pile wall system is proposed as the perimeter excavation support system from the wet well to MH-2 and around MH-3. The purpose of the secant pile wall is to provide a lateral cutoff to water flow into the excavation. The secant pile wall consists of a continuous wall of overlapping concrete circular shafts. Steel W section members are placed in alternating shafts to provide structural lateral support during the excavation. Excerpt drawings from the SOE package have been included as Attachment 2 for illustration.

The secant pile wall system will also serve as the launch and retrieval shafts for microtunneling activities. One secant pile wall will encompass both the wet well and MH-2 while the other will be installed around the existing MH-3. The SOE system around the wet well and MH-2 will serve as the

retrieval shaft and will have two subgrades given the difference in bottom elevations. The excavation within the wet well will extend to El. +266.5 feet while the excavation within MH-2 will extend to El. +275.5 feet. The SOE system around MH-3 will serve as the launch shaft and will extend to El. +275.5 feet.

A LMG program will be performed within the rock along the alignment of the SOE systems and within the proposed excavations to fill cavities and soil seams and restrict water flow into the excavation. The intent of the LMG program is to restrict the amount of groundwater from entering the excavation and aid in the installation of the SOE systems. Additional grouting based on field conditions and grout takes might be required.

Analysis Approach

A numerical model was prepared using the geometry of the proposed excavations, groundwater elevations and stratigraphy discussed above to estimate the flow that will enter the excavations. The computer program, SEEP/W, developed by Geoslope International, a Bentley company, was used to perform the analysis. SEEP/W is a finite element software product for modelling two-dimensional groundwater flow in porous media.

SEEP/W uses permeability properties of the subsurface layers to estimate the flow rate of the groundwater through these layers. As mentioned previously in the subsurface conditions section, three different soil layers were modeled in SEEP/W based on the available boring logs.

The permeability value for Stratum 1 (Residual Soils) layer was estimated using laboratory data in the publication "Hydrogeology of the Carbonate Rocks, Frederick and Hagerstown Valleys, Maryland" by LJ Nutter for the Maryland Geological Survey (Nutter 1973). Hydraulic conductivity tests were performed on residual soil samples from the Eastalco Plant, approximately 1 mile north of the proposed construction site. The hydraulic conductivity test results are within the range of typical permeability values of silty soils presented in NAVFAC DM 7.1 (2022 Manual). The maximum hydraulic conductivity test value was conservatively used in the analysis. The permeability values of the Stratum 2 (Weathered Rock) and Stratum 3 (Rock) layers were estimated using hydraulic conductivity values of well graded gravel (GW) and limestone, respectively presented in NAVFAC DM 7.1.

The LMG program requires that the treated areas achieve a permeability of 10⁻⁶ cm/sec (3.28x10⁻⁸ ft/sec) or less. This permeability value was used in the seepage analysis for the LMG zone.

The permeability of the concrete associated with the secant pile wall is traditionally very low. But the general nature of the construction process results in the formation of concrete cold joints between adjacent piles. The permeability of the secant pile walls used in the analysis took into consideration these joints by assuming higher than normal flows through water-producing hairline cracks. The permeability of the secant pile walls also considered the permeability of the soil layer behind the cold joints.

The NAVFAC DM 7 manual indicates that the ratio of vertical to horizontal permeability (K_y/K_x) can be on the order of 0.1 for stratified soil deposits.

Table 1 summarizes the permeability properties of the various elements used in the SEEP/W analysis.

Table 1. Permeability Properties

Layer	Name	Saturated Horiz. Permeability, K _x (ft/sec)
1	Fine Grained Residual Soils	3.13x10 ⁻⁷
2	Weathered Rock	3.28×10^{-3}
3	Limestone	4.92x10 ⁻⁴
4	Secant Piles – Residual Soils	1.11×10^{-10}
5	Secant Piles -Weathered Rock	1.09x10 ⁻⁶
6	Secant Piles - Limestone	1.64x10 ⁻⁷
7	LMG Treated Areas	3.28x10 ⁻⁸

The analysis was set up as a two-dimensional SEEP/W model section view, modeling both excavations and conservatively using the deeper excavation at the wet well. At the wet well and MH-2 excavation, the top of the model was set at a grade elevation of El. +300. A constant water head of +295.5 feet was set as the boundary condition to the East of the wet well and MH-2. At the MH-3 excavation, the top of the model was set at a grade elevation of El. +297. A constant water head of +292.0 feet was set as the boundary condition to the West of MH-3. A no flow boundary condition was set along the bottom of the limestone layer in the SEEP/W model.

In the SEEP/W model, zero pressure nodes along the width of the excavation were used to model drainage trenches and sump pits. The nodes were placed at relatively equal horizontal distances and were set to target stabilized groundwater depths of two to three feet below the excavation subgrade. The flow rate was then plotted for each of the nodes to estimate the anticipated flow into the excavations.

Grouting along the alignment of the microtunnel is anticipated as part of the LMG program to fill up soil cavities. Note that although the microtunneling process will be designed as a self contained sealed system, some minor leakage into the excavation may occur through entry portal during the microtunneling process. Given the sealed nature of the construction method, the LMG pre-treatment, and the limited construction duration of the microtunneling process, the amount of seepage from this construction activity is considered negligible.

The results of the SEEP/W analyses at the wet well/MH-2 and MH-3 locations are included as Attachment 3. The results of the analysis indicates that about 26 gallons per day per foot of wall (gpd/ft) will leak into the excavation at the wet well/MH-2 and 19 gpd/ft will enter the excavation at MH-3. These flow rates were then multiplied by the total perimeter lengths of the respective excavations to estimate the total flow into the SOE systems. The total flow at the wet well/MH-2 and MH-3 were 3,750 gpd and 2,250 gpd, respectively. The two SOE systems are anticipated to extract a maximum steady state total flow of about 6,000 gpd. The SEEP/W model shows a maximum decrease in the water table of 0.2 feet outside of the excavations, which is considered negligible. Figure 1 shows the extent of the groundwater drawdown beyond the limits of the SOE systems.

Closing

The estimated equilibrated maximum total flow of groundwater into the excavation is expected to be 6,000 gpd average over the period of time that the excavation remains open. Although considerations were made in the analysis to account for potential construction contingencies, the actual flow will be dependent on the implementation of the LMG program and the secant pile installation. Additional grouting identified either during the LMG program or during excavation may be required, and a robust special inspection program is necessary to ensure that the construction meets the design intent.

Attachments:

Attachment 1 – Subsurface Information

Attachment 2 – Secant Pile Wall and LMG Grouting General Design

Attachment 3 – Calculation Package – SOE Seepage Analysis

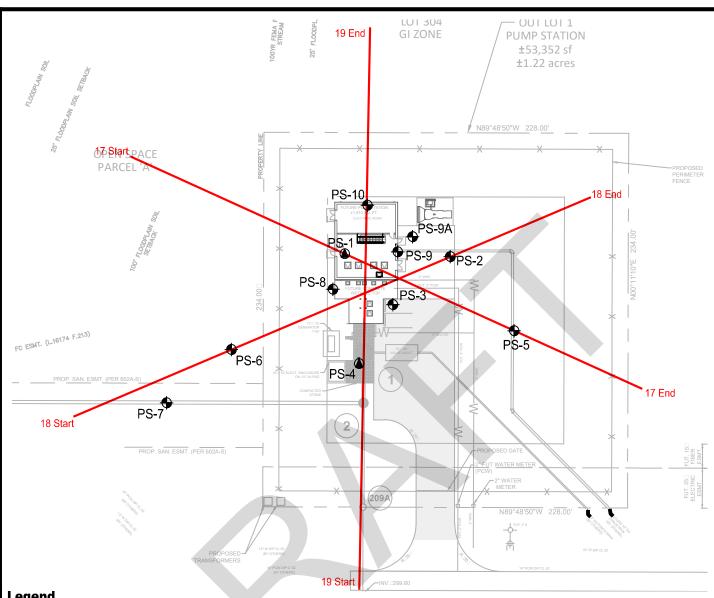
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\\bos-pzcc-1\DATA_STORAGE\\Working\STRUCTURE TONE\2302756 STO Mission Critical - Frederick\11_Seepage Analysis\Pump Station and Manhole 3\Quantum Loop PS Seepage Analysis Memo.docx





Attachment 1 – Subsurface Information





Legend

Identification and approximate location of Standard Penetration Test (SPT) borings performed by GTA and converted to groundwater monitoring wells in May of 2022.

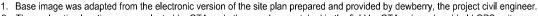
Identification and approximate location of SPT borings performed by GTA in May of 2022.

Identification and approximate location of SPT borings performed by GTA in November of 2022.

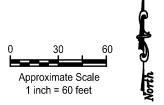


Identification and approximate alignment of Electrical Resistivity Imaging (ERI) survey runs performed in May of 2022.

NOTES



2. The exploration locations were selected by GTA and others and were staked in the field by GTA using a hand-held GPS unit. Exploration locations should be considered accurate only to the degree implied by the method used.





GEO-TECHNOLOGY ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

14280 PARK CENTER DRIVE, SUITE A LAUREL, MARYLAND 20707 (410) 792-9446 OR (301) 470-4470 www.gtaeng.com © Geo-Technology Associates, Inc.

QUANTUM FREDERICK PROPOSED SEWER PUMP STATION

FREDERICK COUNTY, MARYLAND

EXPLORATION LOCATION PLAN

DRAWN BY: RPM PROJECT: 201536 DATE: FEBRUARY 2023 SCALE: 1" = 100'DCG REVIEW BY: FIGURE:

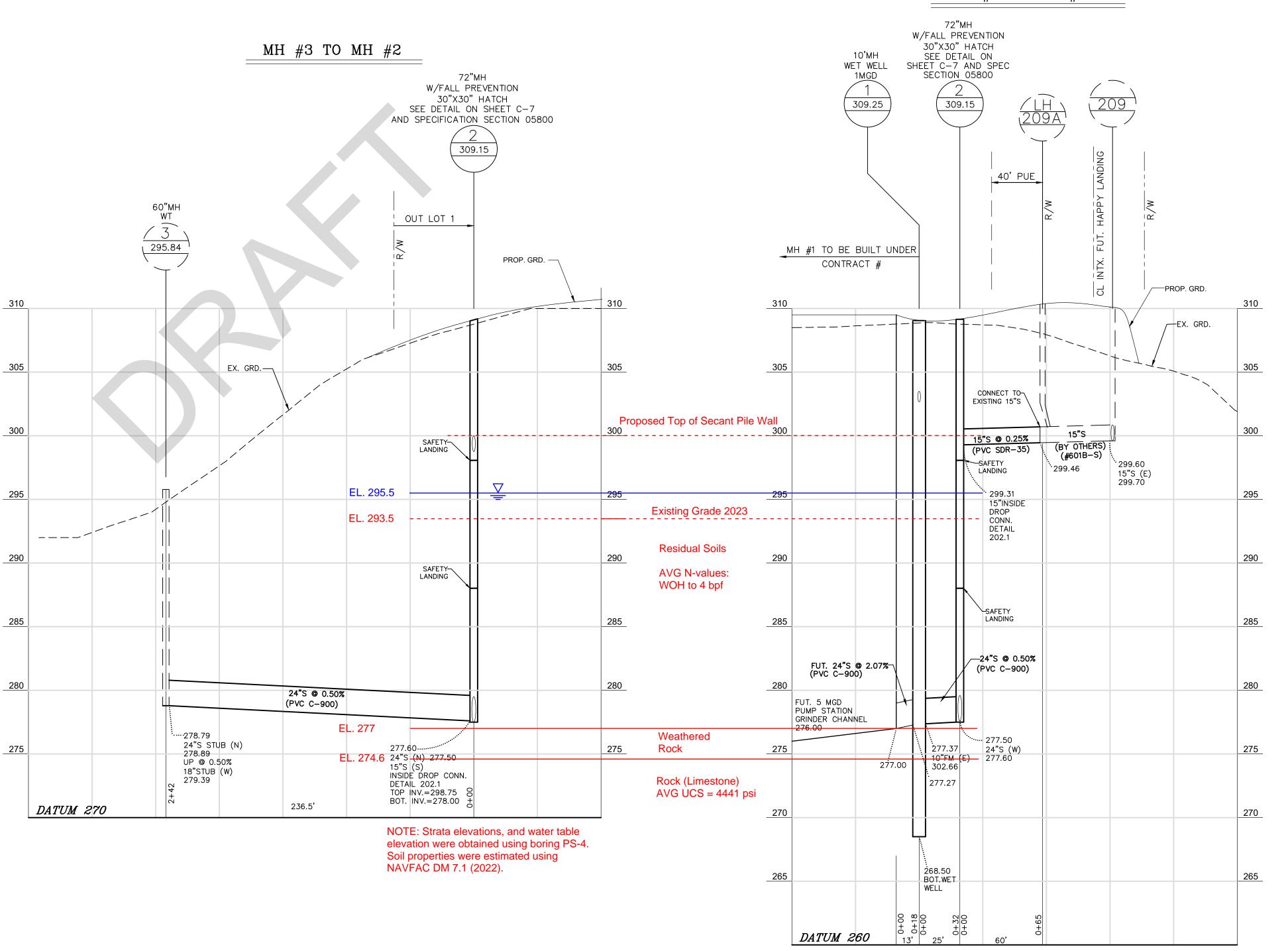


Table No. 1 Subsurface Exploration Summary Quantum Sewer Pump Station GTA Project No. 201536



	Approximate	Approximate	Approximate	Exploration		Approximate		te Depth to	Approximat	e Depth to			Groundwater	Observation	IS		Approxima	te Cave-in
Exploration ID		Proposed	Cut/Fill (-/+)	Depth	Termination	Topsoil	, ,	eathered	Auger Refusal ⁴		Encountered		Completion		After Drilling ⁵		Depth Observation ⁶	
No.	Surface Elevation ¹	Invert/Bearing	Required	(ft.)	Elevation	Thickness	Ro	ck°			During	Drilling	of Dr	rilling		9		
	(El.)	Elevation ² (El.)	(ft.)	(10.)	(El.)	(in.)	Depth (ft.)	El.	Depth (ft.)	El.	Depth (ft.)	El.	Depth (ft.)	El.	Depth (ft.)	El.	Depth (ft.)	El.
PS-1	308	257	-51	42.3	266	8	4	304	22.3	286	13.5	295	14.6	293	15.2	293	Well	
PS-2	310	305	-5	30	280	10	27	283	NE		13.5	297	16.0	294	N/A		22.4	288
PS-3	309	257	-52	49.0	260	8	32	277	35.0	274	28.5	281	16.8	292	N/A		28.5	281
PS-4	309	268	-41	34.4	275	10	32	277	34.4	275	13.5	296	14.2	295	13.7	295	Well	
PS-5	310	305	-5	30	280	10	NE		NE		18.5	292	18.3	292	N/A		25.4	285
PS-6	306	N/A	0	29.0	277	8	17	289	19.5	287	18.5	288	13.8	292	N/A		14.8	291
PS-7	303.7	278	-26	30.0	274	3	12	292	15.5	288	8.5	295	N/A		N/A		N/A	
PS-8	308.2	257	-51	60.0	248	4	NE		11.0	297	Dry	<248	N/A		N/A		N/A	
PS-9	309	257	-52	62.0	247	4	N/A		11.8	297	Dry	<247	N/A		N/A		N/A	
PS-9A	309	257	-52	25.8	283	4	9.5	300	25.8	283	13.5	296	16.5	293	N/A		17.2	292
PS-10	308.5	257	-52	60.8	248	4	NE	/	16.8	292	13.5	295	N/A		N/A		N/A	

Notes:

= Rock core performed upon encountering auger refusal

NE = Not Encountered N/A = Not Applicable

- ² The proposed invert/bearing elevations were obtained from the available plans. The proposed force main invert elevations at the locations of Boring PS-2 and PS-5 are assumed to be 5 feet below proposed grades.
- ³ Highly weathered rock was first encountered in Boring PS-1 at a depth of approximately 4 feet, which was inferred to be a boulder. Highly weathered rock was encountered again at a depth of approximately 17 feet.
- ⁴ Boring PS-1 encountered auger refusal at a depth of 6.5 feet at the staked location. A second boring attempt was offset 10 feet north and encountered auger refusal at 6.3 feet. A third boring attempt was offset 5 feet west of the second attempt. The boring information above was obtained from the third boring attempt.
- $^{\,\,5}\,$ The recorded groundwater depths after drilling are the shallowest observed in each boring.
- 6 Temporary groundwater monitoring wells were installed in Borings PS-1 and PS-4. Cave-in depth/elevations could not be measured. Cave-in depths and groundwater depths were not measured after drilling in Borings PS-7 through PS-10, since water is pumped into the hole during coring.

¹ The existing ground surface elevations for Borings PS-1 through PS-6 were estimated based on the *Utility Plan* (Sheet 30 of the *Improvement Plan* for Pump Station Access Road/ Future Happy Landing Rd/MD80), dated July of 2022, prepared by Dewberry. The existing ground surface elevations for Borings PS-7 through PS-10 were provided by Rodgers Consulting via an instrumented survey. Borings PS-9 and PS-9a were offset from the staked location. The existing ground surface elevation at these locations were visually estimated based on the staked elevation.

LOG OF WELL NO. PS-4

PROJECT: Quantum Frederick - Sewer Pump Station
PROJECT NO.: 201536

PROJECT LOCATION: Frederick County, Maryland

WATER LEVEL (ft):
□ 14.2 □ 13.7 □ 11/09/2022
□ 11/09/2022
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DATE STARTED: 05/23/2022 WATER ENCOUNTERED DURING DRILLING (ft): 13.5

DATE COMPLETED: 05/23/2022 GROUND SURFACE ELEVATION: 309

DRILLING CONTRACTOR: DATUM: Topo

EQUIPMENT: Diedrich D-50

DRILLER: K. Kozak

DRILLING METHOD: 3.25" HSA

SAMPLING METHOD: Split Spoon/Auto

CHECKED BY: ADM

BORING DIA (in): 6

CASING TYPE: Sch. 40

CASING DIA (in.): 1

CASING LEN. (ft): 5

SCREEN TYPE: Sch. 40

SCREEN SLOT SIZE(in): 0.02

SCREEN LEN. (ft): 29.4

S-1 12 2-1-3 4 309.0 S-2 12 4-5-7 12 306.5 S-3 12 2-2-3 5 305.0 S-3 12 2-2-3 5 305.0 S-6 18 2-1-2 3 292.0 S-6 18 2-1-2 3 18 2-2-2 4 300.5 S-7 0 WOH/18" WOH 18 277.0 S-9 6 50/6"		SCR	EEN TYPE	Scl	h. 40				S	CREEN SLOT SIZE(in): 0.02	SCREEN LEN. (ft): 29.4	<u> </u>
S-1 12 2-1-3 4 309-0 30	SAMPLE NUMBER	SAMPLE RECOVERY (in.)	SAMPLE BLOWS/6 inches	N (blows/ft.)	ELEVATION (ft.)	DEPTH (ft.)	PID READING	SOSN	GRAPHIC SYMBOL	DESCRIPTION	REMARKS	WELL CONSTRUCTION DETAILS
	S-2 S-3 S-4 S-5 S-6 S-7	12 12 18 12 12 18 10	4-5-7 2-2-3 2-2-2 WOH-1-2 2-1-2 WOH/18"	12 5 4 3 WOH/ 18	306.5 305.0 300.5 297.0 292.0 285.5 284.0	10 - 10 - 10 - 10 - 10 - 10 - 10 - 10 -		MH ML		Same, stiff, with Rock Fragments (Limestone) Light Brown, moist, medium stiff, Elastic SILT with Sand. Same, soft, Sandy Brown, moist, soft, Sandy SILT. Brown, moist, soft, Sandy Fat CLAY. No Recovery Reddish Brown, moist, very soft, Sandy Elastic SILT. Brown, wet, very dense, Highly Weathered ROCK. Auger refusal encountered at 34.4 feet. 1-in. PVC groundwater monitoring well		

NOTES:



GEO-TECHNOLOGY ASSOCIATES, INC.

LOG OF BORING NO. PS-4

14280 Park Center Drive, Suite A Laurel, MD 20707

LOG OF BORING NO. PS-6

PROJECT: Quantum Frederick - Sewer Pump Station
PROJECT NO.: 201536

PROJECT LOCATION: Frederick County, Maryland

WATER LEVEL (ft): 13.8 14.5 14.5 14.5 15.4 15.4

DATE STARTED: 05/23/2022 WATER ENCOUNTERED DURING DRILLING (ft) $\stackrel{>}{=}$ 18.5 DATE COMPLETED: 05/25/2022 GROUND SURFACE ELEVATION: 05/25/2022 GROUND SURFACE ELEVATION: 05/25/2022 DRILLING CONTRACTOR: DATUM: 05/25/2022 DATUM: 0

DRILLER: K. Kozak EQUIPMENT: Diedrich D-50

DRILLING METHOD: 3.25" HSA
SAMPLING METHOD: Split Spoon/Automatic Hammer CHECKED BY: ADM

SAIV	IFLIIN	3 METT	וטט: סטוו	ı opu	JII/Aut	Ulliat	ic i ia	umme	CHECKED BY	ADIVI
SAMPLE	SAMPLE DEPTH (ft.)	SAMPLE RECOVERY (in.)	SAMPLE BLOWS/6 inches	N (blows/ft.)	ELEVATION (ft.)	DЕРТН (ft.)	nscs	GRAPHIC SYMBOL		
		ш	<u>"</u>						DESCRIPTION	REMARKS
S-1	0.0	10	2-2-3	5	306.0	0 -	СН		Brown, moist, medium stiff, Fat CLAY with Sand.	Topsoil: 8 in.
S-2	2.5	18	4-7-10	17	302.0	_			Same, very stiff	
S-3	5.0	18	5-5-5	10	302.0		ML		Brown, moist, stiff, Sandy SILT with Rock Fragments (Limestone).	
	0.0	10	000	10	299.0		SM		Brown, moist, very loose, Silty SAND with Rock	
S-4	8.5	18	2-2-2	4		10 -			Fragments (Limestone).	
						10				
S-5	13.5	10	18-7-3	10		_			Same, Dark Gray, loose	ard drilling from 3 to 14 feet.
3-5	13.5	10	10-7-3	10		_			Same, Dame Cray, 1999	₹3 to 14 feet.
					289.0	_			Dark Gray, moist, very dense, Partially Weathered	
S-6	18.5	0.5	50/0.5"	50/0.5	286.5	20 -	ROCK	$h \wedge d$	ROCK. \Auger refusal encountered at 19.5 feet.	¥ery hard drilling from 18 to 19.5
R-1	19.5	40	RQD=19%						Moderately hard, slightly weathered, moderately	feet.
					282.0	-	2001		fractured, gray to light gray, LIMESTONE.	
R-2	24.0	60	RQD=68%			-	ROCK		Hard, fresh, moderately fractured, dark gray with white,	
11-2	24.0	00	NQD=0070			-			LIMESTONE. (Recovery = 100%)	
					277.0	30 -		- V/AV	Boring terminated at 29.0 feet.	1
						<u> </u>				
						-				
						-				
						-				
						40 -				
						-				
						-				
						-				
						-				
						50 -				
						-				
						-				
						-				
						60 _				
						00_				

NOTES:



GEO-TECHNOLOGY ASSOCIATES, INC.

LOG OF BORING NO. PS-6

14280 Park Center Drive, Suite A Laurel, MD 20707

LOG OF BORING NO. PS-7

PROJECT: Quantum Frederick - Sewer Pump Station WATER LEVEL (ft):
DATE STARTED: 11/08/2022 WATER ENCOUNTERED DURING DRILLING (ft) $\frac{1}{2}$ 8.5 DATE COMPLETED: 11/08/2022 GROUND SURFACE ELEVATION: 303.7 DRILLING CONTRACTOR: DATUM: Survey

DRILLER: M. Rey EQUIPMENT: Diedrich D-50

DRILLING METHOD: 3.25" HSA

SAMPLING METHOD: Split Spoon/Automatic Hammer

LOGGED BY: DCG
CHECKED BY: ADM

SAN	1PLIN	GMEIF	IOD: Spli	t Spoo	on/Aut	<u>omat</u>	іс на	mme	er CHECKED BY:	ADM
SAMPLE NUMBER	SAMPLE DEPTH (ft.)	SAMPLE RECOVERY (in.)	SAMPLE BLOWS/6 inches	N (blows/ft.)	ELEVATION (ft.)	DEPTH (ft.)	nscs	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
									2200.111	
S-1		7	F 4 6	10	303.7	0 -	N 41		Drawn maint atiff County CU T	Tanasil. O in
	0.0		5-4-6		300.7		ML		Brown, moist, stiff, Sandy SILT.	Topsoil: 3 in.
S-2	2.5	15	3-3-5	8		-			Same, Light Brown, medium stiff	
S-3	5.0	18	3-5-6	11					Same, stiff, with Sand	
S-4	8.5	18	4-5-6	11		-				_
					291.7	12 -) A 2	Brown, moist, very dense, Highly Weathered ROCK.	
S-5	13.5	0	50/1"	50/1"	200.2			$\Delta \Delta$	Auger refusal encountered at 15.5 feet.	
R-1	15.5	47	RQD=50%		288.2 286.7	-	ROCK ROCK		Hard, slightly weathered, highly fractured, gray and white, LIMESTONE with Quartz. (Recovery = 72%)	
R-2	20.0	60	RQD=79%		281.2	24 –	ROCK		Hard, slightly weathered, moderately fractured, white with gray, QUARTZ with Limestone. (Recovery = 100%) Moderately hard, moderately weathered, moderately	
R-3	25.0	60	RQD=93%		278.7		ROCK		ractured, gray to dark gray, LIMESTONE. (Recovery = 100%) Moderately hard, moderately weathered, moderately fractured, gray to dark gray, LIMESTONE.	
						36			(Recovery = 100%) Boring terminated at 30 feet.	

NOTES: *Water is pumped into boring during rock coring. Groundwater levels not measured after drilling.



GEO-TECHNOLOGY ASSOCIATES, INC.

