



Capital Projects & Purchasing Department
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BID: CPST-10
**WATER & WASTE WATER IMPROVEMENTS FOR THE WALTERBORO-
COLLETON LOWCOUNTRY REGIONAL AIRPORT**

BID DUE: THURSDAY, July 13, 2017 at 11:00am

Addendum #2

Dated 7-07-2017

**Questions and Answers, General Clarifications, Changes to Specifications &
Plans, Reports, Revised Bid Form**

This Addendum issued prior to receipt of Bid hereby becomes a part of the Construction Documents for the above listed project.

1. All information contained in this Addendum supersedes and takes precedence over any conflicting information in the original Bidding Documents.
2. **Bidders shall take the “Article-5 Basis of Bid” page of this addendum and place it as the FIRST page of their submitted bid packet.**

Questions

Question 1: Is the 12” gravity sewer shown on Sheet C-011 replacing an existing line recently installed? If so, does the horizontal and vertical alignments match the existing? Are there four (4) existing manholes to be removed and replaced? What is the elevation of the existing 10” PVC entering SSMH-1? Is the sewer line active (in use)?

Answer 1: Approximately 20 feet of 12" gravity sewer was installed, by a previous contractor during a previous project, upstream of SSMH-C (Exist. AP8). No other line or manholes were installed with exception of SSMH-1 (Exist. AP11). The elevation of the existing 10" PVC entering SSMH-1 is approximately 75.51. The sewer line is not active and has no flow in it.

Question 2: Can you provide the requirements and a detail for drop connections? Are inside and/or outside drops permissible? Would an inside drop require a larger diameter manhole?

Answer 2: The contractor shall install an outside drop manhole per the attached detail. This will not require a larger diameter manhole.

Question 3: Can you provide the width of the extended lip base for the wet well shown on Sheet C-016?

Answer 3: 12 inches

Question 4: Can you provide the depth of the top slab for the pump station shown on Sheet C-016?

Answer 4: 12 inches

Question 5: Detail 18 on Sheet C-020, ARV MH, requires a minimum 3'6" clearance between the top of the force main and the bottom of the flat precast top. The total depth of ARV 1 and 2 are slightly over 3' deep. How do you intend to install?

Answer 5: The force main is required to have a minimum of 3' cover from the finished ground surface to the top of pipe. In the area of each ARV, the force main will have to be lowered to obtain the minimum clearance in the box.

Question 6: Can you provide a contact with SCE&G for the gas service costs? Are they aware of the project?

Answer 6: For the purpose of the bid, the bidder may assume that the gas line will be installed up to the pump station location by the owner at the owner's expense.

Question 7: Will the City of Walterboro require a tap fee, impact fee, etc. for the water service at the pump station? If so, what is the cost, and will the City install the tap? Will the City or County provide the water meter?

Answer 7: The City will not require a tap fee. The City will provide the water meter.

Question 8: Will there be any special requirements and/or work restrictions when crossing the end of Runway 35 with the force main? If so, can you provide?

Answer 8: A portion of the project will be conducted within the Runway 35 Safety Area, and therefore, the runway will be closed to aircraft operations while construction proceeds through the 150' wide Safety Area. The selected contractor will be required to notify the Airport Operations Manager 72 hours prior to beginning work in the Safety Area so that required coordination with the FAA can take place for runway closure.

Question 9: Can you provide the clearing limits on the plans or give a unit of measure other than Lump Sum? It was hard to discern where the centerline of the R/W was and some of the areas were inside the controlled access area of the airfield.

Answer 9: The Bid Form has been modified to reflect an estimated 7.3 acres of clearing and grubbing.

- Question 10: Which information sign is required? EDA or AECOM, or both?
Answer 10: Only the EDA sign is required.
- Question 11: Is there any specific Scheduling software needed (i.e. CPM, etc.)?
Answer 11: No.
- Question 12: Once construction begins, will SC utility locators mark private airport utilities or will that be the responsibility of the contractor?
Answer 12: Once construction begins, the contractor will be responsible for locating all utilities. It is our understanding that the SC utility locators will only mark lines within public right-of-ways. However, the airport will mark any private utilities that they are aware of within the airfield at the request of the selected contractor.
- Question 13: Are any areas within this project deemed a protected wetland?
Answer 13: There are no wetlands on the project, as determined by the USACE and SCDHEC.
- Question 14: The soils report listed in Section 02010 Subsurface Investigations was not provided. Please provide for review.
Answer 14: The soils report has been provided for review.
- Question 15: In the USDOT Advisory Circular, 4a, what is the minimum safe distance that must be maintained from active runways?
Answer 15: The following are Object Free Areas established for the Lowcountry Regional Airport:
- Runway 05/23: 400 feet wide on both sides of the centerline and 1,000 feet beyond the threshold
 - Runway 09/27: 250 feet wide on both sides of the centerline and 300 feet beyond the threshold
 - Runway 17/35: 250 feet wide on both sides of the centerline and 300 feet beyond the threshold
- Question 16: In regards to the USDOT Advisory Circular, has a Construction Safety and Phasing Plan (CSPP) been submitted or is that the responsibility of the contractor? If submitted, will it be made available before the bid?
Answer 16: The selected contractor will not be required to prepare a CSPP. The Lowcountry Regional Airport will provide the CSPP to the selected contractor after the Notice of Award has been made.
- Question 17: In regards to the USDOT Advisory Circular, who is responsible to submit the Safety Plan Compliance Doc (SPCD)?
Answer 17: The selected contractor will be required to prepare and submit a SPCD to the Lowcountry Regional Airport that details how the contractor will comply with the CSPP.
- Question 18: In regards to the USDOT Advisory Circular, are weekly and or daily safety meetings required, and will the FAA, ARFF, or ATO personnel need to be present?

Answer 18: Safety meetings will be conducted between the Owner, Airport Operations Manager, Engineer, and Contractor on an as-needed basis. They are not expected to be more frequent than twice a month.

Question 19: In regards to the USDOT Advisory Circular, when will the FAA, ARFF, and ATO need to be notified and for what activities?

Answer 19: The contractor will not be responsible for notifying the FAA, ARFF, and ATO. The contractor will only be required to notify the Airport Operations Manager 72 hours prior to doing work within the Runway Safety Area established for each runway, and again when construction has been completed in these areas.

Question 20: In regards to the USDOT Advisory Circular, what, if any, additional training will be required by the CSPP or SPCD?

Answer 20: Any training required by the CSPP will be presented by the Airport Operations Manager during the Pre-Construction Conference.

Question 21: In regards to the USDOT Advisory Circular, what types of restrictions of personnel and or equipment are to be expected while working inside the controlled access areas (CAA) and the airport operations Areas (AOA)?

Answer 21: The contractor will be restricted to the area of work as shown on the plans, along with appropriate access to that area. This will be coordinated with the Airport Operations Manager during the Pre-Construction Conference.

Question 22: In regards to the USDOT Advisory Circular, what are the limits of the (CAA) and the (AOA)?

Answer 22: Specific limits of the Air Operations Area (AOA) will be established by the Airport Operations Manager during the Pre-Construction Conference. Refer to the Advisory Circular Appendix 2 Definitions and Terms.

Question 23: In regards to the USDOT Advisory Circular, who is required to fill out form 7460-1?

Answer 23: The Airport Operations Manager or their consultant will prepare and file the Notice of Proposed Construction with the FAA (if required).

Question 24: In regards to the USDOT Advisory Circular, will the following be required during construction:

- Monitored contractor access to AOA or CAA
- FOD management
- Runway and taxiway visual aids, barricades, closures (particularly the taxi way adjacent Runway 35)
- Issuance of NOTAMs
- Placarded entrances to CAA/AOA
- Temporary fencing of any kind
- Heavy equipment signage or flagging

Answer 24: The contractor will be required to provide debris management, signage, and temporary fencing as deemed necessary to protect maneuvering aircraft. We anticipate this being

minimal and typical, similar to that employed on any other project site with roadways. Specifics will be outlined during the Pre-Construction Conference.

Question 25: Will burning of clearing debris be allowed by the County and also within the CAA and AOA vicinity? Not specified in Section 02110-2D.

Answer 25: Burning is not permitted on this project. Additionally, the County will not be waiving any tipping fees for the disposal of land clearing debris.

Question 26: Will stockpiling of spoils be allowed?

Answer 26: Soil may be temporarily stockpiled near the excavation sites. However, it must ultimately be spread out throughout the limits of disturbance in a manner that does not change the stormwater flow patterns, or hauled off-site. Any asphalt, concrete, or other impervious materials must be hauled off-site at the completion of the project.

Question 27: Will the asphalt/concrete removed @ FM STA 60+00 and 61+00 need to be replaced?

Answer 27: No.

Question 28: What is the size and approximate location of the Water main along Sidney's Road?

Answer 28: A 2" water line is located approximately 3' to 5' off the edge of pavement, on the opposite side of Sidneys Road from the pump station.

Question 29: What will the status need to be for the existing fence running along Sidneys Road near the existing Culverts and construction entrance?

Answer 29: A new fence will be constructed from the corner of the existing fence to the new pump station. Please refer to Drawing C-014.

Question 30: Is the entrance from Sidneys Road to be permanent or temporary? It is labeled as temporary on the plans.

