URS

June 28, 2013

Mr. Alex Wardle
Commonwealth of Virginia
Department of Environmental Quality
Northern Virginia Regional Office: Remediation
13901 Crown Court
Woodbridge, VA 22193

Re: Site Conceptual Model Update
Potomac River Generating Station
1400 North Royal St, Alexandria, VA 22314
PC #2013-3154

Dear Mr. Wardle:

On behalf of GenOn Potomac River, LLC (GenOn), URS Corporation (URS) is submitting the Site Conceptual Model Update for the above reference site. This report presents the updated recent site evaluation and the proposed remedial approach based on the findings of this evaluation.

If you have any questions regarding the Site Conceptual Model Update or require additional information, please do not hesitate to contact the undersigned at 301.820.3000.

Sincerely,
URS CORPORATION

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Environmental Engineer

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Environmental Scientist

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SITE CONCEPTUAL MODEL UPDATE
POTOMAC RIVER GENERATING STATION
1400 NORTH ROYAL STREET
ALEXANDRIA, VIRGINIA

VDEQ PC #2013-3154

Prepared for

GenOn Potomac River, LLC
1400 North Royal Street
Alexandria, Virginia 22314

June 27, 2013

URS Corporation
12420 Milestone Center Drive, Suite 150
Germantown, MD 20876
Project No. 15303530

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On behalf of GenOn Potomac River, LLC's Potomac River Generating Station (PRGS), URS Corporation (URS) is submitting this Site Conceptual Model (SCM) for the subject property (the Facility) located at 1400 North Royal Street in Alexandria, Virginia. This report has been prepared to present a non-intrusive evaluation of subsurface utilities and conditions at the site and to describe the selection of the next site characterization steps to delineate subsurface impacts given the constraints due to underground utility presence. The Virginia Department of Environmental Quality (VDEQ) requested the submittal of the SCM in a directive letter dated April 2, 2013. Pollution Complaint (PC) #2013-3154 was generated by the VDEQ to track this case. This SCM describes an overview of the subsurface geologic conditions, a detailed description of the underground utilities at the site, and a recommendation for site characterization activities going forward.

2.1 FACILITY LOCATION AND AREA DESCRIPTION

The Facility is located at 1400 North Royal Street in Alexandria, Virginia (**Figure 1**). Based on the U.S. Geological Survey (USGS) Alexandria, Virginia Quadrangle Topographic Map, the Facility is located approximately 35 feet above mean sea level. The Facility is located adjacent to the Potomac River, and is relatively flat lying, sloping gently to the northeast. Based on the surrounding topography, and the proximity of the Potomac River, the groundwater flow direction is inferred to be to the east.

2.2 DESCRIPTION OF STRUCTURES AND OTHER IMPROVEMENTS

The Facility is a recently decommissioned coal power plant. **Figure 2** shows the entire area of the former coal power plant. While in operation, the station's five generating units were capable of producing 482 megawatts of electricity, which was supplied to the Pennsylvania/New Jersey/Maryland distribution grid. The station used number 2 fuel oil to preheat its generating units and coal as its primary fuel to generate electricity. The area surrounding the Facility is mixed residential and commercial use, with a condominium building (Marina Towers) approximately 300 yards away. A section of the Mt. Vernon Trail—a multi-use recreating trail extensively used for walking, jogging, bicycling, and other activities—is located immediately adjacent to the station along the Potomac River.

PC #2013-3154 (the subject of this SCM) refers to the site in the vicinity of two 25,000 gallon heating oil underground storage tanks (USTs) (referred to as the Site). The two heating oil USTs are located directly to the east of the facility's five cooling units, in the area that previously housed the plant's flyash collection area (**Figure 3**). The UST area is covered by a roof and paved with concrete. The two heating oil USTs are each approximately 40 feet long and 10 feet in diameter. Numerous air, electrical, and fluid lines run into and around the surrounding structures, including several 48-inch steel circulating water lines and four outfall drains leading to the Potomac River.

2.3 FACILITY REGULATORY HISTORY

The following summarizes the known history of the Facility:

- On September 16, 1985, a petroleum release was reported to the Virginia State Water Control Board. Approximately 50 gallons of number 2 fuel oil was released as a result of a space heater valve that had been left open when the boilers were lit off. No further investigation was warranted because of the small amount of product lost, the high dilution factor, and the infeasibility of containment.
- In 1987, a leaking 2,500-gallon steel kerosene UST was removed from the ground and replaced with the recently removed 4,000-gallon fiberglass-reinforced plastic (FRP)-coated steel tank in the same location. The area was remediated and the pollution case was closed by VDEQ.
- In 1992, a soil sample collected during the construction of one of the two soil vapor monitoring wells in the area of the 4,000-gallon kerosene UST revealed total petroleum hydrocarbon (TPH) levels of 390 parts per million. A precision test was conducted on

August 8, 1992, by the original installers of the tank. The tank passed the test. A site assessment was conducted and as a result, a groundwater recovery system was installed to recover any residual oil that may be present in groundwater. Based on the results of the groundwater samples collected from two monitoring wells showing no detectable levels of hydrocarbons, the case was closed by VDEQ in April 1999.

- In June 1996, a leaking UST case referring to a 3,500-gallon diesel UST was closed. When this tank was closed in place, elevated levels of TPH were detected in the soil. Fluor Daniel GTI completed a site characterization, and the VDEQ closed this case. According to PEPCO personnel, who owned and operated the facility at the time, acceptable cleanup standards were met.
- On February 19, 2013, UST removal and in-place abandonment activities began at the site as part of plant closure. Details are further discussed in this report.
- On March 11, 2013, PC #2013-3128 was assigned to the 4,000-gallon kerosene UST area of the site when, during the removal of the 4,000-gallon kerosene UST, soil analysis confirmed that a petroleum release had occurred. Details of the site characterization and subsequent activities associated with PC #2013-3128 have been submitted to the VDEQ under separate cover.
- On April 2, 3013, PC #2013-3154 was assigned to the two 25,000-gallon heating oil USTs when, during the in-place abandonment of the tanks, soil and groundwater analyses confirmed that a petroleum release had occurred. Soil borings were advanced in the vicinity of the USTs, and temporary monitoring wells were installed to collect groundwater samples. Of the ten soil samples collected, six contained detectable concentrations of benzene, toluene, ethylbenzene, or xylenes (collectively, BTEX), six contained detectable total petroleum hydrocarbon (TPH gasoline range organics (GRO), and eight contained detectable TPH diesel range organics (DRO). Of the four groundwater samples collected from the temporary monitoring wells, all four contained detectable BTEX, three contained detectable TPH-GRO, and three contained detectable TPH-DRO.

2.4 FACILITY PETROLEUM RELEASE OBSERVATIONS

The following listings refer to observed apparent petroleum releases on the Potomac River as documented by PRGS personnel.

- January 5, 2000 – Approximately 2 gallons of oil was discovered leaking from the union out of the recirculating line of the north #2 heating oil UST contained in the vault. Because site workers were working in that area, the leak was immediately detected and all product was recovered.
- February 18, 2000 – An oil sheen on the river was reported to the Alexandria Health Department. The source was tracked back to storm water runoff from an ash truck parked on the north end of the flyash building. PRGS personnel put booms around the storm drain that is direct receptor to that area.
- March 1, 2000 – A petroleum sheen on the river was reported to the Alexandria Health Department. The source of the sheen was not located.

- March 7, 2000 – An oil spill of less than 1 gallon was reported. A demineralized water tank located outside the plant building was overfilled and water collected in the trench for the number 2 fuel unloading station. The trench is connected to the fuel oil spillage tank that is located in the basement of the plant. Rushing water overwhelmed the spillage tank causing oily water to exit the top of the tank through two closed inspection hatches. The oily water spilled onto the basement floor. An unused locked storage shed with an open floor drain is adjacent to this area. Oily water entered this floor drain and exited into the Potomac River at Outfall 003. The floor drain was plugged and a visual inspection of other plugged floor drains was conducted.
- March 27, 2000 – An oil sheen was reported to the Alexandria Health Department. The suspected source of the sheen was a floating oil bottle in the Potomac River.
- December 22, 2000 – The Unit 3 Boiler Feed Pump reservoir was drained to the condenser drain, resulting in a visible sheen of oil out of Outfall 003. The spill was reported to the National Response Center (NRC) as potentially less than 1 quart discharged but PRGS personnel observed less than 1 cup.
- January 22, 2001 – Less than 1 gallon of oil was reported entering the Potomac River from Outfall 003. The source of the spill was a leaking gasket from the Unit #3 initial pressure regulator in the area of the front turbine standard. The oil was mounting in the cavity and draining down to a floor drain next to the turbine oil reservoir. Plant personnel cleaned out the front standard cavity, vacuumed out the drain area by the turbine oil reservoir, removed the drain pipe going to the drain funnel, and diverted the flow to a bucket. The spill was reported to the NRC, and the Alexandria Fire Department and a Hazmat team were sent. Alexandria responders were satisfied that sufficient corrective actions were taken and the amount released was not enough to initiate cleanup actions.
- March 16, 2003 – Less than 5 gallons of light lubricating oil was reported entering the Potomac River via Outfall 003. The event occurred during the pumping out of a circulating water pipe tunnel when the water level dropped too low and oil was discharged with the water.
- June 10, 2004 – An oil spill from Outfall 003, estimated to be between 10 to 25 gallons, entered the Potomac River as the result of a failed valve that allowed number 2 ignition oil to enter an air line. Oil spilled and accumulated on the floor and entered a floor drain that had been unplugged. That floor drains flow directly to the river. All floor drains have been permanently sealed as a result of this incident.
- November 19, 2007 – An oil sheen was reported on the Potomac River. PRGS conducted an investigation of all drains that discharged to the River, but could not determine the source. The sheen was reported to the NRC, the U.S. Coast Guard, and the local fire department. A sample collected at Outfall 004 indicated the presence of oil. The local fire department arrived, and after observing that the sheen was contained inside the plant's boom area, decided no further action was required. Subsequent visual observation of the oil sheen indicated a reduction in size, and an additional sample of Outfall 004 indicated no presence of oil.
- February 19, 2008 – A Baltimore Tank Lines tanker delivering number 2 fuel oil ruptured its 7,500-gallon tanker by running into a metal dumpster on the plant property. A small

amount of oil traveled into some of the plant storm drains and a slight sheen was visible in the Potomac River. All proper agency notifications were made. Incident command and cleanup was initiated.