Laurel, MD 20707

14280 Park Center Drive, Suite A

LOG OF BORING NO. PS-7

Sheet 1 of 1

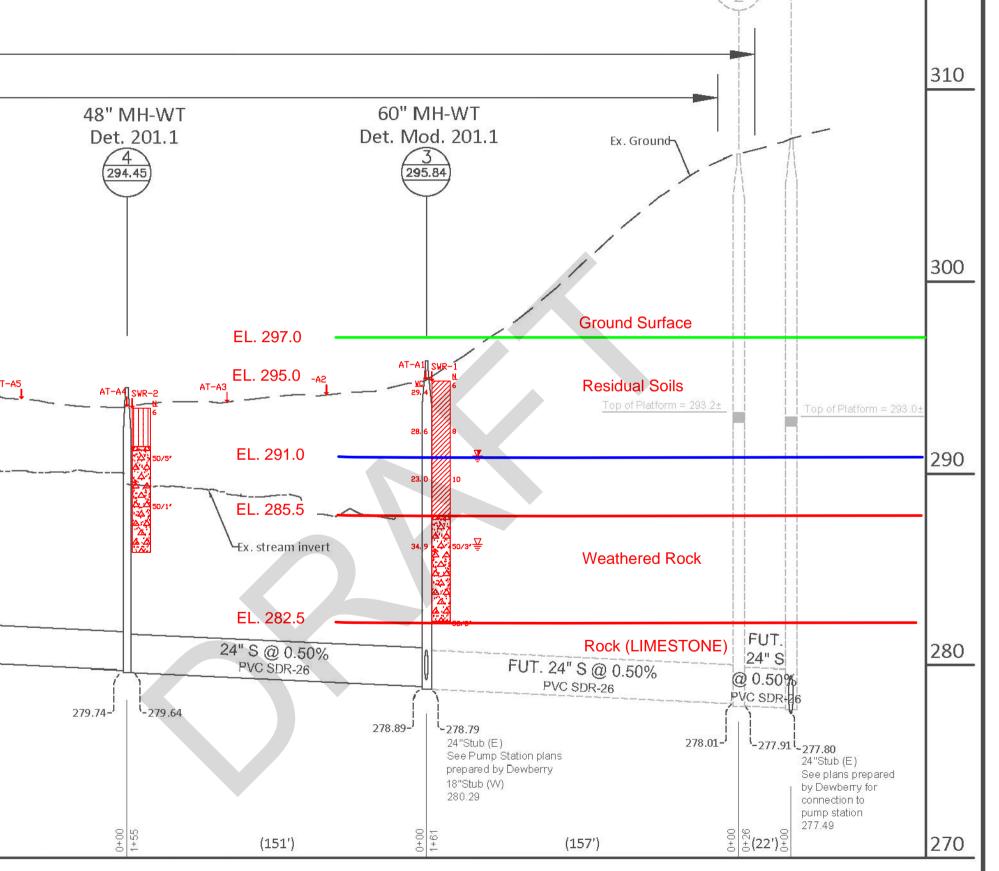


Table No. 1 Subsurface Exploration Summary - SPT Borings Quantum Frederick - Sewer Outfall A



GTA Project No. 201536

		Approximate	Approximate	Approximate	Evaloration	Approximate	Approximate			Approximat	to Donth of	Approxima	to Donth to		-	Groundwater	Observation	ıs		Approvinge	to Cava in	Depth of Invert
Exploration	Manhole	Existing Ground	Proposed Invert	Cut/Fill (-/+)	Exploration Depth	Termination	Topsoil	Highly W	eathered	Approximat Excavata		Approxima Auger F		Encou			letion		veral Days	Depth Ob	te Cave-in	Below
ID No.	ID	Surface Elevation ¹	Elevation ²	Required	(ft.)	Elevation	Thickness	Roo	ck ³					During		of Dr			Drilling			Unexcavatable
		(El.)	(El.)	(ft.)	(14.)	(El.)	(in.)	Depth (ft.)	El.	Depth (ft.)	El.	Depth (ft.)	El.	Depth (ft.)	El.	Depth (ft.)	El.	Depth (ft.)	El.	Depth (ft.)	El.	Rock (ft.)
SWR-1	MH3	295.1	278.8	-16	12.5	283	7	9.5	286	9.5	286	12.5	283	8.5	287	Dry	<283	3.9	291	Pipe		7
SWR-2	MH4	293.5	279.6	-14	7.5	286	8	3	291	4	290	7.5	286	Dry	<286	Dry	<289	Dry	<290	3.9	290	10
SWR-3	MH5	296.0	281.7	-14	10	286	4	6	290	7	289	10	286	Dry	<286	Dry	<292	Dry	<292	3.9	292	7
SWR-4	MH6	297.7	283.7	-14	10.5	287	3	6	292	6	292	10.5	287	2.5	295	2.5	295	5.6	292	Pipe		8
SWR-5	MH7	297.7	285.8	-12	10	288	5	7	291	9	289	10	288	8.5	289	3.7	294	2.1	296	6.1	292	3
SWR-6	MH8	299.0	286.8	-12	10	289	6	6	293	7	292	10	289	2.5	297	2.5	297	3.8	295	5.2	294	5
SWR-7	MH175	314	302.2	-12	20	294	8	12	302	12	302	NE		13.5	301	Dry	<297	Dry	<301	13.4	301	0
SWR-8	MH9	303.1	288.8	-14	10	293	3	7	296	7	296	10	293	Dry	<293	Dry	<293	Dry	<293	Pipe		7
SWR-9	MH11	303.8	295.7	-8	12.5	291	5	12.5	291	12.5	291	12.5	291	8.5	295	Dry	<300	6.1	298	3.4	300	-4
SWR-10	MH12	306.2	296.7	-10	10	296	4	7	299	7	299	10	296	Dry	<296	Dry	<303	Dry	<302	3.7	303	3
SWR-11	MH13	310.7	297.6	-13	15	296	4	12	299	12	299	15	296	8.5	302	12.5	298	12.2	299	12.6	298	1
SWR-12	MH14	311.4	298.7	-13	16.5	295	3	12	299	12	299	16.5	295	8.5	303	11.5	300	10.1	301	Pipe		1
SWR-13	MH15	312.9	299.8	-13	20	293	6	12	301	12	301	NE		2.5	310	Dry	<309	Dry	<309	3.9	309	1
SWR-14	MH85	319	305.9	-13	20	299	7	17	302	17	302	NE		2.5	317	4.1	315	Dry	<314	5.1	314	-4
SWR-15	MH16	313.0	300.9	-12	10.5	303	4	2	311	2	311	10.5	303	Dry	<303	Dry	<303	Dry	<303	Pipe		10
SWR-16	MH17	312.0	301.3	11	20	292	6	NE		NE		NE		13.5	299	11.1	301	7.1	305	13.3	299	N/A
SWR-17	MH18	314.2	302.4	-12	10	304	4	1	313	6	308	10	304	Dry	<304	Dry	<312	Dry	<314	1.8	312	6
SWR-18	MH19	318.0	303.5	-15	20	298	6	12	306	17	301	NE		Dry	<298	Dry	<298	Dry	<298	Pipe		-3
SWR-19	MH20	316.1	303.8	-12	20	296	3	12	304	12	304	NE		8.5	308	Dry	<312	Dry	<315	1.6	315	0
SWR-20	MH21	316.4	304.3	-12	16	300	4	9	307	9	307	16	300	8.5	308	8.6	308	6.5	310	7.6	309	3
SWR-21	MH22	321.0	305.0	-16	21.5	300	5	17	304	17	304	21.5	300	13.5	308	13.5	308	11.6	309	Pipe		-1
SWR-22	MH23	321.0	306.0	-15	20	301	3	14.5	307	14.5	307	NE		13.5	308	7.7	313	7.3	314	8.8	312	1
SWR-23	MH24	323.7	306.7	-17	22.5	301	7	17	307	17	307	22.5	301	13.5	310	Dry	<322	Dry	<319	1.7	322	0
SWR-24	MH25	325	307.7	-17	25	300	6	22	303	22	303	NE		18.5	307	Dry	<320	Dry	<322	3.0	322	-5
SWR-25	MH26	324	308.2	-16	25	299	6	17	307	17	307	NE		13.5	311	12.5	312	8.7	315	Pipe		-1

Notes:

NE = Not Encountered N/A = Not Applicable

¹ The existing ground surface elevations for the majority of the borings were provided by Rodgers Consulting, via an instrumented survey. The locations of Borings SWR-7, SWR-14, SWR-24, and SWR-25 were not included in this survey, and these locations were estimated based on the topographic Sewer Outfall plans, dated March 2022, prepared by Rodgers.

² The proposed invert elevations were obtained from the profiles on the above-referenced plans.

³ Highly weathered rock was first encountered in Boring SWR-17 at a depth of approximately 1 foot, which was inferred to be a boulder. Highly weathered rock was encountered again at a depth of approximately 4 feet.

LOG OF BORING NO. SWR-1

PROJECT: Quantum Frederick - Sewer Outfall
PROJECT NO.: 201536

PROJECT LOCATION: Frederick County, Maryland

WATER LEVEL (ft): V Ory 3.9

DATE: 06/28/22

O6/28/22

Pipe

Pipe

Pipe

DATE STARTED: 06/28/22 WATER ENCOUNTERED DURING DRILLING (ft) $\frac{1}{2}$ 8.5 DATE COMPLETED: 06/28/22 GROUND SURFACE ELEVATION: 295 DRILLING CONTRACTOR: DATUM: Topo

DRILLER: M. Lyons EQUIPMENT: Diedrich D-50

DRILLING METHOD: 3.25" HSA

SAMPLING METHOD: Split Spoon/Automatic Hammer LOGGED BY: XAH

CHECKED BY: DCG

SAIV	IL FIIA	GIVILII	IOD: Spli	ı əpu	JII/Aut	Omat	с па	шше	er CHECKED BY:	DCG
SAMPLE NUMBER	SAMPLE DEPTH (ft.)	SAMPLE RECOVERY (in.)	SAMPLE BLOWS/6 inches	N (blows/ft.)	ELEVATION (ft.)	DEPTH (ft.)	nscs	GRAPHIC SYMBOL	DESCRIPTION	DEMARKS
									DESCRIPTION	REMARKS
						_				
S-1	0.0	14	3-3-3	6	295.0	0 -	CL		Brown, moist, medium stiff, Sandy Lean CLAY.	Topsoil: 7 in.
S-2	2.5	12	1-4-4	8		-			Same, Light Brown, stiff, with Sand	
					-	-				_
S-3	5.0	6	4-6-4	10		5 –			Same, stiff, with Rock Fragments (Quartz)	
						-				
S-4	8.5	2	5-6-50/3"	50/3"	285.5	10 –			Light Brown, wet, very dense, Highly Weathered ROCK.	\
						10 -			29 . 5, 5, 5, 7, 5, 7, 5, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7,	
					282.5	_			Auger refusal encountered at 12.5 feet.	
S-5	12.5	0	50/0"	50/0"		_			Boring offset 10 feet north of staked location. Auger	
						15 –			refusal encountered in offset boring at 12.0 feet.	
						-				
						-				
						20 –				
						-				
						-				
						25 –				
						-				
						-				
						30_				

NOTES:



GEO-TECHNOLOGY ASSOCIATES, INC.

LOG OF BORING NO. SWR-1

14280 Park Center Drive, Suite A Laurel, MD 20707

LOG OF BORING NO. SWR-2

PROJECT: Quantum Frederick - Sewer Outfall
PROJECT NO.: 201536
PROJECT LOCATION: Frederick County, Maryland

WATER LEVEL (ft): Very Dry 06/29/22 06/30/22 06/30/22 06/29/22

CAVED (ft): 4.3 3.9 Augers

DATE STARTED: 06/28/22 WATER ENCOUNTERED DURING DRILLING (ft) ₩ Dry
DATE COMPLETED: 06/28/22 GROUND SURFACE ELEVATION: 294

DRILLING CONTRACTOR: DATUM: Topo

DRILLER: M. Lyons EQUIPMENT: Diedrich D-50

DRILLING METHOD: 3.25" HSA

SAMPLING METHOD: Split Spoon/Automatic Hammer LOGGED BY: XAH

CHECKED BY: DCG

U/IIV	II LIIN	O METT	OD: Spli	t Spot	JII/Aut	Ulliat	іс па	11111111	er CHECKED BY:	рсв
SAMPLE NUMBER	SAMPLE DEPTH (ft.)	SAMPLE RECOVERY (in.)	SAMPLE BLOWS/6 inches	N (blows/ft.)	ELEVATION (ft.)	DЕРТН (ft.)	nscs	GRAPHIC SYMBOL		
									DESCRIPTION	REMARKS
S-1	0.0	10	3-3-3	6	294.0	0 -	ML		Brown, moist, medium stiff, SILT with Sand.	Topsoil: 8 in.
						-				
S-2	2.5	5	3-50/5"	50/5"	291.0	-		ΔΔ. ΔΔ. ΔΔ.	Brown, moist, very dense, Highly Weathered ROCK.	
						5 -				
S-3	5.0	0	50/1"	50/1"		-				
					286.5	-		A. A.	Auger refusal encountered at 7.5 feet.	
					200.3	10 - 15 - 15 - 15 - 15 - 15 - 15 - 15 -			Auger refusal encountered at 7.5 feet. Boring offset 10 feet north of staked location. Auger refusal encountered in offset boring at 7.5 feet.	
						30_				

NOTES:



GEO-TECHNOLOGY ASSOCIATES, INC.

LOG OF BORING NO. SWR-2

14280 Park Center Drive, Suite A Laurel, MD 20707

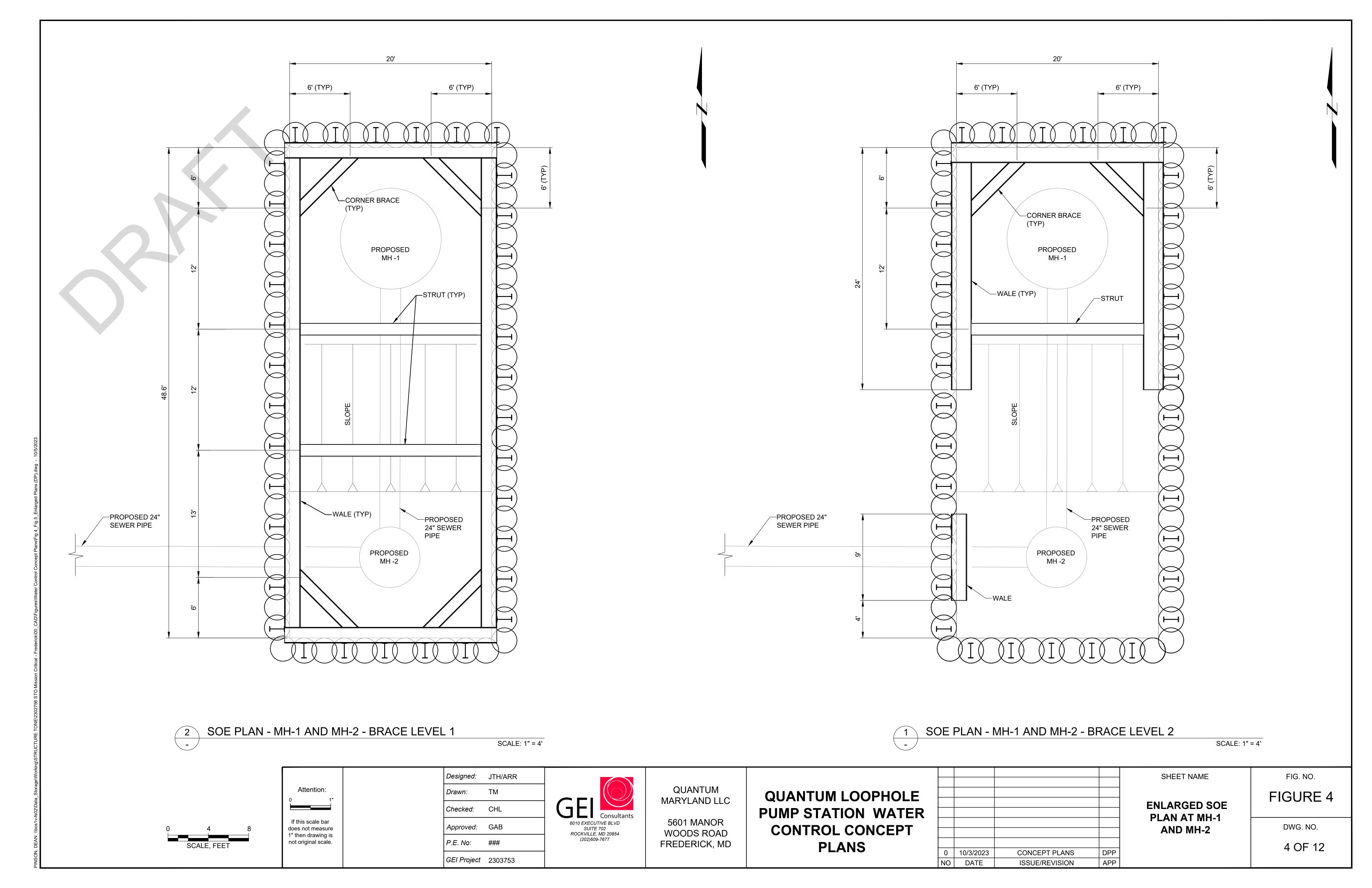
Table No. 2 Subsurface Exploration Summary - Air Track Probes Quantum Sewer Outfall A GTA Project No. 201536

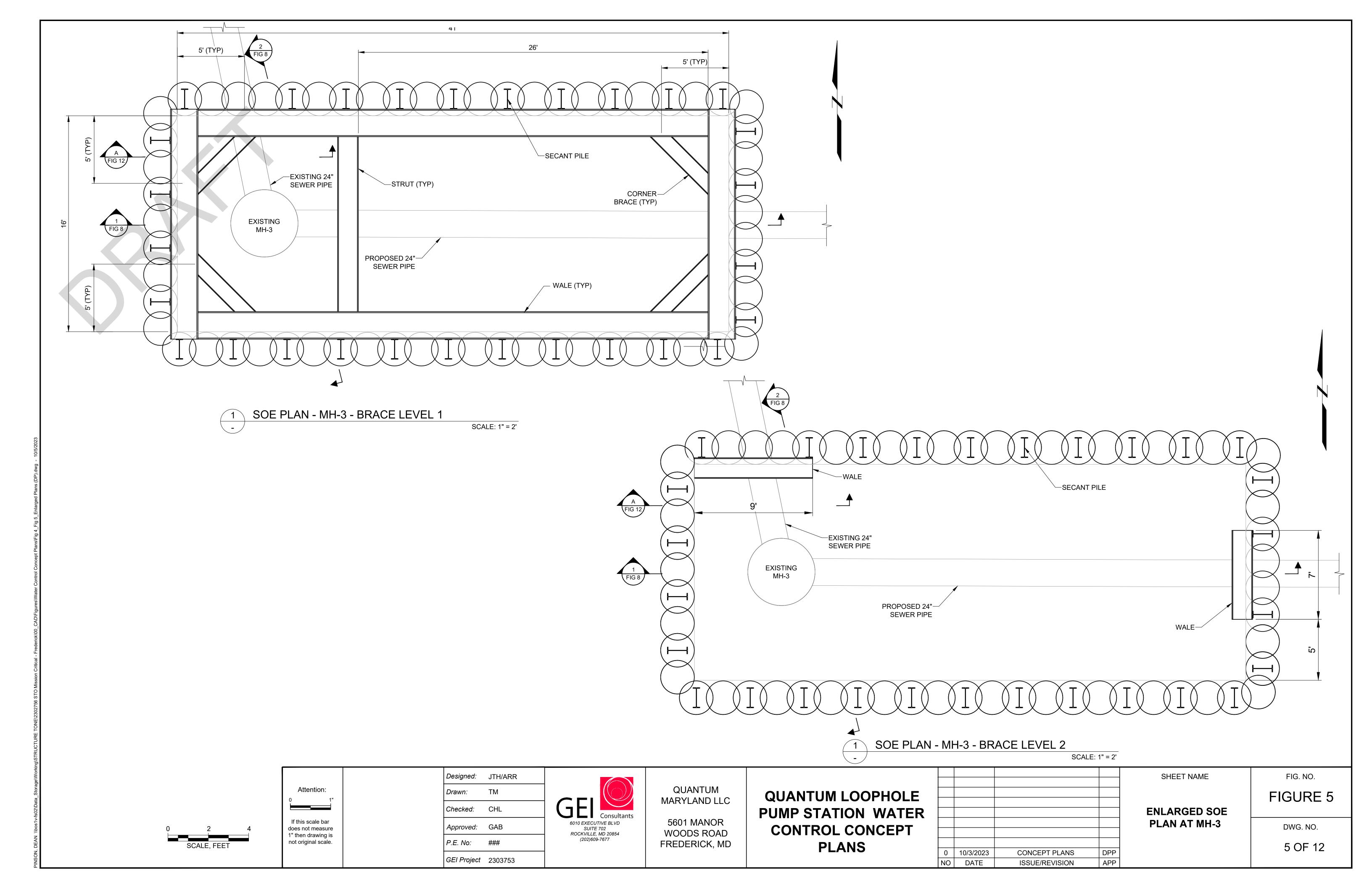
GTA Project No. 201536										
Air Track Probe ID	Location	Approximate Depth to Sewer Invert	Probe Depth (ft.)	Estimated Soil Depth ¹ (ft.)	Estimated Rock Depth ¹ (ft.)	Remarks ¹				
		(ft.)		` '	` ′					
AT-A1	MH3	16	21	0-11	11-21					
AT-A2	MH3 0+52	15	20	0-9.5	9.5-20					
AT-A3	MH3 1+04	14	19	0-4.5	4.5-19					
AT-A4	MH4	14	19	0-3.5	3.5-19					
AT-A5	MH4 0+55	14	19	0-3	3-19					
AT-A6	MH4 1+10	15	20	0-6	6-20	Soil seam 9-9.5 ft.				
AT-A7	MH4 1+65	15	20	0-7.5	7.5-20					
AT-A8	MH4 2+20	16	21	0-5	5-21					
AT-A9	MH4 2+75	16	21	0-7	7-21					
AT-A10	MH4 3+30	15	20	0-5	5-20					
AT-A11	MH5	14	19	0-7, 15-19	7-15					
AT-A12	MH5 0+49	15	20	0-9	9-20					
AT-A13	MH5 0+98	15	20	0-6	6-20					
AT-A14	MH5 1+47	15	20	0-20	NE 7.04					
AT-A15	MH5 1+96	16	21	0-7	7-21					
AT-A16	MH5 2+45	16	21	0-7	7-21					
AT-A17	MH5 2+94	16	21	0-6	6-21					
AT-A18	MH5 3+43	15	20	0-5	5-20					
AT-A19	MH6	14	19	0-4.5	4.5-19					
AT-A20	MH6 0+50	14	19	0-4.5	4.5-19					
AT-A21	MH6 1+00	13	18	0-5	5-18					
AT-A22	MH6 1+50	13	18	0-5	5-18					
AT-A23	MH6 2+00	13	18	0-6	6-18					
AT-A24	MH6 2+50	13	18	0-6	6-18					
AT-A25	MH6 3+00	13	18	0-7	7-18					
AT-A26	MH6 3+50	13	18	0-8	8-18					
AT-A27 AT-A28	MH7 MH7 0+46	12	17 16	0-8	8-17					
AT-A28 AT-A29	MH7 0+46	12	17	0-9 0-7	9-16 7-17	Broke through rock at 17 ft.				
AT-A29 AT-A30	MH7 1+37	12	17	0-7	7-17	Bloke tillough lock at 17 it.				
AT-A30 AT-A31	MH8	12	17	0-11.5	11.5-17					
AT-A31 AT-A32	MH8 0+49 (MH175)	6	11	0-11.5	8-11					
AT-A32	MH8 0+98 (MH175)	6	11	0-6	6-11					
AT-A33	MH8 1+47 (MH175)	6	11	0-8.5	8.5-11					
AT-A35	MH8 1+96 (MH175)	7	12	0-0.5	9-12					
AT-A35	MH8 2+45 (MH175)	7	12	0-12	NE					
AT-A30 AT-A37	MH8 2+94 (MH175)	7	12	0-12	NE NE					
AT-A37	MH8 3+43 (MH175)	9	14	0-12	NE NE	Rock at 14 ft.				
AT-A39	MH8 0+48 (MH9)	13	18	0-14	13-18	Noon at 17 It.				
AT-A40	MH8 0+96 (MH9)	13	18	0-13	9-18	Soil seam 13-14.				
AT-A41	MH8 1+43 (MH9)	14	19	0-19	NE NE	Boulder 5-8 ft.				
AT-A42	MH8 1+91 (MH9)	14	19	0-8	8-19	Sporadic rock 8-19 ft.				
AT-A43	MH8 2+39 (MH9)	14	19	0-6	6-19					
AT-A44	MH8 2+87 (MH9)	15	20	0-6	6-20					
AT-A45	MH8 3+34 (MH9)	15	20	0-6.5	6.5-20					
AT-A46	MH9	14	19	0-6.5	6.5-19					
AT-A47	MH9 0+49	14	19	0-6.5	6.5-19					
AT-A48	MH9 0+98	13	18	0-6	6-18					
AT-A49	MH9 1+47	12	17	0-6	6-17					
AT-A50	MH9 1+96	11	16	0-5	5-16					
AT-A51	MH9 2+45	10	15	0-15	NE					
AT-A52	MH10	10	15	0-6.5	6.5-15					
d	1									
AT-A53	MH10 0+50	9	14	0-12	12-14					