Answer 30: The access road is permanent. It will consist of asphalt pavement for the section within the SCDOT right-of-way of Sidneys Road, then will continue as only compacted aggregate base to the pump station. During construction, a temporary construction entrance/exit will be utilized for erosion control.

Question 31: Can a new Benchmark be set outside of the temporary construction entrance, or will the contractor have to establish one?

Answer 31: The contractor will be responsible for establishing any new benchmarks that may assist them during construction.

Question 32: Where does DIP end and PVC begin after leaving the pump station?

Answer 32: The transition from DIP to PVC will be at Station 0+25, after the force main has gone underground.

Question 33: Will restrained joint PVC be allowed in lieu of DIP along the restrained sections of Forced Main?

Answer 33: DIP is required for all portions of the force main that are above finished ground surface.

Question 34: If on site materials will not provide proper compaction, how will imported fill be paid for?

- Answer 34: Based on an evaluation of existing soils, it is assumed that proper compaction can be achieved.
- Question 35: Will the airport allow cut/fill of excess spoils operations on property?
- Answer 35: Excess spoils can be spread across the site as long as they stay within the limits of disturbance and do not change the stormwater flow patterns.
- Question 36: Will the SS Manholes require a liner? Especially MH C-5, ARV's and MH G-3. Assuming G-4 is also coated with Raven per notes?
- Answer 36: All ARV manholes, MH-C5, and SSMH-G4 are to have a polymer lined interior.
- Question 37: Details 16 and 17 - Do these details apply to Water Sewer and Force Mains? What determines impervious and pervious conditions? It is understood what Impervious and pervious means. The question is regarding bedding. Both details show 12" of stone and fabric under the bedding materials, but the notes say only as directed by the engineer. Is the 12" of stone and filter fabric outside and below the pipe bedding to be included in the bid price? If so, why are you placing 12" of soil on top of the stone on impervious sections of pipe? If not, will these materials be a change of conditions along with importing of soils that are suitable in the event the onsite soils are unsuitable?
- Answer 37: Details 16 and 17 apply to water, gravity sewer, and force main. The 12 inches of "imported select foundation material - #57 stone" is only required for the gravity sewer line installed between SSMH-B and SSMH-1.
- Question 38: Is a precast top slab for the wet well acceptable with CIP slab-on-grade outside the precast?
- Answer 38: Bid the pump station per the plans and specifications.
- Question 39: Could a force main specification section be provided? Force main material requirements are not clear without it.
- Answer 39: Specification Section 02723 – Sewers: Sanitary, Pressure has been added per this Addendum.
- Question 40: Can you clarify the width of the forced main's r/w? It says that it is a 15 foot Easement, but to scale it is either 22 feet or 30 feet, and there are width markings that show it at 20 feet. Please advise? The center line of the Easement is also offset and not in line with the pipe.
- Answer 40: The sewer easements vary along the alignment as follows:
- 30' combined force main and gravity sewer easement (Pump Station to Sta. 30+50)
 - 15' force main easement (Sta. 30+50 to Sta. 76+50)
 - Varied water and sewer easement (Sta. 76+50 to 10+50, along Robertson Boulevard R/W)
- Question 41: Please clarify the connection @ GV-2 c-011? The plans show an 8" AND A 10" waterline. The parts list is showing a 10x8 reducer, but the profile on page c-013 does not show a separate connection to another line. There is also a hydrant shown. Does this line not tie into the new 10" main?
- Answer 41: There is an existing 8" waterline and hydrant assembly connected to the existing 10" waterline. The 10" x 8" reducer, 2 LF 8" RJ piping, and 8" solid sleeve are not needed at

this location. The proposed 10" waterline will connect directly to the existing 10" waterline.

Question 42: Will a wet tap be allowed in lieu of a cut in and subsequent water shut down?

Answer 42: Bid the project per the plans.

Question 43: Has the casing under Robertson Blvd been located?

Answer 43: No.

Question 44: Will a jumper be required to feed the new water main? Can you provide a detail?

Answer 44: No. There is an existing 10" waterline at the proposed tie-in.

Question 45: Will a permanent 2" blow off be installed at the cap at STA 0+00?

Answer 45: No. Water can be flushed at the new fire hydrant assembly.

Question 46: Is the importation of 4" topsoil required per Detail 16?

Answer 46: No. Contractor shall use available top soil from on-site to achieve grassing at the end of construction.

General Clarifications

1. A 6" triple-arch expansion joint is required on each side of the Natural Gas Emergency By-pass Pump.
2. A detail for the Sanitary Sewer Drop Manhole has been added.

Changes to the Specifications

1. The Bid Form, included in Section 2016-1714, is being replaced with the new one attached.
2. Section 0201.1 – This section (Limited Soil Sampling and Analytical Testing Report) has been added to the specifications.
3. Section 02661 – This section (Water Service Connections) is being replaced with the new one attached.
4. Section 02723 – This section (Sewers: Sanitary, Pressure) is being added to the specifications.
5. Section 02751 – This section (Pump Station Piping, Valves, and Appurtenances) is being replaced with the new one attached.
6. Section 09900 – This section (Painting) is being replaced with the new one attached.
7. Section 11306 – This section (Aboveground Natural Gas Engine Emergency Pump System) is being replaced with the new one attached.
8. Section 11313 – This section (Submersible Sewage Pumps) is being replaced with the new one attached.

Changes to the Plans

1. Plan Sheet C-014 is being replaced with the new one attached, which shows additional perimeter fencing for the airport.

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SECTION 02661

WATER SERVICE CONNECTIONS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Provide water service connections, including meters, meter boxes, and other appurtenances as shown on the drawings, specified herein, and needed for a complete and proper installation.
 - 1. Service connections include connection to the distribution main, service line between main and the meter, meter with box and service stops.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 2. Section 02221 - Trenching, Backfilling for Utilities.

1.2 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. All materials in this Section are to be 100% manufactured in the United States.

1.3 SUBMITTALS

- A. Comply with pertinent provisions of Section 01340.
- B. Product data: Within 35 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.

1.4 PRODUCT HANDLING

- A. Comply with pertinent provisions of Section 01640.

PART 2 - PRODUCTS

2.1 SERVICE PIPE

- A. Use materials for the various sizes of services as follows:
- B. Services 1" in diameter and smaller:
 - 1. Provide Type K, soft copper complying with ASTM B88, Table 4; or

2. High molecular weight polyethylene pipe complying with ASTM D1248, Type III, and AWWA C-901 for flexible pipe with SDR 7, CTS.
 - a. Pipe shall be stamped with National Sanitation Foundation approval for use with potable water at 18" intervals.
 - b. When polyethylene pipe is used, provide a continuous #12 gauge blue insulated copper tracer wire, approved by the manufacturer for direct burial, in the trench and tape to the top of the pipe using 2" duct tape. Terminate the tracer wire in the meter box and arrange to allow for the connection of equipment for tracking pipe, yet not interfere with the operation of the curb stop, meter, etc. Use underground water proof connections on all splices and thoroughly wrap all connections in electrical tape.
 - 1) Test all tracer wire for conductivity in accordance with Part 3.

C. Services 1-1/2" in diameter and larger:

1. Provide PVC pipe complying with ASTM D2241 for PVC 1120, SDR 26, with NSF approval marked at 18" intervals.
 - a. Use integral bell or coupling type joints with elastomeric gaskets.
 - 1) Integral bells to comply with ASTM D2672.
 - 2) Couplings to comply with ANSI/AWWA C900.
 - 3) Gaskets to comply with ASTM F477.
 - 4) Lubricants shall be compatible with pipe and gasket materials, shall not support bacteria growth and shall not adversely affect potable quality of line contents.
 - b. Use PVC fittings, 160 psi at 73° pressure rating, joint design to conform to pipe joints.
2. Provide pipe complying with ASTM D1785 for PVC 1120. Schedule 80, dark gray color NSF approved solvent weld coupling joints, unless otherwise indicated.
3. Provide standard weight, hot-dip galvanized steel pipe complying with ASTM A53, ends threaded and coupling on one end.

2.2 SERVICE SADDLE

A. Provide of the following materials:

Body	Type 304 Stainless Steel
Sales and Strips	Type 304 Stainless Steel
Studs	Type 304 Stainless Steel
Hardware	Type 304 Stainless Steel

- B. Provide double-strap for sizes 5" and larger.
- C. Provide Romac 304 and 305 or approved equal.
- D. Connect to pipeline using a 6" stainless steel nipple.
 1. Do not use a threaded PVC connection.

2.3 BRASS MATERIALS

- A. Provide materials complying with AWWA Standard C800, unless otherwise indicated or specified.

- B. Corporation stops: Furnish with AWWA Standard Corp. Stop Thread on inlet side, with outlet connection suitable for use with the type service pipe being installed.
- C. Service stops: Provide water works ground key type, oval flow way, tee handle, without drain.
 - 1. Quarter turn between "open-close" positions, controlled by integral check lugs.
 - 2. Inlet connection to match service pipe, outlet end to match meter spud.
- D. Goosenecks: Form from Type K copper tubing complying with ASTM B88, to a minimum length of 18".

2.4 METER BOXES

- A. General:
 - 1. Provide cast iron boxes
- B. Cast iron boxes:
 - 1. Provide $\frac{3}{4}$ " Yoke Box Model #YLHC261-233-G by Ford Meter Box or approved equal.