- April 3, 2008 – A visible sheen was discovered near Outfall 003 when plant personnel assembled to conduct a Potomac River Shoreline cleanup. PRGS called 911. Plant personnel immediately checked equipment but were unable to locate the source. City responders indicated that it seemed to be mostly pollen, which accounted for the thick yellow substance, and a small amount of oil. The City instructed PRGS to continue to monitor the discharge. Plant personnel placed two booms around Outfall 004 to absorb the oil. The sheen was reported to NRC as a minor event.
- July 15, 2008 – Less than 5 gallons of turbine oil discharged through Outfall 004 and was contained by the Facility's oil boom. Spill contractors captured the oil using absorbent materials. All proper notifications were made and City agencies responded.
- March 20, 2009 – An ash truck was exiting the truck washer on the property when the right wheel ran off the ramp, causing the 120-gallon fuel tank to hit the side of the truck washer and rupture. The entire contents of the fuel tank spilled into the truck washer and onto the ground and flowed in the direction of a parking lot drain that discharges out of the National Pollutant Discharge Elimination System outfall leading to the river. An unknown amount of fuel entered the drain. PRGS employees immediately responded to the spill to block the drain. They also deployed oil absorbent and containment materials. An assessment of the situation found the employees had successfully contained the spill to prevent any additional oil from entering the drain. The NRC was notified of the spill. Upon investigation of the river, no visible sheen was observed; however, a visible sheen was seen during monitoring later that day. It was determined that a spill response contractor was needed to clean up the spill and provide containment for the fuel that entered the River. The City of Alexandria Fire Department arrived on scene to assist with cleanup efforts and used their boats to deploy absorbent booms in the water to control the spill. The plant's spill contractors arrived on site and suctioned fuel from the original receiving drain and a downstream drain. They also completed the shoreline cleanup, which included deployment of sweep and absorbent pads, as well as suctioning of contaminated rocks.
- January 28, 2010 – A small sheen was observed on the Potomac River adjacent to the water intake pump house structure. Upon inspection of the outfalls, no visible sign of oil contamination was present in the discharge. Initial efforts were taken to contain the sheen using plant resources, but contractor support was necessary to deploy booms and absorbent pads. Plant staff were deployed to investigate all plant areas inside and outside to determine a potential source. No definitive sources of the sheen were identified. The NRC, as well as the City of Alexandria Fire Marshall and the District Department of the Environment (DDOE), was notified. Continued visual monitoring of the area was performed and spill contractors returned to replace absorbent pads and booms as needed to complete the cleanup. After continued monitoring, it was determined the sheen on the river was associated with both Outfall 009 and Outfall 010.
- October 2, 2010 – On October 2, a small sheen was observed on the Potomac River adjacent to the water intake pump house structure. Around the same time, a leak occurred

from the #2 Turbine Oil Lube Tank in the plant basement; however, whether the leak was the source of the sheen was undetermined. Upon inspection of the outfalls, no visible sign of oil contamination was present. Initial efforts were taken to contain the sheen using plant resources, but contractor support was necessary to deploy booms and absorbent pads. A cleanup subcontractor was on site October 2–4 to conduct cleanup efforts. The City of Alexandria Fire Department assisted in deploying booms while the contractor was mobilizing. Concurrently, plant staff deployed to investigate the potential source of the sheen inside and outside and conducted dye testing to verify plant drainage. No definitive sources of the sheen were identified. The plant contacted the NRC, as well as the City of Alexandria Fire Marshall and DDOE. Continued visual monitoring of the area was performed and spill contractors returned to replace absorbent pads and booms as needed to complete cleanup.

- January 23, 2011 – On this date, GenOn assisted on a spill from the Pepco substation located adjacent to the Facility. A transformer pipe connection failed in the PEPCO substation and discharged mineral oil, which overwhelmed the containment system and overflowed to a facility trench drain. The trench drain discharged via Outfall 006 into the Potomac River. Approximately 4,000 to 5,000 gallons of oil spilled into the Potomac River. PRGS worked with PEPCO to provide assistance as needed in spill response and provided initial notifications to the Alexandria Fire Department and NRC. PEPCO assumed full responsibility for the spill and cleanup associated with the event.
- November 18, 2011 – A small sheen was observed inside the boomed structure on the Potomac River. The NRC, as well as the Alexandria Fire Department and the DDOE, was notified. The source of the sheen was from the Outfall 010 pipe that has been retired for many years. The outfall in question was capped, and the facility has followed DDOE direction on how to clean and retire the pipe in question.
- March 29, 2012 – A normally closed and plugged valve on the retired Outfall 009 pipe was discovered unplugged and in the open position during a routine inspection of the outfall and shoreline. The open valve allowed oil-contaminated water to discharge from the pipe and enter the Potomac River along the shoreline creating a small sheen against the shoreline. Upon discovery, the valve was closed and locked, and a new plug was installed. Internal spill response resources, as well as a spill response contractor, were mobilized. Appropriate agencies were notified. The spill (<1 gallon) was completely remediated by March 31.

2.5 SITE GEOLOGY

The site is located within the Atlantic Coastal Plain Physiographic Province, which is characterized by sequences of marine and terrestrial sedimentary deposits. The western limit of the province is commonly referred to as the Fall Line, where older crystalline rocks of the Piedmont Province begin to dip beneath the relatively new sediments of the Coastal Plain. The Fall Line is located approximately 5 miles northwest of the site.

In general, the Coastal Plain consists of an eastward-thickening wedge of unconsolidated gravels, sands, silts, and clays that have been deposited upon an eroded crystalline basement rock surface that slopes downward toward the east. Many different depositional environments existed during

the formation of the Coastal Plain. Glacially influenced marine transgressions and regressions, periods of erosion and deposition, fluvial processes, and structural deformations have all played a part in the evolution of the Coastal Plain. As a result of these processes, the presence, thickness, and lateral continuity of geologic units are highly variable.

The upper 20 feet of soil sampled during the UST closure activities varied widely in composition in the vicinity of the two heating oil tanks, both between the borings and throughout the boring depths. This soil is most likely fill brought in during the construction of the facility. The soil contained some coarse pebbles, as well as occasional fragments of concrete or brick that were most likely relics of the facility's construction. At approximately 20 feet below grade, the soil transitions into various layers of native silty clay and clayey sand, with less of the coarse material found in the soils above.

2.6 NON-INTRUSIVE SUBSURFACE INVESTIGATION

A generalized diagram of subsurface structures was created based on a series of site visits, historical site research, photographs, and a private utility locating event. **Figure 4** represents a view of all discovered underground utilities. Subsurface utilities located in the UST area include ten 48-inch-diameter circulating water lines, four concrete ducts (unknown diameters), ten drains varying from 6 inches to 12 inches in diameter, five 16-inch-diameter water lines, two oil lines, and an air line (unknown diameter). PRGS site personnel were interviewed regarding fill material around the various area utility trenches, but because of the date at which they were installed and the lack of documentation, fill material is currently unknown. Site plans associated with an area of the Facility outside of the area of the two 25,000-gallon heating oil USTs has revealed utility trenches filled with a bottom layer of gravel and a top layer clean fill. Based on this observation, the site utilities are inferred to be backfilled similarly.

A series of cross sections were created to display various depths and spatial relationships of subsurface utilities in the area. **Figure 5** depicts the locations of Cross Sections A-A' through E-E'. In all of the cross sections, estimated groundwater depth is depicted at a depth of 32.50 feet below ground surface. This estimate is based on the depths at which groundwater was encountered in the vicinity of the USTs during the UST closure activities. Each of the cross sections also depicts the projected outlines of the heating oil USTs for reference, even though the cross section transects do not actually intersect the USTs.