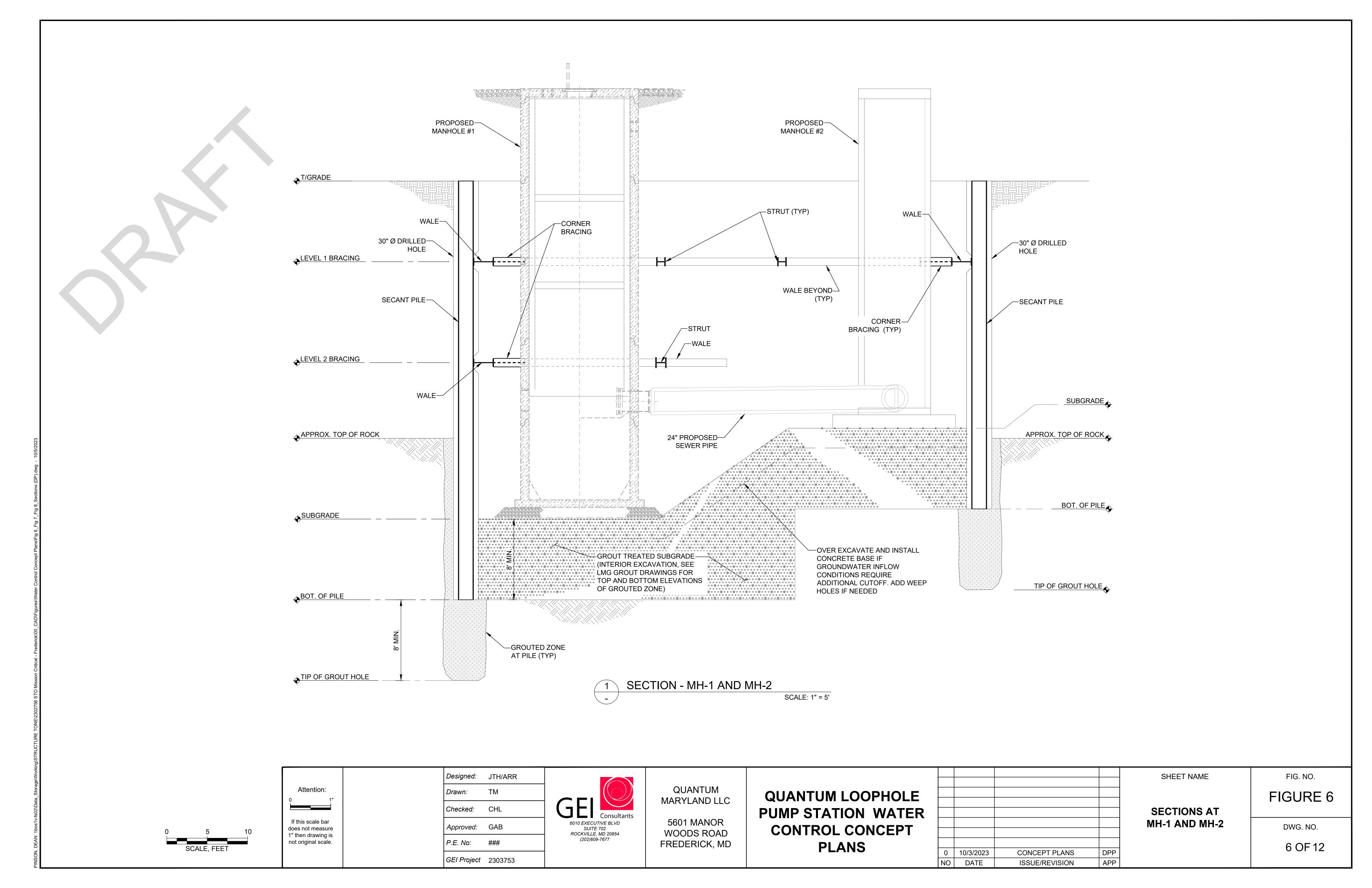


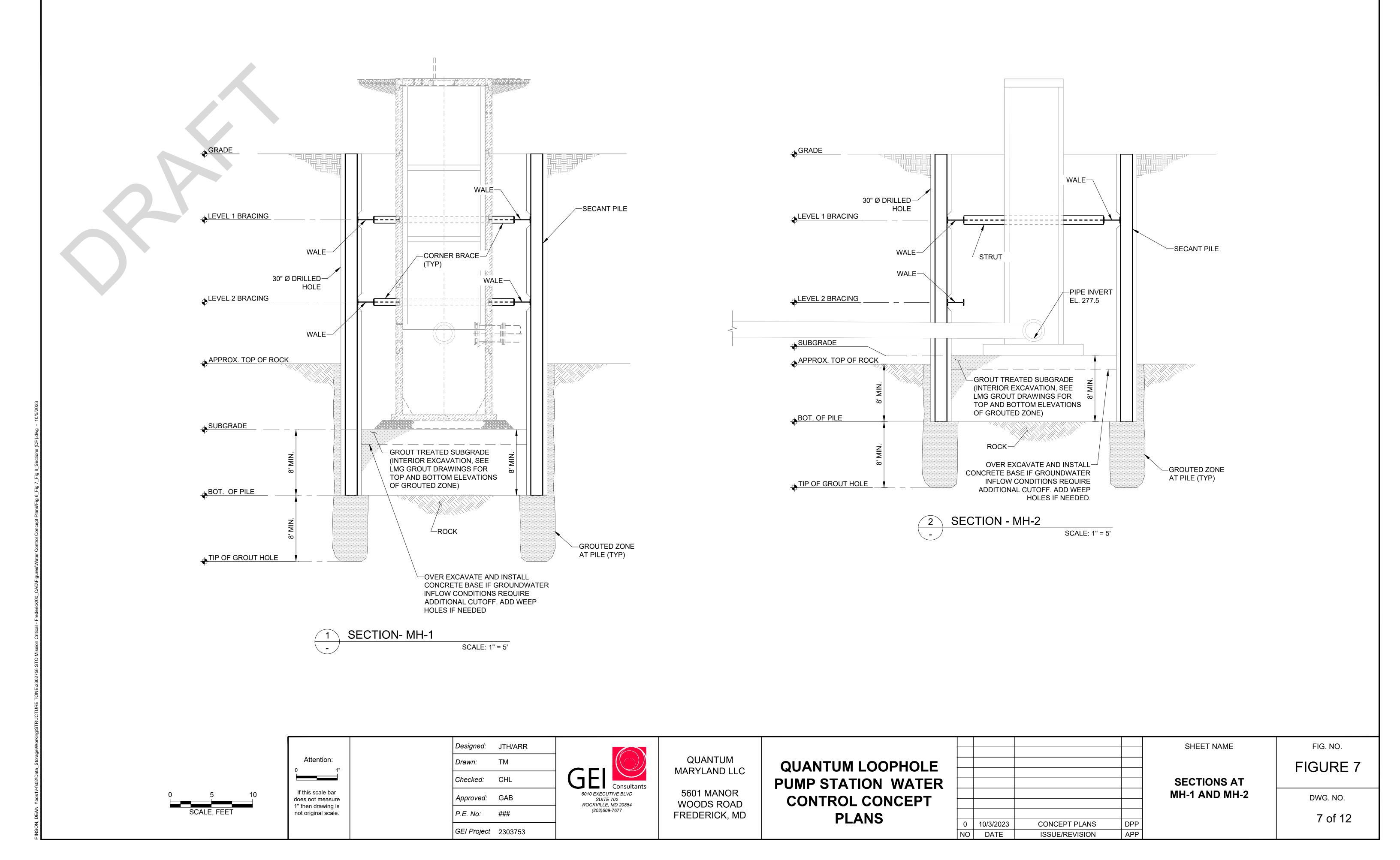
Attachment 2 - Secant Pile Wall and LMG Grouting General Design

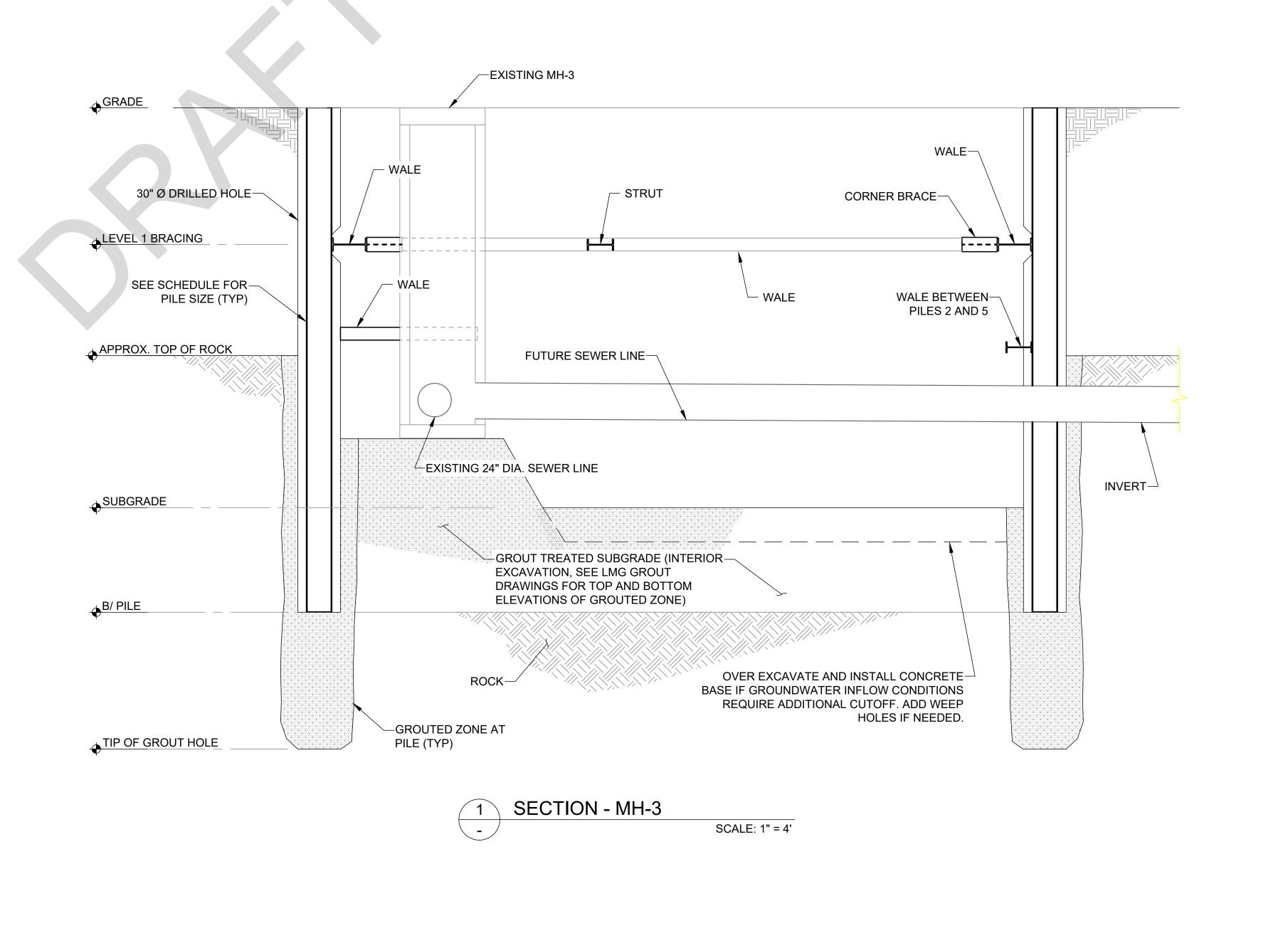


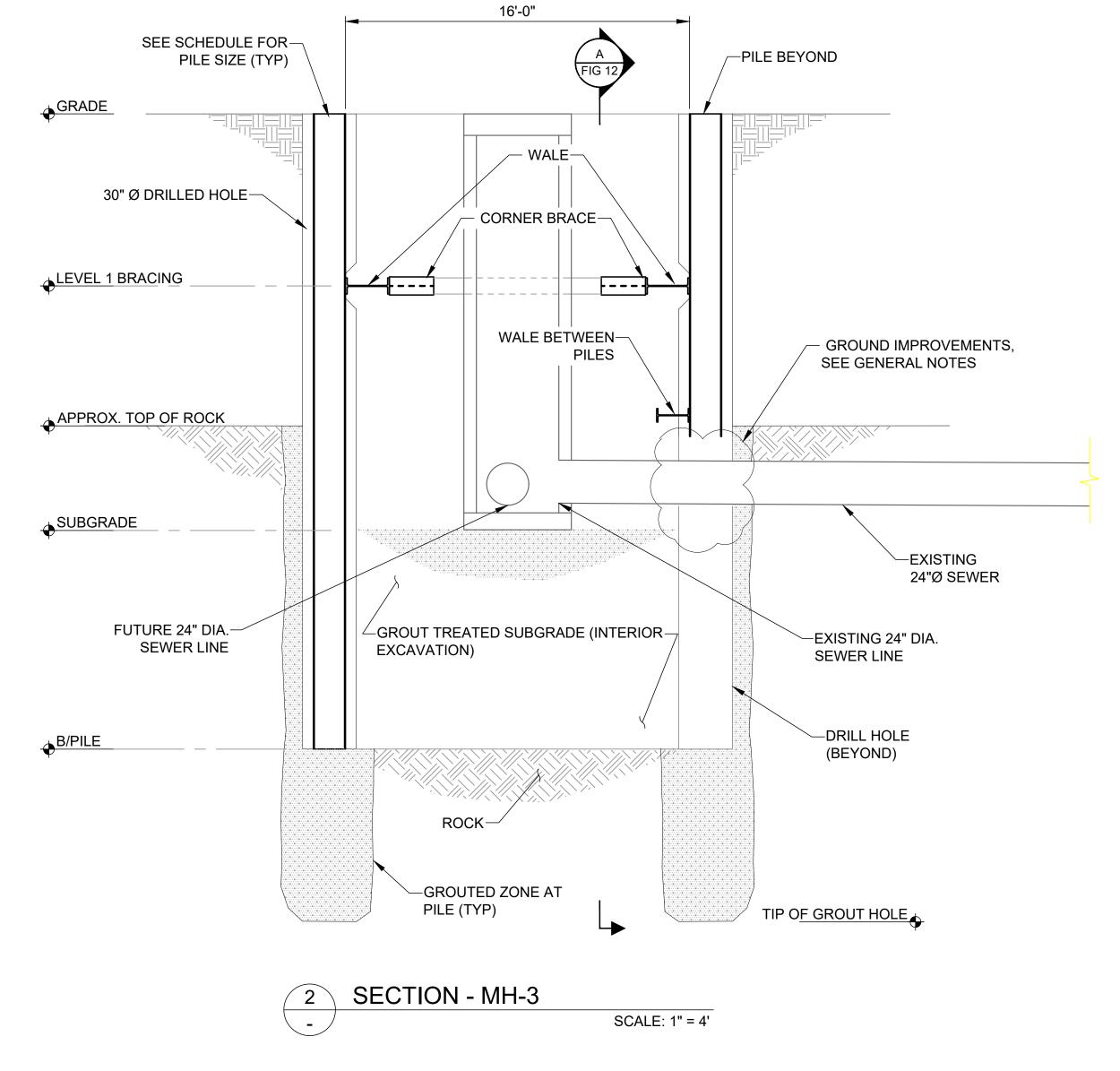


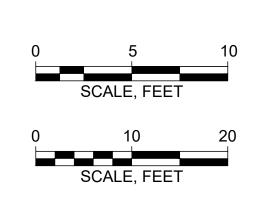


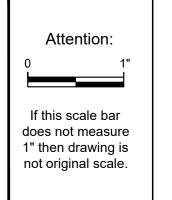


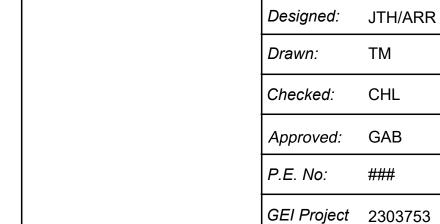














QUANTUM MARYLAND LLC

Consultants
IVE BLVD
702
MD 20854
7677
FREDERICK, MD

QUANTUM LOOPHOLE
PUMP STATION WATER
CONTROL CONCEPT
PLANS

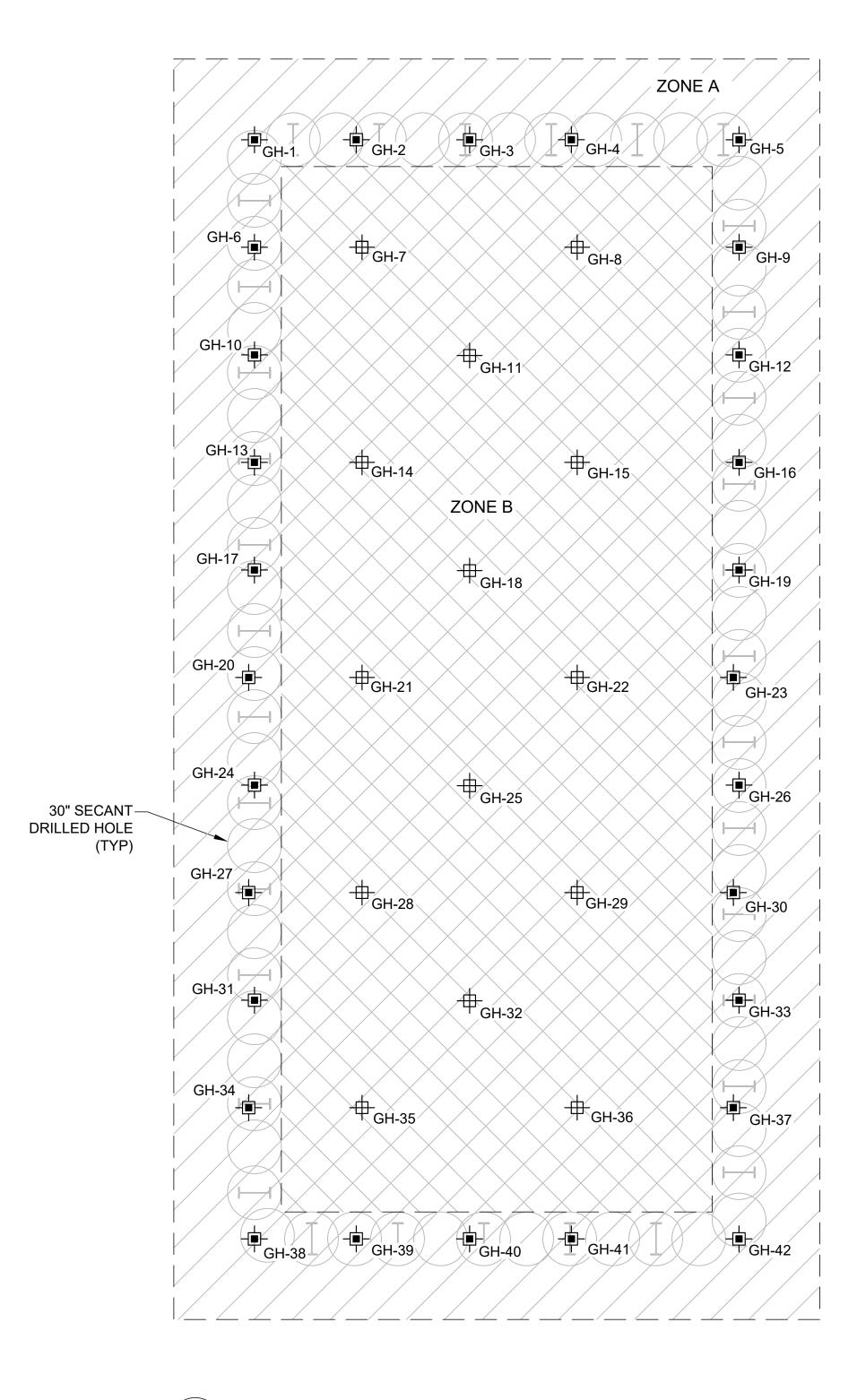
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SECTIONS A				
	DPP	CONCEPT PLANS	10/3/2023	0
	APP	ISSUE/REVISION	DATE	NO

FIG. NO.
FIGURE 8

ONS AT MH-3

DWG. NO.
8 of 12







GROUTING PLAN - MH-1 AND MH-2

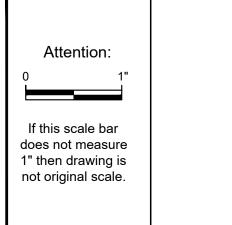
SCALE: 1" = 4'

LEGEND: PRIMARY GROUT HOLE - ZONE A PRIMARY GROUT HOLE - ZONE B

EXCAVATION INSTALLATION AND EXCAVATION.

SUBSURFACE CONDITIONS OBSERVED.

SCALE, FEET



Designed:	JTH/ARR
Drawn:	TM
Checked:	CHL
Approved:	GAB
P.E. No:	###
GEI Project	2303753



QUANTUM MARYLAND LLC	QUANTUM LOOPHOLE
5601 MANOR WOODS ROAD	PUMP STATION WATER CONTROL CONCEPT
FREDERICK, MD	PLANS

0	10/3/2023	CONCEPT PLANS	DPP
NO	DATE	ISSUE/REVISION	APP

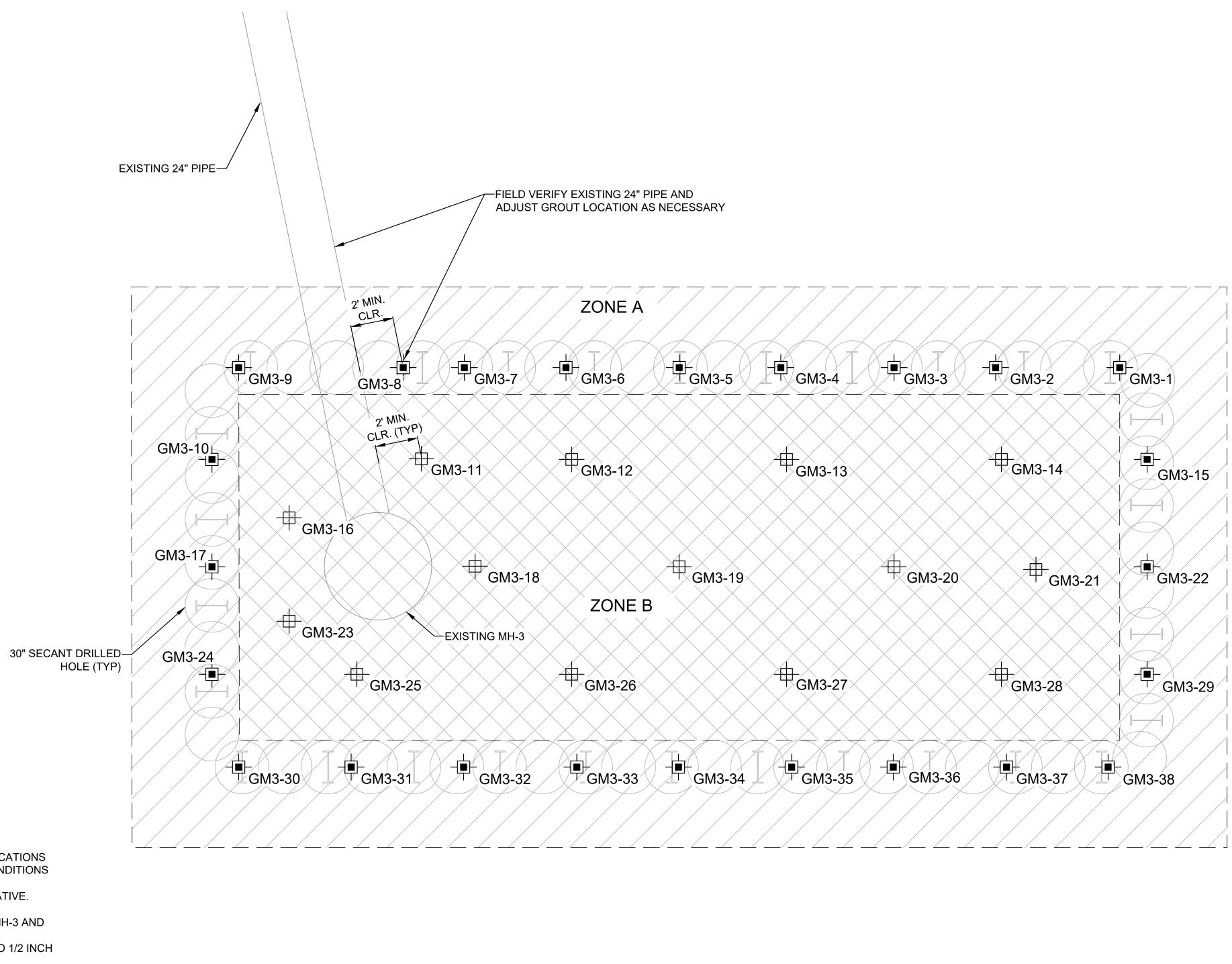
GROUTING LAYOUT	
PLAN AT MH-1 AND	
MH-2	

SHEET NAME

FIGURE 10	
DWG. NO.	

FIG. NO.

10 OF 12





ZONE A

ZONE B

- 1. THE LMG PROGRAM MUST BE COMPLETED PRIOR TO THE START OF THE SUPPORT OF
- EXCAVATION INSTALLATION AND EXCAVATION.

TABLE 1 - TOP OF LMG GROUTING PROGRAM AT MH-1 AND MH-2

FROM TIP EL. TO 2 FEET

ABOVE TOP OF ROCK

FROM TIP EL. TO PROPOSED

BOTTOM OF EXCAVATION

- 2. ONLY PRIMARY GROUT INJECTION LOCATIONS ARE SHOWN. ADDITIONAL INJECTION LOCATIONS WILL BE RECOMMENDED IN THE FIELD BASED ON GROUT TAKES AND SUBSURFACE CONDITIONS OBSERVED.
- 3. ALL GROUTING WORK SHALL BE PERFORMED IN THE PRESENCE OF A GEI REPRESENTATIVE.
- 4. HEIGHT OF GROUT INJECTION SHALL CONFORM TO CRITERIA IN TABLE 1.
- 5. MAINTAIN 2 FOOT CLEARANCE BETWEEN GROUT INJECTION LOCATION AND EXISTING MH-3 AND
- 6. MONITOR MH-3 AND PIPE FOR LATERAL AND VERTICAL MOVEMENT. LIMIT MOVEMENT TO 1/2 INCH LATERAL AND VERTICAL MOVEMENT.