2.5 METERS

- A. Provide sizes appropriate for the waterline service connection for the pump station site.
- B. Provide meters of standard design, complying with AWWA C700, and the following:
 - 1. Furnish meters with nutating discs.
 - 2. Utilize split case design.
 - 3. Furnish coupling nuts and tail pieces for each meter.
- C. Provide registers hermetically sealed and recording in gallons
- D. Nutating disc shall rotate a permanent magnet within a completely sealed chamber; an opposing magnet shall actuate the gear train and register.
- E. Provide Hersey Hot Rod Model #430 or approved equal.

2.6 OTHER MATERIALS

- A. Provide other materials related to water service installation as shown on the plans.
- B. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Engineer.

PART 3 - EXECUTION

3.1 GENERAL

- A. Install service lines from the distribution main to the property lines at each lot, or at each location indicated or directed by the Engineer.
- B. Depth of the service connection shall be no less than the top of main connected to, and shall be at least 12" deep at the meter box.
- C. Install insulating couplings between ferrous and non-ferrous pipe, fittings, etc. of such shape to effectively prevent metal-to-metal contact between the dissimilar metals.

3.2 EXCAVATION AND BACKFILLING

- A. Comply with pertinent provisions of Section 02221, except as otherwise specified herein.
- B. Under paved areas install service lines by jetting, unless otherwise directed by the Engineer.

3.3 INSTALLATION - SERVICE LINES

- A. Install flexible service lines in one continuous piece from main to service stop.
- B. Connections to mains, 3" and smaller:
 - 1. Provide tees or tapped couplings in new mains.
 - 2. Use approved service saddle on existing mains.
 - 3. Provide corporation stop on mains.
- C. Connections to cast iron or ductile iron mains:
 - 1. Drill and tap pipe barrel and install corporation stop therein.
- D. Terminate each service line with service stop and/or meter, as indicated.
- E. Install service lines and casings under payment by coring method in accordance with the SCDOT Policy for Accommodating Utilities on Highway Rights-of-Way.

3.4 INSTALLATION - METER BOXES AND METERS

- A. Install boxes level in both directions and with top flush with finished grades.
- B. Do not let weight of box rest on the service line.
- C. Make installation in such manner that meter may be removed at any time without disturbing box setting.

3.5 TRACER WIRE TESTING

- A. General:
 - 1. Utilize an approved magnetic locating device, M Scope or Equal.
 - 2. Connect a cable conductively from the transmitter to a metal ground rod and to the tracer wire.
 - 3. Locate the line following the instructions of the magnetic locating device.

4. If interference is encountered from adjacent utilities or if the depth of bury or line length interferes with the signal, install a dummy valve box with access to the tracer wire at no additional cost to the owner.
5. Where there is a break in the tracer wire, repair with 3M DBY or ILSCO #IK-8 repair kit and wrap with poly wrap for cathodic protection.

B. Creek crossing and wetland areas:

1. Send a prescribed frequency with a shore line base signal ejector between 25 and 1024 HZ down a metal medium and read by a receiver.
2. Select a frequency based on the depth and the amount of linear feet of the line.
3. If the tracer wire has a break, reinstall the cable and repeat the conductivity test at no additional cost to the owner.

C. Notify in advance and conduct all testing in the presence of the Engineer.

3.6 FLUSHING

- A. Flush each service line thoroughly after installation to clear of sand, dirt, or other construction debris.
- B. When meters are to be installed, accomplish flushing prior to meter installation.

3.7 MEASUREMENT AND PAYMENT

- A. No separate measurement or direct payment will be made for the items under this Section and all costs for same shall be included in the price bid for the pump station.

END OF SECTION

SECTION 02723

SEWERS: SANITARY, PRESSURE

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Provide sanitary sewer pressure (force) mains as shown on the drawings, specified herein, and needed for a complete and proper installation.
- B. Related work:
 - 1. Documents affecting work of this section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 2. Section 02221 - Trenching, Backfilling for Utilities.
 - 3. Section 02722 - Sewers: Sanitary, Gravity.
 - 4. Section 02930 - Grassing.
 - 5. Section 09811 - Epoxy Lining for Wetwell and Manhole Interiors.

1.2 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. All materials in this Section are to be 100 % manufactured in the United States.

1.3 SUBMITTALS

- A. Comply with pertinent provisions of Section 01340.
- B. Product data: Within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.

1.4 PRODUCT HANDLING

- A. Comply with pertinent provisions of Section 01640.
- B. Storage of polyvinyl chloride (PVC) pipe:
 - 1. Store in unit packages as received from manufacturer until just prior to use.
 - 2. Stack units in such manner as to prevent deformation to pipe barrel and bells.
 - 3. Protect from direct sunlight by covering with opaque material if storage period will exceed six weeks.
 - 4. Avoid severe impact blows, gouging or cutting by metal surfaces or rocks.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Use any pipe material and associated fittings as specified herein, except where use of a particular material is indicated on the plans, or specified herein.

2.2 PIPE AND FITTINGS

A. Pipe:

1. Ductile iron pipe (DIP):
 - a. Comply with AWWA C151/A21.51, latest revision.
 - b. The class or nominal thickness, net weight without lining, and casting period shall be clearly marked on each length of pipe. Additionally, the manufacturer's mark, country where cast, year in which the pipe was produced, and the letters "DI" or "Ductile" shall be cast or stamped on the pipe.
 - c. Wall thickness in accordance with Table 51.1 of ANSI/AWWA C151/A21.51 with working pressure of 150 psi, depth of cover indicated and Type 3 bedding conditions, minimum Class 52.
2. Use mechanical or push-on joints complying with ANSI/AWWA C111/A21.11 as modified by ANSI/AWWA C151/A21.51.
3. Use rubber gaskets and lubricant complying with ANSI/AWWA C111/A21.11.
4. Use lining complying with one of the following:
 - a. Amine cured Novalac Epoxy polymeric lining, 40-60 mils nominal thickness. The standards of quality are based on Protecto 401 by Vulcan Painters, Birmingham, Alabama or Corrosion-Clad Polymer Lining No. 210 by Sauereisen Cements, Pittsburgh, Pennsylvania.
5. Ductile iron pipe must be installed in accordance with AWWA C-600, latest revision.
6. Restrained joint pipe and fittings:
 - a. Provide retainer glands for use with mechanical joint pipe and fittings.
 - b. Provide wedge type.
 - c. Provide ductile iron gland conforming to ASTM A536-80. Provide split gland where standard gland cannot be installed.
 - d. Provide ductile iron set screws, heat treated to a minimum hardness of 370 BHN with twist-off nuts and permanent standard hex head remaining.
 - e. Provide for the following rated pressure with minimum 2 to 1 safety factor; 3" - 16" 350 psi, 18" - 48" 250 psi.
 - f. Provide tee-head bolts conforming to ANSI/AWWA C111/A21.11 latest revision.
 - g. Provide "MEGALUG" as manufactured by EBAA Iron, Inc. of Eastland, Texas, or approved equal.
 - h. Provide restrained joint pipe and fittings where indicated on the plans. Provide one of the following:
 - Snap-Lok by Griffin Pipe.
 - American Cast Iron Pipe Company.
 - Flex-Ring (4" - 48")
 - U. S. Pipe.
 - TR-Flex (4" - 36")
 - Super-Lock by Clow (4" - 30").
 - Fast Grip Gasket by American Cast Iron Pipe Company.
 - Field Lok by U.S. Pipe.

B. Ductile iron fittings:

1. Provide 250 psi rated ductile iron fittings or specials unless otherwise indicated, complying with ANSI/AWWA C110/A21.10 and in accordance with ANSI/AWWA C111/A21.11.
2. Fittings for use with push-on joint pipe, comply with ANSI/AWWA C111/A21.11.
3. Use lining complying with Part 2.2.A.4 above.
4. The maximum phosphorous level in the casting will be 0.08%.
5. The fitting surface finish will conform to MSS SP-112 Quality Standard for Evaluation of Cast Surface Finishes.
6. The manufacturer shall be ISO 9000 certified.
7. Markings:
 - * Each fitting shall have the following markings cast integrally to the fitting:
 - a. Manufacturer's Name or Logo.
 - b. "MJ"
 - c. Country of Origin.
 - d. Manufacturer's Foundry Mark.
 - e. AWWA C-153 or C-110.
 - f. Pressure Rating.
 - g. Nominal Diameter (each leg).
 - h. "DI" or "Ductile".
 - i. No. of degrees (bends).