Figure 6, displayed as Cross Section A-A', represents subsurface utilities located along the boiler room wall as it travels adjacent to the two heating oil USTs. Cross Section A-A' displays six of the circulating water lines as they exit the adjacent boiler room and enter the subsurface in the area of the two heating oil USTs. Four of the circulating water lines pass in close proximity to the two 25,000-gallon heating oil USTs at similar depths. The tops of the 48-inch-diameter circulating water lines are located at approximately 29 feet above mean sea level (msl). Three water drain lines are located north of the two USTs, traveling east towards the Potomac River. These drain lines are associated with Outfalls 003, 008, and 009, and are located between 26 and 31 feet msl. Figure 6 also depicts two concrete electrical ducts that enter the area from the boiler room wall. The concrete ducts run in close proximity to the two USTs, but are located at a shallower depth. The concrete ducts are located at elevations of 30 to 34 feet msl.

Figure 7 depicts Cross Section B-B', which runs north to south, parallel to Cross Section A-A' on the opposite side of the two heating oil USTs. Nine of the circulating water lines are visible in

Cross Section B-B'. Four of the circulating water lines pass in close proximity to the two 25,000-gallon heating oil USTs at similar depths. The tops of the 48-inch-diameter circulating water lines are located at approximately 29 feet msl. Eight drain lines varying from 8 inches to 18 inches in diameter are located in Cross Section B-B'. Approximate elevations of the drain lines range from 20 to 32 feet msl. Two concrete electrical ducts of unknown diameter are located in Cross Section B-B' at approximately 22 feet msl. The concrete ducts run in close proximity to the two USTs at similar depths. One 16-inch-diameter water pump line is located just south of the two USTs. The water pump line is 16 inches in diameter and is located at approximately 29 feet msl. In addition to depicting the subsurface utilities, Cross Section B-B' also displays the apparent geology as logged during the monitoring of temporary well borings associated with the previously performed UST closure activities. Given the limited number of borings and locations of borings from the closure activities, Cross Section B-B' is the only cross section that displays geologic characteristics.

Figure 8 depicts Cross Section C-C', which runs parallel and east of Cross Section B-B', closer to the Potomac River. Nine 48-inch-diameter circulating water lines are visible in Cross Section C-C'. Six of the circulating water lines are located at elevations of 26 to 30 feet msl and three of the lines are located at approximately 20 to 24 feet msl. The six circulating water lines located at 26 to 30 feet msl are located at similar depths as the two heating oil USTs. Four water drain lines with diameters ranging from 6 inches to 18 inches are located at elevations of 14 to 31 feet msl. Two concrete electrical ducts of unknown diameter are located approximately 26 to 28 feet msl. Two 6-inch-diameter fire protection water lines intersect Cross Section C-C' located at depth between 26 and 30 feet msl. One 16-inch-diameter water pump line is located at an approximate elevation of 29 feet msl.

Figure 9 depicts Cross Section D-D', which begins at the boiler room wall and runs diagonally in a southeasterly direction towards the Potomac River. Cross Section D-D' is collinear with one of the 48-inch-diameter circulating water lines as it enters the screen well pump house. The top of the circulating water line is located at an elevation of approximately 29 feet msl, before it drops to approximately 18 feet msl as it enters the screen well pump house. Five water drain pipes with 6- to 12-inch diameters intersect Cross Section D-D' at elevations ranging from 20 to 30 feet msl. One concrete electrical duct and one 6-inch-diameter drain are located at approximately 31 feet msl.

Figure 10 depicts Cross Section E-E', which begins at the boiler room wall and travels east, ending at the Potomac River. The tops of five of the 48-inch-diameter circulating water lines intersect Cross Section E-E' at an elevation of approximately 29 feet msl. Two concrete electrical ducts are located at approximately 26 to 28 feet msl. One 6-inch-diameter fire protection water line is located at 29 feet msl. Four water drain pipes with diameters 6 to 12 inches intersect Cross Section E-E'. Three of these drain pipes are located from approximately 30 to 32 feet msl. The other begins at approximately 26 feet msl and dips downward until it enters a manhole containing a drain pipe junction at approximately 10 feet msl. A separate 12-inch-diameter drain runs from this manhole into the Potomac River as Outfall 010. A separate 10-inch iron pipe, while not visible in Cross Section E-E', also runs from this manhole into the Potomac River as Outfall 009.

Photographs of unique features and their locations in relation to the cross section lengths are included in **Figure 11.** Photos in Figure 11 represent the water circulation pipes as they exit the

boiler room and enter the heating oil UST area, the ground surface at the two USTs, the contents of a subsurface concrete vault, the Outfall 009 and 010 drain pipe junction, the inside of the screen well pump house where the water circulation pipes enter, as well as photos on the river bank that represent outfall locations. **Figure 12** is a photograph from 1954, taken during the construction of additions to the screen well pump house. In this photograph, several of the 48-inch-diameter water circulation pipes are visible as they enter the screen well pump house. Additionally, a cluster of electrical conduits is visible between the second and third circulation pipes. These conduits are currently encased in the concrete duct nearest the USTs that is depicted in Figure 4.

2.7 OUTFALL DESCRIPTIONS

Five of the facility's outfalls to the Potomac River—Outfalls 003, 004, 008, 009, and 010—are located in the vicinity of the two 25,000-gallon heating oil USTs. Below is a brief description of each of these outfalls. Outfalls 003, 009, and 010 are being permanently closed accordance with DDOE requirements.

Outfall 003 previously carried wastewater from two of the facility's cooling units and floor drains to the Potomac River. In December 2008, a bolted blind flange was installed in the pipe just west of the bike path to eliminate discharge to the Potomac River. A photograph of this flange is shown in Figure 11. Upstream of the flange (towards the facility), the Outfall 003 pipe contains wastewater under pressure. Downstream of the flange (towards the Potomac River), the pipe is open to the atmosphere on both ends.

Outfall 004 previously carried wastewater from the facility's unit 5 bearing cooling, unit 5 floor drains, and ramp storm runoff. In October 2008, a bolted blind flange was installed in the pipe just west of the bike path to eliminate discharge to the Potomac River. Upstream of the flange (towards the facility), the Outfall 004 pipe contains wastewater under pressure. Downstream of the flange (towards the Potomac River), the pipe is open to the atmosphere on both ends.

Outfall 008 is an emergency overflow for a sump that collects stormwater from roofing and paved areas on the east side of the power plant. The pipe is open to the atmosphere on the upstream end, and the discharge end of the pipe is underwater unless the tide is exceptionally low.

Outfall 009 passes the two heating oil USTs and leads into a FRP manhole located just inside the facility perimeter fence. The design of this manhole is shown in Figure 11, and its location relative to the surrounding area is shown in Figure 10. The pipe is severed inside the plant and plugged with concrete, and is also severed within the manhole. This manhole collects any liquids that migrate from the upstream portion of the Outfall 009 pipe. The downstream portion of the pipe is plugged at the Potomac River.

Outfall 010 is located near Outfall 009. The upstream portion of the Outfall 010 pipe was removed from the ground in the mid 1970s. The downstream portion of the pipe runs from the manhole described in the Outfall 009 discussion. The pipe is plugged at the Potomac River to prevent discharge.

An investigation of the relationships between the extensive subsurface network of area utilities and observed petroleum impacts in the Potomac River indicate that the majority of surface water releases of known pathways occurred via petroleum migration through site outfall drains. As

indicated above, the Facility has initiated measures to block the pathways that the outfalls have previously conveyed. As directed by the DDOE's letter dated April 4, 2012, and subsequent comments, PRGS has devised and submitted the *Work Plan for Decommissioning Outfalls at GenOn's Potomac River Generating Station*. This Work Plan describes further abandonment measures, including permanent outfall closure by filling the pipes with flowable fill on the downstream portions of Outfalls 003, 004, 009, and 010.

3.1 PROPOSED SITE ACTIVITIES

Based on the results of this investigation, URS proposes the following site characterization activities in the vicinity of the 25,000-gallon heating oil USTs.

URS proposes to perform an Ultra Violet Screening Tool (UVOST) survey in the area of the two heating oil USTs to provide vertical and horizontal profiles of liquid phase hydrocarbon (LPH) contamination within the subsurface. The UVOST method uses a laser-induced fluorescence technique in which the degree of fluorescence is proportional to the concentration or saturation of petroleum hydrocarbons within the subsurface. Additionally, the UVOST survey will collect data on soil particle size and mineralogy based on conductivity readings. A Geoprobe direct-push drilling rig stem will be used to push the UVOST into the subsurface to the proposed terminal depth. URS proposes 40 direct-push UVOST points starting in the vicinity of the two heating oil USTs following the identified subsurface utilities as they approach the Potomac River. **Figure 13** depicts the locations of the proposed UVOST soil borings. Because of the extensive set of utilities and unique subsurface features, not all of the 65 proposed UVOST points will likely be advanced to their proposed total depths. Additionally, Facility geologic cross sections will be updated to include the geological features acquired from the UVOST soil borings.

Based on the results of the UVOST survey, URS proposes to offset and advance five soil borings in the locations with the highest observed petroleum impact. Two soil samples will be collected from each soil boring collected via disposable 5-foot-long acetate macrocore liners. The samples will be collected from the depths of the two highest photoionization detector readings as recorded by the onsite geologist. The soil samples will be collected for laboratory analysis of BTEX, naphthalene, and methyl tert-butyl ether (MTBE) using EPA Method 8021B, and TPH-DRO using EPA Method 8015B.