SCALE, FEET

7. REFER TO GENERAL NOTES FOR GROUTING REQUIREMENTS UNDER EXISTING 24-INCH DIAMETER



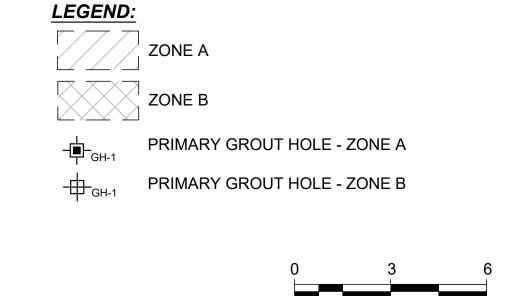
QUANTUM

MARYLAND LLC

5601 MANOR

WOODS ROAD

FREDERICK, MD



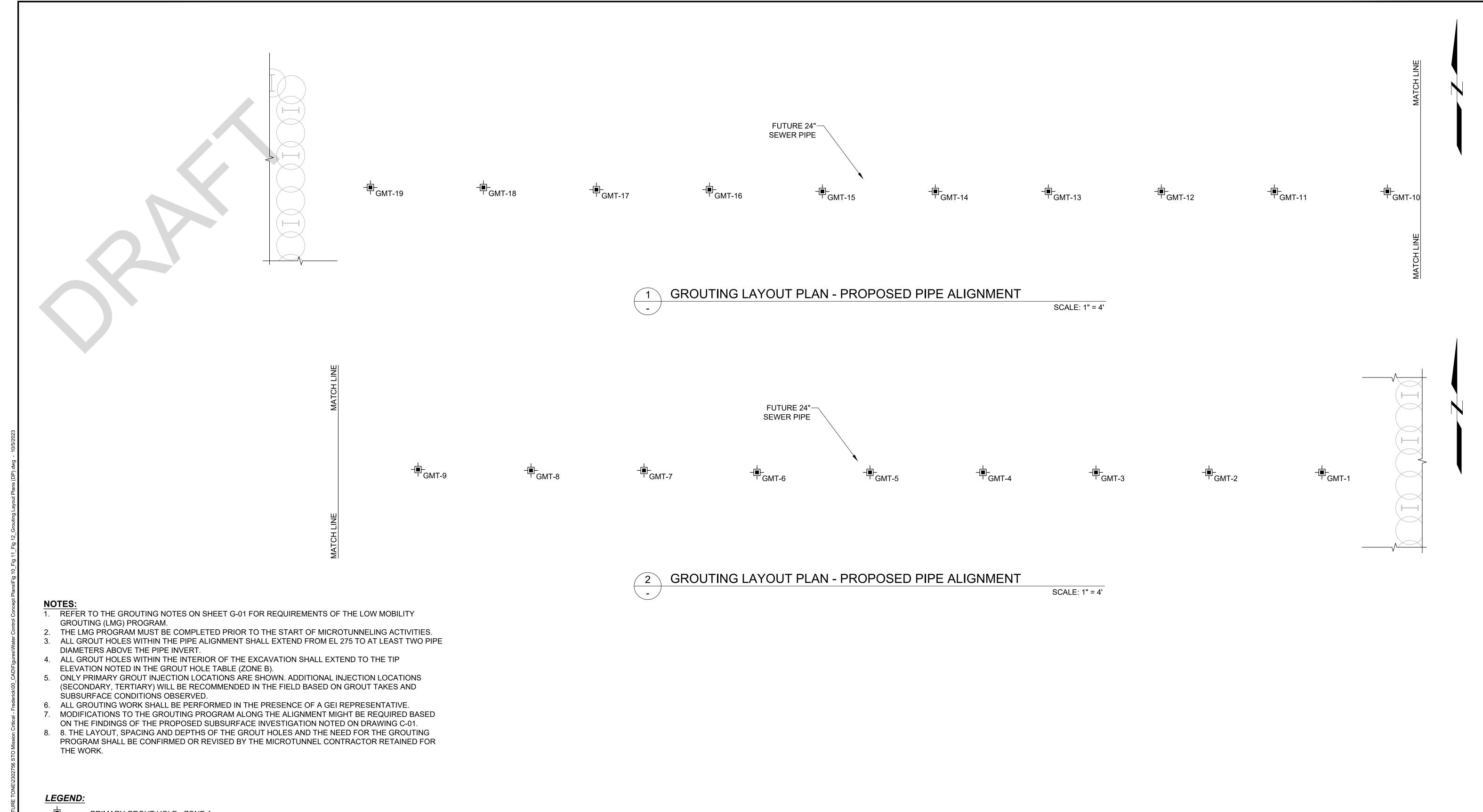
Designed:	JTH/ARR	
Drawn:	TM	
Checked:	CHL	GEL
Approved:	GAB	6010 EXECUTIVE BLVL SUITE 702 ROCKVILLE, MD 20854
P.E. No:	###	(202)609-7677
GEI Project	2303753	

GEI	
Consultants	
6010 EXECUTIVE BLVD	
SUITE 702 ROCKVILLE, MD 20854	
(202)609-7677	

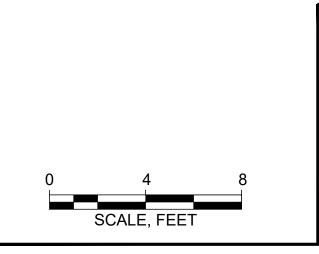
QUANTUM LOOPHOLE
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PLANS

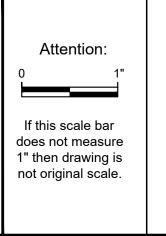
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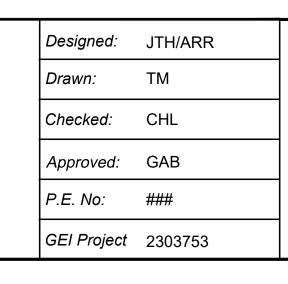
SHEET NAME	FIG. NO.	
ROUTING LAYOUT	FIGURE 11	
PLAN AT MH-3	DWG. NO.	
	11 OF 12	



-P-GH-1 PRIMARY GROUT HOLE - ZONE A









QUANTUM MARYLAND LLC 5601 MANOR WOODS ROAD FREDERICK, MD

QUANTUM LOOPHOLE
PUMP STATION WATER
CONTROL CONCEPT
PLANS

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•	0	10/3/2023	CONCEPT PLANS	DPP	
	NO	DATE	ISSUE/REVISION	APP	

GROUTING LAYOUT
PLAN ALONG
PROPOSED PIPE
ALIGNMENT

SHEET NAME

FIG. NO.

FIGURE 12

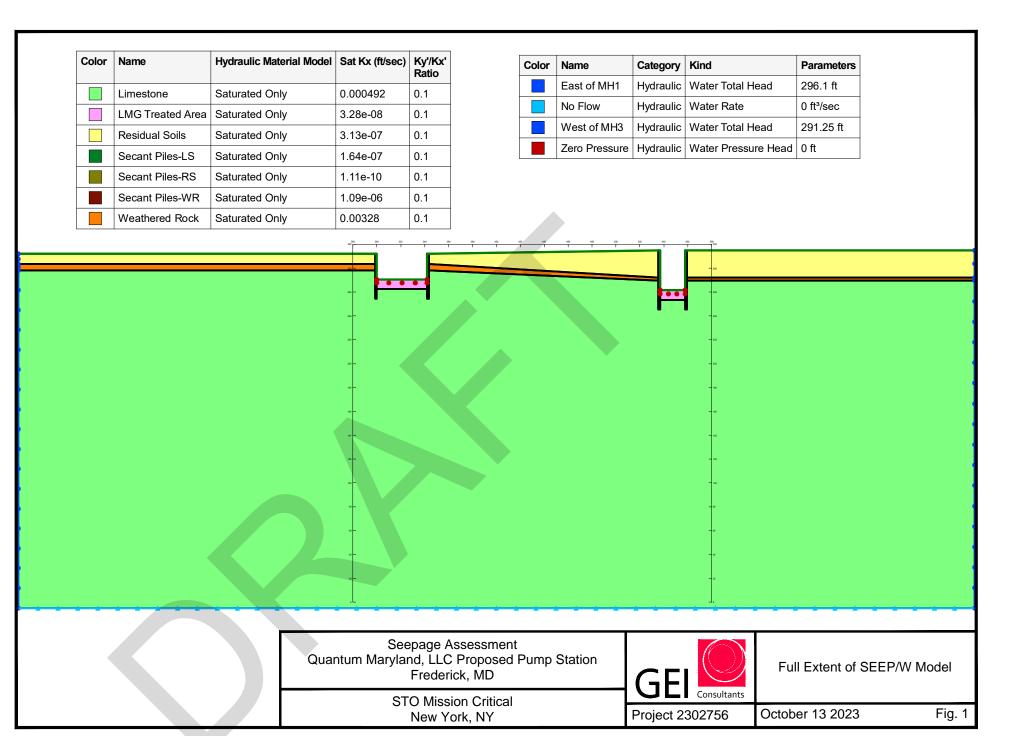
DWG. NO.

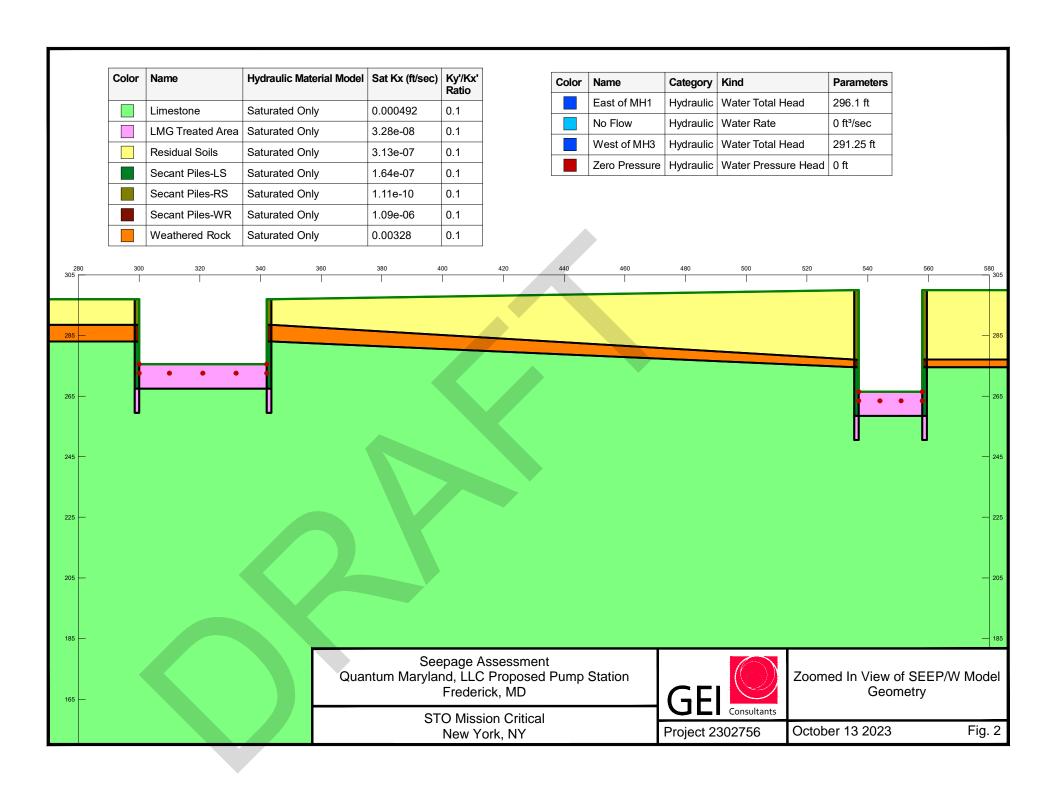
12 OF 12

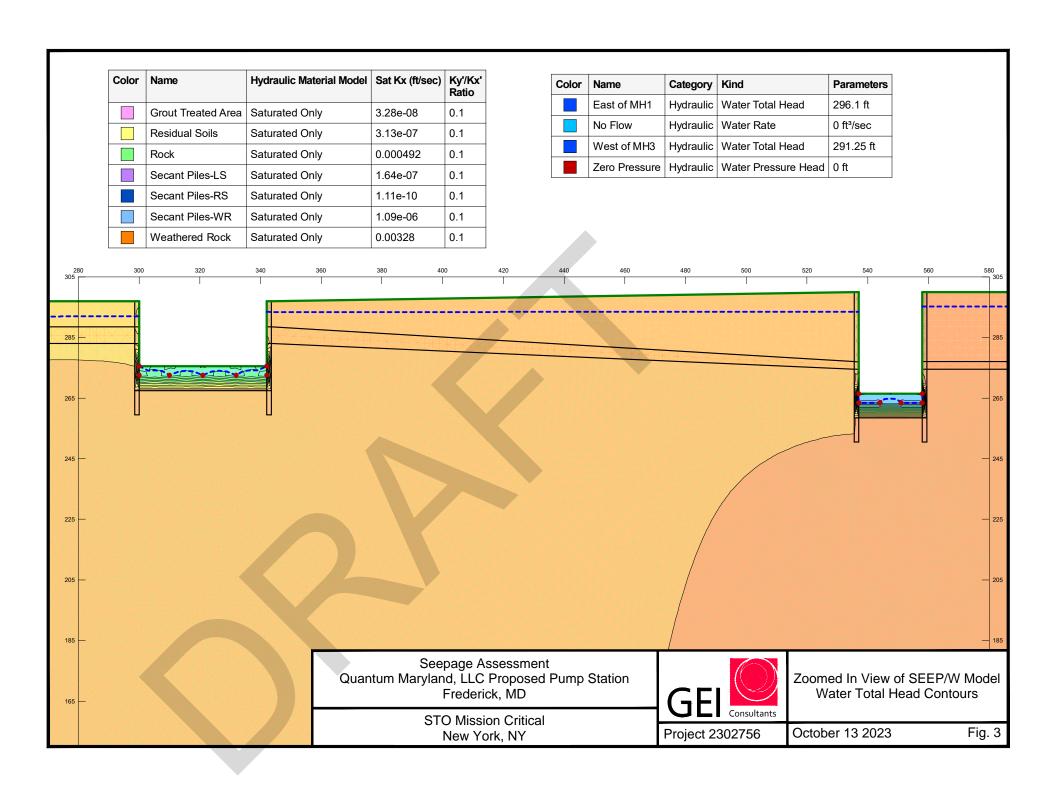


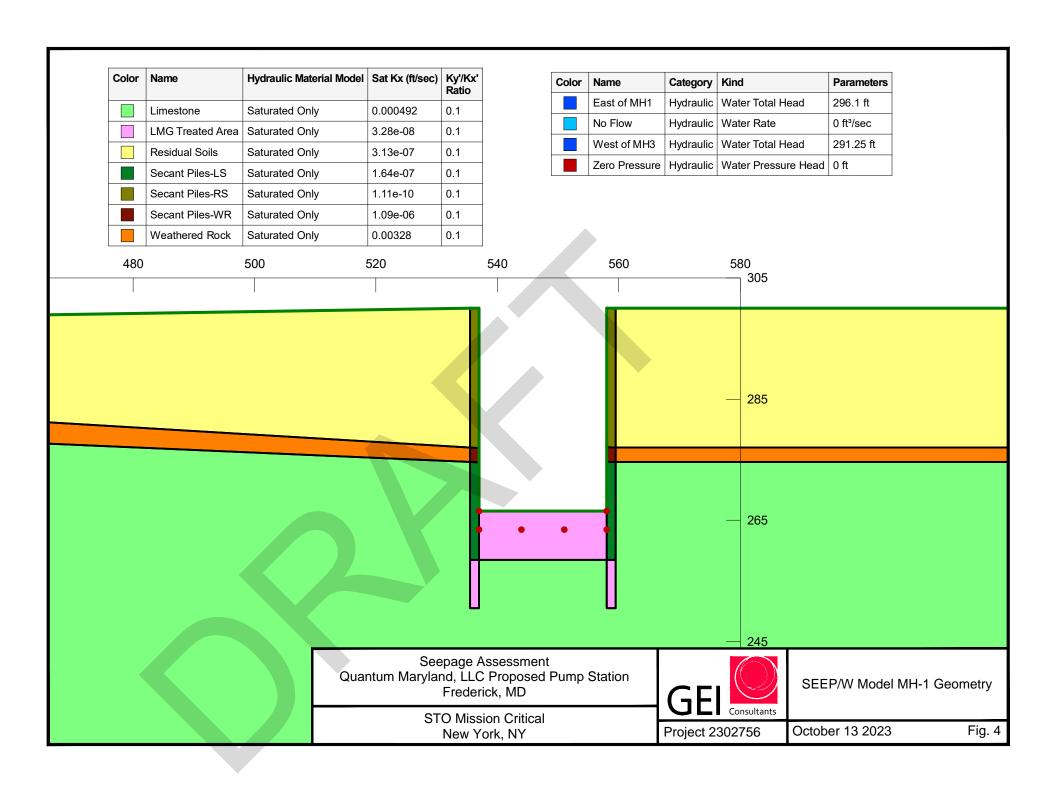
Attachment 3 – Calculation Package – SOE Seepage Analysis

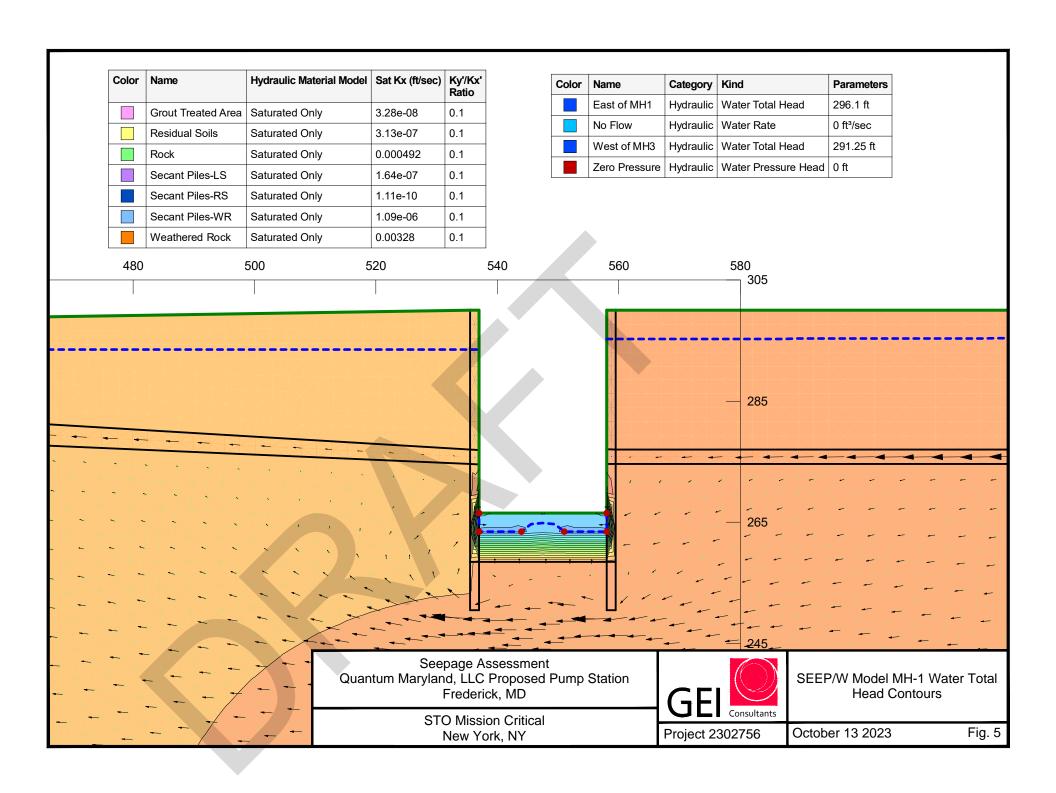


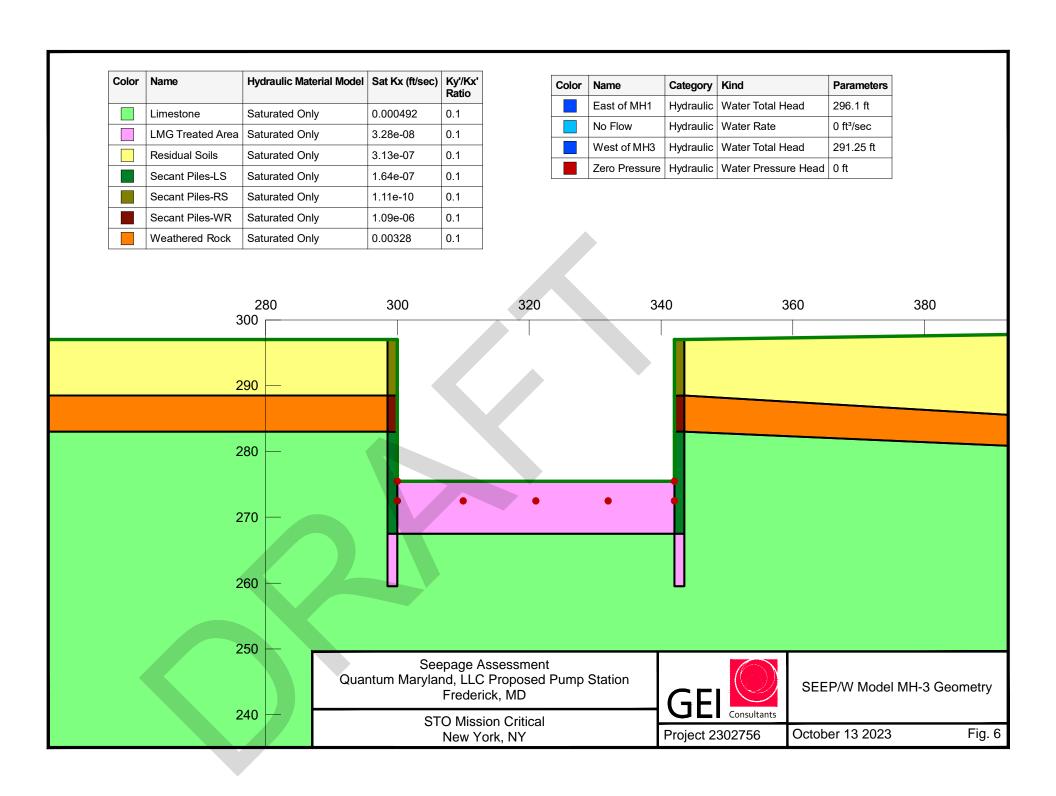


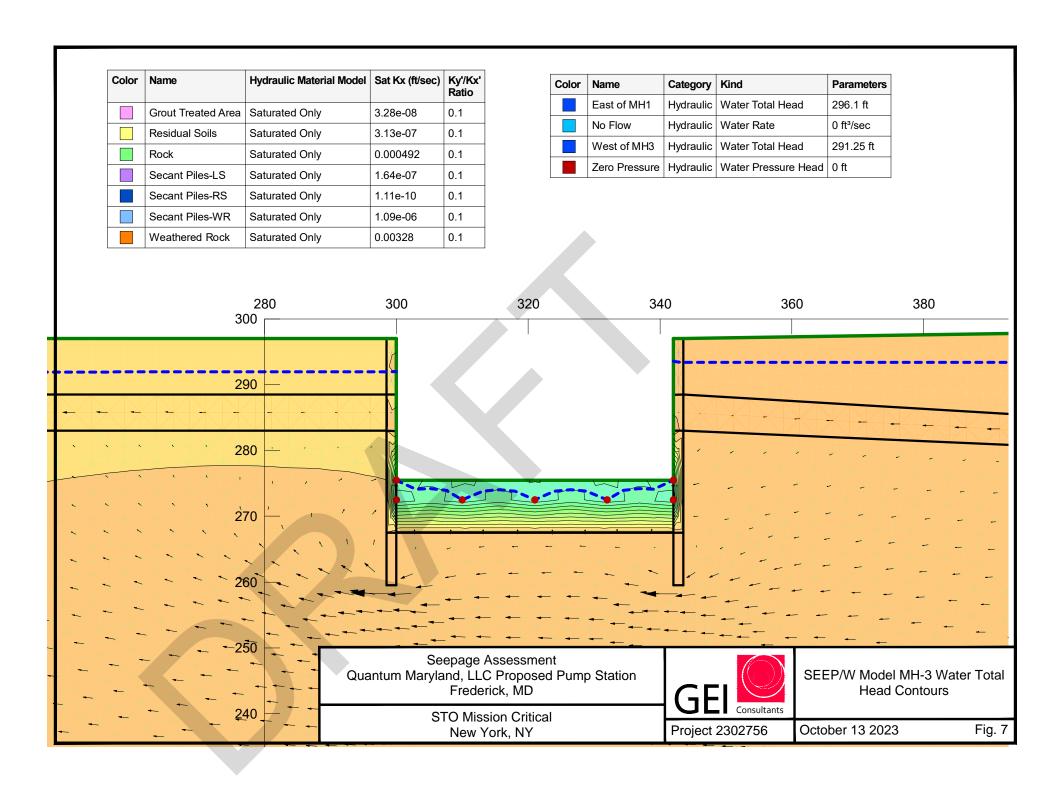


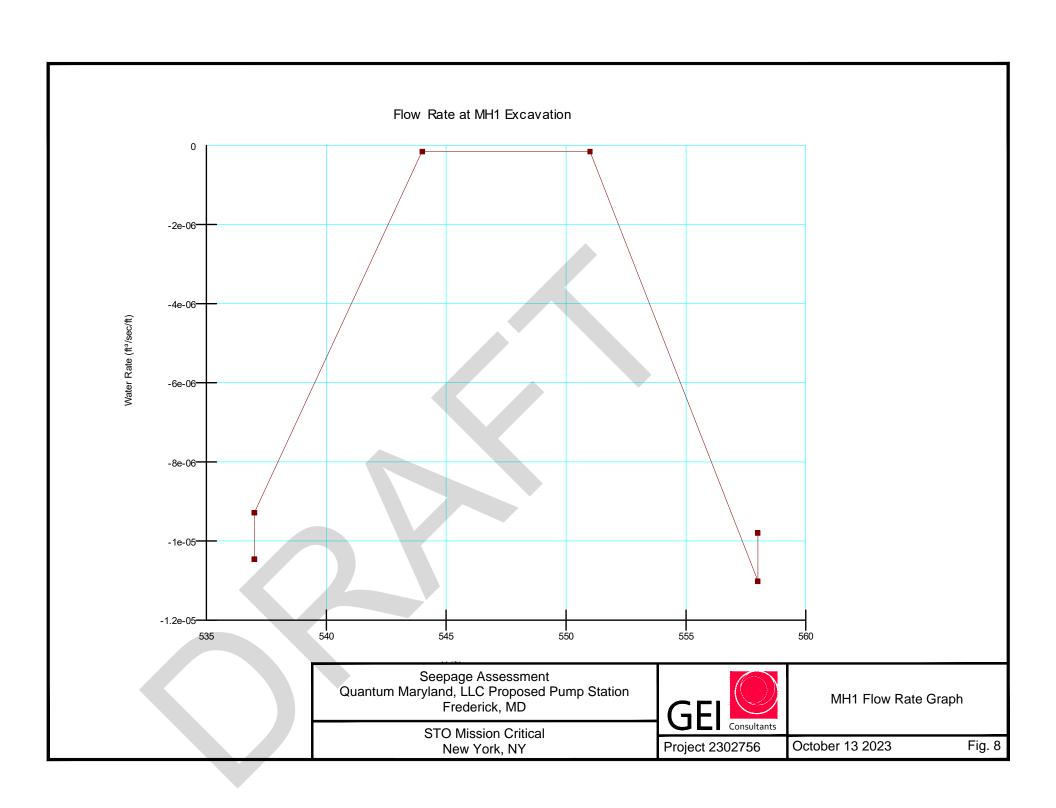












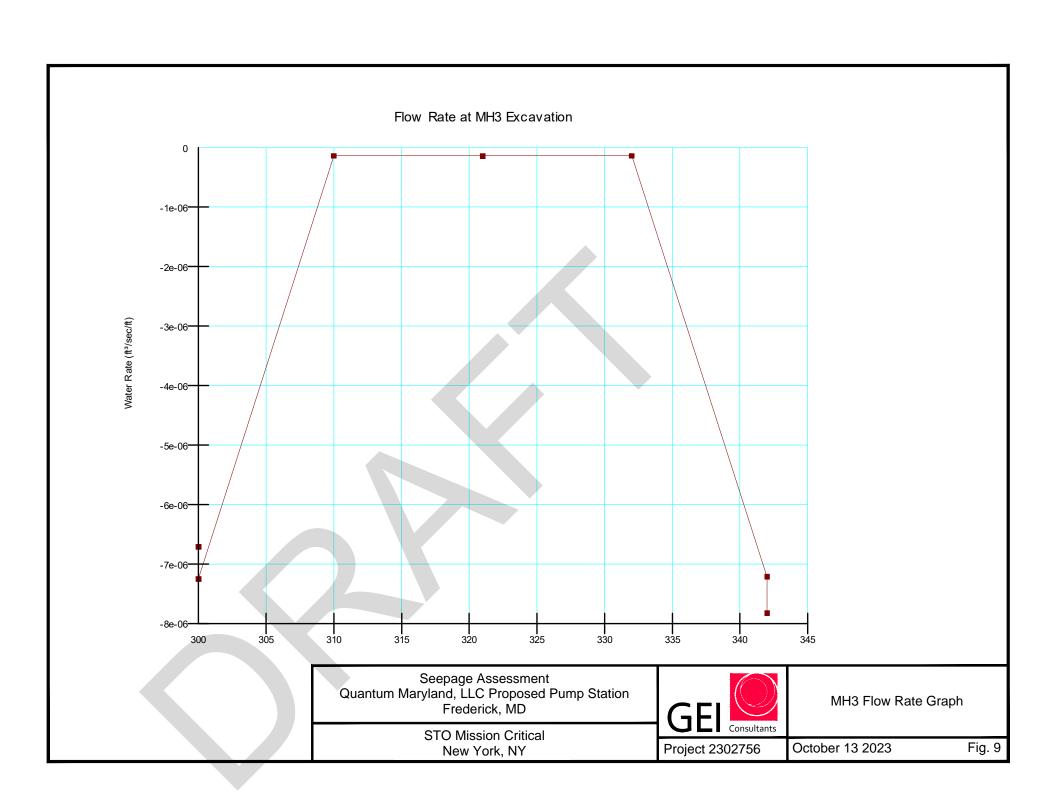


Table 1: Water Flow Rate Results at MH-1 from SEEP/W Model

X (ft)	Water Rate (ft³/sec/ft)	Perimeter Length (ft)	Flow rate (gpd)	Flow Rate Sum (gpd)
537	1.05E-05	141	953.24	
537	9.29E-06	141	846.32	
544	1.50E-07	141	13.69	3723.31
551	1.50E-07	141	13.70	5/25.51
558	1.10E-05	141	1003.80	
558	9.80E-06	141	892.57	