C. Polyvinyl chloride pipe and fittings (PVC):

1. Comply with ANSI/AWWA C900, Table 2, Pressure Class 150 (DR 18).
2. 3" and below: Comply with ASTM D2201 for PVC 1120, SDR 21, pressure rating 160 psi at 73°F.
3. Color of pipe to be green and reuse pipe to be purple.
4. Use integral bell or coupling type with elastomeric gaskets.
5. Gaskets are to be factory-installed and integral with the pipe.
6. Use ductile iron fittings with lining complying with Part 2.2.B above.
7. Provide adaptor glands, gaskets, etc. as required to accommodate any differences in pipe and fitting dimensions.
8. Restrained joint pipe and fittings:
 - a. Provide restraint for C-900 PVC by mechanical means separate from the mechanical joint gasket sealing gland.
 - 1) Provide wide, supportive contact around full pipe circumference as follows:

<u>Size</u>	<u>Restraint Width</u>
4", 6"	1-1/2"

- 2) Provide means of restraint by machined serrations on inside surface of restraint device designed to provide circumferential loading over the entire restrainer.
 - a) Design to be such that restraint increases with increased in-line pressure.
 - b) Provide a minimum of 8 serrations per inch of restraint width.
- 3) Restraint device to be pressure rated at 350 psi, or equal to the pipe on which it is used and capable of withstanding test pressures of 2 times pressured rating.
- 4) Provide "MEGALUG" as manufactured by EBAA Iron, Inc. of Eastland, Texas or approved equal.

- D. Couplings:
 - 1. Provide couplings where needed to make piping connections and where located on the plans.
 - 2. Provide mechanical joint ductile iron sleeve, full length, minimum 12".
 - 3. Provide cutting-in sleeve where installing fittings in an existing line.
 - a. Provide ductile iron with mechanical joint.
 - 4. Provide restrained joint couplings where restrained joints are specified herein.
- E. Tee head bolts: Provide Cor-Ten steel tee head bolts for use on mechanical joints complying with ASTM A242.
- F. Polyethylene encasement:
 - 1. Provide polyethylene encasement on all ductile iron pipe and fittings.
 - 2. Minimum nominal thickness of 8 mils. $\pm 10\%$.
 - 3. Conform to AWWA C105.

2.3 AIR RELEASE AND VACUUM VALVES`

- A. Provide single body universal type with compound lever system to seal both the pressure orifice and the air and vacuum orifice simultaneously.
- B. Provide a large orifice for the air and vacuum function and a small orifice for the air release function contained in a single valve body to:
 - 1. Exhaust large quantities of air during the filling of a pipeline or vessel and automatically close after all the air has been vented.
 - 2. Continue to release small quantities of air under pressure as often as needed to keep the system free of accumulated air.
 - 3. Automatically open to allow air to re-enter during draining or whenever a negative pressure occurs.
- C. Provide valve with minimum 2" inlet, or larger, if shown on the drawings.
- D. The small air release orifice shall be stainless steel orifice for working pressures up to 150 PSI, unless noted.
 - 1. Provide protective cover to prevent debris from falling into release orifice.
- E. Design valve to allow minimum contact between operating mechanisms and sewage.
 - 1. Provide internal linkage and float of 316 stainless steel.
 - 2. Linkage mechanism to be removable without disassembly.
 - 3. Provide a Type 316 stainless steel plug and removable Type 316 stainless steel seat ring.
 - 4. Provide plug with a renewable resilient O-ring seat of Buna-N or other suitable material retained in a dovetail groove.
 - 5. Provide a single float ball of 316 stainless steel, attached to a 316 stainless steel stem by means of a universal connection.
- F. Provide air and vacuum valves of the size listed in the schedule or shown on plans with threaded inlet and outlet to 3" size and ANSI B16.1 Class 125 flanged inlet and threaded outlet in larger sizes.
- G. Provide 316 stainless steel body and cover.

- H. Tap valve body with ½" NPT near the top and 1" NPT near the bottom to permit the installation of flushing attachments and have a 2" NPT plugged port, with 316 stainless steel plug, near the base to facilitate cleanout of large solids.
- I. Provide flushing attachments to include ½" stainless steel ball and valve, 1" stainless steel blowoff valve, 5' of rubber hose and quick disconnect couplings.
- J. Provide inlet Type 316 stainless steel ball valve with T-handle operator.
- K. At 10 lbs. working pressure, design valve to vent not less than 10 scfm of free air. At -4 lbs. of vacuum, design the valve to allow an inflow of not less than 65 scfm of air.
- L. Provide discharge cowl on all valves located in manholes. All others to have threaded discharge.
- M. All piping, nipples, etc., to be Schedule 40, Type 316L stainless steel.
- N. Valves to be a maximum of 21 inches in overall height to minimize contact between the liquid and the linkage and orifice areas.
- O. Provide G.A. Industries Model GA X942SS sewage air and vacuum relief valve.
- P. Air release and vacuum valve manhole:
 - 1. Provide reinforced precast concrete ring and flat top slab section complying with ASTM C-478 and the following.
 - 2. Use portland cement complying with ASTM C-150, Type II.
 - 3. Cast base slab monolithically with walls.
 - 4. Design flat slab top sections for HS-20 traffic loadings.
 - 5. Provide tongue and groove with vulcanized butyl rubber sealant or "O" ring rubber gasketed joints.
 - 6. Cast or factory cut pipe opening in manholes:
 - a. Provide flexible pipe boot conforming to ASTM C-923M.
 - b. Attach boot to piping with dual stainless steel straps.
 - c. All other hardware to be stainless steel.
 - d. Provide Kor-N-Seal or equal.
 - 7. Size lift holes and inserts for a precision fit with the lift devices.
 - a. Holes shall not penetrate through the manhole wall.
 - b. Comply with OSHA Standard 1926.704.
 - 8. Provide flat slab tops.
 - 9. Manhole liners:
 - a. Provide a High Density Polyethylene (HDPE) concrete protective liner (CPL) on manhole interior.
 - b. Minimum thickness: 2mm.
 - c. Provide extruded liner sheets with a minimum 39 anchoring studs per sq. ft. manufactured during the extrusion process in one piece with the sheet.
 - d. Liner pull out of 112.5/lbs/anchoring stud.
 - e. Overlap joints with flat liner sheet, non-anchored, having a minimum thickness of 3mm.
 - f. Seal all joints by means of thermal welding performed by welders certified by the Manufacturer.
 - g. Provide sufficient elongation to bridge up to 1/4" settling cracks.
 - h. Lining to be repairable at any time during the life of the structure.
 - i. Provide a manufacturer-certified fabricator to custom fit the liner to the form work.

- j. Interior surfaces to be protected, including walls, ceiling, pipe entries, and structure chimney.
- k. Manufacture the liner and welding rod from the same resins meeting the following properties:

Property	Testing Method	Units
Density	ASTM D792-86	.0945 g/cm ³
MFI (Melt Flow Index)	ASTM D1238-88	(190/5) g/10min
Heat Reversion (Dimensional Stability)	<2%	ASTM D1638-83
Yield Stress	ASTM D638-89	≥2,320 PSI
Elongation of Yield	ASTM D638-89	≥12%
Fire Classification	UL-94	V2
Maximum Working Temperature		140°F

- l. Provide upon request, written certification from the manufacturer that the liner meets or exceeds the requirement of this specification.
- m. Accepted products: AgruSure Grip, or approved equivalent.

10. Steps:

- a. Provide polypropylene plastic steps reinforced with 3/8" diameter steel rod, M.S.A. Industries, Inc. Model PS-K, or equal.
- b. Provide steps having non-skid top surfaces, safety slope at each end, minimum width of 10" and not less than 5" projection from wall.
- c. Embed a minimum of 3".
- d. Maximum spacing - 16".

11. Frames and covers:

- a. Provide gray iron castings, complying with ASTM A 48, Class 35B iron and AASHTO M-306.
- b. Provide a minimum recycled material content of 75 consisting of post-consumer material.
- c. Castings shall be of uniform quality, free from sand holes, gas holes, shrinkage, cracks and other surface defects ground smooth and clean by shot blasting.
- d. Cast or machine bearing surfaces between rings and covers with such precision to prevent rocking.
- e. Casting dimensional tolerances shall be +/- 1/16" per foot.
- f. Conduct a first article proof load test and make the results of that proof load available upon request.
 - i. Conduct in accordance with the method and procedure outlined in AASHTO M-306.
 - ii. Test casting on a suitable and calibrated load testing machine. Casting shall hold a 40,000 pound proof load for one minute without experiencing any cracks or detrimental permanent deformation.
 - iii. Maintain test results for each lot of castings by the foundry for a minimum of seven years. Make available upon request.
- g. Provide inspections in accordance with AASHTO M-306 and furnish results of these tests upon request.
- h. Furnish a foundry certification stating that samples representing each lot have been tested, inspected, and are in accordance with this specification.

- i. Each casting shall be identifiable and show, at a minimum, the following: name of the producing foundry, country of manufacturer, ASTM material designation, recycle symbol, individual part number, cast or heat date.
- j. Provide frame weighing not less than 155 lbs. with inside opening between 21.8" and 24".
- k. Provide circular cover with two "pick" holes, one 1" diameter vent hole, and weighing not less than 130 lbs.
- l. Covers to have the words "SANITARY SEWER" cast in the metal.
- m. Coat frames and covers with two (2) shop coats of water based bitumastic paint, MC4 MPFC by Molecular Coating Specialist of Cedar Hill, Texas or approved equal.
- o. Provide East Jordan Iron Works, Inc. Model V-1384 or approved equal.

2.4 SERVICE SADDLE

- A. Provide of the following materials:

Body	Type 304 Stainless Steel
Bales and Strips	Type 304 Stainless Steel
Studs	Type 304 Stainless Steel
Hardware	Type 304 Stainless Steel

- B. Provide double-strap for sizes 5" and larger.
- C. Provide Romac 304 and 305 or approved equal.
- D. Connect to pipeline using a 6" stainless steel nipple.
 - 1. Do not use a threaded PVC connection.