Groundwater samples will be collected from temporary monitoring wells constructed at a selected subset of the UVOST boring locations. The actual number of temporary monitoring wells will depend on the number of successful UVOST borings and subsurface conditions as witnessed from the field. At a maximum, URS proposes the collection of 20 groundwater samples. The groundwater samples will be collected for laboratory analysis of BTEX, naphthalene, and MTBE using EPA Method 8021B, and TPH-DRO using EPA Method 8015B.

Once the data is collected and analyzed from the UVOST survey, soil sampling, and groundwater sampling, URS will evaluate the data compared with the risk associated with area receptors. If further action is deemed appropriate, URS will produce a Corrective Action Plan to address and remediate the site.

Environmental Data Resources, Inc. May 16, 2013. EDR Historical Topographic Map Report, Potomac River Generating Station, 1252-1299 N Royal St, Alexandria, VA.

Environmental Data Resources, Inc. May 16, 2013. The EDR-Radius Map with GeoCheck, Potomac River Generating Station, 1252-1299 N Royal St, Alexandria, VA.

GenOn Potomac River, LLC. December 31, 2012. Work Plan for Decommissioning Outfalls at GenOn's Potomac River Generating Station.

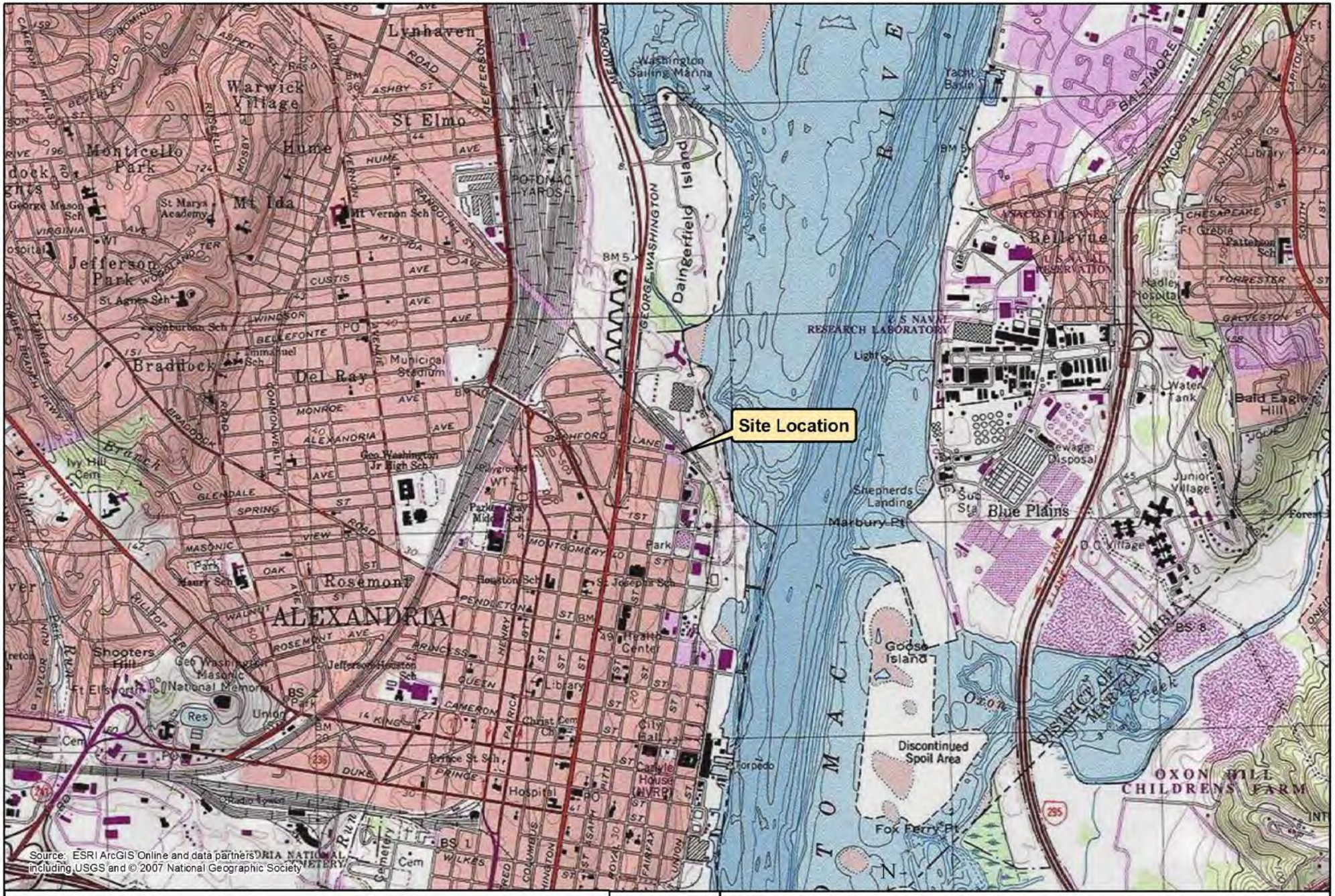
GenOn Potomac River, LLC. June 20, 2013. Potomac River Generating Station Spill Log.

Mirant Corporation, Mid-Atlantic Region Engineering Services. August 12, 2008. Potomac River Generating Station Storm Drainage Site Plan-Detailed.

Work of Unknown Author. October 30, 1975. Potomac River Generating Station "C" Flyash and Dewatering and Wastewater Neutralization System Site and Utilities Plan SHT. #1.

URS Greiner Woodward Clyde. December 15, 1999. Phase I Environmental Site Assessment of the Potomac River Generating Station.

FIGURES



SITE	**Potomac River Generating Station**			
SCALE	1:24,000	0 1,000 2,000 4,000 Feet		
REVISION NO	0	DES BY	JK	03/21/2013
G:\Projects\Shell\PotomacRGS\MXD\PotomacRGS_SiteLocale.mxd		CHK BY	ES	03/21/2013

N

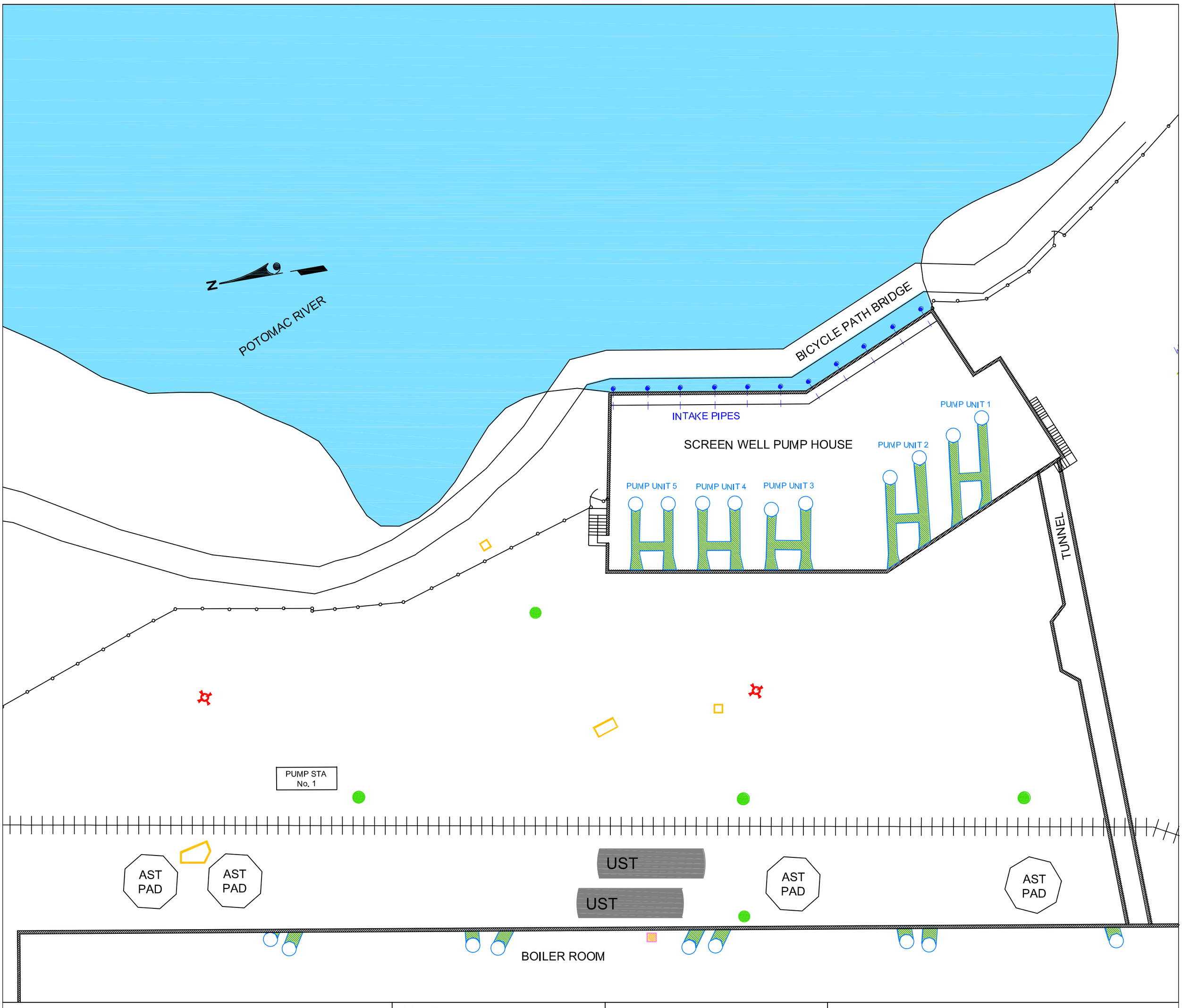
TITLE **USGS Topographic Map**

URS 12420 Milestone Center Drive Germantown, MD 20876

Site Address: 1400 North Royal Street, Alexandria, VA

FIGURE 1

Figure 2
Facility Map
1400 North Royal Street,
Alexandria, VA



LEGEND:

- CIRCULATING WATER LINE (ABOVE GROUND)
- CONCRETE VAULT
- MANHOLE
- FIRE HYDRANT
- OIL FILL PORT (ABOVE GROUND)
- R.R. TRACK
- FENCE
- UST
- POTOMAC RIVER
- BUILDING WALL

SCALE:

0 25' 50'

1 INCH = 25 FEET

URS

12420 MILESTONE CENTER DR.
SUITE 150
GERMANTOWN, MD 20876

DATE: 05/22/2013

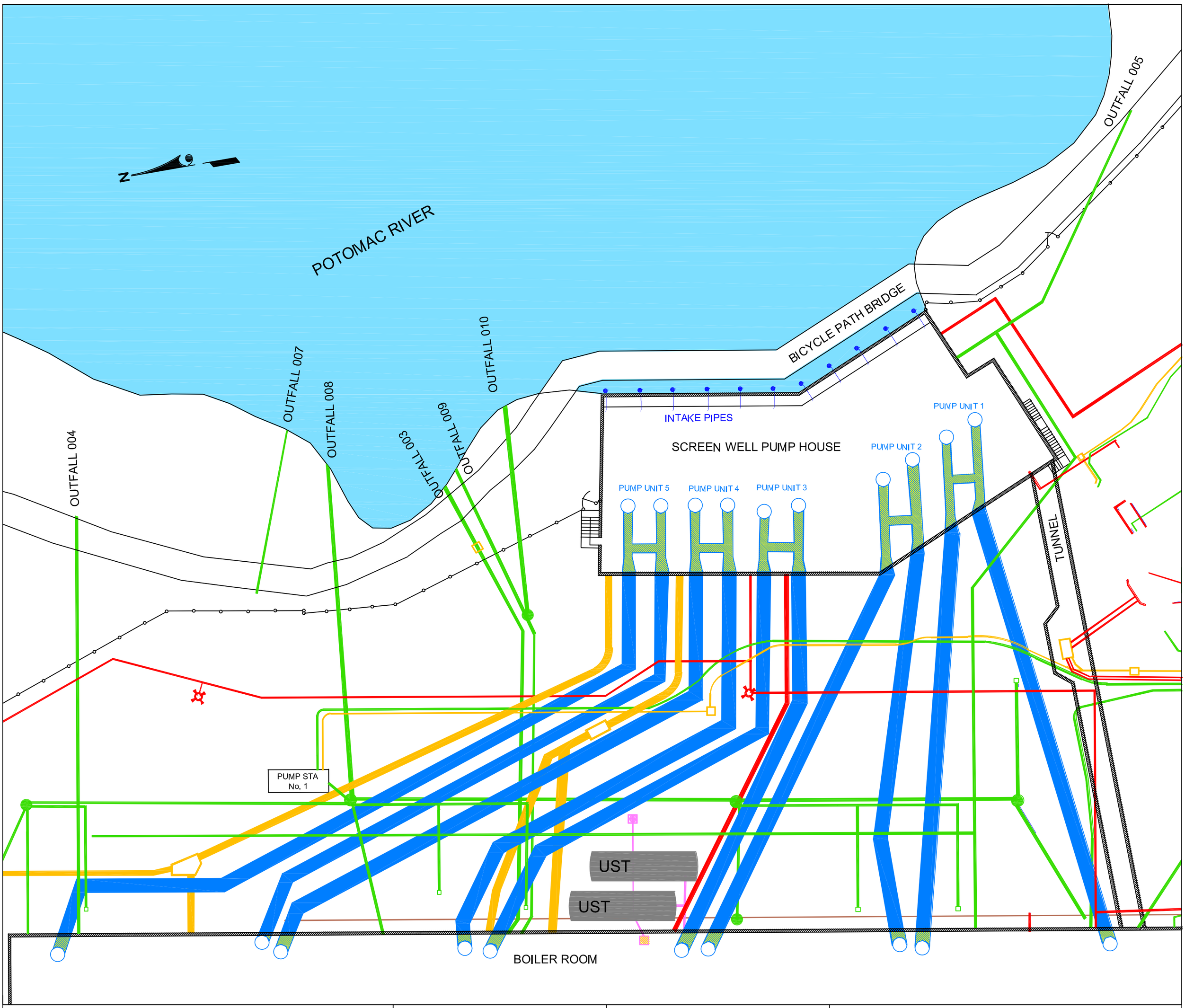
CREATED: QH

CHECKED: ES

FIGURE 3

SITE MAP

POTOMAC RIVER GENERATING STATION
1400 NORTH ROYAL STEET
ALEXANDRIA, VA



LEGEND:

- CIRCULATING WATER LINE (UNDER GROUND)
- CIRCULATING WATER LINE (ABOVE GROUND)
- CONCRETE DUCT
- DRAIN
- WATER LINE
- AIR LINE
- OIL LINE
- UST
- POTOMAC RIVER
- BUILDING WALL
- CONCRETE VAULT
- MANHOLE
- FIRE HYDRANT
- SUMP
- OIL FILL PORT (UNDER GROUND)
- OIL FILL PORT (ABOVE GROUND)
- FENCE

SCALE:

0 25' 50'

1 INCH = 25 FEET

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FIGURE 4

25,000-GALLON UNDERGROUND STORAGE TANK UTILITY MAP

POTOMAC RIVER GENERATING STATION
1400 NORTH ROYAL STEET
ALEXANDRIA, VA

POTOMAC RIVER

OUTFALL 004

OUTFALL 007

OUTFALL 008

OUTFALL 003

OUTFALL 009

OUTFALL 010

OUTFALL 005

BICYCLE PATH BRIDGE

INTAKE PIPES

SCREEN WELL PUMP HOUSE

PUMP UNIT 5

PUMP UNIT 4

PUMP UNIT 3

PUMP UNIT 2

PUMP UNIT 1

TUNNEL

PUMP STA No. 1

UST

UST

BOILER ROOM

A

A'

B

B'

C

C'

D

D'

E

E'

LEGEND:

- CIRCULATING WATER LINE (UNDER GROUND)
- CIRCULATING WATER LINE (ABOVE GROUND)
- CONCRETE DUCT
- DRAIN
- WATER LINE
- AIR LINE
- OIL LINE
- UST
- POTOMAC RIVER
- BUILDING WALL
- CONCRETE VAULT
- MANHOLE
- FIRE HYDRANT
- SUMP
- OIL FILL PORT (UNDER GROUND)
- OIL FILL PORT (ABOVE GROUND)
- FENCE
- CROSS SECTION LOCATION

SCALE:

0 25' 50'

1 INCH = 25 FEET

URS

12420 MILESTONE CENTER DR.
SUITE 150
GERMANTOWN, MD 20876

DATE: 05/22/2013

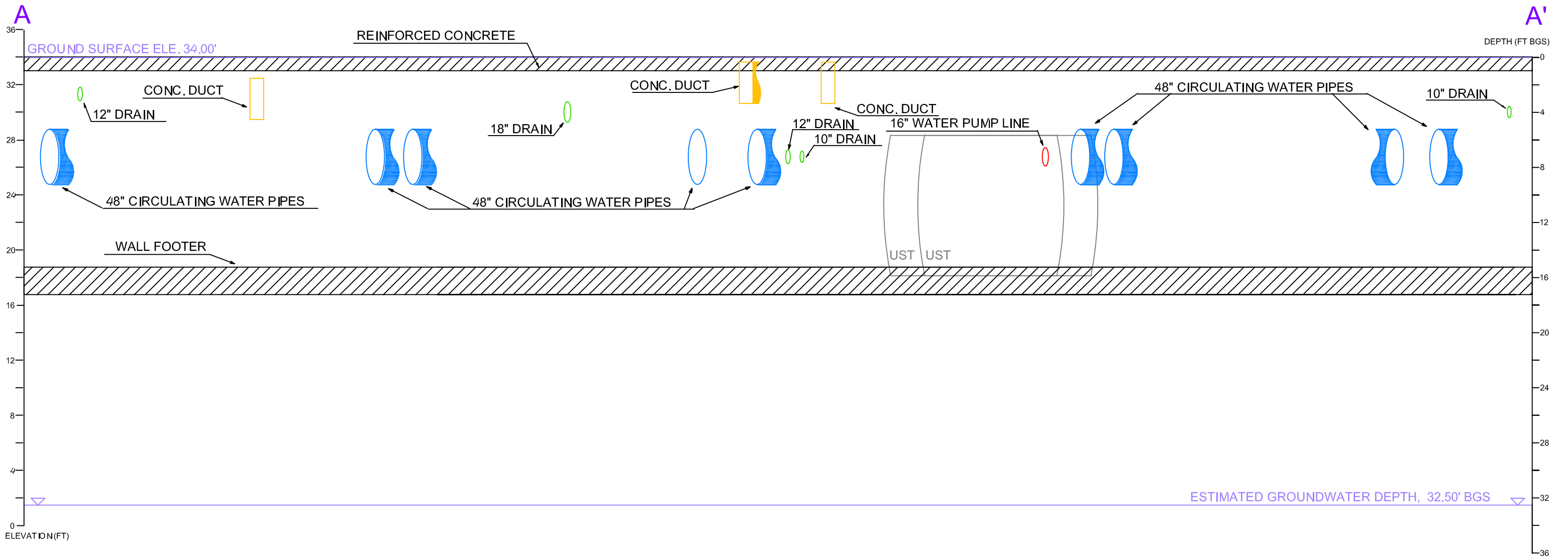
CREATED: QH

CHECKED: ES

FIGURE 5

25,000-GALLON UNDERGROUND STORAGE TANK UTILITY CROSS SECTION LOCATING MAP

POTOMAC RIVER GENERATING STATION
1400 NORTH ROYAL STEET
ALEXANDRIA, VA



NOTES:

SCALE:

7'
0
21'

DATE:
05/17/2013

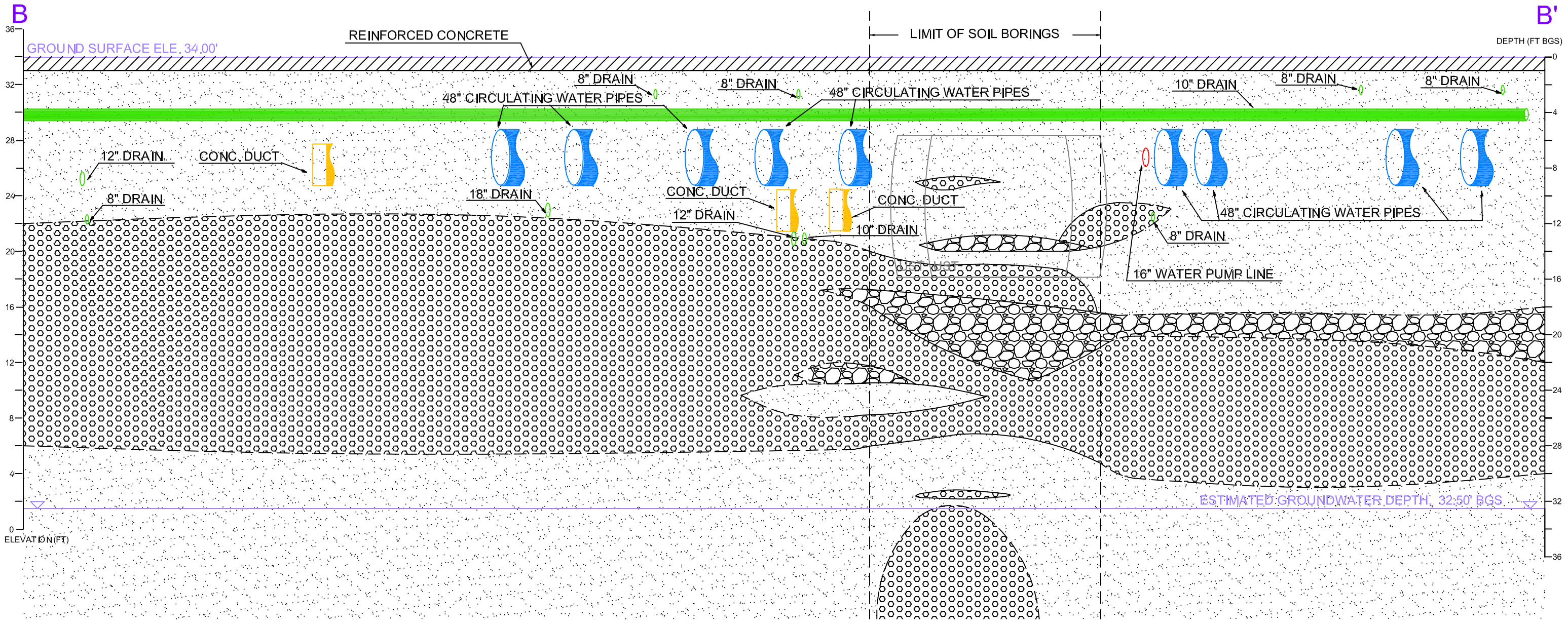
CREATED:
QH

CHECKED:
ES

URS
12420 MILESTONE CENTER DR.
SUITE 150
GERMANTOWN, MD 20876

FIGURE 6

PIPING CROSS SECTION A-A'



LEGEND:

- CLAY (INFERRED)
- SAND (INFERRED)
- GRAVEL (INFERRED)

SCALE:

7'
0
21'

DATE: 05/17/2013

CREATED: QH

CHECKED: AR

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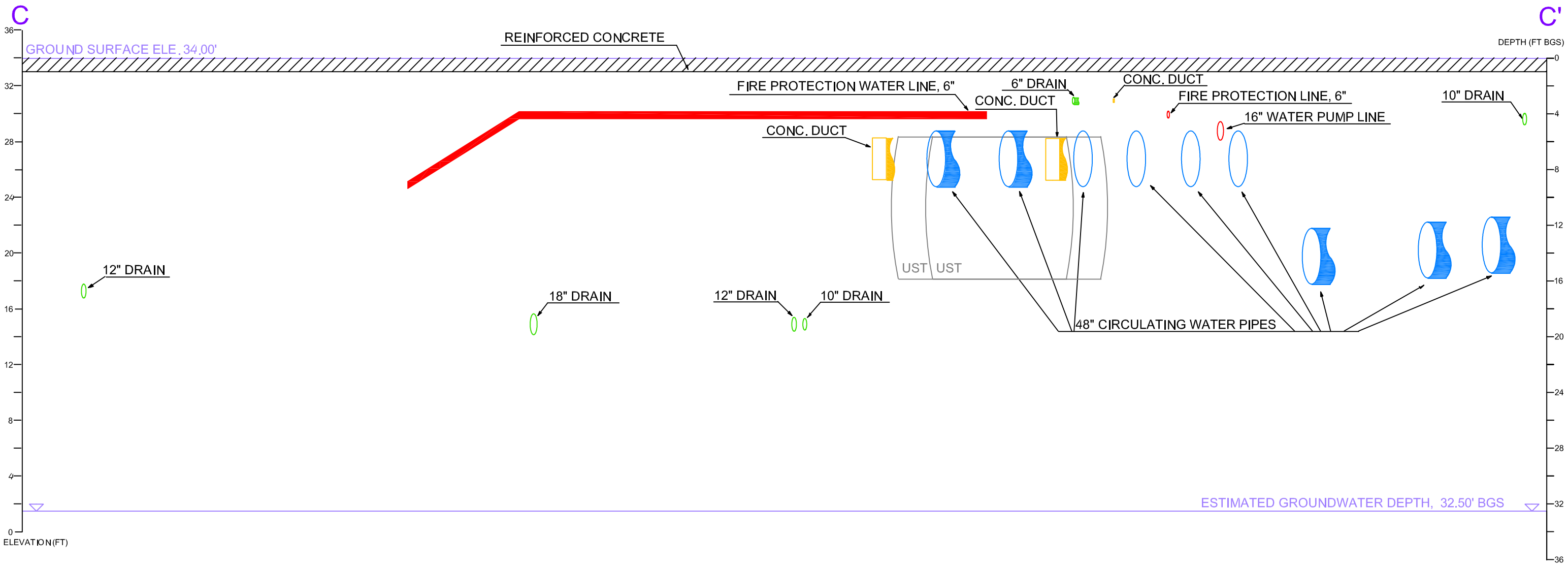
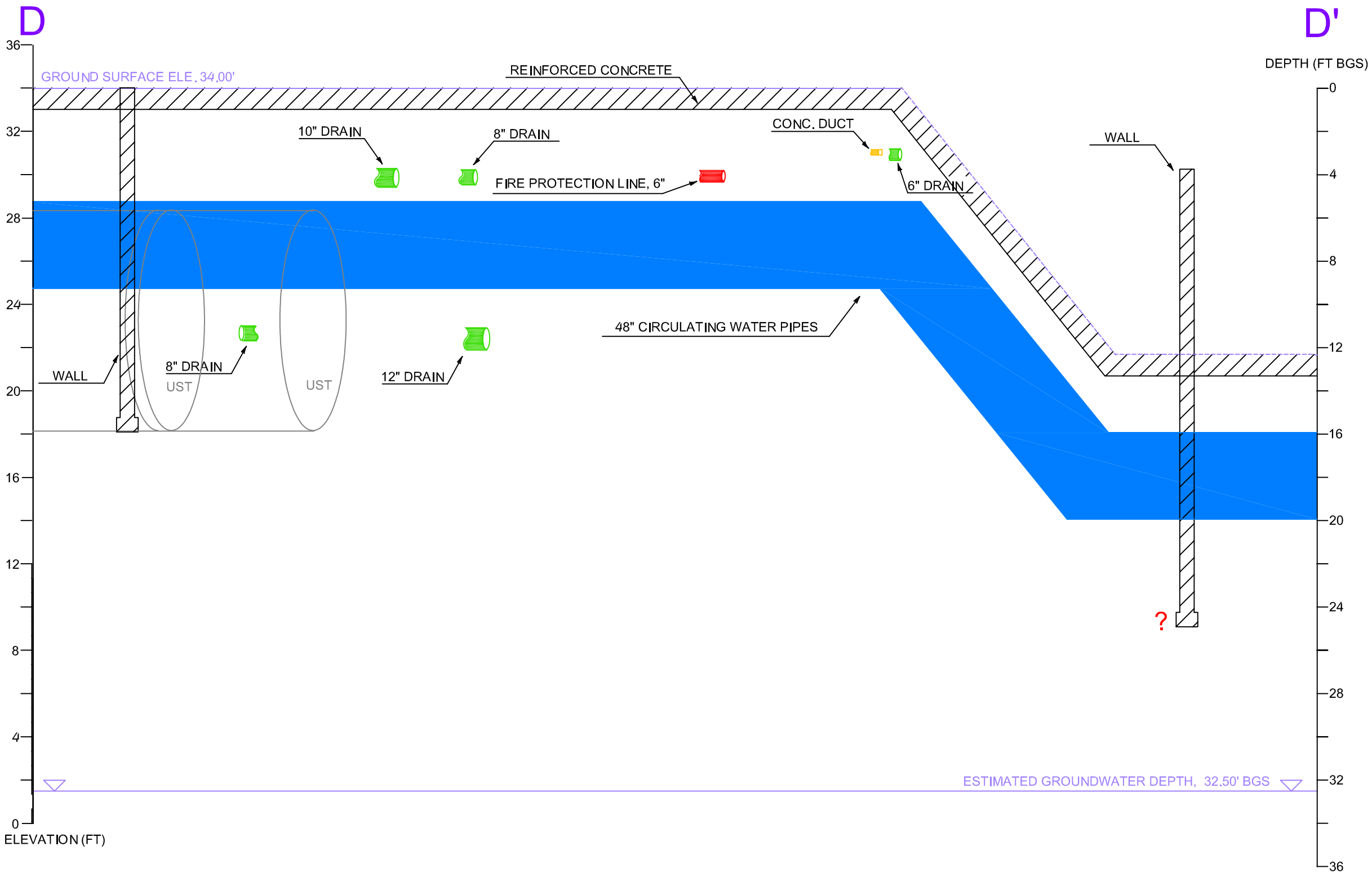
SUITE 150
GERMANTOWN, MD 20876