Seepage Assessment Quantum Maryland, LLC Proposed Pump Station Frederick, MD

> STO Mission Critical New York, NY



Full Extent of SEEP/W Model

Project 2302756

October 13 2023

Table 1

Table 2: Water Flow Rate Results at MH-3 from SEEP/W Model

X (ft)	Water Rate (ft³/sec/ft)	Perimeter Length (ft)	Flow rate (gpd)	Flow Rate Sum (gpd)
300	7.25E-06	118	552.95	
300	6.71E-06	118	511.80	
310	1.37E-07	118	10.43	
321	1.40E-07	118	10.71	2243.45
332	1.37E-07	118	10.45	
342	7.22E-06	118	550.28	
342	7.83E-06	118	596.85	

Seepage Assessment Quantum Maryland, LLC Proposed Pump Station Frederick, MD

> STO Mission Critical New York, NY

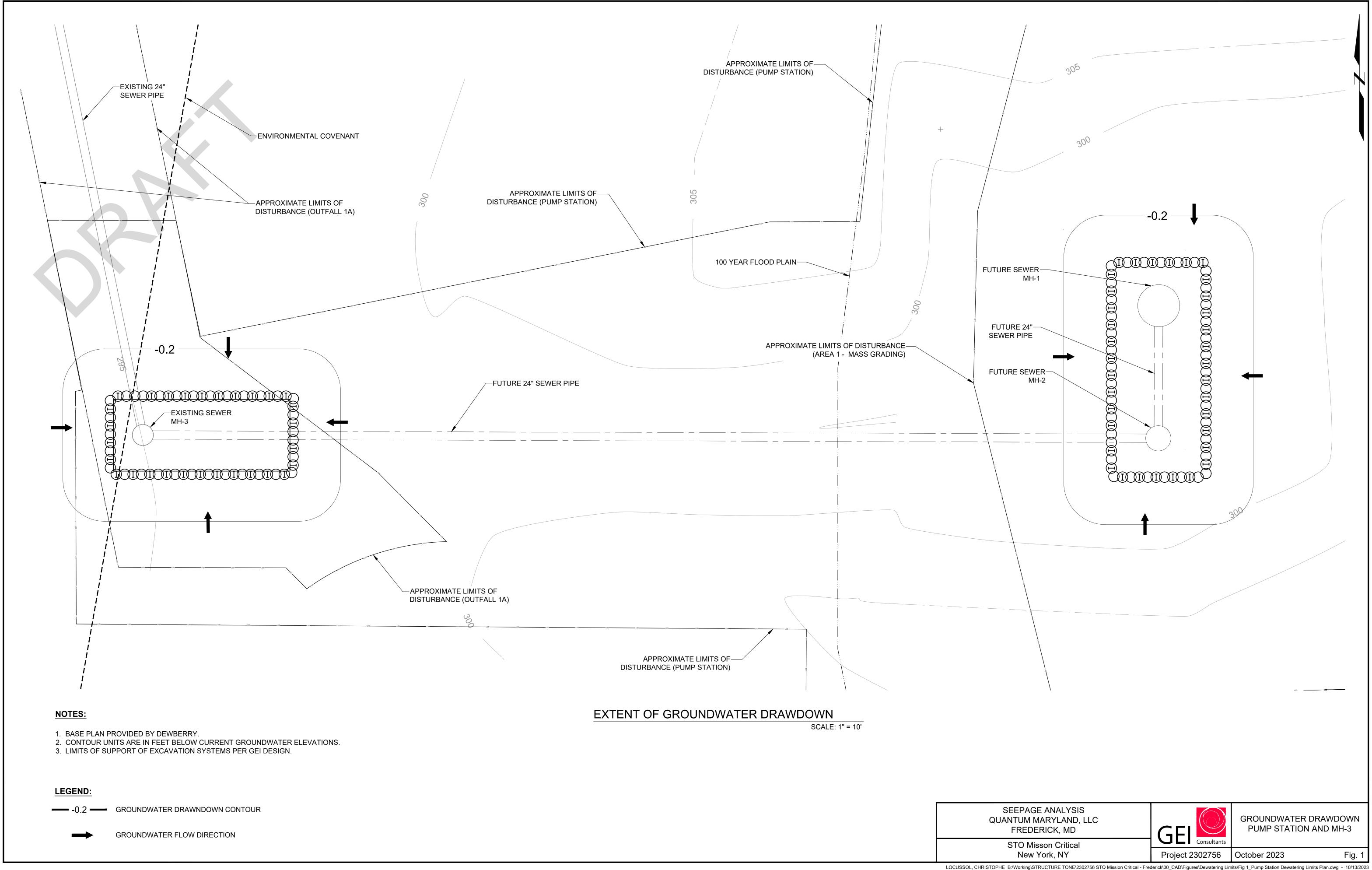


Full Extent of SEEP/W Model

Project 2302756

October 13 2023

Table 2



Appendix E

Clark Construction HASP for Pump Station Work



Accident Prevention Plan

Quantum Loophole - 1 MGD Sewage Pumping Station

Job # 22072W2

Project Description via the Project Plan:

- Clark Water will be providing a new 1 MGD Pump Station as part of the phased construction of the new Quantum Loophole Data Center Campus
- The 1 MGD Pump Station will be used to service Frederick County residents and needs from the initial expansion phase of the Quantum Loophole Data Center Campus and was designed in compliance with Frederick County standards.
- The new pump station will be composed of a new underground precast wet well, new pumps and pipeline to existing sanitary manholes and new supporting electrical infrastructure. The 1 MGD Pump Station will be configured to allow for expansion to a 5 MGD Pump Station as the campus expands.



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(1) SIGNATURE SHEET

Plan Prepared By: Lucas Porter – Safety Manager, C	Clark Construction Group, LLC
Corporate Approval: Brian Walker – Sr. Vice Presid Group, LLC	lent & General Manager, Clark Construction
Signature	Date
Cellular: (252) 643-1000	
Corporate Approval: Nathan Scalla – Project Execut	ive, Clark Construction Group, LLC
Signature	Date
Cellular: (831) 588-5440	
Corporate Approval: Dwayne Wright –Superintenden	t, Clark Construction Group, LLC
Signature	Date
Cellular: (240) 517-4637	
Safety Approval: Marty Laskey – Division Safety Dir Clark Construction Group, LLC	ector,
Signature	Date
Cellular: (404) 638-809	



(2) INTRODUCTION

The requirements specified in this Accident Prevention Plan (APP) have been established to protect the safety and health of Clark Construction Group, LLC employees and subcontractors assigned to the Quantum Loophole – 1 MGD Sewage Pumping Station Project. This plan has been written to comply with the regulations established by the Clark Construction Group, LLC Corporate Safety and Health Program and the Federal Occupational Safety and Health Administration (OSHA), Maryland OSH (MOSH), and the Structure Tone Corporate Safety, Health and Environmental Policies and Procedures Manual dated January 1st, 2022. Whenever a conflict arises between these requirements and the Accident Prevention Plan, the specification most protective of worker safety and health shall prevail (except where specifically noted as an exception). Each Clark Construction Group, LLC employee and subcontractor assigned to the project must abide by these requirements. Subcontractors, upon approval of the Clark Construction Group, LLC Site Safety and Health Officer, may use safety and health procedures that are at least as stringent as those contained in this document.

Contractor must immediately inform the Owners Representative and Clark Representatives of any inspections by MOSH, EPA, or other HSE regulatory agencies or other actions involving Contractor's work.

The information contained herein is general in nature and may not be enough to address all situations.

NOTICE

This Accident Prevention Plan (APP) has been prepared for use by employees and subcontractors performing a specific, limited scope of work. It has been prepared based on the best available information regarding the physical and chemical hazards known or suspected to be present on the projectsite.

It is not possible in advance to discover, evaluate, and protect against all possible hazards that may be encountered during the completion of this project. Adherence to the requirements of this Plan will significantly reduce, but not eliminate, the potential for occupational injury and illness at the project site. The guidelines contained in this Plan have been developed specifically for the project site and scope of work described herein and should not be used at any other site(s) without the review and approval of a qualified health and safety professional. For this Plan, "site" is defined as the area of the Quantum Loophole – 1 MGD Sewage Pumping Station Project.

Clark Construction Group LLC's Corporate Safety and Health Manual is available electronically and will be provided upon request. All references to the appendixes within this Accident Prevention Plan are part of the Clark Construction Group LLC Corporate Safety and Health Manual and can be provided electronically or printed upon request.

PURPOSE

Clark Construction is committed to providing a safe and healthful workplace for its employees. The Clark Construction Group, LLC Safety and Health Manual contains policies, procedures and programs designed to ensure the safety of our workforce, construction personnel and the general public. We consider the prevention of incidents to be an integral part of our operation, and to these ends, we have established a supplemental site-specific health and safety plan to assure the continued safety of all project employees. This plan is designed to:

CLARK

SAFETY is our core value.

Quantum Loophole - 1 MGD Pump StationProject Accident Prevention Plan

П	Identify and evaluate jobsite hazards.
П	Establish means and methods to prevent exposure to unsafe conditions.
П	Develop a system to communicate with our employees concerning safety matters and to encourage feedback.
П	Establish training and retraining programs for employees.
П	Develop a recognition program that identifies individuals/subcontractors who have met criteria and goals for working safe.
	Develop an enforcement and disciplinary system to ensure that employees comply with the Site Safety and Health Plan.
	Establish a culture on the jobsite where safety is recognized as a core value by all employees.
П	Develop a trusting safety relationship between us and the owner
SA	FETY AND HEALTH POLICY STATEMENT
eliı	ark Construction believes that an effective safety and health program is based on a sincere desire to minate personal injuries, occupational illnesses, damage to equipment and property, as well as to protect general public.
	inagement and supervision are charged with the responsibility of preventing the occurrence of incidents or inditions that can lead to occupational injuries or illnesses.
	e ultimate success of a safety and health program depends upon the cooperation and coordination of each lividual employee and sub-contractor.
	s management's responsibility to provide effective training and education that will result in a safe place to rk, and to ensure that safety and health rules and procedures are adequate and enforced.
unl	employee or subcontractor shall be required to work in an unsafe manner or under unsafe conditions, ess it is to correct an unsafe condition and then, only after all reasonable safety precautions have been en to minimize the potential injury exposure.
pol	ark Construction recognizes that safety and health are integral and essential parts of our operations. Our icy is to accomplish work in a safe manner consistent with good work practices. Management at every el is charged with the task of translating this policy into positive actions.
Ou	r safety and health philosophy are based on the following principles:
П	Employees are an invaluable resource to the company and their safety and well-being are essential to its
П	continued success. Incidents are preventable and the occurrence of an incident means that we have not effectively managed our people and resources.
П	our people and resources. ALL EMPLOYEES play a role in their own safety and the safety of those working around them.
1 1	Management will be responsive to the expressed safety concerns of employees.



ASSIGNMENT OF RESPONSIBILITIES

PROJECT SR. VICE PRESIDENT / RESPONSIBLE PERSON

Brian Walker, Sr. Vice President and General Manager of Clark Construction has been designated as the Responsible Person for the APP. It is the responsibility of the Project Sr. Vice President to ensure overall implementation of the APP. In addition, the Project team will have the responsibility for enforcement of the program at the project site.

The duties of the Responsible Person are to:		
П	Identify and evaluate jobsite hazards, including procedures for investigating occupational injuries and illnesses.	
П	Establish and/or review methods and procedures for correcting unsafe and unhealthful conditions and work practices.	
П	Ensure that employees receive training on general and specific safety practices for the company and on each of their job assignments.	
	Ensure that there is a procedure for communicating to employees, in an understandable manner, the safety and health rules and procedures.	
П	Ensure compliance with safety and health work practices.	
П	Ensure that records on training, inspections, and corrective measures are properly maintained, as required by this APP and other OSHA required programs.	
	Follow all Clark, CDC, State and Local rules/regulations pertaining to COVID-19	
	OJECT MANAGER / PROJECT SUPERINTENDENT / SITE SAFETY AND HEALTH	
PR	OJECT MANAGER / PROJECT SUPERINTENDENT / SITE SAFETT AND HEALTH OFESSIONAL OJECT MANAGER	
PR PR Ale	OFESSIONAL	
PR PR Ale enf Thi	OFESSIONAL OJECT MANAGER xandria Hare of Clark Construction has been assigned as Project Manager. Ms. Hare is responsible for orcement of this program at the project site, in conjunction with the Project Superintendent and SSHP. s includes: Assist in development of a job specific safety and health plan.	
PR Ale enf Thi	OFESSIONAL OJECT MANAGER xandria Hare of Clark Construction has been assigned as Project Manager. Ms. Hare is responsible for orcement of this program at the project site, in conjunction with the Project Superintendent and SSHP. s includes: Assist in development of a job specific safety and health plan. Preplanning for safety in work activities.	
PR Ale enf Thi	OFESSIONAL OJECT MANAGER xandria Hare of Clark Construction has been assigned as Project Manager. Ms. Hare is responsible for orcement of this program at the project site, in conjunction with the Project Superintendent and SSHP. s includes: Assist in development of a job specific safety and health plan. Preplanning for safety in work activities. Foster a positive safety culture throughout the project.	
PR Alee enf Thi	OJECT MANAGER xandria Hare of Clark Construction has been assigned as Project Manager. Ms. Hare is responsible for orcement of this program at the project site, in conjunction with the Project Superintendent and SSHP. includes: Assist in development of a job specific safety and health plan. Preplanning for safety in work activities. Foster a positive safety culture throughout the project. Inspect the project at least weekly.	
PR Ale enf Thi	OJECT MANAGER xandria Hare of Clark Construction has been assigned as Project Manager. Ms. Hare is responsible for orcement of this program at the project site, in conjunction with the Project Superintendent and SSHP. s includes: Assist in development of a job specific safety and health plan. Preplanning for safety in work activities. Foster a positive safety culture throughout the project. Inspect the project at least weekly. Ensure that corrective action is taken when there is an unsafe act or unsafe condition. Enforce employee and subcontractor disciplinary policies as described in the APP. Ensure subcontractor safety compliance.	
PR Alee enf Thi	OJECT MANAGER xandria Hare of Clark Construction has been assigned as Project Manager. Ms. Hare is responsible for orcement of this program at the project site, in conjunction with the Project Superintendent and SSHP. s includes: Assist in development of a job specific safety and health plan. Preplanning for safety in work activities. Foster a positive safety culture throughout the project. Inspect the project at least weekly. Ensure that corrective action is taken when there is an unsafe act or unsafe condition. Enforce employee and subcontractor disciplinary policies as described in the APP. Ensure subcontractor safety compliance. Review of safety training and orientations to ensure that the proper message is being delivered.	
PR Alee enf Thi	OJECT MANAGER xandria Hare of Clark Construction has been assigned as Project Manager. Ms. Hare is responsible for orcement of this program at the project site, in conjunction with the Project Superintendent and SSHP. includes: Assist in development of a job specific safety and health plan. Preplanning for safety in work activities. Foster a positive safety culture throughout the project. Inspect the project at least weekly. Ensure that corrective action is taken when there is an unsafe act or unsafe condition. Enforce employee and subcontractor disciplinary policies as described in the APP. Ensure subcontractor safety compliance. Review of safety training and orientations to ensure that the proper message is being delivered. Ensure that proper personal protective equipment (PPE) is available and being used as required.	
PR Alee enf This	OJECT MANAGER xandria Hare of Clark Construction has been assigned as Project Manager. Ms. Hare is responsible for orcement of this program at the project site, in conjunction with the Project Superintendent and SSHP. s includes: Assist in development of a job specific safety and health plan. Preplanning for safety in work activities. Foster a positive safety culture throughout the project. Inspect the project at least weekly. Ensure that corrective action is taken when there is an unsafe act or unsafe condition. Enforce employee and subcontractor disciplinary policies as described in the APP. Ensure subcontractor safety compliance. Review of safety training and orientations to ensure that the proper message is being delivered.	



П	Follow all Clark, CDC, State and Local rules/regulations pertaining to COVID-19. Participate in site walks and log safety observations via safety suite
PR	OJECT SUPERINTENDENT
	rayne Wright of Clark Construction has been assigned as the Project Superintendent. Mr. ight is responsible for enforcement of this program at the project site. This includes:
П	Assist in development of a job specific safety and health plan.
П	Preplanning for safety in work activities.
П	Foster a positive safety culture throughout the project.
	Inspect the project daily.
П	Ensure that corrective action is taken when there is an unsafe act or unsafe condition.
П	Enforce employee and subcontractor disciplinary policies as described in the APP.
П	Ensure subcontractor safety compliance.
	Ensure that safety meetings are conducted and documented as described in this program and subcontractor "Safe Start" documents.
	Ensure that every employee goes through on-site safety orientation prior to starting work.
П	Ensure that proper personal protective equipment (PPE) is available and being used as required.
П	Ensure that communication from employees is being acted upon.
П	Notify the owner and insurance carrier of an injury/incident which requires medical attention.

Investigate all incidents and document findings in accordance with the APP.

Participate in site safety walks and log observations via safety suite

Follow all Clark, CDC, State and Local rules/regulations pertaining to COVID-19.

SITE SAFETY AND HEALTH PROFESSIONAL

Lucas Porter of Clark Construction has been assigned as the Site Safety and Health Professional (SSHP) for this project. The SSHP shall implement the operational aspects of this Plan and other applicable requirements and regulations. The SSHP shall identify and communicate existing and anticipated safety and health requirements to the Project Superintendent and Project Manager, and all subcontractor(s) through the Clark Subcontractor Safe Start meeting, and through activity/plan reviews with the project team prior to the subcontractor's start of work on the project.

The SSHP carries the authority of the Project Sr. Vice President as it relates to matters of project safety. The SSHP reports to the Project Sr. Vice President and has authority to stop work in order to prevent injury or incident.

The SSHP is responsible for the field coordination/ implementation of the APP and will consult with the Division Safety Director, Marty Laskey, on matters related to the project. Monthly exposure data including man hours worked will be completed by the SSHP and submitted to the Owner's representative.



The SSHP will strictly enforce all Clark, CDC, State and Local rules/regulations pertaining to COVID-19.

PROJECT TEAM

Project Team members will be familiar with the contents of the Clark Construction Group, LLC Safety and Health Program, this Clark Construction Site Safety and Health Plan, the project work plan, and the project quality control plan, and will observe all specifications set forth within those plans, and with any further direction they may receive. No employee may, for any reason, perform an act, or create a condition that may cause harm to themselves, co-workers, or third parties.

All employees shall immediately report unsafe conditions to their immediate supervisor who will either correct the condition or request assistance from the SSHP.

All employees will participate in site safety walks and log safety observations via safety suite.

FOREMAN

Pro	oject foremen have the following responsibilities:
	Ensure compliance with the APP. Ensure that all employees receive the site-specific orientation prior to beginning work on site. Inspect work areas regularly for unsafe acts and unsafe conditions. Communicate safety and health matters to the crew and ensure their understanding. Ensure corrective action is taken when there is an unsafe act or condition observed. Coordinate with Superintendents and Safety Managers to ensure safety is planned into work activities. Ensure that their crew understands the importance of and is wearing all required personal protective equipment.
	Ensure that their crew is performing in a safe manner, in compliance with all rules and regulations. Ensure that the concerns of the crew are communicated to the project superintendent. Ensure that tools and equipment are in good condition and are being used properly and in a safe manner. Assist with incident investigation when needed. Conduct Safe Plan of Action daily in the morning before work commences. Authority to stop work in order to prevent injury or incident. Perform at least 1 toolbox talk a week with crew. Follow all Clark, CDC, State and Local rules/regulations pertaining to COVID-19.
EN	MPLOYEES
Em	aployees have the following responsibilities:
ПП	Arrive to work fit for duty. Have on proper work attire including long pants with no cuffs and shirts with sleeves that cover the shoulder, safety toed work boots, Safety Helmets, safety glasses and a minimum A3 cut resistant



	glove.
	Wear personal protective equipment that is required by their job/task and applicable regulation.
П	Follow safety rules required by their company and the project.
	Report all unsafe acts or conditions immediately.
П	Immediately report any work-related injury, regardless of how minor.
П	Authority to stop work in order to prevent injury or incident.
П	Follow all Clark, CDC, State and Local rules/regulations pertaining to COVID-19.
VI	SITORS
П	Must follow project safety requirements, Code of Safe Practices, and OSHA, MOSH, and EPA regulations
	Will not be permitted in a work area that may present a hazard to the individual.
П	Will not be allowed on project site work areas without proper PPE
	Must coordinate with GC prior to coming to job site and sign in at office trailer upon arrival.
П	Follow all Clark, CDC, State and Local rules/regulations pertaining to COVID-19.
П	Must be escorted on Site property by a member of Clark or by an authorized subcontractor representative.

SUBCONTRACTORS AND SUPPLIERS

Prior to proceeding with any work on this project, each Subcontractor must attend a pre-mobilization Safe Start meeting held by the SSHP. This meeting will review the established Corporate Safe Start Program. Each subcontractor shall be given a copy of our Subcontractor Safe Start Manual which contains the written documentation that is required to be submitted prior to working. All documents shall be reviewed with our Subcontractor's field leadership and Safety Representative during this meeting. A copy of the Subcontractor Safe Start Manual will be distributed to each Subcontractor prior to this meeting.

Vendors and/or suppliers who will be performing work of any kind on this project will be required to submit a detailed hazard analysis prior to start of work. Each hazard analysis must be approved by the SSHP. Examples of this type of work include but are not limited to the set up and use of concrete pump trucks, deliveries of building materials that must be mechanically unloaded onsite, installation of material hoists, trash chutes and scaffold systems.

Subcontractors are responsible for notifying their vendors and suppliers of this requirement, obtaining the hazard analysis and submitting the documentation to the SSHP for approval.

Subcontractors will, at a minimum, incorporate all the principles of the Clark Construction Group, LLC, Clark Construction APP into their safety programs. Subcontractors must accept responsibility for the management and implementation of their company's Safety and Health and HAZCOM Programs for the project and will ensure that their employees, subcontractors and suppliers, regardless of tier, know, understand, properly implement and are held accountable for complete project safety and health requirements.

Additional information on the Subcontractor Safe Start Program is contained in Appendix A-14.

All Subcontractors shall provide a full-time Safety representative on jobsite when manpower exceeds 30 or more workers (including lower tier sub-contractors). Safety representative shall have no other duties other



than safety and shall have OSHA 30 and be First aid CPR trained. Safety representative shall attend all Safety meetings conducted by Clark or by its lower tier sub-contractors while they are onsite.

Any Subcontractor with less than 30 workers onsite (including lower tier subcontractors) must have a designated onsite safety representative that is at a minimum First Aid/CPR trained at all times.

All Subcontractors, lower tier sub-contractors, suppliers (when onsite), sales reps, and visitors must adhere to all Clark, CDC, State and Local rules/regulations pertaining to COVID-19.

SUBCONTRACTOR SAFETY REPERSENTIVE SHALL:

	Ensure that their employees, subcontractors and suppliers, regardless of tier, comply with their company's Safety and Health and HAZCOM Programs, the Contract Documents, OSHA/MOSH Standards, and all other federal, state and local codes, laws and regulations.
П	Follow project safety requirements, Clark Construction Group, LLC Code of Safe Practices, and
	OSHA/MOSH regulations.
	Ensure that all work activities are planned with an emphasis on safety and health to prevent bodily injury,
	illness and property damage.
П	Post a copy of the Medical Emergency Procedures and the Fire Emergency Procedures for the project in their change rooms, trailers and offices.
П	Make provisions for immediate first aid and/or medical/hospital treatment for all work-related injuries and illnesses for their employees.
\Box	Ensure that a Job Specific Hazard Analysis is developed and implemented for each major work operation.
	Be responsible for the Subcontractor Incident Reporting Requirements.
П	Attend all Scheduled Safety Meetings.
	Arrange for weekly Toolbox Talks. A copy of the written minutes must be forwarded to the SSHP and Clark Superintendent.
	1
П	Report all safety and health related matters to the Superintendent and/or the SSHP.
	Perform daily safety inspections of work areas.
П	Document all equipment inspections daily and provide copies to Clark Superintendent and or Clark Management representative.
П	Ensure that Employee Information and the Training Checklist is completed and documented for new employees prior to starting work on the project.
П	Authority to stop work in order to prevent injury or incident.
	Follow all Clark, CDC, State and Local rules/regulations pertaining to COVID-19
П	At a minimum First Aid/CPR trained.
П	Maintain up to date MSDS sheets for all materials on site.
SU	BCONTRACTOR EMPLOYEES SHALL:
П	Follow project safety requirements, Clark Construction Group, LLC Code of Safe Practices, and
	OSHA/MOSH regulations.
П	Report any unsafe conditions or acts to their Supervisor.
	Perform their work using safe and healthful methods.