2.5 VALVE BOXES

- A. Provide at each buried valve.
- B. Cast iron extension type, suitable for minimum cover of 3'6" over the pipe.
- C. Minimum inside diameter at the top of 5", minimum wall thickness 3/16" and thickness at the top of 11/16".
- D. Have the word "SEWER" cast into the cover.
- E. Provide Tyler Series 6850.
- F. Where depth requires more than a two piece box use adjustable cast iron extensions.
- G. Coat box and cover with two (2) shop coats of bitumastic paint.

2.6 METALLIC DETECTION TAPE

- A. Provide 2" wide metallic detection tape on all buried PVC piping.
 - 1. Provide 5.0 mil overall thickness with no less than a 50 gauge solid aluminum foil core.
 - 2. Foil to be visible from both sides.
 - 3. No inks or printing extended to the edges of the tape.
 - 4. Encase printing to avoid ink rub-off.
 - 5. Tensile strength - 28 lbs/inch.
 - 6. Use heat set mylar inks.

- B. Locate 12" below ground surface in pipe trench.
- C. Color to be safety brown.
- D. Wording on tape to indicate pipe contents and repeated a minimum of every 24".

2.7 COPPER TRACER WIRE

- A. Provide a continuous 12 gauge insulated copper tracer wire on all buried piping.
- B. Approved for direct burial by the manufacturer.
- C. Terminate tracer wire at each valve and air release valve and make provisions to allow for connection of testing apparatus without interfering with the proper operation of valves.
- D. Connect to the line with duct tape at every bell connection or every 20' to ensure that the wire is directly over the top of the pipe.
- E. Splice wire at each tee connection with an approved copper compression lug.
- F. Test all tracer wire for conductivity in accordance with Section 3.

2.7 CONCRETE

- A. Use 3000 psi complying with Section 03300.

PART 3 - EXECUTION

3.1 LAYING OUT WORK

- A. Provide all materials, labor, instruments, etc. required to lay out Work.
- B. Prepare "cut sheets" under direct supervision of the Engineer.
- C. Exercise proper precaution to verify figures on the drawings prior to layout Work. Contractor will be held responsible for any errors therein that otherwise might have been avoided.
- D. Promptly inform Engineer of errors or discrepancies found, in order that proper corrections may be made.

3.2 HANDLING

- A. Handle pipe accessories so as to ensure delivery to the trench in sound, undamaged condition:
 - 1. Carry pipe into position - do not drag.
 - 2. Use pinch bars or tongs for aligning or turning ductile iron pipe only on the bare end of the pipe.
 - 3. Use care not to injure pipe linings.
- B. Thoroughly clean interior of pipe and accessories before lowering pipe into trench. Keep clean during laying operations by plugging or other method approved by the Engineer.

- C. Before installation, inspect each piece of pipe and each fitting for defects:
 - 1. Material found to be defective before or after laying: Replace with sound material meeting the specified requirements, and without additional cost to the Owner.
- D. Rubber gaskets: Store in a cool dark place until just prior to time of installation.

3.3 PIPE CUTTING

- A. Cut pipe neatly and without damage to the pipe.
- B. Unless otherwise recommended by the pipe manufacturer and authorized by the Engineer, cut pipe with mechanical cutter only.
 - 1. Use wheel cutters when practicable.
 - 2. Cut plastic pipe square, and remove all burrs.

3.4 LOCATING

- A. Where possible, locate pressure sewer at least 10' away, horizontally, from water mains.
- B. Where pressure sewers cross over or under water lines, maintain minimum 18" separation between outside edges of the two pipes.
 - 1. A full length of the pressure sewer pipe shall be located so that the joints will be equal distance from the water main.

3.5 EXCAVATION AND BACKFILLING

- A. Comply with pertinent provisions of Section 02221 and Section 02615 of these Specifications.

3.6 ALIGNMENT OF PIPE

- A. Pipe lines intended to be straight shall be so laid.
- B. Where vertical or horizontal alignment requires deflection from straight line or grade, such deflection shall not exceed maximum deflection recommended by the pipe manufacturer.
- C. If alignment requires deflection exceeding recommended limits, furnish special bends or a sufficient number of shorter lengths of pipe to provide angular deflections within the allowable limits.

3.7 PLACING AND LAYING

- A. General:
 - 1. Lower pipe and accessories into trench by means of derrick, ropes, belt slings, or other equipment approved by the Engineer.
 - 2. Do not dump or drop any of the materials of this Section into the trench.
 - 3. Rest the full length of each section of pipe solidly on the pipe bed, with recesses excavated to accommodate bells, couplings, and joints.
 - 4. Take up and relay pipe that has the grade or joint disturbed after laying.
 - 5. Do not lay pipe in water, or when trench conditions are unsuitable for the work; keep water out of the trench until jointing is completed.

6. Securely close open ends of pipe when work is not in progress.
7. Where any part of coating or lining is damaged, repair to the approval of the Engineer and at no additional cost to the Owner.
8. Lay each pipe accurately to the indicated line and grade maintaining a positive slope toward the air release valve locations as shown on the drawings.
9. Record pipe elevation every 100' and submit elevations to Engineer weekly.

B. Ductile iron pipe:

1. Mechanical and push-on joints: Install in accordance with ANSI/AWWA C600.
2. Gaskets: Handle, lubricate where necessary, and install in strict accordance with manufacturer's recommendations.

C. Plastic pipe:

1. Clean gasket, bell or coupling interior, especially groove area.
2. Lubricate and invert gasket as recommended by manufacturer.
3. Align spigot to bell, insert spigot into bell until it contacts gasket uniformly.
4. Push pipe "home" until reference mark is at proper location.
5. PVC force main must be installed in accordance with ASTM D-2321, latest revision.

D. Restrained joints:

1. Install in accordance with manufacturer's instructions.
2. Tighten set screws to the manufacturer's rated torque using a torque wrench. If twist-off nuts are provided, tighten screws until nut breaks loose.

3.8 TRACER WIRE TESTING

A. General:

1. Utilize an approved magnetic locating device, M Scope or Equal.
2. Connect a cable conductively from the transmitter to a metal ground rod and to the tracer wire.
3. Locate the line following the instructions of the magnetic locating device.
4. If interference is encountered from adjacent utilities or if the depth of bury or line length interferes with the signal, install a dummy valve box with access to the tracer wire at no additional cost to the owner.
5. Where there is a break in the tracer wire, repair with 3M DBY or ILSCO #IK-8 repair kit and wrap with poly wrap for cathodic protection.

B. Creek crossing and wetland areas:

1. Send a prescribed frequency with a shore line base signal ejector between 25 and 1024 HZ down a metal medium and read by a receiver.
2. Select a frequency based on the depth and the amount of linear feet of the line.
3. If the tracer wire has a break, reinstall the cable and repeat the conductivity test at no additional cost to the owner.

C. Notify in advance and conduct all testing in the presence of the Engineer.

3.9 INSTALLATION OF MANHOLES

- A. Set bases level so that walls will be plumb.
- B. Clean bells and spigots.
- C. Apply joint sealer, or ring gasket to wall section(s), set firmly in place to assure watertight joints.
- D. Set risers and cones so steps align.
- E. Tightly connect pipe boot to piping with dual stainless steel straps.
- F. Grout lift holes from the outside using non-shrink grout.
- G. Liner installation:
 - 1. Install manhole liner in accordance with manufacturer's published directives and procedures.
 - 2. Perform welding by welders certified by the manufacturer.
 - 3. Complete welding to provide a one-piece monolithic concrete protective liner system.
 - 4. Acceptable welding techniques:
 - a. Extrusion welding.
 - b. Wedge welding.
 - c. Butt welding.
 - d. Hot air welding.
 - 5. Perform testing and supervision of the installation and welding by qualified staff only and check when completed by visually checking and by Spark Testing all welded joints.

3.10 INSTALLATION OF AIR RELEASE VALVES

- A. Compact backfill thoroughly over pressure sewer.
- B. Install gravel drainage bed as shown on plans.
- C. Set valve plumb, using a bronze nipple between pressure sewer and valve.
- D. Install manhole wall sections plumb and level.

3.12 HYDROSTATIC TESTING

- A. General:
 - 1. Pressure and leakage testing must be conducted in accordance with AWWA Standards C600.
 - 2. Clean and flush line of air, dirt and foreign material.
 - 3. Do not perform hydrostatic tests until at least five days after installation of concrete thrust blocking.
 - 4. Test pump, pipe connection, pressure gauges, measuring devices and all other necessary appurtenances to conduct tests are to be provided by the Contractor.
 - 5. Install brass corporation cocks at all high points that do not have permanent air vents. Corporation cocks are to be left in place and all costs for providing such cocks are to be borne by the Contractor.
 - 6. Conduct tests on each line or valved section of line.

7. Test pressures to be 150 psi, or 1.5 times the maximum working pressure, whichever is greater, based on the elevation of the lowest point of the section under test and corrected to the elevation of the test gauge.
8. Do not test pipe at pressures exceeding manufacturer's recommendations.
9. The Contractor must provide documentation of the pressure and leakage tests. Documentation must include length of lines, diameter of pipe(s), amount of water required to fill line after test was performed, and amount of allowable leakage.
10. The witness to the hydrostatic testing is to be someone other than the Contractor or the utility installing the lines.