FIGURE 7

PIPING CROSS SECTION B-B'



NOTES:	SCALE: 7' 0 21'	DATE: 05/17/2013 CREATED: QH CHECKED: ES	URS 12420 MILESTONE CENTER DR. SUITE 150 GERMANTOWN, MD 20876	FIGURE 8 PIPING CROSS SECTION C-C'



NOTES:

LINES IN DASH ARE INFERRED BASED ON AVAILABLE INFORMATION

SCALE:

5'
0
15'

DATE: 05/17/2013

CREATED: QH

CHECKED: ES

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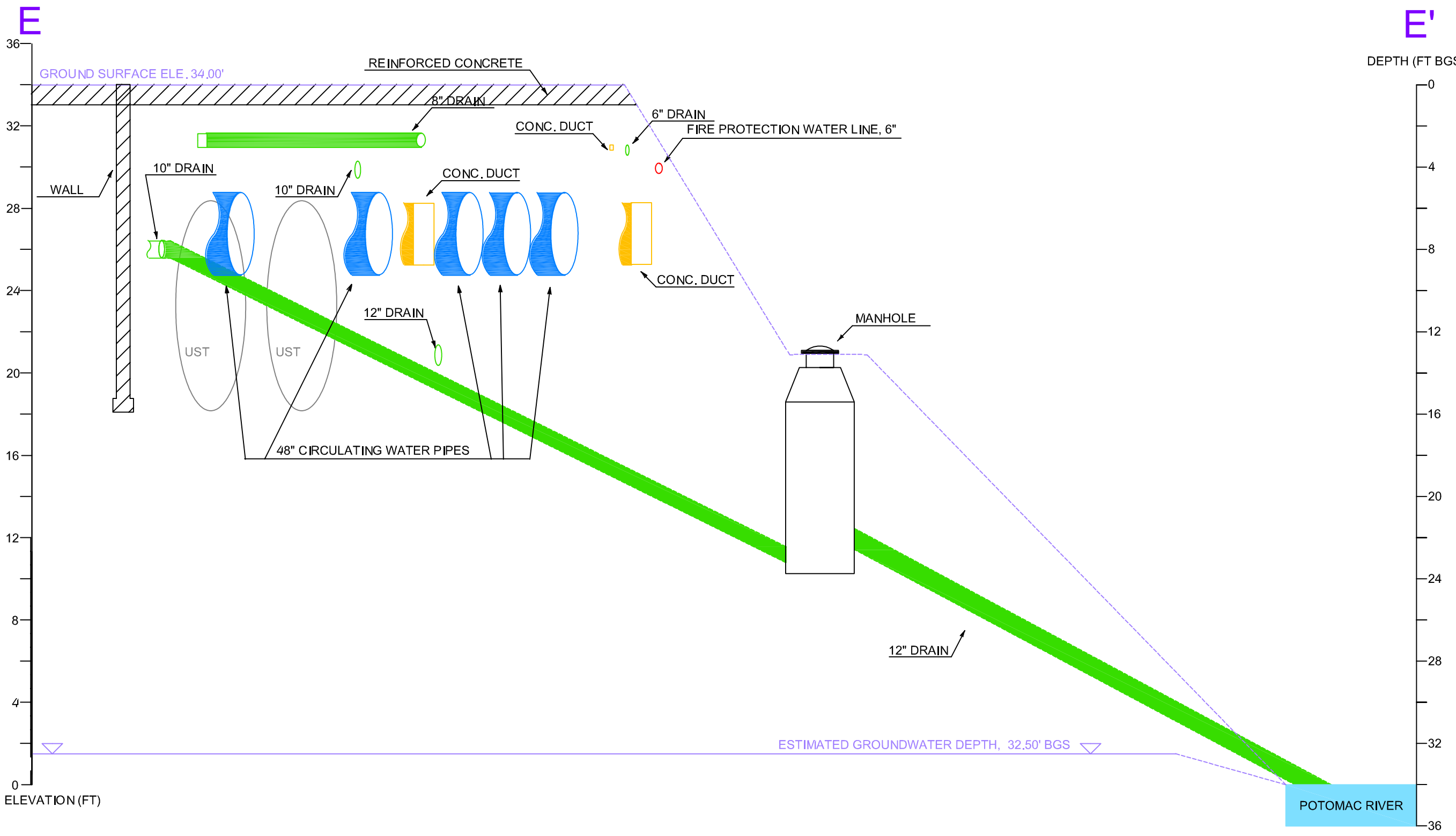
SUITE 150
GERMANTOWN, MD 20876

FIGURE 9

PIPING CROSS SECTION D-D'



NOTES:

LINES IN DASH ARE INFERRED BASED ON AVAILABLE INFORMATION

SCALE:

5'
0
15'

DATE: 05/17/2013

CREATED: QH

CHECKED: ES

URS

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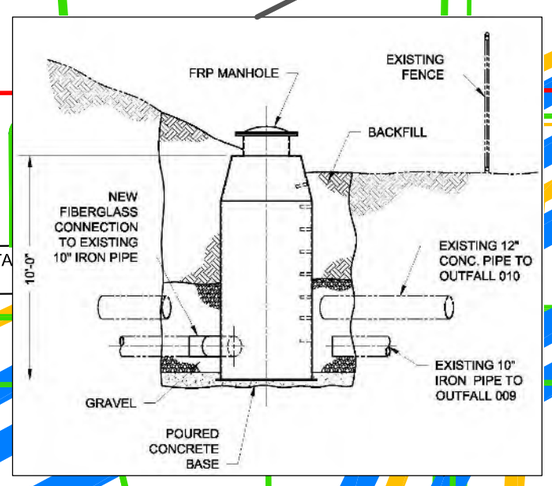
SUITE 150
GERMANTOWN, MD 20876

FIGURE 10

PIPING CROSS SECTION E-E'



POTOMAC RIVER

OUTFALL 004

OUTFALL 003

OUTFALL 009

OUTFALL 010

OUTFALL 005

PUMP UNIT 1

PUMP UNIT 2

PUMP UNIT 3

PUMP UNIT 4

PUMP UNIT 5

TUNNEL

UST

UST

BOILER ROOM

LEGEND:

- CIRCULATING WATER LINE (UNDER GROUND)
- CIRCULATING WATER LINE (ABOVE GROUND)
- CONCRETE DUCT
- DRAIN
- WATER LINE
- AIR LINE
- OIL LINE
- UST
- POTOMAC RIVER
- BUILDING WALL
- CONCRETE VAULT
- MANHOLE
- FIRE HYDRANT
- SUMP
- OIL FILL PORT (UNDER GROUND)
- OIL FILL PORT (ABOVE GROUND)
- FENCE

SCALE:

0 25' 50'