П	Use and wear all personal protective equipment required.
П	Attend weekly Toolbox Talks and sign attendance list.
П	Keep all areas clean and free of debris.
П	Wear seat belts when operating equipment.
П	Refrain from fighting, discrimination, harassment, and or any other immoral activities.
П	Notify Supervisors immediately of any incidents.
П	Not to possess any drugs, alcohol or firearms of any type on Job/Plant premises or in Company vehicles
П	Authority to stop work in order to prevent injury or incident.
П	Follow all Clark, CDC, State and Local rules/regulations pertaining to COVID-19.

FITNESS FOR DUTY

Clark Construction and its subcontractors will be required to implement a drug testing program that includes, at a minimum, Pre-Employment, Periodic, Post Incident, For Cause, Random and Return to Work testing. Subcontractors will be required to comply with the Clark Construction Group, LLC Fitness for Duty program while working on the Quantum Loophole – 1 MGD Sewage Pumping Station Project. See Appendix A-14 for the complete Fitness for Duty Policy.

JOB AND ACTIVITY HAZARD ANALYSIS

Each subcontractor, regardless of tier, must submit Clark Construction a Pre-Phase Safety Plan including a Job Hazard Analysis (JHA) for each phase of work. This JHA will be reviewed by the Clark Construction Group, LLC Superintendent(s) and SSHP at the Safe Start Meeting and Initial Meetings for their feature(s) of work. All JHA/AHA will be kept on file at the project site for review.

Pre-activity walks will be conducted with applicable parties on stie at the discretion of the Owner, Engineer, and Contractor. A pre activity review will be completed before an AHA is created

Additional information on the Hazard Analysis Policy is contained in Appendix A-7.

All Phases of work will require a Job Hazard Analysis (JHA), examples are:

Site-work

Demolition

Excavations, Trenching

Concrete – Structural

HVAC

Electrical

Equipment Rigging

Working on/near existing utilities; electrical, gas, chemical, steam, pressurized lines, sanitary lines Confined Space Entry

At a minimum (for each phase) consider all potential hazards including those below.



- 1. Noise
- 2. Dust/Fumes/Mists/Chemical Exposures
- 3. Traffic Control
- 4. Falls, Working at Heights
- 5. Falling Objects/Flying Objects
- 6. Walking Surfaces/Access/Work Platforms & Scaffolding
- 7. Lighting
- 8. Machinery/Vehicles
- 9. Interface with other contractors
- 10. Security
- 11. Pollution/Spills
- 12. Utilities Exposure Including Electrical, Water (onsite and Public)
- 13. Vibration/Subsidence/Ground Support/Trenching and Excavations
- 14. Fires, Welding, Burning Operations/Fire Prevention
- 15. Clothing/PPE Requirements
- 16. Craning/Hoisting/Rigging
- 17. Signage/Barricades
- 18. Tools-use, Inspection, Maintenance
- 19. Demolition Operations
- 20. Protection of the Public
- 21. Other Hazards Particular to this Project

In addition, Specific plans will be submitted prior to these activities.

- 1. Site-specific Fall Protection and Prevention
- 2. Formwork and Shoring Erection and Removal
- 3. Steel Erection
- 4. Roofing
- 5. HVAC and Plumbing
- 6. Tank Rehabilitation Work
- 7. Crane
- 8. Confined Space Entry

A JHA will be completed for each major task during the project. This analysis will be conducted according to the Clark Construction Group, LLC Clark Construction Procedure - Job Hazard Analysis. The purpose for this analysis is to evaluate the task, identify the sources of hazards related to the task, and assign control measures for each hazard. The completed JHA can be used to train employees and subcontractors prior to initiating the task. It should be used by the supervisor to assure that safety planning has been completed, and that all necessary safety equipment is available in advance.

An JHA will be developed by the Contractor for every operation involving a type of work presenting hazards not experienced in previous project operations or where a new work crew or subcontractor is to perform work. The analysis must identify and evaluate hazards and outline the proposed methods and techniques for the safe completion of each phase of work. At a minimum, define activity being performed, sequence of work, specific safety and health hazards anticipated, control measure (to include personal protective equipment) to eliminate



or reduce each hazard to acceptable levels, equipment to be used, inspection requirements, training requirements for all involved, and the competent person in charge of that phase of work.

For work with fall hazards, including fall hazards associated with scaffold erection and removal, identify the appropriate fall protection methods used. For work with materials handling equipment, address safeguarding measures related to materials handling equipment. For work requiring excavations, include requirements for safeguarding excavations.

The JHA/AHA shall be continuously reviewed and, when appropriate, modified to address changing site conditions or operations. The analysis should be used during daily inspections to ensure the implementation and effectiveness of the activity's safety and health controls. The JHA list will be reviewed periodically and updated as necessary when procedures, scheduling, or hazards change.

The JHA/AHA shall be updated as necessary to provide an effective response to changing work conditions and activities. The on-site superintendent, SSHP and competent persons used to develop the JHA/AHAs, including updates, shall sign and date the JHAs before they are implemented.

The JHA/AHA shall be developed using the project schedule as the basis for the activities performed. Any activities listed on the project schedule will require a JHA. The JHA/AHAs will be developed by the contractor, supplier or subcontractor and provided to Clark Construction Group, LLC.

HAZARD CONTROL MEASURES

At the beginning of each work shift and as often as necessary to ensure safety, each crew foreman will conduct an area survey to identify workplace hazards and determine appropriate safety control measures. The hierarchy of control measures is as follows.

Engineering Controls
Work Practices Administrative Controls
Personal Protective Equipment

EMPLOYEE TRAINING, INSTRUCTION AND INDOCTRINATION

COMMUNICATION OF SAFETY AND HEALTH MATTERS

Communication of safety and health policies and procedures begins on the employee's first day at the Employee Orientation. Each employee shall receive training from their employer on the identification of potential hazards he/she may encounter during their specific work activity, preventive measures or corrective actions and the OSHA/MOSH regulations.

Additional information on the Education and Training Policy is contained in Appendix A-12.

Daily "Safe Plan of Action" meetings are held by each crew, daily at the beginning of the work shift. A "Toolbox" Safety Meeting is held once a week attended by all of the Contractor's personnel. The Contracting



Offices will be notified in advance of these meetings and be invited to attend.

Employees shall be kept informed of updates or changes to the APP, Clark, Clark Construction and OSHA/MOSH Regulations and Policies through safety meetings, written notices, and posting of notices on the company bulletin board and shall be communicated in a manner understandable to all employees.

The SSHP will attend the Weekly Project Progress Meeting. In this forum, the SSHP will communicate concerns and issues to specific subcontractors and subcontractors in general. Subcontractors will have the opportunity to share concerns and issues regarding project safety as well.

All employees are encouraged to report hazardous conditions at the jobsite to the SSHP or Superintendent so that corrective action can be taken. Employees who report such conditions will do so without fear of reprisal.

For anonymous notification of potential safety hazards, a toll free "Safety Hotline" is available to all project personnel and jobsite subcontractors by dialing 1-888-547-3520. All notifications of potential safety hazards will be thoroughly investigated, and corrections will be made where necessary.

The SSHP shall post and maintain all required OSHA Federal and MOSH State postings, Emergency Phone Number Lists, The Emergency Action Plan, Hazard Warnings and Illness and Injury Data for employees in or on the jobsite trailer.

ORIENTATION

A representative of the Clark Project Team/SSHP shall conduct site specific orientations for all Clark Construction Group, LLC employees, subcontractor employees and visitors.

The initial site safety orientation shall be documented, and a unique hardhat sticker will be issued to each person completing the initial site-specific orientation on the Quantum Loophole – 1 MGD Sewage Pumping Station Project.

The orientation materials are shown in Appendix A-13. The orientation materials, Code of Safe Practices have been translated to Spanish and are available onsite.

Prior to beginning the orientation non-English speaking employees will be identified, a translator will be provided along with the appropriate documents to assist in the understanding of orientation material. Proper orientation documents shall be available onsite for review.

DAILY "SAFE PLAN OF ACTION" SAFETY MEETINGS

At the beginning of each shift, a qualified person shall conduct a daily Safe Plan of Action safety meeting detailing activities, specific hazards of the work to be performed and safety precautions and procedures for each task to be performed during that workday. A full understanding of the SPA must be agreed upon by all employees prior to work commencing. A copy of SPA must be submitted for documentational purposes to a representative of Clark daily.

Topics of discussion include the AHA/JHA, specific safety items relevant to the day's work activities, a



review of Safety Data Sheets (SDS) for new chemicals introduced into the work environment, new hazards that have been recognized by management or employees and a review of historical incident data or near miss information relevant to the day's activities. These meetings provide an open forum for employees to note safety conditions that need attention. The Foreman will identify non-English/non-Spanish speaking employees and provide an interpreter and translated training materials. All employees will be required to sign an attendance sheet which will be maintained in the project files.

Provide Owner's Representative copies of the meeting attendance sheet and meeting minutes.

SCHEDULED WEEKLY SAFETY MEETINGS

A "Toolbox" safety meeting shall be held weekly, attended by all contractor personnel. Topics to be covered include a review of specific health and safety regulations, new policies or procedures, any incidents or near misses that have occurred at the project, updated project incident rates, new JHA's and a forum for employee questions or comments. The SSHP or Superintendent will identify non-English/non-Spanish speaking employees and provide an interpreter and translated training materials, JHA's or Memo's. Any issues brought up during this meeting shall be documented in the meetingminutes.

Subcontractors have the option of attending the Clark Construction Group, LLC meeting or conducting their own weekly safety meeting. If a subcontractor holds their own weekly safety meeting, the Subcontractor's Superintendent is responsible for conducting the meeting and submitting the required documentation to the Clark Construction Group, LLC SSHP or onsite representative of Clark.

Provide Owner's Representative copies of the meeting attendance sheet and meeting minutes.

EMPLOYEE HEALTH AND SAFETY TRAINING

All Clark Construction Group, LLC and Subcontractor employees shall receive training and instruction by their employer in the following areas:

Safety Data Sheets (SDS) requirements, location and availability.
Specific instruction on each new task or phase of construction using Activity Hazard Analysis to identify hazards unique to this job environment and elimination/mitigation methods.
Personal Protective Equipment (PPE) selection, use and maintenance requirements.
All training will be documented and available for review.
COVID-19 rules/regulations.

Training of employees covered by this APP shall occur:

- A. When the program is first established.
- B. For all new employees.
- C. For all employees given a new job assignment for which training has not previously been received.
- D. Whenever new personnel, substances, materials, processes, procedures, or equipment are introduced to the job site that represent a new hazard.



- E. Whenever the project is made aware of a new or previously unrecognized hazard.
- F. In response to a near miss or actual incident.

In accordance with this APP, the instructor will identify non-English/non-Spanish speaking employees and provide an interpreter and translated training materials.

Employers will provide additional training to supervisors to familiarize them with the safety and health hazards to which employees under their immediate direction and control may be exposed.

REQUIRED PERIODIC TRAINING

The following is a list of mandatory training applicable to this project:

- A. Vehicle/Equipment/Crane Operator
- B. First Aid/CPR
- C. Confined Space Entry
- D. Fall Protection
- E. Hot Work/Fire Watch
- F. Control of Hazardous Energy
- G. Excavation Safety
- H. Fire Extinguisher Use

CERTIFICATIONS/QUALIFICATIONS

The following lists of certifications are applicable to this project:

- A. Crane Operation
- B. Forklift Operator (Per Jurisdiction)
- C. Rigger/Signalman
- D. Traffic Flagman
- E. Powder Actuated Tool Operator
- F. Respiratory Medical Questionnaire/ Fit Test
- G. Scissor Lift/Aerial Lift Operator
- H. Confined Space Training

SAFETY AND HEALTH INSPECTIONS/CORRECTIVE ACTION PROCEDURES

The SSHP will conduct and document regular safety and health inspections. The SSHP will also conduct and document one monthly audit and submit a written report.

The safety and health inspection report shall contain the following:

- Date deficiency identified
- Description of deficiency
- Name of Company responsible for correcting deficiency
- Projected resolution date



Date resolved

Unsafe or unhealthy work conditions or work practices will be corrected in a timely manner, as determined by the severity of the hazard. Under no circumstances will personnel be required to, or permitted to, work under conditions that pose a clear or imminent hazard.

The Project Superintendent will be responsible for problems that cannot be corrected immediately. Once corrected, the Project Superintendent will forward written documentation of the action taken to the SSHP.

When an imminent hazard exists, which cannot be immediately corrected without endangering employees and/or property, the following steps will be followed:

	Remove all potentially endangered employees from the area. Provide employees responsible to correct the condition with necessary safeguards.
	Correct the problem.
	Document and date the corrective action taken. The documentation is to be completed by the Project Superintendent. Documentation will be maintained at the project site and forwarded to the SSHP. Provide Owner's Representative a copy of the report before the end of the month at a minimum.
Ado	ditional inspections will be conducted:
	Whenever new materials, substances, processes, procedures, or equipment are introduced to the jobsite that represent a new occupational safety or health hazard.
	Whenever the jobsite is made aware of any new or previously unrecognized hazard.
be u	gineering controls are the best way to prevent or minimize unsafe or unhealthy work conditions and should used first. If engineering controls are impractical or infeasible, adjusted work practices will be used. In a negineering controls alone, or in combination with adjusted work practices cannot adequately minimize the ard, personal protective equipment shall be used.
are	operating procedures will be monitored and reviewed whenever new chemicals, equipment, or processes introduced into the system. When changes are made, affected employees will receive additional ruction.
In tl	he event that a subcontractor has created an unsafe condition, the following procedure will be followed.
	Upon identification of an unsafe condition, the Clark Construction Group, LLC Superintendent or SSHP will direct the subcontractor employees to stop work at that location immediately.
	The subcontractor supervisor will be called to the location to discuss the identified unsafe condition and the JHA covering that scope of work.
	The subcontractor will be directed to correct the unsafe condition and the timeframe in order to make the correction.
	The SSHP will make a determination as to subcontractor requirements for additional employee training.



The unsafe condition along with correction information and training requirements will be documented on the Clark Construction Group, LLC Inspection/Violation Report.
 Upon correction of the hazard, the Clark Construction Superintendent will inspect the area and sign off on the report.
 A jobsite stand down will be conducted by Clark Superintendent/SSHP with the subcontractor/subcontractor's management representative and employees before any work will commence.

☐ A copy of this report will then be given to the subcontractor and the SSHP for review and a copy will be given to the Owner's Representative.

- 1. First offense violations by a subcontractor are handled at a field level.
- 2. Second offense violations will result in a letter authored by the Clark Construction Group, LLC Project Director to the Subcontractor Corporate Office requesting an onsite safety meeting to discuss the violations and management commitment to employee safety.
- 3. A third offense may result in a request for the removal of a supervisor who is not enforcing safety policy, assignment of a full-time designated Safety Manager or the withholding of current and future pay requisitions pending compliance with this APP.

SAFETY AND HEALTH EXPECTATIONS, RECOGNITION PROGRAM AND COMPLIANCE

Our goal is to establish and implement a safety and health plan that will educate our employees on identifying and eliminating hazards and unsafe acts. We expect to prevent injuries, occupational illnesses and property damage by establishing safe and healthful methods on our construction sites.

SAFETY RECOGNITION PROGRAM

The Clark Construction Group, LLC mission is to build a strong safety culture through education, training, enforcement and recognition. A Safety Recognition Program will be developed providing motivation and positive reinforcement as a tool to realize increased safety performance.

EMPLOYEE COMPLIANCE AND DISCIPLINE

All employees are required to follow company safety policies and operating procedures. When required, employers will provide their employees additional training and information, or re-training to maintain their knowledge.

The disciplinary action policy is intended to encourage employee compliance with this APP. Immediate Termination: Any employee who commits a serious safety violation may be subject to immediate termination without prior notice in lieu of any prior verbal and/or written warnings.

Fall protection violations, harassment of any type, workplace violence/fighting, discrimination of any kind, possession or use of illegal drugs or alcohol use, possession of weapons, or flagrant violations or disregard for project safety rules, and unauthorized removal of LOTO devices, will result in immediate



and permanent termination, or removal from the project and all other future Clark Construction projects.

The SSHP and Superintendent will determine the best disciplinary action to be taken that best suits the

□ Verbal Warning: As the first step in correcting unacceptable behavior or minor infractions, a verbal warning and coaching will be used. This verbal warning will be documented.
 □ Written Warning: If the unacceptable performance continues, or the severity of the infraction's warrants, the next step will be a written warning. The written warning will clearly state the safety policy that was violated and steps the employee and supervisor must take to correct it.
 □ Suspension/Termination: If the unacceptable practice continues, or the severity of the infraction warrants, the employee will be given time off without pay. If suspended, an employee will be required to attend training specific to the unsafe practice or behavior that was cited.

Project workers who are terminated or removed from the project for disciplinary reasons related to violations of this safety program may not return to the project as an employee of the company they worked for at the time of termination or for any other employer. Further, they may not work on any other Clark Construction Group, LLC projects for at least 180 days. If a suspended employee wishes to return to a Clark Construction Group, LLC project they must meet with the Division Safety Director, Marty Laskey and demonstrate a significant change in attitude toward safety prior to being allowed access to Clark Construction Group, LLC projects.

Likewise, Clark Construction Managers and Supervisors may be at risk of discipline up to and including termination if they fail to diligently carry out their responsibilities as outlined in this APP and the overall Site Safety and Health Program.

Subcontractors who continually fail to comply with or to correct safety issues may have their payment withheld until compliance with safety issues and procedures is complete. Further, subcontractors may have their contracts suspended and they may be removed from work on this project if chronic failure to comply with project safety procedures continues.

INCIDENT INVESTIGATION

All work-related injuries and illnesses must be reported to the SSHP, no matter how minor, in accordance with the Clark Construction Procedure - Incident Investigation. Injuries, illness, or any other incident involving a third party, or a member of the general public must be promptly reported to the Clark SSHP and the Owner's Representative. Incident reviews shall take place after all near misses, recordable, lost times and hand injuries. Incidents involving potential exposure to hazardous materials, biological waste, and release or spills of such materials must be promptly reported to the Clark SSHP and the Owner's Representative. The Owner's Representative will be notified within four (4) hours of all incidents by the Clark Construction Superintendent/SSHP. Each Incident must be investigated as soon as possible by the immediate supervisor who has direct control over the employee or over the condition involved in the Incident. Project



Superintendent and SSHP will investigate all reported incidents and complete the Incident Investigation Report Form, as well as present the report for signature by the SSHP. Additional information on incident investigations is contained in Appendix A-5.

The Vice President, or his/her designee, will notify all public agencies requiring this information. OSHA needs to be notified of the following: any work-related fatality, hospital admittance of one or more individuals, any amputation, and loss of an eye.

Do not release information surrounding an incident to any agency. If in doubt as to who is asking, refer the inquiry to the Project Vice President.

The Incident Investigation Report Form must be completed for each injury to a Quantum Loophole – 1 MGD Sewage Pumping Station **Project** by a project employee and for all other types of incidents. All questions on the form must be clearly and completely answered.

This form must be submitted to the SSHP within twenty-four (24) hours. In addition, the incident report shall be submitted to the Owner's Representative within twenty-four hours of the incident.

Secure the incident scene until the SSHP has examined it. Do not allow any activity other than the initial rescue.

Photographs of the area are to be taken as soon after the incident as possible.

All Incident investigations should include the following information when applicable.

Name/age/address/phone number of injured. Date and time of the incident.
Equipment and or tools being used at the time. PPE being used/required at
the time.
Other subcontractors working in the vicinity at the time. Photographs.
Primary cause. Secondary cause. Witness statements.
Determine whether the employee had adequate instructions prior to starting
the job.
Name of the employee's supervisor.
Name and telephone number of the clinic or hospital.
Copies of AHAs, SPAs, site orientations, work plans, permits, etc.

When incidents or near misses occur that result in property damage or lost production time, these mishaps usually indicate an unsafe act, faulty procedure or hidden hazard.

The Owner's Representative shall also be notified of incidents or near misses that result in property damage or lost production time.

For any weight handling equipment incidents, a root cause incident investigation shall be completed.



Accident investigation reports for all Contractor accidents, injuries, and work-related illnesses shall be forwarded to the Owner's Representative within twenty-four hours of the occurrence. Vice President or officer of subcontractors shall attend all lost time meetings

INJURED EMPLOYEE ASSISTANCE

The Injured Employee Assistance Policy is part of the overall administration of the APP. The administration of this program includes the identification of all serious incidents, and ensures prompt medical attention and appropriate medical benefits, compensation benefits and applicable insurance coverage is provided to our injured employees.

Clark Construction is committed to providing injured employees the opportunity to return to work as soon as medically appropriate. The SSHP will meet with and be in contact with the clinic in order to communicate this policy and identify the potential for modified duty. A vital part of the recovery process is knowing that the employer will try its best to find meaningful work for their employee once they are released for work to the extent that work is reasonably available. Superintendents are expected to aggressively identify and provide modified duty assignments on their project for injured employees who have been released to work with physical limitations.

It is important to understand that returning injured employees to work under this modified duty program is in the interests of both the employee and employer.

MEDICAL SUPPORT AND FIRST AID PROCEDURES

PHYSICAL INJURY

For minor injuries, routine first aid procedures shall be applied. If required, the injured employee shall then be transported to the hospital.

For major injuries, an ambulance shall immediately be called. The emergency medical responders shall assess the nature and extent of the injury. In cases of severe injury occurring along with chemical contamination of the victim, and if injuries permit, the victim shall be decontaminated or have the contaminated garments removed prior to being transported in the ambulance, but only if these actions will not pose risk to the victim's health. Ambulance and hospital personnel shall be advised if contamination exposure is possible.

In the event of bleeding, broken bones, shock, burns, heat exhaustion, heat stroke, seizure, insect stings, etc., the trained personnel on each shift will use American Red Cross or equivalent approved measures for treatment.



CHEMICAL INJURY

Ш	Appropriate safety gear snall be worn when treating the victim.
	The victim shall be removed to fresh air if possible.
	The victim's vital signs shall be assessed, and resuscitation shall be initiated if necessary.
	If clothing is chemically contaminated and injuries permit, clothing shall be removed, and the skin flooded with copious amounts of water.
	If the eyes are contaminated, they shall be irrigated immediately with copious amounts of water for twenty (20) minutes minimum.
	Medical attention shall be obtained immediately for any injury involving the eyes.
	Call the nearest Poison Control Center for technical advice and assistance.
	SDS sheets should be referenced to in order to treat victim properly. Emergency personnel should be notified of all chemicals involved if contacted.

NOTIFICATIONS

In the event of an emergency requiring notification, the Superintendent/SSHP is responsible for immediately contacting the Contracting Officer and appropriate agencies. If the Superintendent/SSHP is unavailable, the Project Manager will perform this function.

Contact will be made with local EMS/Fire Department and hospital services to discuss the project scope of work, materials identified on-site, number of employees, etc. Contact will be made with the Frederick County Police and Fire Department to give them a tour of the construction area and overview of the potential hazards. A list of phone numbers for emergency agencies and utilities will be posted near each phone in the field office to help facilitate emergency activities in the event of an incident.

The Superintendent/SSHP shall designate a rally point in case of emergency. The emergency evacuation signal for this project will be three (3) long blasts on an air horn or the crane horn, then a pause, and three more long blasts. Project radios may also be used, as well as verbal warnings, to notify project personnel of the emergency and evacuation notice.

Once an evacuation alarm has been sounded all personnel on site will proceed to the predetermined evacuation rally point. Using the daily sign-in sheet, the foremen for each trade/crew will account for the personnel under their supervision and report to the SSHP regarding the presence or absence of any of their personnel. The Superintendent/SSHP shall ensure that all personnel on site have been accounted for and provide instructions on further actions to be taken, including declaration of "all clear".

An evacuation drill will be conducted initially after work begins, and then as deemed necessary. This Emergency Action Plan will be updated as jobsite conditions warrant.

RESCUE AND EVACUATION PLAN



A Rescue and Evacuation Plan will be incorporated as part of the overall emergency action plan. The plan will incorporate the facility emergency and evacuation plan. Individual rescue and response plans will be included in other specific plans including the fall prevention/protection plan, excavation work plan, confined space entry plan, etc. The emergency action plan is contained in Appendix A-4. This plan will include a detailed discussion of the following:

- Methods of rescue
- Methods of self-rescue
- Equipment to be used
- _ Training requirements
- Procedures for requesting rescue
- _ Medical assistance
- Transportation route to the medical facility

The Rescue and Evacuation Plan will be included in the JHA for each phase of work and in the Fall Protection and Prevention Plan.

All of our subcontractors are required to have at least one (1) person who is trained and certified in First-Aid and CPR. The SSHP as well as the Project Superintendents are required to have been trained in First-Aid and CPR. At least one (1) Clark Construction trained and certified person will be on-site at all times.

TRAINING

Clark Construction office and supervisory personnel will be assigned specific duties regarding site security, media communications, assisting emergency personnel, and other duties.

Those project personnel assigned specific responsibilities regarding this emergency response policy will receive training regarding their specific responsibilities prior to the start of this project. A drill will be conducted within the first one hundred twenty (120) days from start of excavation, which will include all personnel who are assigned responsibilities. The Superintendent/SSHP will develop a specific list of responsibilities for each emergency response assignment and will distribute and review these responsibilities and discuss each participant's role in the emergency response plan in the initial Emergency Response Training meeting. This information will be contained in the project Emergency Action Plan.



Internal and external emergency contact numbers are identified in Table 1. The nearest emergency medical care is identified in Table 2. Emergency contact information will also be posted throughout the project including maps to clinics and hospital.