B. Pressure tests:

1. After the pipe is laid, the joints completed, and the trench backfilled, subject the newly laid piping and valved sections of the piping to the test pressure specified in Part A above.
2. Open and close each valve within the section being tested several times during the test period.
3. Replace or remake joints showing leakage.
 - a. Remove cracked pipe, defective pipe, and cracked or defective joints, fittings and valves. Replace with sound material and repeat the test until results are satisfactory.
 - b. Make repair and replacement without additional cost to the Owner.

C. Leakage test:

1. Conduct leakage test after the pressure test has been completed satisfactorily.
2. Duration of each leakage test: At least two hours.
3. During the test, subject water lines to the test pressure specified in Part A above.
4. Leakage is defined as the quantity of water to be supplied into the newly laid pipe, or any valved or approved section thereof, necessary to maintain the specified leakage test pressure after the pipe has been filled with water and the air expelled.

- a. No piping installation will be accepted until the leakage is less than the number of gallons per hour as determined by the formula(s):

- 1) Ductile iron piping:

$$L = S \times D \times \sqrt{P} / 133,200; \text{ where}$$

L = allowable leakage in gallons per hour;
 S = length of pipe tested in feet;
 D = nominal diameter of pipe in inches; and
 P = average test pressure psi gauge.

- 2) PVC piping:

$$L = N \times D \times \sqrt{P} / 7400; \text{ where}$$

L = allowable leakage in gallons per hour;
 N = number of joints in pipeline being tested;
 D = nominal diameter of pipe in inches; and
 P = average test pressure psi gauge.

- b. When testing against closed metal-seated valves, an additional leakage per closed valve of 0.0078 gallons per hour per inch of nominal valve size will be allowed.

- 1) Should any test of pipe disclose leakage greater than that specified above, locate and repair the defective joint or joints until the leakage is within the specified allowance, and at no additional cost to the Owner.
- 2) Repair all visible leaks regardless of test results.

3.14 MEASUREMENT AND PAYMENT

- A. All work under this Section will be measured and paid for as follows.
- B. Pipe will be paid for at the unit price per linear foot as stated in the Bid Form, and shall include cost of excavation, backfilling, detection tape, tracer wire, installation records, cleanup, testing, dewatering (if necessary), polyethylene encasement, restrained joints, etc. Measurement will be from center to center of fittings; no deduction will be made for the space occupied by valves and fittings.
- C. Pipe installed cannot be included in quantities for payment until weekly installation elevation reports are submitted and approved by the Engineer.
- D. Fittings: Fittings, including couplings, sleeves, and plugs, will be paid for at the unit price per ton as stated on the Bid Form and shall include cost for restraint with weight of fittings based upon the published weight of compact (C153) fitting body. No payment will be made for the weight of joint accessories for mechanical joint including joint restraint.
- E. Air release valve will be paid for at the unit price, each, stated in the Bid Form and shall include cost of valve, pipe, manhole, frame and cover, grade rings, stone, cleanup, etc. for a complete installation.

END OF SECTION

SECTION 02751

PUMP STATION PIPING, VALVES AND APPURTENANCES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Provide plant, gravity, pressure, yard and interior piping systems as shown on the Drawings, specified herein, and as needed for a complete and proper installation.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 2. Section 02221 - Trenching, Backfilling for Utilities.
 - 3. Section 05990 - Miscellaneous Metals.
 - 4. Section 09811 - Epoxy Lining for Wetwell and Manhole Interiors.
 - 5. Section 09900 - Painting.
 - 6. Section 11293 - Plug Valves.

1.2 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. All materials in this Section are to be 100% manufactured in the United States.

1.3 SUBMITTALS

- A. Comply with pertinent provisions of Section 01340.
- B. Product data: Within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
- C. Detailed piping layouts to include details and location of pipe supports.
- D. Certified records of manufacturer's pipe tests per Paragraph 2.1B of this Section.

1.4 PRODUCT HANDLING

- A. Comply with pertinent provisions of Section 01640.
- B. Storage of PVC pipe:
 - 1. Store in unit packages as received from manufacturer until just prior to use.
 - 2. Stack units in such manner as to prevent deformation to pipe barrel and bells.

3. PVC pipe shall be protected from direct sunlight by covering with opaque material if storage period will exceed six (6) weeks.
4. Protect from severe impact blows, gouging or cutting by metal surfaces or rocks.

1.5 JOB CONDITIONS

- A. Work under this Section may require construction or work in a confined space.
- B. Provide safety equipment as specified in Section 01500.

PART 2 - PRODUCTS

2.1 PIPE AND FITTINGS

A. Service requirements:

1. Pipe materials for the various services shall be as indicated on the drawings. If not shown on the drawings, piping 4" and larger shall be ductile iron pipe, including sanitary sewer lines, force mains and water lines unless otherwise indicated below:

Service	Size (Inches)	Buried (B) Exposed (E)	Pipe Material	Pipe Schedule	Lining	Gaskets
Air Release Valve Discharge		E, B	Stainless Steel			
Sanitary Sewer (Pressure)		E, B	DIP		Epoxy	

2. Design pressures:
 - a. Pipe, regardless of type of material, shall be designed for minimum of 150 psi internal pressure, safety factor of 2 with an additional surge allowance pressure of 100 psi, and for trench loads as indicated on the drawings.

B. Factory testing:

1. Test each type of pipe material in accordance with the requirements for that particular type of pipe as specified hereinafter.
2. Certified records of the tests made by the manufacturer or by an approved commercial laboratory shall be furnished to the Engineer for each shipment of pipe delivered to the job site.

C. Lead content:

1. Any pipe, solder, or flux used shall be lead free (lead free is defined as less than 0.2% lead in solder or flux and less than 8.0% lead in pipes and fittings).

D. Ductile iron pipe and fittings (DIP):

1. Provide thickness class pipe with a minimum working pressure as indicated in the design pressures specified and complying with ANSI/AWWA C151/A21.51, ASTM A377, latest revision, minimum Class 52.
2. Clearly mark the class or nominal thickness, net weight without lining, and casting period on each length of pipe. Additionally, cast or stamp the

- manufacturer's mark, country where cast, year in which the pipe was produced, and the letters "DI" or "Ductile" on the pipe.
3. Buried Piping:
 - a. Provide mechanical or push-on joints complying with ANSI/AWWA C111/A21.11 as modified by ANSI/AWWA C151/A21.51 with rubber gaskets and lubricants complying with ANSI/AWWA C111/A21.11.
 - b. All buried fittings, valves, etc. to be mechanical joint.
 - c. Bolts and nuts:
 - 1) Provide Cor-Ten steel tee head bolts for use on mechanical joints complying with ASTM A242.
 4. Exposed piping:
 - a. Provide Class 53 minimum.
 - b. Provide flanged joints complying with ANSI/AWWA C115/A21.15, latest revision.
 - c. Provide solid type flanges with country where cast stamped or cast into the flange.
 - d. Provide full face, red rubber, factory cut, 1/16" thick gasket for pipe up to 10" diameter and 1/8" thick gasket for larger sizes.
 - e. Bolts and nuts: Provide 316 stainless steel machine bolts, hex head.
 5. Fittings:
 - a. Provide 250 psi rated ductile iron fittings or specials unless otherwise indicated, complying with ANSI/AWWA C110/A21.10 and in accordance with ANSI/AWWA C111/A21.11.
 - b. Clearly cast the manufacturer's mark, country where cast, year in which the fitting was produced, and the letters "DI" or "Ductile" on the fitting.
 6. Restrained joint pipe and fittings:
 - a. Provide restrained joint pipe and fittings on all piping at each fitting, including valve connections and on the pipe joints.
 - b. Provide one of the following for use with push-on joints:
 - 1) Snap-Lok by Griffin Pipe.
 - 2) Flex-Ring by American Cast Iron Pipe Company.
 - 3) TR-Flex by U.S. Pipe.
 - 4) Fast grip gasket by American Cast iron Pipe Company.
 - 5) Field LOK by U.S. Pipe.
 - c. Provide the following for use with all mechanical joints:
 - 1) Provide retainer glands for use with mechanical joint pipe and fittings.
 - 2) Provide wedge type.
 - 3) Provide ductile iron gland conforming to ASTM A 536-80. Provide split gland where standard gland cannot be installed.
 - 4) Provide ductile iron set screws, heat-treated to a minimum hardness of 370 BHN with twist-off nuts and permanent standard hex head remaining.
 - 5) Provide for the following rated pressure with minimum 2 to 1 safety factor; 3" - 16" 350 psi.
 - 6) Provide tee-head bolts conforming to ANSI/AWWA C111/A21.11 latest revision.
 - 7) Provide "MEGALUG" as manufactured by EBAA Iron Sales, Inc. of Eastland, Texas.
 7. Lining (All pipes and fittings):
 - a. Sanitary sewer, scum, sludge and wastewater service:
 - 1) Provide lining complying with one of the following:
 - a) Amine cured Novalac Epoxy polymeric lining, 40 mils nominal thickness. The standards of quality are based on Protecto 401 by Vulcan Painters, Birmingham, Alabama or Corrosion-Clad Polymer

Lining No. 210 by Seauereisen Cements, Pittsburgh, Pennsylvania.