1 INCH = 25 FEET

URS
12420 MILESTONE CENTER DR.
SUITE 150
GERMANTOWN, MD 20876

DATE: 05/22/2013

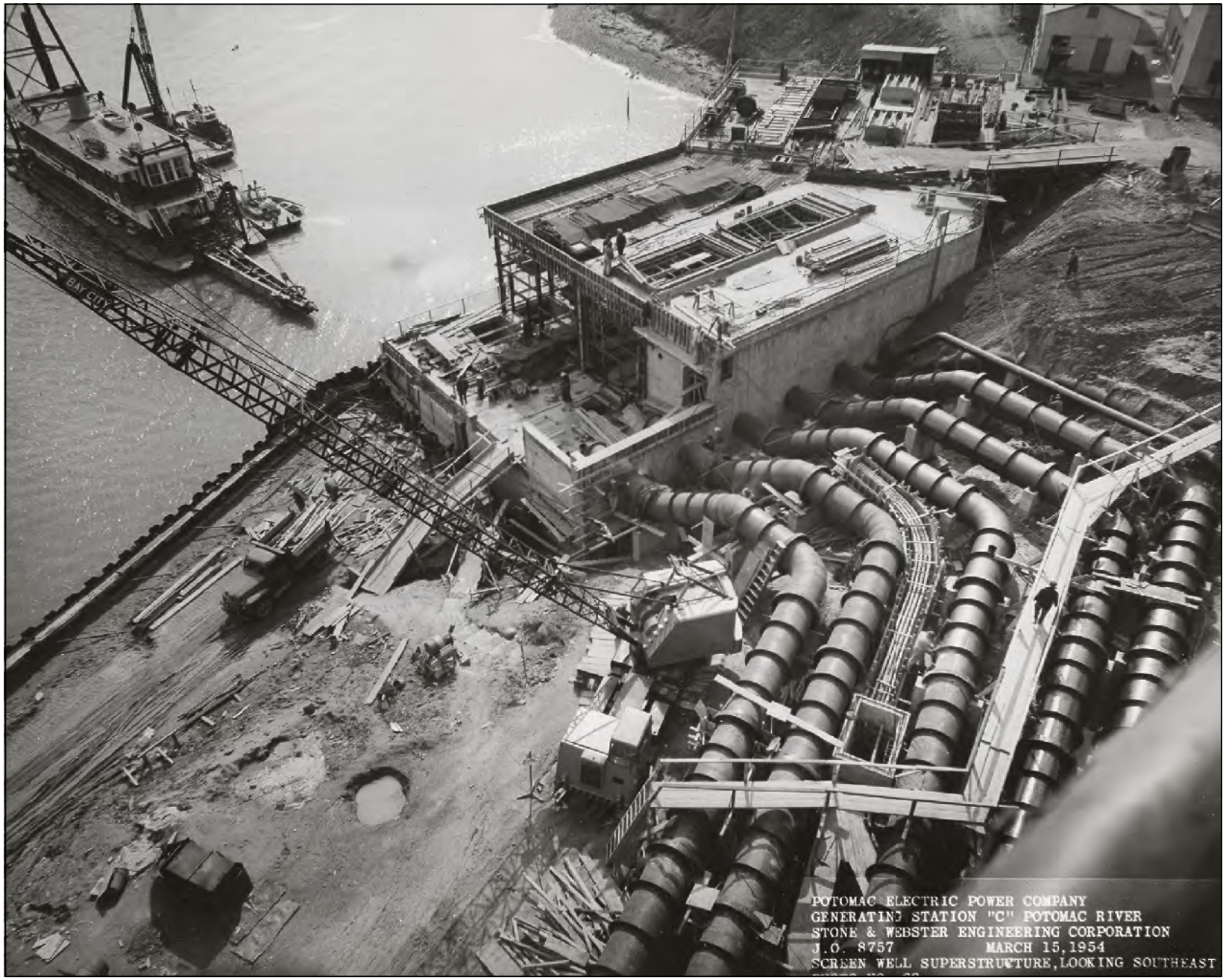
CREATED: QH

CHECKED: ES

FIGURE 11

25,000-GALLON UNDERGROUND STORAGE TANK UTILITY MAP WITH PHOTOS

POTOMAC RIVER GENERATING STATION
1400 NORTH ROYAL STEET
ALEXANDRIA, VA



URS
12420 Milestone Center Drive
Germantown, MD 20876

Date: 05/22/2013

Created: QH

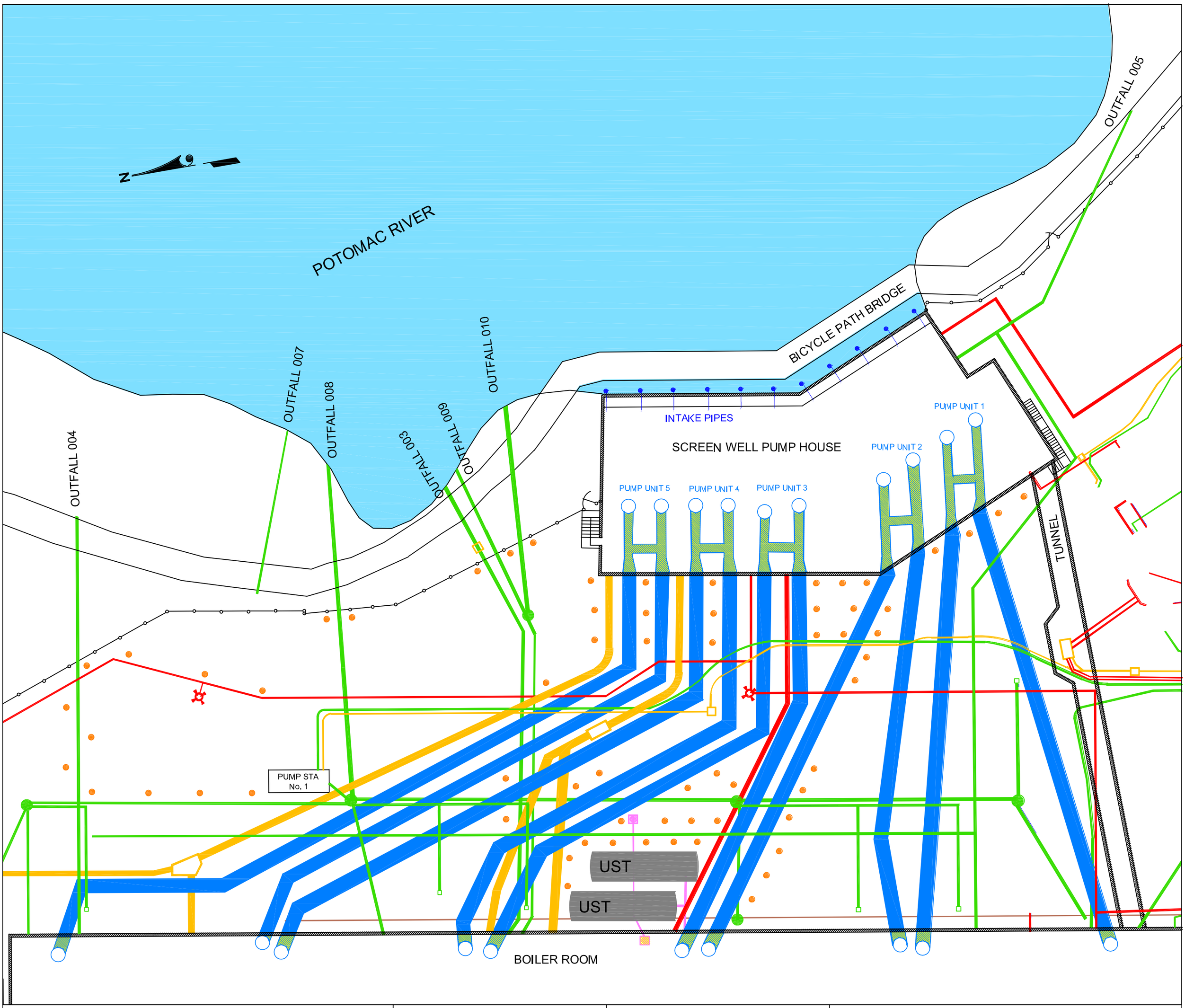
Checked: ES

FIGURE 12

SCREEN WELL PUMP HOUSE CONSTRUCTION

POTOMAC RIVER GENERATING STATION

1400 NORTH ROYAL STREET ALEXANDRIA, VA



LEGEND:

- CIRCULATING WATER LINE (UNDER GROUND)
- CIRCULATING WATER LINE (ABOVE GROUND)
- CONCRETE DUCT
- DRAIN
- WATER LINE
- AIR LINE
- OIL LINE
- UST
- POTOMAC RIVER
- BUILDING WALL
- CONCRETE VAULT
- MANHOLE
- FIRE HYDRANT
- SUMP
- OIL FILL PORT (UNDER GROUND)
- OIL FILL PORT (ABOVE GROUND)
- FENCE
- PROPOSED SOIL BORINGS

SCALE:

0 25' 50'

1 INCH = 25 FEET

URS
12420 MILESTONE CENTER DR.
SUITE 150
GERMANTOWN, MD 20876

DATE: 05/22/2013

CREATED: QH

CHECKED: ES

FIGURE 13

PROPOSED UVOST SOIL BORINGS

POTOMAC RIVER GENERATING STATION
1400 NORTH ROYAL STEET
ALEXANDRIA, VA