TABLE 1 - EMERGENCY CONTACTS

_	Emergency Ambulance	911
_	Fire	911

Poison Control Center 911 / 800-222-1222

Police 911
Spill Reporting 911

_ Safety Emergencies (after hours) Maria Amenta: 301-272-8319

Burn Permits Lucas Porter: (301) 310-3738

Gas Leaks 911

Project Superintendent
 Project Manager
 Project Executive
 Dwayne Wright: (240) 517-4637
 Alexandria Hare: (571) 458-6938
 Nathan Scalla: (831) 588-5440

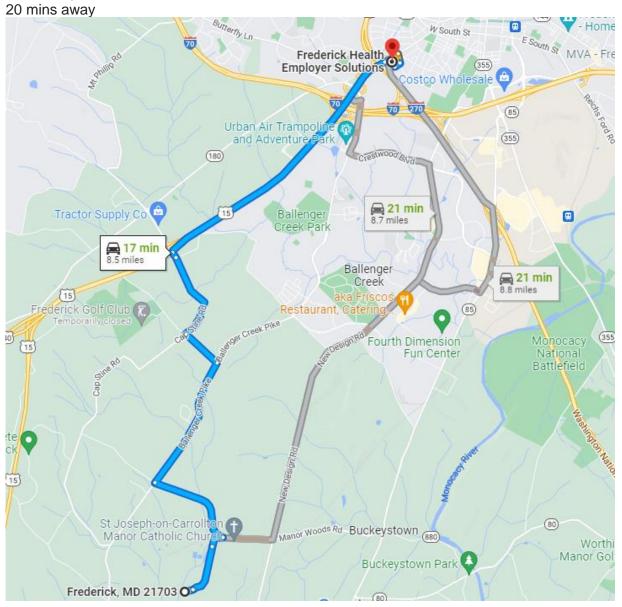


Primary Care Facility Locations

The Primary Care Facility for minor injuries will be:

Off Site Clinic:

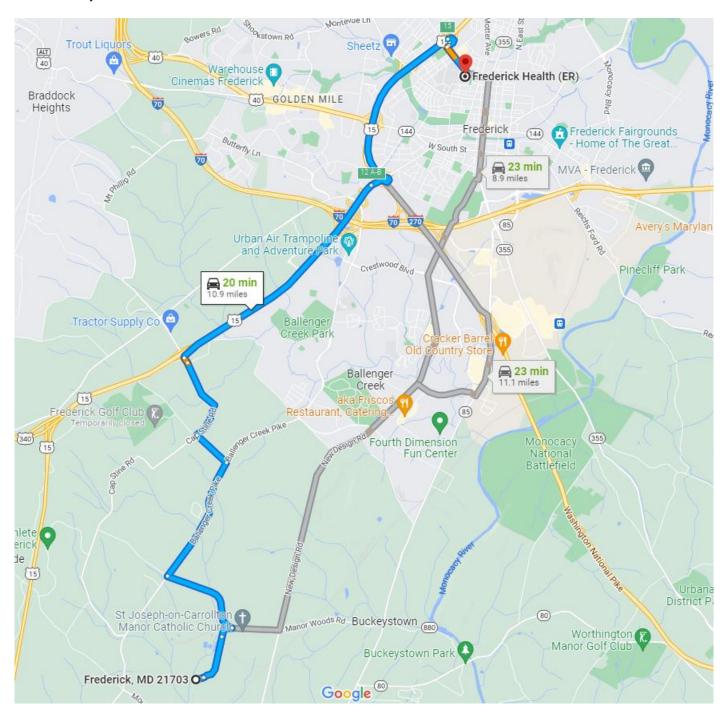
Employer Solutions Fredrick Office 490-L Prospect Blvd Frederick, MD 21701





Hospital:

Frederick Health ER Emergency Department, 400 W 7th St, Frederick, MD 21701 20 mins away.





MANUAL LIFTING

Manual lifting is common to site work activities; and is a potential source of serious injury. The common concern about lifting is causing an injury to the back; but improper lifting techniques can also injure the neck, shoulder, knee, and hands.

Site conditions (such as poor footing, inadequate lighting, and weather) can compound the hazards associated with lifting. To minimize potential hazards from manual lifting, employees will be trained on the guidance presented below:

- Material handling equipment should always be the first choice if there is any question whether or not an employee can safely lift/move materials.
- _ If manual lifting will be used, prior to lifting, size up the job; look at the weight, size, shape, and condition of the object to be lifted, and decide if you can lift it unassisted.
- Obtain help if the lift will exceed your abilities or if lift weight exceeds fifty (50) lb. When lifting/carrying an object with another person, the weight should be evenly distributed, and movements coordinated.
- If you are lifting an object on your own, place your feet close to the object, get a good grip (palm of the hand is stronger than fingers, watch for sharp edges, nails, splinters), and straighten your back.
- Keeping your back as straight as comfortably possible, keep the object close to your body, and use the muscles in your legs to lift the object. Complete the lift before turning, and turn by repositioning your feet, never twist while lifting or carrying an object.
- Reverse the procedure when setting the object down, and keep your fingers clear of pinch points.
- _ Adverse weather condition can also be a factor in material handling such as rainy/ windy conditions, etc.
- _ If you do injure yourself lifting, or suspect that you may have, report the injury immediately. Do not attempt self-treatment, or ignore the problem. Report the injury to your supervisor.

HAZARD COMMUNICATION

Employees who may encounter hazardous substances used by site workers as part of construction activities will be subject to the requirements of the Clark Construction Group, LLC hazard Communication Program. All workers will be required to attend documented initial and annual refresher training on the GHS/Hazard Communication Standard.

Each hazardous material must receive approval from the Owner's Representative prior to being brought onsite. The Hazardous Material Approval Request process will take a minimum of ten (10) working days to approve.

Safety Data Sheets (SDS) will be obtained for all hazardous materials introduced for use on site. A copy of each SDS shall be available on the site. Each subcontractor will be required to supply a site-specific chemical inventory list prior to start of work. The list will be updated as necessary throughout the project. Copies of SDS will be available for review by the all employees on the project. Additional information on the hazard communication policy is contained in Appendix C-11.



SILICA EXPOSURE

Construction activities identified to have a potential to expose workers to silica dust will be conducted in accordance with OSHA standard 29CFR1926.1153 and the Clark Construction Group, LLC Procedure – Fugitive and Silica Dust Control. In addition to this procedure, the following NIOSH recommendations to reduce exposures to respirable crystalline silica in the workplace will be followed:

- 1. Recognize when silica dust may be generated and plan ahead to eliminate or control the dust at the source. Awareness and planning are keys to prevention of silicosis.
- 2. Use engineering controls and containment methods such as blast-cleaning machines and cabinets, wet drilling, or wet sawing of silica-containing materials to control the hazard and protect adjacent workers from exposure.
- 3. Routinely maintain dust control systems to keep them in good working condition.
- 4. Practice good personal hygiene to avoid unnecessary exposure to other worksite contaminants such as lead
- 5. Wear disposable or washable protective clothes at the worksite.
- 6. Shower (if possible) and change into clean clothes before leaving the worksite to prevent contamination of cars, homes, and other work areas.
- 7. Conduct air monitoring to measure worker exposures and ensure that controls are providing adequate protection for workers.
- 8. Use adequate respiratory protection when source controls cannot keep silica exposures below the OSHA PEL.
- 9. Post warning signs to mark the boundaries of work areas contaminated with respirable crystalline silica.
- 10. Provide workers with training that includes information about health effects, work practices, and protective equipment for respirable crystalline silica.

These recommendations are discussed briefly in the following subsections.

DUST CONTROL

The key to preventing silicosis is to keep dust out of the air. Dust controls can be as simple as a water hose to wet the dust before it becomes airborne. Use the following methods to control respirable crystalline silica:

Use the dust collection systems available for many types of dust-generating equipment. When purchasing equipment, look for dust controls.
Use local exhaust ventilation to prevent dust from being released into the air. Always use the dust control system, and keep it well maintained.
Do not use equipment if the dust control system is not working properly.
During rock drilling, use water through the drill stem to reduce the amount of dust in the air, or use a drill with a dust collection system.
Use drills that have a positive-pressure cab with air conditioning and filtered air supply to isolate the driller from the dust.
When sawing concrete or masonry, use saws that provide water at the point of operation.
Use good work practices to minimize exposures and to prevent nearby workers from being exposed. For example, remove dust from equipment with a water hose rather than with compressed air. Use vacuums with high-efficiency particulate air (HEPA) filters or use wet sweeping instead of dry sweeping.



	Use fans when possible, to keep dusty air moving away from worker/workers in workarea.
	RSONAL HYGIENE following personal hygiene practices are essential for protecting workers from respirable crystalline a:
	Do not eat, drink, or use tobacco products in dusty areas.
	Wash hands and face before eating, drinking, or smoking outside dusty areas.
PRO	OTECTIVE CLOTHING
Tak	e the following steps to assure that dusty clothes do not contaminate cars, homes, or worksites outside the
dust	ty area:
	Change into disposable or washable work clothes at the worksite.
	Shower (if possible) and change into clean clothes before leaving the worksite.

AIR MONITORING

Air monitoring is needed to measure worker exposures to respirable crystalline silica and to select appropriate engineering controls and respiratory protection. Perform air monitoring as needed to measure the effectiveness of controls. Any new or irregular activity should be reviewed and have air monitoring conducted to determine if silica is close to or above the PEL.

Additional information on-silica is contained in Appendix C-10.

NOISE

The Clark Construction Group LLC Hearing Conservation Program will be implemented when noisy conditions exist which produce noise exposures equal to or exceeding 85 dBA as an 8-hour time weighted average (TWA). Work activities and production areas will be monitored and sampled where necessary to ensure that no employee is exposed to noise level above the PEL.

Based on the hazard, employees will be given a choice of the type of PPE that can be used. Comfort and fit are important to ensure that employees will use the PPE necessary for protection.

Additional information on hearing conservation is contained in Appendix B-16.

WORK AT ELEVATED LOCATIONS

FALL PROTECTION/PREVENTION

100% fall protection is required when employees are working at (6) feet or above lower/working levels for all operations. If the fall distance is less than six (6) feet but the employee could fall into/onto dangerous equipment, or other hazards exist, fall protection must be implemented.

All employees who will utilized personal fall arrest equipment must be trained in the nature of fall hazards



associated with his or her job; calculating fall distances; proper selection, inspection, maintenance, wear and use of the equipment; proper selection and use of anchorage points; removal from service.

All fall prevention measures will be positive in nature, meaning there must be physical means to prevent an individual(s) from falling. Examples of this are guardrails and hard barricades.

Project employees shall use a complete fall arrest system when a personal fall arrest system is implemented. This includes full body harness, shock absorbing lanyard or self-retracting lanyard, anchorage devices, and an approved anchorage point.

A full body harness and lanyard are required to be used by all employees when operating any and all aerial lifts and scissor type lifts.

Double-lanyard systems will be used when necessary to ensure that 100% tie-off is maintained at all times when repositioning from one work location to another.

Positioning devices may be used but must be accompanied by a complete personal fall arrest system when an employee is working at or above 6 feet.

Body belts are not permitted on this project for any purpose.

Clark Construction believes that conventional fall protection equipment can be utilized in most cases where Leading Edge Programs have been used in the past. A Leading-Edge Program will only be approved for use under special circumstances.

A site-specific Fall Protection and Prevention Plan (FP&P) shall be developed to address specific fall protection hazards during each phase of construction. This plan will be written by a qualified person, kept onsite and revised every six (6) months to reflect any changes within the project.

Additional information on fall prevention and protection is contained in Appendix B-5.

PERSONAL PROTECTIVE EOUIPMENT

The purpose of this section is to establish guidelines for the use of Personal Protective Equipment (PPE). Although PPE can prevent an employee from injury or illness, engineering controls and work practices should always be considered first before relying on PPE. Protective equipment shall be identified, used and maintained in sanitary and reliable condition. Where employees provide their own PPE, the employer shall be responsible to assure its adequacy.

Minimum personal protective equipment requirements at the Quantum Loophole – 1 MGD Sewage Pumping Station Project include:

ANSI approved safety toed leather work boots are required.
Safety helmets with a fastened, integrated four-point chinstrap are required. Acceptable helmets shall meeting
ANSI z89.1 Type 1 or Type II standards and EN12492 performance standards 4.2.1.2 (Front Energy absorption)
4.2.1.3 (Side Energy absorption), 4.2.1.4 (Rear Energy absorption), 4.2.3 (retention system strength), and 4.2.4
(retention system effectiveness). Subcontractor shall determine whether the hazards associated with their work



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ANSI approved safety glasses with permanent side shields.
A shirt with sleeves that cover the shoulders, and long work pants.
Respirator (as needed for location and type of work);
Clean-Shaven daily (is using a respirator); Hearing protection (as required)
Appropriate task-related gloves for all activities. Minimum of at least ANSI cut resistance level
3.
ANSI approved Class II reflective vests when working on site.
Chaps and face shield are required when using a chainsaw
Minimum A3 cut resistant gloves.

Based on the task being conducted, the SSHP may adjust personal protective equipment requirements. Individual PPE requirements shall be identified by the Subcontractor prior to start of work and will be outlined in the JHA consistent with the Clark Construction Group, LLC Procedure - Job Hazard Analysis. Each Subcontractor shall provide the appropriate PPE training to each of their employees, lower tier Subcontractor employees and vendors. This training shall be documented by date and individual signatures and kept onsite for review upon request. In the event that Clark Construction or the Subcontractor has reason to believe that an employee who has been trained does not have the understanding and skill required of the training, the employer shall retrain the employee. PPE is covered in safety orientation and documentation is retained by the SSHP. PPE requirements shall be enforced by the Project Director, Superintendent, SSHP, and individual Foreman.

EYE PROTECTION

As standard eye protection, ANSI approved Z87, non-prescription, standard industrial safety glasses with side shields are considered as minimum protection.

Prescription eyewear with side shields shall comply with ANSI standards. If prescription eyewear does not meet the ANSI standards, safety goggles of over-glasses shall be worn over the eyewear.

ANSI approved eye protection is required in all designated construction or facility areas, and maintenance/equipment yards.

Eye protection may be required in work atmospheres other than construction and facility areas as hazards dictate (to be determined by the SSHP).

Contact lenses are not recommended for use at the worksite due to the possibility of particles and chemicals getting behind the contact lens, the lens being broken into small particles in the eye or welding spatter fusing the lens to the eye. These can be very serious injuries.

CHEMICAL GOOGLES

Approved chemical mono-goggles shall be worn to ensure eye protection from the hazards associated with the handling or dispensing liquid chemicals.



FACE SHIELDS

An approved full-face shield shall be worn to provide face protection to the employee from flying particles, splashes, or mists. This includes, but is not limited to, activities such as grinding, chipping, jack hammering, and use of power saws. However, a face shield only provides protection to the face from direct impact objects, and does not provide acceptable eye protection. Eye protection must be worn in conjunction with a face shield.

BURNING GOOGLES/SHIELDS

ANSI approved burning goggles/shields with filtering lenses of number 3 or greater shall be worn to provide employee protection from optical radiation. Burning goggles/shields shall be worn whenever a torch is used for cutting or burning.

WELDING HOOD

Welding hoods with a filtered lens of number ten (10) shade or darker shall be used to provide protection from the optical radiation produced during electric arc welding. Welding hoods shall meet ANSI standards. Safety glasses must be worn in conjunction with a welding hood.

HEAD PROTECTION

Safety helmets with a fastened, integrated four-point chinstrap are required. Acceptable helmets shall meeting ANSI z89.1 Type 1 or Type II standards and EN12492 performance standards 4.2.1.2 (Front Energy absorption) 4.2.1.3 (Side Energy absorption), 4.2.1.4 (Rear Energy absorption), 4.2.3 (retention system strength), and 4.2.4 (retention system effectiveness). Subcontractor shall determine whether the hazards associated with their work warrant having helmets with an electrical rating

Metal hard hats, cowboy type, or bump caps are not considered approved head protection and shall not be used. Traditional style hardhats (lacking an integrated chinstrap) are prohibited from use on this site.

ALL employees, at all times while on the project site, shall wear approved safety helmets with their names and company name affixed to the front of the helmet.

Safety Helmets shall conform to the approved specifications of ANSI z89.1 Type 1 or Type II standards and EN12492 performance standards 4.2.1.2, 4.2.1.3, 4.2.1.4, 4.2.3, and 4.2.4
Clark Construction Group, LLC does not allow of the use of cowboy style
hardhats. Helmets must be worn in the forward position only.
Chin Straps must be worn on all Safety Helmets.

HEARING PROTECTION

Employees shall not be exposed to noise in excess of the Occupational Exposure Limits established by OSHA. Hearing protection shall be worn when exposures exceed 85 dba and/or working with heavy equipment. The two types of recognized hearing protection available for use in reducing noise exposure are earplugs and earmuffs.



In most instances, universal-fit earplugs are acceptable hearing protection. Cotton plugs are not acceptable and shall not be used.

When using earmuffs for hearing protection, special care shall be given to ensure that the muffs are cleaned regularly and disinfected before being issued to another employee.

HAND PROTECTION

Task-appropriate work gloves shall be worn by employees for protection against splinters, sharp edges, jagged surfaces, wire rope, glass, metal splinters, concrete burns or any other exposures that could cause injury to the hands. Minimum of ANSI cut resistance Level 3 shall be worn by all employees for general use. When using sharp cutting tools such as razor knives the protective posture must be increased according to the ANSI hand protection standard based on the tool being used.

Special purpose work gloves shall be required when employees are exposed to greater hazards. Special purpose gloves include:

- _ Electric "hot" gloves
- Cut resistant gloves (sharp metal, glass)
- _ Chemical resistant (solvents) or heat resistant gloves (welding, torch cutting)
- Standard latex/rubber gloves (grout, concrete)

FOOT PROTECTION

Work boots with leather uppers and slip resistant soles are recommended. Safety toes footwear is mandatory.

Sneakers (even if ANSI approved), sandals, tennis shoes, high heels, leather soled street or dress shoes, and thongs shall not be considered approved industrial or construction footwear.

Additional information on personal protective equipment is contained in Appendix B-16.

Metatarsals are required on boots while jackhammering for demo work operations are occurring

RESPIRATORY PROTECTION (GENERAL)

Each Subcontractor who is performing work that will require employees to use respiratory protection must submit a Respiratory Protection Program. The completed program shall meet or exceed the Clark Construction Group, LLC Procedure - Respiratory Protection. Once submitted, the plan must be approved by the SSHP prior to start of work.

Selection of respirators will be made pursuant to the Clark Construction Group, LLC respiratory Protection Program. Any variance from this program will require the approval of the Corporate Vice President of Safety, Greg Covelas. Only properly cleaned and maintained NIOSH-approved respirators shall be used on site. Air



purifying cartridges shall be replaced at the beginning of each shift or when load-up or breakthrough occurs. Where respirators are designated for protection against particulate contaminants, the employee shall be permitted to change canisters or cartridges whenever an increase in breathing resistance (load-up) is detected. Respiratory devices will be cleaned, sanitized, and inspected at the completion of each shift's activities.

No employee shall be assigned to tasks requiring the use of respirators if, based upon the most recent examination, a physician determined that the employee will be unable to function normally wearing a respirator or that the safety or health of the employee or other employees will be impaired by use of a respirator. This shall be so stated on the medical certificate.

Only employees who have had pre-issue training, qualitative fit tests, annual re-training, and fit tests thereafter shall be allowed to work in atmospheres where respirators are required. If an employee has demonstrated difficulty in breathing during the fitting test or during use, he or she shall have a supplemental physical examination to determine the cause of the difficulty.

Excessive facial hair (beards and mustaches) inhibits proper face fit and effectiveness of respirators. All personnel wearing respirators will be required to be clean-shaven prior to each day's shift.

Regular eyeglasses cannot be worn with full-face respirators because they break the face piece seal. Special purpose inserts must be used.

Additional information on respiratory protection is contained in Appendix C-19.

FIRE PREVENTION

Fire prevention measures shall be implemented in accordance with the Clark Construction Group, LLC Procedure - Fire Prevention and Protection.

The SSHP will contact local fire department officials as soon as practical after the beginning of the project to coordinate a familiarization meeting. This meeting will address access to the project, location of dry standpipes, and other related concerns.

Organic solvents and fuels with low fire hazard and toxic properties shall be used.

Users of flammable liquids shall be trained in safe practices that shall include the hazardous characteristics of the specific flammable liquids they are using. Safety Data Sheets (SDS) will assist with the specific training of the hazardous characteristics.

The "No Smoking or Open Flames" posting will be strictly enforced where flammable liquids are being transported, used, or stored. The use of flammable liquids must be constantly monitored during welding/cutting operations to ensure there are no flammable or combustible hazards in the area. Flammable liquids must be secured in an approved container overnight. **Smoking is prohibited on the project site.**

Work efforts (e.g., painting, solvent cleaning of parts, etc.) and work areas where the potential exists for vapor accumulation shall incorporate fire prevention provisions including engineering controls and/or work practices. These controls are intended to prevent the concentration of any flammable or combustible mists or vapors.



All flammable liquid containers shall be kept away from ignition sources. Even empty containers generally contain flammable vapor-air mixtures.

Flammable and combustible liquids shall be stored at least ten (10) feet away from stairways, elevators, and exits.

Flammable liquids shall be stored in facilities that have been approved by Underwriters Laboratories (UL), and/or Factory Mutual (FM), or which have been constructed to meet those requirements and have been approved for flammable liquid storage by the SSHP.

No plastic storage containers for flammable liquids.

Portable fire extinguishers shall be located within seventy-five (75) feet of travel from all locations where fuel transfer is being performed.

Fire extinguisher use training will be conducted annually.

Oil painting materials (paint, brushes, empty paint cans, etc.), and all flammable liquids shall be removed from the facility at the end of the work shift. All painting materials and flammable liquids shall be stored outside in a suitable metal locker or box and will require re-submittal with non-hazardous materials.

Accumulation of trays, papers, shavings, sawdust, boxes and other packing materials shall be removed from the facility at the close of each workday and such material disposed of in the proper containers located away from the facility.

The storage of combustible supplies shall be a safe distance from structures.

Area outside the facility undergoing work shall be cleaned of trash, paper, or other discarded combustibles at the close of each workday.

All portable electric devices (saw, sanders, compressors, extension cord, lights, etc.) shall be disconnected at the close of each workday. When possible, the main electric switch in the facility shall be deactivated.

When starting work in the facility, Contractors shall require their personnel to familiarize themselves with the location of the nearest fire alarm boxes and place in memory the emergency Fire Division phone number. ANY FIRE, NO MATTER HOW SMALL, SHALL BE REPORTED TO THE RESPONSIBLE FIRE DIVISION IMMEDIATELY.

Obtain services from a National Fire Protection Agency (NFPA) Certified Chemist for "HOT WORK" within or around flammable materials (such as fuel systems, welding/cutting on fuel pipes) or confined spaces (such as sewer wet wells, manholes, vaults, etc.) that have the potential for flammable or explosive atmospheres.

All fuel containers such as gas or diesel must be stored in appropriate fuel cabinets, not in offices or tool storage containers.

All fire extinguishers must be tagged and inspected on a monthly basis. Any extinguishers not in good



working order must be removed and replaced immediately.

Additional information on fire prevention is contained in Appendix B-6.

FIRE WATCH

A fire watch shall be maintained during and for at least sixty (60) minutes after completion of welding/cutting operations so that possible smoldering fire can be detected and extinguished. Where it is possible for hot metal/sparks to fall to lower levels, a fire watch must be assigned to each level.

Should the hot work take place in an occupied building, historical building or other area requiring special attention the fire watch shall be maintained for three (3) hours after completion of welding/cutting operations.

Firewatchers shall have fire-extinguishing equipment readily available and shall be trained in its use. They shall be familiar with facilities and procedures in the event of a fire. They shall watch for fires in all exposed areas and attempt to extinguish them only when the situation is obviously within the capacity of the equipment available.

The Fire Department shall be immediately notified of all fires.

SMALL FIRES

A small fire is defined as a fire that can be extinguished with a single 10-pound dry chemical fire extinguisher. In the event of a small fire, site personnel will take the following actions:

Evacuate all unnecessary personnel from the area, if possible to an upwind location.
Attempt to extinguish fire using portable fire extinguishers or by smothering with soil
Fire Department shall be notified of all fires, even if extinguished with no damage.

LARGE FIRES

In the event of a large fire or a small fire that cannot be extinguished, the following actions will be taken:

- _ Evacuate all unnecessary personnel from the site, preferably to an upwind location.
- Notify the fire department and other emergency response services (police, ambulance, hospital and poison control center) as needed.

Additional information on fire watch is contained in Appendix B-6.



WELDING AND FLAME CUTTING

Employees who will perform hot work; any spark or flame producing operation or tool, shall attend the Hot Work Orientation. Records of hot work orientations will be maintained by the SSHP.

No welding or flame cutting will be done without first obtaining authorization for such activities. Authorization must be obtained from the SSHP for Quantum Loophole – 1MGD Sewage Pumping Station Project to any welding, cutting or burning activities.

Prior to performing "Hot Work" or operating other flame producing devices, a written permit shall be obtained from the SSHP. *The permit will not be issued until all of the criteria are met.* Any "Hot Work" to be performed as part of the project will require a Hot Work Permit. Use of the Structure Tone Hot Work Permit is required on this project site and an inspection walk will be required prior to issuance of the Hot Work Permit.

The subcontractor will supply at least one (1) twenty-pound 4A:20BC rated fire extinguisher for normal hot work.

All oxygen and acetylene tanks should be kept a minimum of 25' apart while not in use. Containers should be stored in appropriate storage cages. Fire extinguishers should be kept near storage areas within 50'.

Additional information on hot work procedures and welding/torch operations is contained in Appendix B-6.

TRANSFER AND USE OF FLAMMABLE LIQUIDS

Flammable liquids may be transferred into an approved container after the original manufacturer's container is opened.

Containers are to be kept closed except when transfers are being made.

When transferring flammable liquids between conductive containers, the containers must be effectively bonded and grounded.

A maximum of a one-day supply of flammable liquids may be kept in a work area at one time. The one-day supply is to be returned to the designated storage area at the end of each work shift.

Secondary containers of flammable and combustible liquids shall be labeled with the name and hazards of the contents in accordance with OSHA regulations.

No welding or cutting operations which may provide an open flame or hot surface will be permitted until the SSHP has been notified and a permit obtained to conduct the specific operation outlined in the permit.

When possible, objects to be welded, cut, or heated shall be moved to a designated safe location. If this is not possible, all movable combustibles in the workspace shall be taken to a safe place.

If the object to be welded, cut or heated cannot be moved and all combustibles cannot be removed (e.g., equipment, walls, floors, etc.), positive means shall be taken to confine the heat, sparks, and slag to protect



the immovable combustibles as well as opposite sides.

No welding, cutting, or heating shall be done where the application of flammable paint, the presence of other flammable compounds, or heavy dust concentration create a possible hazard.

Wherever there are openings or cracks in the flooring that cannot be closed, precautions shall be taken so that no sparks will drop through the floor. The same precautions shall be taken in the presence of cracks or holes in walls, open doorways, and open or broken windows.

Approved fire extinguishing equipment in good working order shall be present in the immediate work area.

HAND AND PORTABLE POWER EQUIPMENT

Hand and portable power equipment will be operated in accordance with manufacturer specifications. Markings, guards, grounding devices, and other safety equipment must be fully functional.

When working from heights tools must be properly tethered.

Wrenches with cracked work jaws, screw drivers with broken points or broken handles, hammers with loose heads, dull saws, extension cords or electrical tools with broken plugs, improper or removed grounding systems, or split insulation are examples of tools in poor condition. Tools that have deteriorated to these conditions must be taken out of service.

Screwdrivers applied to objects held in the hand, knives pulled toward the body, cutting the ground pin off of electrical equipment, which eliminates the shock safeguard, are all activities that are prohibited.

Many incidents have been caused by tools falling from overhead and by knives, chisels, and other sharp tools carried in pockets or left in toolboxes with cutting edges exposed.

Powder-activated shot charges are classified as a hazardous material and must be listed on the hazardous material identification Form. Powder-activated shot charges and tools must be secured in a locked container when not in use. Never use used shot strips with misfired shots, place strips in a bucket of water and dispose of properly.