8. Coatings:
 - a. For buried service, provide shop applied bituminous coating, 1 mil thick. Do not apply to the first 6" of the spigot end.
 - b. For exposed locations, provide prime coat per Section 09900.

E. Polyethylene encasement:

1. Provide polyethylene encasement on all buried ductile iron pipe and fittings.
2. Minimum nominal thickness of 8 mils +/- 10%.
3. Conform to C105.

F. Stainless steel pipe and fittings:

1. Provide Schedule 40 pipe and fittings.
2. Provide Type 316.
3. Provide NPT threaded connections and fittings for Schedule 40 piping.
4. Provide stainless steel unions at all connections to fixtures, pumps, equipment, etc.
5. Provide joint compound for thread sealant on threaded connections.
 - a. Provide Lok-Tite PST or approved equal.
 - b. Submit shop drawings for approval.

2.2 PLUGS OR CAPS

- A. Provide at all pipe ends and unused branches of fittings.
- B. All plugs and caps shall be tapped 2" and provided with 2" plug.
- C. Provide restrained fittings on ductile iron lines.

2.3 LINK SEAL SLEEVE SEAL

- A. Provide sleeve seals where indicated on the plans to seal between pipe sleeves and piping.
- B. Provide glass reinforced nylon plastic pressure plates.
- C. Provide Type 316 stainless steel bolts and nuts.
- D. Provide EPDM sealing element.
- E. Provide square two (2) piece escutcheon plate on exposed side(s) of sleeve(s).
 1. Fabricate from .063" clear anodized aluminum sheet.
 2. Mount with stainless steel sleeve and stainless steel stove bolts.
- F. Acceptable manufacturer is Link Seal, Type S or equal.

2.4 ADAPTER FLANGES

- A. Provide adapter flanges where indicated on the plans.
- B. Provide high strength ductile iron flange, ASTM A536, Grade 65-45-12.
- C. Provide set screws with a Rockwell hardness of C40-45 converted from Brinnell.

- D. Gasket material:
 - 1. BUNA S.
- E. Minimum pressure rating - 150 psi.
- F. Provide adapter flanges with a minimum of a 2 to 1 safety factor.
- G. Provide adapter flanges with MEGA-BOND Restraint Coating System.
 - 1. Wash all adapter flanges and appurtenances in a phosphate wash prior to coating.
 - 2. Coat with a minimum of two coats of liquid Xylan fluoropolymer coating with heat cure to follow each coat.
- H. Provide Series 2100 Megaflange Restrained Flange Adapter by EBAA Iron.

2.5 PIPE EXPANSION JOINT

- A. Provide triple arched flanged expansion joints consisting of a filled style arches, inner tube, body, and outer cover where indicated on the construction drawings or as needed for a complete and proper installation.
- B. Provide steel reinforced Neoprene rubber construction.
- C. Rubber expansion joints must be installed between two fixed anchor points in a piping system. The piping system must be rigidly anchored on each side of the expansion joint.
- D. When proper anchoring cannot be provided, control rods are required.
 - 1. Provide 316 stainless steel control rods necessary for a minimum 150 psi service with a minimum factor of safety of 1.5.
- E. Provide ANSI B 16.5, Class 150#, full-faced integral flanges, with 316 stainless steel flange bolts, so that no gaskets are necessary.
- F. Provide two-piece, 3/8" thick, 316 stainless steel flange retaining rings.
- G. Provide PROCO Triple Arch Series FA230, Style FA233 spool type wide arch rubber expansion joints as manufactured by PROCO or equal.

2.6 SERVICE SADDLE

- A. Provide of the following materials:

Body	Type 304 Stainless Steel
Bales and Strips	Type 304 Stainless Steel
Studs	Type 304 Stainless Steel
Hardware	Type 304 Stainless Steel

- B. Provide double-strap for sizes 5" and larger.
- C. Provide Romac 305 and 306 or approved equal.
- D. Connect to pipeline using a 6" long stainless steel nipple.
 - 1. Do not use a threaded PVC connection.

2.7 COUPLINGS, BURIED PIPING

- A. Provide couplings where needed to make piping connections and where located on the plans.
- B. Provide cast iron mechanical joint sleeve, full length, minimum 12" long.
- C. Provide ductile iron ASTM A-536 followers.
- D. Provide high strength low alloy steel bolts with heavy semi-finished hexagon nuts to AWWA/ANSI C111/A21.11 standards.
- E. Gaskets to be Grade 30.
- F. Provide Silicone gaskets for air service.
- G. Provide Cor-Ten steel tee head bolts for use on mechanical joints complying with ASTM A242, galvanized in accordance with ASTM A-123.
- H. Provide restrained joints where indicated or specified herein.

2.8 PLUG VALVES

- A. Comply with Section 11293.

2.9 CHECK VALVES

- A. Cushioned swing check valves, 3" and larger:
 - 1. Provide valve body of a one-piece casting, globe pattern, constructed of ASTM A126 Class B cast iron with minimum strength of 30,000 psi.
 - 2. Provide flanged end connections per ANSI B16.1.
 - 3. Provide full pipeline flow area with disc at 23° open position, and allow for a minimum of 60° total disc travel.
 - 4. Provide a circular flanged cover of adequate size to permit field inspection, maintenance, and/or replacement of all internal valve components.
 - 5. Design working pressures to 250 psi.
 - 6. Body seat:
 - a. Material to be Type 316 stainless steel.
 - b. Design seat to permit field replacement.
 - 7. Disc construction:
 - a. Construct of ASTM A126 Class B cast iron with minimum strength of 30,000 psi.
 - b. Provide disc with resilient seat ring for tight shut-off.
 - 1) Disc seat ring shall be of BUNA-N.
 - 2) Attach disc seat ring to disc by means of 18-8 stainless steel follower ring and 18-8 stainless steel fasteners.
 - 3) Design disc seat ring to permit field replacement.
 - c. Attach disc to disc arm by means of a single attachment point.
 - 1) Attachment design shall permit a controlled amount of disc articulation to provide uniform compression of disc seat ring under any pressure condition, up to the maximum working pressure.
 - 2) Rotation of the disc around the attachment point shall not be permitted.
 - d. Construct disc arm of one-piece, ductile iron casting with minimum strength of 60,000 psi.

8. Shaft construction:
 - a. Construct of non-hardened, Type 316 stainless steel.
 - 1) Hardened stainless steel or chrome-plated steel shafts shall not be permitted.
 - b. Support shaft in the body by solid bronze bearings mounted in the valve body.
 - 1) Locate shaft and bearings completely out of flowpath through valve.
 - 2) Bearing material shall be UNS C93200 bronze, with minimum strength of 20,000 psi.
 - 3) Bearing/shaft design shall provide sufficient bearing area to prevent bearing wear, deformation, or excessive friction. Use of oil impregnated bearings, grease or oil lubrication, or synthetic bearing materials shall not be permitted.
 - c. Shaft design shall employ stainless steel keys for attachment of disc arm and externally mounted counterweight arm.
 - 1) Use of set screws or clamps shall not be permitted.
 - d. Extend shaft through one (1) side of valve body to allow attachment of external counterweight arm and cushion chamber.
 - e. Seal shaft where it passes through the valve body by means of an externally adjustable packing gland and Teflon packing.
 - 1) O-ring shaft seals shall not be permitted.
 - f. Shaft design shall employ a mechanical locking device for maintaining proper shaft and disc arm alignment within the valve body. The shaft bearings and/or disc arm shall not be used to maintain shaft alignment.
 - g. Provide minimum shaft diameters for each size as follows:

Valve Size	Shaft Diameter
2-1/2"	3/4"
3"	3/4"
4"	7/8"
6"	1"

9. Cushion chamber construction:
 - a. Attach a cushion chamber to the exterior of the valve body with mechanical linkage connecting the cushion chamber piston to the valve shaft.
 - b. Construct the cushion chamber cylinder tube and piston of bronze.
 - c. Cushioning shall be accomplished by using air as the cushioning media. Use of hydraulic oil or pre-charged air cylinders shall not be permitted.
 - d. The degree of cushioning shall be easily adjustable.
10. Counterweight arm and counterweight construction:
 - a. Attach a single counterweight arm to the valve shaft.
 - b. The counterweight arm shall employ a stainless steel key to prevent rotation around the valve shaft.
 - 1) Use of set screws or clamps to connect the counterweight arm to the valve shaft shall not be permitted.
 - c. The counterweight arm shall be positioned on the shaft to provide the maximum amount of closing force when the valve is in the seated position, and the minimum amount of closing force when the valve is in the open position.
 - d. Sufficient counterweight(s) shall be provided to prevent or minimize slamming of the check valve immediately following shut-down of the pump.
 - 1) The position of the counterweight(s) shall be adjustable on the counterweight arm.
 - 2) The counterweight(s) shall have provision to be locked into

- 11. Valve shall be completely serviceable in the line, and all internal parts shall be removable through the top cover.
- 12. The valve shall be Figure 250-D as manufactured by G.A. Industries, Inc. or Engineer approved equal.