Additional information on hand tools and equipment is contained in Appendix B-17.

ELECTRICAL

Work on or near energized electrical parts is prohibited unless authorized by Clark Construction. All electrical work, installation, and wire capacities shall be in accordance with the pertinent provisions of the National Electrical Code.

It is mandatory that Ground Fault Circuit Interrupters (GFCI's) be used on all 120-V, single-phase, 15/20 amp receptacle outlets used for temporary power. Each GFCI outlet shall be marked and inspected daily before use, and monthly at a minimum. All cords will be inspected daily before use, and periodically depending on use and environment.



All switches shall be enclosed and grounded. Panel boards shall have provisions for closing and locking the main switch and fuse box compartments. All switches will be labeled to show the device or area that the switch serves.

Cables passing through work areas shall be covered or elevated to protect them from damage and to eliminate hazards to employees.

Extension cords used with portable electric tools and appliances shall be three-wire and grounded. Plugs shall conform to the type and configuration required by OSHA Construction Standards.

Suitable means shall be provided for identifying all electrical equipment and circuits, especially when two or more voltages are used on the same job. All circuits shall be marked for the voltage and the area of service they provide.

Flexible electrical cord shall be continuous length without splices. The Clark Construction Group, LLC Procedure - Portable Electrical Equipment shall be implemented.

All extension cords should follow Clarks minimum rating of a 12/3 gauge or higher.

Additional information on electrical equipment and operations is contained in Appendix B-9.

LOCK OUT/TAG OUT/BLOCK OUT (HAZARDOUS ENERGY CONTROL)

All hazardous energy control activities will be conducted in accordance with the Clark Construction Group, LLC Procedure - Lock and Tag Program.

Dwayne Wright (Clark Superintendent) will be the designated Energy Marshall for this project. Dwayne will be familiar with all "LOTO" process as part of our scope of work and will coordinate between the Owner, Structure Tone, Clark and all lower tier subcontractors.

Locks and "DANGER" tags shall be used by authorized personnel when the release of energy can cause injury to personnel, create property damage, or release a harmful substance to the environment. If locks cannot be used, an alternate method of isolating the system must be implemented. Tags will always beused.

Affected employees and contractors, if applicable, shall be notified of the placement of locks/tags prior to locking out the equipment. Only one lock per key.

Removal or cutting of locks and tags without approval is subject to immediate termination. Additional information on LOTO is contained in Appendix B-15.

LADDERS

A "Ladders Last" approach shall be used during the pre-planning period for any scope of work. Ladders should only be used once the competent person has determined that no other method of access or egress to the work is feasibly available.

Ladders used on the project site must be used and maintained in accordance with the Clark Construction Procedure – Ladders - Use Handling and Storage and manufacturers' specifications. Ladders must have tight



joints, and securely attached hardware and fittings. Ladders in need of repair will be removed from the job site and repaired or destroyed.

All portable ladders must be clearly marked with the user's company name. Only Type 1-A or a Lean Safe ladders are allowable for use on any Clark project.

All employees who will use ladders must be trained in the nature of fall hazards associated with ladders; proper selection, inspection, maintenance, and use; removal from service.

Extension ladders must be secured to a suitable anchorage point to prevent tipping or rolling. If an employee must mount the ladder in order to secure it, a second employee must be utilized to hold the ladder until it is secured. If an employee is working above the fifth rung of an extension ladder, the ladder must either be secured in place or held by a second employee.

Employees must maintain three points of contact while ascending/descending any type of ladder. While performing work from a ladder, an employee must keep him or herself centered between the side rails of the ladder and not over reach, changing the center of balance.

Fall protection is required when an employee is working at or above 20 feet while working from a ladder.

Job-built ladders shall meet the requirements outlined in ANSI 14.4; Job-built Ladders.

Metal ladders are not permitted when working in or around electrical equipment at Quantum Loophole – 1 MGD Sewage Pumping Station Project.

Additional information on ladders is contained in Appendix B-14.

SCAFFOLD USE, ASSEMBLY, AND DISMANTLING

All employees who will erect, alter, dismantle, and use scaffolding shall be trained in the nature of fall hazards associated with scaffolds; proper selection, erection, inspection, maintenance and use (dependent on the job task); engineering requirements.

A competent person shall be identified and be present to guide and observe any erection, alteration, or dismantling of scaffolding.

All scaffold activities will be conducted in accordance with the Clark Construction Group, LLC Procedure Scaffold Use, Assembly and Dismantling. Prior to assembly activities, a competent person or erection supervisor must be identified.

Scaffold or work platform erectors shall utilize fall protection during the erection and Dismantling of scaffolding or work platforms that are more than six (6) feet in height. The specific fall protection requirements can be found in the Fall Protection and Prevention Plan and delineated in the JHA for scaffold activities.

Scaffold platforms greater than twenty (20) feet in height shall be accessed by use of a scaffold stair system.



For scaffolds less than twenty (20) feet in height, when ladders are used, an adequate gate is required.

Counter-weighted suspended scaffold systems shall not be used with any system requiring the counterweights to be suspended or hung from the scaffold system. Counterweighted systems must be placed on the ground or deck. Counterweighted scaffold systems must be approved for the intended set up and have manufacturer data sheets on available on site or have drawings stamped by a registered professional engineer and be set up accordingly.

All employees who will use suspended scaffold systems must have proper training for the type of scaffold to be used. A competent person trained in suspended scaffolds must inspect daily and be present for all suspended scaffold operations.

Additional information on scaffolds is contained in Appendix B-20.

FALLING OBJECT PROTECTION

Employees exposed to falling objects will be protected by one of the following methods:

- Toe boards, screens or guardrail systems shall be erected to prevent objects from falling from higher levels, and potential falling objects on higher levels shall be kept far enough from the edge so that they would not go over the edge if they were incidentally displaced; or
- The area(s) into which objects could fall shall be barricaded and employees shall be prohibited from entering barricaded areas; or
- _ A canopy structure shall be erected.
- _ Tethering of tools when working from heights.

EXCAVATION AND TRENCHING

All excavation and trenching activities will be conducted in accordance with the Clark Construction Group, LLC Policy – Trenching and Excavation. Prior to initiating excavation and trenching activities, a competent person must be designated. The competent person shall be present during all excavation activities.

Sloping technique will be used during initial excavation and soil removal. All slopes shall be cut back according to Type C soil condition requirements.

All spoils piles must be kept a minimum of 2' away from edge of excavation.

Trench and shoring systems shall be identified in the JHA/AHA for each activity or phase of work. Manufacturer tabulated data and specifications or registered engineer tabulated data for all shoring or benching systems shall be readily available on-site for review.

All shoring systems to be kept a minimum of 2' off bottom of excavation.

The means of egress must be located so as not to require workers to travel more than 25' laterally within the trench.



Job-made sheeting and shoring systems shall have the registered professional engineer stamped specification and tabulated data.

All existing utility or other underground facilities shall be identified by a "No Dig Method" and located before excavation commences. The utility company or owner shall be contacted within customary or established response times to identify underground facilities.

Surface encumbrances (trees, boulders, and poles) that are located so as to create a hazard to employees shall be removed or supported, as necessary, to safeguard employees.

During initial excavation, truck ramps shall have built-up side berms. Additionally, if employees will use the ramps to access the work area, a segregated walkway shall be fenced off along one side of the ramp to provide safe access. High visibility fencing or rope with flagging shall be used to mark the boundaries of the walkway.

Excavation Support plans including section and plan views must be submitted to Clark Construction for approval prior to beginning excavations greater than four (4) feet in depth.

Additional information on excavation and trenching is contained in Appendix A-23.

CONFINED SPACES AND PERMIT REQUIRED SPACES

All confined space entry activities will be conducted in accordance with OSHA standard 29CFR1926.1200, and the Clark Construction Group, LLC Procedure - Confined Space Entry. Prior to initiating confined space entry activities, a competent person must be designated, and all entry team members identified; Entry Supervisor, Attendant, Entrant.

The contractor who will require employees to enter and work in a confined space must complete the Clark Confined Space Survey form and submit it to the SSHP. The SSHP will then evaluate the space and coordinate with the appropriate party (Owner, subcontractor) to determine if the space is permit required, and if declassification is possible.

Proof of training for all employees involved in confined space/permit required confined space entry must be submitted for review and approval prior to the activity taking place.

Three (3) calendar days prior to entering any space, subcontractor will submit a request for a confined space permit to the SSHP. A confined space entry plan will accompany each request (see Subcontractor Safe Start Documents). Permit required confined space entries will, at a minimum, comply with the Department of Labor 29 CFR § 1926.1200. Non-permit required confined space entries will, at a minimum, require a confined space entry plan and AHA. Rescue procedures shall be included as part of all confined space entry plans. 911 shall not be the sole means of rescue prescribed for any confined space activity.

Additional information on confined spaces is located in Appendix C-7

HEAVY AND LIGHT EOUIPMENT

Heavy and light equipment shall be operated and maintained in accordance with manufacturer specifications.



Daily inspections will be performed by a competent person prior to equipment operation.

Proof of training, qualification, and required licenses shall be submitted to the SSHP to be kept on file.

Additional information on equipment operations is contained in Appendix B-4.

USE OF CRANES/DRILL RIGS

All cranes that will be operated on site shall have a 3rd party crane check performed as required by Clark Construction Group LLC crane policy. All deficiencies noted during the 3rd party crane check must be corrected prior to the crane being operated on site.

Prior to crane operations the crane packet required by Clark Construction Group LLC Policy Section B-02 Crane Operations, shall be completed and submitted to the Clark Water SSHP for review at least one week prior to any crane arriving on site.

Additionally, all crane/drill rig activities will be conducted in accordance with the Clark Construction Group, LLC Policy B-02 Crane Operations.

All cranes/drill rigs shall be inspected prior to use. If the crane was out of service, it must receive either certification or a complete annual inspection, whichever is applicable, prior to placement in service. The crane/drill rig operator shall conduct a daily inspection prior to start of work each shift.

All cranes with telescoping booms shall be equipped with a device to indicate clearly to the operator at all times the boom extended length, or an accurate determination of the load radius to be used during the lift shall be made prior to the lift.

Tower crane pedestals shall be designed by a registered professional engineer familiar with structural engineering. Pedestals must be built according to engineered specifications and the concrete cured to a specified strength prior to beginning erection of the tower crane.

Mobile crane operators must be qualified on the specific crane (type and capacity) that they are assigned to operate through an OSHA and/or industry recognized testing and qualification procedure. The out riggers on mobile cranes shall be fully extended and deployed to lift or support load. Base plates/supports shall be level.

Each load shall be rigged or attached independently to the hook/master link. Multiple rigging of materials (Christmas-Tree Lifting) is prohibited.

All cranes must be equipped with an operational anti two block device, except during Driving Pile operations.

Back-up alarms shall be operational on all cranes and tested daily.

Crane operator should fill out a daily inspection form to be turned into supervisor for documentation.

At least one hand-held or crane mounted wind speed indicator shall be on site during crane operations.



Tag lines shall be used on all lifts unless their use creates an unsafe condition.

All lifts shall be made in accordance with the manufacturer's lifting recommendations.

The use of a crane to hoist employees on a personnel platform is prohibited, except when conventional means of reaching the work location presents a greater hazard or is not possible because of structural design or worksite conditions. Supervision shall make a case-by-case evaluation to determine if an alternate method can be used. A justification for the use of crane-suspended personnel platforms shall be written into the JHA.

All cranes must follow Clarks Adverse weather condition policies, such as for wind and lighting.

□ Copy of crane assembly and inspection reports prior to the crane being used.
 Copy of annual crane inspection report.
 □ Copy of crane operators certifications
 □ Copy of riggers and signal persons certifications

The following documentation/reports are to be forwarded to the Owner's Representative:

Additional information on crane operations and rigging is contained in Appendix B-2.

CRITICAL LIFT PROCEDURE

When a lift will exceed 75% of the cranes lifting capacity, lifts that will require two cranes (tandem lift), lifting of personnel or any lift involving non-routine rigging or operations a Critical Lift Plan will be prepared and signed in accordance the Clark Construction Group, LLC Critical Lift Procedure.

The Critical Lift Plan (CLP) must be reviewed and signed by all persons involved in the lift, and must include the following:

- _ The qualifications of the Critical Lift Supervisor;
- A description of the ground conditions, outriggers, and/or other requirements to achieve a level foundation for the lift;
- A list of environmental conditions that will stop the lift; and,
- _ A description of the coordination communication requirements.

The CLP must be completed before every critical or tandem lift procedure is performed.

All cranes must be equipped with Load Indicating Devices, anti-two blocks, load, and boom angle moment indicators.

Additional information on critical lift procedures is located in Appendix B-2.



HAZARDOUS MATERIAL HANDLING

Hazardous material may be encountered on this project. Additionally this project may require recycling of certain materials. The Hazardous Material/Recycling Coordinator for this project will be the Project Superintendent. He will be responsible for implementing the Recycling and Hazardous Material/Waste Handling/Disposal Procedure if required at the Quantum Loophole – 1 MGD Pumping Station Project.

In the event that contaminated soils are encountered during any phase of this project, the Hazardous Waste/Recycling Coordinator will have all work stopped in the area of the contaminated soils and will notify the owner. Soils tests will then be conducted by the owner to determine the level of contamination. Determinations will be made of how to dispose of the contaminated soils based on the soils test that have been conducted.

All subcontractors who generate hazardous waste materials during the process of building this project will share costs associated with the maintenance of this program.

Additional information on hazardous materials is located in Appendix C-12.

SPILLS

If a spill of hazardous material occurs, the following actions will be taken:

- Notify the Hazardous Material Coordinator immediately.
- _ Notify the Owner's Representative immediately.
- _ Take immediate measures to control and contain the spill within site boundaries if safe to do so.
- Keep unnecessary personnel away, isolate the hazardous area and deny entry.
- Stay upwind and keep out of low-lying areas.
- _ Allow no flares, smoking, or flames in hazard area.
- _ For liquids, keep combustibles away from the spilled materials.

SMALL DRY SPILLS

Proceed only under the direction and approval of the Hazardous Material Coordinator. Shovel contaminated materials into dry containers and cover. Use care not to make material airborne. Label the containers as to contents and remove to a secure area.

SMALL LIQUID SPILLS

Proceed only under the direction of the Hazardous Material Coordinator. Absorb the liquid with sand, clean fill, or other noncombustible absorbent material. Place contaminated material in a container, cover and label it, and remove it to a secure area.



DRINKING WATER

□ Cool drinking water will be provided during hot weather
 □ Drinking water will be dispensed by means that prevent contamination between the consumer and the source.
 □ Cups will be provided when drinking from portable coolers/containers. Unused disposable cups shall be kept in sanitary containers and waste receptacle shall be provided for used cups at each water container
 □ All drinking water should be stored in a proper location away from direct sunlight and extreme hot or cold conditions.
 □ Containers used to distribute drinking water shall be clearly marked "DRINKING WATER" and should not be used for other purposes. Water Containers shall be cleaned each day and each time refilled. The lid shall be taped shut and marked with the days date.

Housekeeping and Sanitation

Work areas shall be cleaned regularly of trash and debris to prevent slip/trip hazards and fire dangers.

Equipment and materials shall be stored in designated areas. Trash cans shall be placed in work areas and break areas in quantity enough to contain daily build-up. Food rubbish shall be removed from work areas regularly. Access routes and stairways shall be kept free of stored materials and debris piles.

Toilet facilities shall be made available based on the personnel on site. Toilet facilities shall be cleaned at regular intervals, and more often as needed. Hand washing and sanitizing stations shall be maintained in the toilet facility areas.

Additional information on housekeeping and sanitation is contained in Appendix B-12.

An adequate supply of potable water shall be provided in all places of employment.

MAINTENANCE OF RECORDS

The SSHP will keep records of the actions taken to implement and maintain this APP.

Records of scheduled and unscheduled periodic inspections as well as other records including methods used to identify and evaluate jobsite conditions and work practices shall also be retained.

Records relating to the APP shall include, at a minimum, person(s) conducting the inspection or evaluation; the unsafe conditions and work practices that have been identified; and actions taken to correct the identified condition or work practice.

Records and documentation of safety and health training shall include at a minimum, the name of employee and/or employee number, date of training, training topic(s), and the name of the instructor.



ENVIRONMENTAL

Per Section 4.2.2, 4.2.3 and 4.2.4 of the Standard Operating Procedures set forth by Geo-Technical Associates Inc. per the Subject Property: Former Alcoa East alco Works Property, Frederick County, Maryland:

GTA Project No. 31201536

Date: October 28, 2022

All Infrastructure activities, Mass Grading and Construction, and Ground Water Management performed by Clark Construction, LLC will take place outside the SMA and EC. Please find Appendix 1 that contains the SOPs developed by Geo – Technical and a site map overlay to show SMA, EC and specific locations of Clark Water construction activities.

HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE (HAZWOPER)

In areas where hazardous soils or conditions exist Clark will follow and institute a HAZWOPER plan. Clark will coordinate with trade partners to manage controls to be put place to protect employees and other subcontractors from hazardous materials on the jobsite. These controls will be outlined in an Activity Hazard Analysis (AHA) some of these controls include the use of continuous atmospheric monitoring through the use a calibrated 4-gas monitor testing for Oxygen concentration, Carbon Monoxide, Flammable concentration, and Hydrogen Sulfide. In addition, a photoionization detector (PID) will be used. Proper PPE will be used to include Tyvek suits, nitrile or rubber gloves, safety glasses and googles, and rubber boots. Personal hygiene stations will be set up within the Clark Limits of Disturbance to include handwash stations and changing rooms.

Based on industrial hygiene monitoring no adverse conditions are present where our employees and subcontractors will need to be enrolled in a medical surveillance program. Clark will conduct routine industrial hygiene monitoring during work activities to validate that workers will not be exposed to environmental concerns.

In addition, Clark will ensure that all employees or subcontractors that have the potential to come in to contact with Hazardous Waste will be decontaminated. All decontaminated materials will be disposed in accordance with both Local and Federal requirements.

Clark will ensure all individuals that could encounter hazardous waste be trained with a minimum of 24 hours of training and 8 hours of classroom experience. Annual refresher will be conducted as needed for applicable individuals. All employees and subcontractors entering the jobsite will be briefed on specific environmental concerns and methods to protect themselves during jobsite specific orientation.

This accident prevention plan contains provisions to address additional sections of a comprehensive HAZWOPER program as outlined in 1910.120 (B) (4) (ii).



SITE CONTROL

ACCESS

Access to the project site shall be restricted to authorized personnel. All personnel shall enter and exit through the pre-planned construction project access gates and will wear a hard hat sticker that denotes the worker has completed mandatory safety orientation training.

SITE COMMUNICATION

If the size or topography of the site is such that operations will be conducted out of continuous visual contact, a buddy system, or means of immediate voice communication (two-way radio) shall be instituted.

WARNING SIGNAGE

Appropriate caution/warning/danger signs will be posted to warn of potential hazards prior to entering the work areas and throughout the site as needed. Also, notices regarding the use of personal protective equipment (hardhats, safety glasses, etc.) shall be placed at the access points to the sites. Additional notices of specific hazardous areas shall be posted where needed.

VISITORS

This project is located at a secured location. As a result, **NO VISITORS** will be granted access unless escorted by authorized personnel. All Visitors are required to receive visitor orientation and sign visitor indemnification form.

SEVERE WEATHER

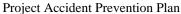
In the event of severe weather, as determined by warning and/or observation of earthquake, lightning, high winds, or heavy rain, site work shall be suspended until the event has passed. If the area of the project is under a severe weather warning issued by the National Weather Service, the SSHP shall maintain continuous observation of approaching weather.

Following a severe geological event or weather episode (including, earthquake wind, brush fires, and heavy rain), site work shall not resume until the site area has been inspected and a qualified person has determined that the site is secure.

No Cranes or any other heavy equipment should operate during sever weather conditions.

Additional information on weather response actions is contained in Appendix C-20, emergency action plan.

Quantum Loophole - 1 MGD Pump Station

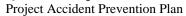




ORIENTATION OUTLINE

- 1. Emergency procedures.
- 2. Project work rules.
- 3. Incident investigation.
- 4. First Aid/Incident reporting.
- 5. Fitness for duty.
- 6. Lost time injury management policy.
- 7. Fall protection policy (6 foot).
- 8. Discipline policy.
- 9. Actions to be expected for failure to comply with safety requirements.
- 10. Parking and site security procedures and regulations.
- 11. Public protection.
- 12. Scaffold program and standards.
- 13. Hazard communication.
- 14. Hazardous chemical inventory list.
- 15. All MSDS's on site and submitted before product is used.
- 16. Safety recognition program.
- 17. Ladder safety.
- 18. Specific licensing requirements.
- 19. Subcontractor's safety audits.
- 20. Our written safety program.
- 21. Contractual obligation to comply with our safety program.
- 22. Respiratory protection program or requirements.
- 23. Fire protection.
- 24. Confined spaces/permits.
- 25. Job hazard analysis.
- 26. Safety meetings and documentation
- 27. Hazard abatement.
- 28. Housekeeping.
- 29. Project specific safety plan.
- 30. Designated safety representative.
- 31. Chain of command within the company.
- 32. Notification of OSHA visits.
- 33. Personal protective equipment policy.
- 34. Personal protective equipment use (including demonstration as
- 35. necessary).
- 36. Owner imposed safety requirements.
- 37. First aid provider identification.
- 38. First aid kit location.
- 39. Footwear/clothing/jewelry/hair policy.
- 40. Trenches and excavations.
- 41. Competent person identification.
- 42. Barricade/barricade tape (Yellow tape is cautionary; Red tape is mandatory).

Quantum Loophole - 1 MGD Pump Station





- 43. Lock Out/Tag Out.
- 44. Hot work permits.
- 45. Review of the Safety and Health Handbook.
- 46. Rigging requirements.
- 47. Further safety education through Clark Net.
- 48. Daily SPA requirements.
- 49. 3rd party crane inspection



CODE OF SAFE PRACTICES

All work shall be performed in compliance with OSHA Construction Industry Standards, the Clark Construction Group, LLC safety requirements, and other applicable federal, state, and local Safety and Health laws.
Only equipment that is in serviceable condition, properly maintained, and equipped with all necessary safety guards and operating accessories shall be used on the Project.
Project workers shall be fit for work, and qualified to perform all assigned tasks.
Project workers shall strictly comply with all safety regulations and directions of the Contractor and Client.
Workers with long hair must keep their hair tucked under their hard hat.
Adequate supplies of all necessary personal protective clothing and equipment shall be available for employees. Protective clothing and equipment shall be approved by, or comply with, the specifications of ANSI, Underwriters Laboratories, or Factory Mutual, as appropriate.
If respiratory protection is required, only NIOSH-approved respirators shall be used. Use of respiratory protection shall comply with OSHA. Project workers who may use respiratory protection shall have been trained and medically certified for its use.
Project workers shall have been trained as required by the Hazard Communication Standard. All hazardous material containers shall be labeled and meet labeling requirements of the OSHA standard.
All necessary steps shall be taken to protect Project workers from exposure to materials in excess of the OSHA Permissible Exposure Limits.
Hearing protection devices shall be provided to and used by Project workers as appropriate.
Safety glasses with side shields, hard-hats, long pants, sleeved shirts, and work boots are mandatory.
Eating, drinking, and use of tobacco products are permitted only in designated areas. Use or possession of alcohol, intoxicating drugs, or firearms is prohibited.
Use of smokeless tobacco products is strictly prohibited.
Reasonable steps shall be taken to protect third parties from injury related to the work.
The work area shall be maintained in an orderly manner. Accumulation of trash or debris is prohibited.





Tools, equipment, and materials used during the work shall be properly stored.
Flammable gases, liquids, fuels, and solvents shall be properly used and stored to prevent fires. GFCIs shall be incorporated into all temporary wiring and flexible cords.
Ladders shall be used, inspected and maintained according to manufacturers' recommendations. Portable ladders constructed of metal are prohibited.
Scaffolding shall be erected and dismantled only under the direction of a competent person. Each scaffold system shall be inspected by a competent person prior to start of work.
No Project worker shall be required or permitted to enter any unsecured excavation greater than five (5) feet deep.
No Project worker shall be permitted or required to enter any confined space, until that space has been isolated, purged, and supplied with a safe atmosphere. A safety standby and emergency rescue capability shall be maintained for entry into a permit required confined space.
Necessary emergency equipment, such as first aid kits, fire extinguishers, and eyewash solution shall be available for use by Project workers.
Where Project workers may be exposed to the unexpected release of hazardous energy, a lock out/tag out program shall be applied.
Horseplay, practical joking, or any other actions that jeopardize safety will not be tolerated. Running is not permitted
Alcoholic beverages and non-medicinal drugs are not permitted at the project site. Employees suspected of being under the influence of alcohol or drugs will be removed from the site.
Transportation and disposal of any contaminated materials shall comply with all applicable local, state, federal regulations. The generator, transporter, and disposer will address these items.
Contaminated materials shall be stored in tightly closed containers in well-ventilated areas. Emergency equipment shall be located in readily accessible locations.
All trenching, shoring, and excavation work must comply with Clark Construction Group, LLC safety requirements.
Appropriate action to provide secure footing shall be taken at all locations where personnel will be working.
Whenever solvents, cleaners, or other chemical substances are used, a properly completed Safety Data





Sheet (SDS) for the chemicals shall be available at the work site. ☐ Whenever flammable or combustible solvents are used, specific procedures for the control of flammable gases and vapors may be necessary. ☐ Tests shall be made by a qualified person to ensure that concentrations of flammable vapors in the work area do not exceed 10% of the lower explosive limit. ☐ As appropriate, equipment on site shall be bonded and grounded, spark proof, and explosion resistant. ☐ An adequate supply of fire extinguishers with a minimum rating of 20 lbs. ABC shall be strategically located throughout the work area so as to limit the travel distance required by any worker to reach the extinguisher to less than 100 linear feet. ☐ Radios (except two-way radios), tape players, or other forms of entertainment devices are prohibited within the authorized construction work zone. This includes storage yards, staging areas and other construction support work zones, which may be adjacent to the construction worksite. ☐ All activities will be performed in such a manner as to minimize or prevent the disbursement or release of any contaminants. ☐ Legible and understandable precautionary labels shall be affixed prominently to containers of contaminated scrap, waste, debris, and clothing. ☐ Transportation and disposal of any contaminated materials shall comply with all applicable local, state, federal regulations. The generator, transporter, and disposer will address these items. ☐ Contaminated materials shall be stored in tightly closed containers in well-ventilated areas. Emergency equipment shall be located in readily accessible locations. ☐ All trenching, shoring, and excavation work must comply with Clark Construction Group, LLC safety requirements. ☐ Appropriate action to provide secure footing shall be taken at all locations where personnel will be working.