2.10 STAINLESS STEEL BALL VALVES, 4" AND SMALLER

- A. Provide the following for sizes under 3":
 - 1. Full port Type 316 stainless steel ball valves where indicated on the plans or otherwise specified herein.
 - 2. Lever handle operator. T-handle operator where space does not allow use of lever.
 - 3. Three piece body that is in-line serviceable without removing the valve from the line.
 - 4. Acceptable manufacturers:
 - a. Series "60" as manufactured by Whitey.
 - b. Apollo Series 86A as manufactured by Conbraco.
 - c. V3P-1000 as manufactured by Velan.
- B. Provide quarter turn valves.
- C. Provide with standard locking devices.
- D. Provide with pre-tapped actuator mounting holes.
- E. Provide blowout-proof stem.
- F. Provide stem with RPTFE live load thrust washer.
- G. Support valve seats by a small stainless steel coned disc spring which provides a positive sealing force at high and low pressures.
 - 1. Seats are to automatically compensate for wear and thermal expansion.
- H. Materials of construction:

Body and body cover	316 SS (CF8M)
Ball	316 SS
Stem	316 SS
Seats	PTFE
Stem packing	PTFE
Stem thrust washer and bushing	RPTFE
Body seal	316 SS Graphite
Gland follower	304 SS
Grounding spring	302 SS
Packing Flange	316 SS (CF8M)
All bolts and nuts	B8M Cl.2, 8M, or 304 SS
Handle	304 SS
Handle grip	Vinyl

2.11 AIR RELEASE AND VACUUM VALVES

- A. Provide air release valves where indicated on the drawings and not specified in other sections of these specifications.

- B. Raw wastewater, unfiltered wastewater effluent, and sludge applications:
1. Provide single body universal type with compound lever system to seal both the pressure orifice and the air and vacuum orifice simultaneously.
 - a. Design valve to automatically exhaust large amounts of air and gases while the pipeline or system is being filled and close after the system is purged of air.
 - b. Design valve to re-open to admit air during draining or when a negative pressure exists in the system.
 2. Provide valve with minimum 2" inlet, or larger, if shown on the drawings.
 3. Design valve to allow minimum contact between operating mechanisms and sewage.
 - a. Provide internal linkage and float of 316 stainless steel.
 - b. Linkage mechanism to be removable without disassembly.
 - c. Provide a Type 316 stainless steel plug and removable Type 316 stainless steel seat ring.
 - d. Provide plug with a renewable resilient O-ring seat of Buna-N or other suitable material retained in a dovetail groove.
 - e. Provide a single float ball of 316 stainless steel, attached to a 316 stainless steel stem by means of a universal connection.
 4. Provide air and vacuum valves of the size listed in the schedule or shown on plans with threaded inlet and outlet to 3" size and ANSI B16.1 Class 125 flanged inlet and threaded outlet in larger sizes.
 5. Provide body and cover constructed of ASTM A351 Grade CF8M 316 stainless steel.
 6. Tap valve body with 1/2" NPT near the top and 1" NPT near the bottom to permit the installation of flushing attachments and have a 2" NPT plugged port, with 316 stainless steel plug, near the base to facilitate cleanout of large solids.
 7. Provide flushing attachments to include 1/2" stainless steel flushing valve, 1" stainless steel blowoff valve, 5' of rubber hose and quick disconnect couplings.
 - a. Provide stainless steel ball valves to complying with Section 02751.
 8. All other components to be 316 stainless steel.
 9. At 10 lbs. working pressure, design valve to vent not less than 10 scfm of free air. At -4 lbs. of vacuum the design valve to allow an inflow of not less than 65 scfm of air.
 10. Provide discharge cowl on all valves located in manholes. All others to have threaded discharge.
 11. All piping, nipples, etc., to be Schedule 40, Type 316 stainless steel.
 12. Valves to be a minimum of 20" in overall height to minimize contact between the liquid and the linkage and orifice areas.
 13. Provide G.A. Industries Model 935SS sewage air and vacuum relief valve, or G.A. Industries Model 939SS, where short body valves are allowed.

2.12 VALVE BOXES

- A. Provide at each buried valve.
- B. Cast iron extension type, suitable for minimum cover of 3'6" over the pipe.
- C. Minimum inside diameter at the top of 5", minimum riser wall thickness 1/4" and thickness at the top of 11/16".
- D. Have the word "SEWER" cast into the cover.
- E. Provide Tyler Series 6850.

- F. Where depth requires more than a two piece box use adjustable cast iron extensions.
- G. Coat box and cover with two (2) shop coats of bitumastic paint.

2.13 VALVE BOX PROTECTION RING

- A. Provide at each valve box a precast concrete protection ring.
- B. Provide two rings of No. 3 reinforcing steel, one 14" in diameter, and one 23" in diameter.
- C. Inside dimensions to be 9-1/4".
- D. Outside diameter to be 27".
- E. Provide 5" thickness at interior with a continuous slope to 2" thickness at the outside.
- F. Minimum weight of 110 lbs.

2.14 PRESSURE GAUGES

- A. Provide pressure gauges where indicated on the drawings and not otherwise specified in separate sections of these Specifications.
 - 1. Provide solid front rounded type, 4 or 4-1/2" phenolic or stainless steel case with blow-out back, Type 316 stainless steel bourdon tube, glycerin fill, 1/2" NPT bottom male threaded connection, Teflon coated 400 series, stainless steel rotary movement, black micro-adjusted corners and black figures with white plastic dials, and a threaded ring.
 - 2. Provide gauge accurate to within 1/2% of the total scale range.
 - 3. Provide glycerin filled diaphragm isolators on all gauges except for those used on potable water systems.
 - a. Provide diaphragm material resistant to chemicals in the process line being measured.
 - b. Type 316L stainless steel housing and components.
 - c. 1/2" connection.
 - d. Provide fill/bleed connection.
 - e. Viton o-rings with Teflon back-up ring.
 - 4. Select gauge at the range indicated on the drawings or at the nearest standard range which provides a top limit above the pump shutoff head at the operating conditions but no greater than 10% above the shut off head.
 - 5. Each gauge connection to consist of a shutoff valve and 1/2" stainless steel piping connections.
 - a. Shutoff valve to be Type 316 stainless steel ball valve with T-handle operator.
 - 6. Provide gauges manufactured by Ametek, Ashcroft, McDaniel or Wika.

2.15 MANHOLES

- A. Use precast manholes inside the pump station site:
 - 1. Provide reinforced precast concrete ring and eccentric cone sections complying with ASTM C478 and the following:
 - a. Use portland cement complying with ASTM C150, Type II.
 - b. Concrete compressive strength: 5000 psi minimum at 28 days.
 - c. Air content: 4% minimum.
 - d. Alkalinity: Adequate to provide a Life Factor,

Az = Calcium carbonate equivalent times cover over reinforcement, no less than 0.35 for bases, risers and cones.

- e. Cementitious materials: Minimum of 564 lbs. per c.y.
 - f. Coarse Aggregates: ASTM C33. Sound, crushed, angular granitic stone only.
 - g. Fine aggregates: ASTM C33. Free from organic impurities.
 - h. Chemical admixtures: ASTM C494. Calcium chloride or admixtures containing calcium chloride shall not be used.
 - i. Air entraining admixtures: ASTM C260.
2. Cast ladder rungs into the units.
 3. Provide tongue and groove or o-ring rubber gasketed joints.
 - a. Maximum annular space at joint base - 0.10".
 - b. Minimum joint height - 4".
 - c. Use vulcanized butyl rubber sealant with tongue and groove joints.
 4. Cast or factory cut pipe opening in manholes.
 - a. Provide flexible pipe boot.
 - b. Attach boot to piping with dual stainless steel straps.
 - c. All other hardware to be stainless steel.
 - d. Provide Kor-N-Seal or equal.
 5. Provide flat slab tops where manhole depth is less than 4'0".
 6. Coat manhole with coal tar epoxy, Tnemec "Tneme-Tar" or equal.
 - a. Exterior 21 dry mils.
 - b. Do not coat joints.
- B. Epoxy coating:
1. Comply with Section 09811.
- C. Exterior joint collar:
1. Install an exterior joint collar on all manhole joints.
 2. Provide a 7" wide band.
 - a. Provide an outer layer of polyethylene with an under layer of rubberized mastic reinforced with a woven polypropylene fabric.
 - b. Provide a peelable protective paper against the mastic that is removed when the collar is applied to the joint.
 - c. Within the collar, locate two steel straps 5/8" wide 3/4" from each edge of the band.
 - d. Install the straps in tubes that isolate them from the mastic and allow them to slip freely when tightened around the pipe.
 - e. Design the collar so that when it is applied around the joint the ends overlap at least 6" and when the straps are secured a layer completely covers the straps protecting them from moisture and rust.
 3. Provide MacWrap Exterior Joint Sealer as manufactured by Mar-Mac Manufacturing Company or an approved equal.
- D. Steps:
1. Use plastic steps.
 2. Provide steps having non-skid top surfaces, safety slope at each end, minimum width of 10" and not less than 5" projection from wall.
 3. Provide propylene plastic steps reinforced with 3/8" diameter steel rod. M.S.A Industries, Inc. Model PS-K, or equal.
- E. Frames and covers:
1. Provide gray iron castings, complying with ASTM A 48, Class 35B iron and AASHTO M-306.

2. Provide a minimum recycled material content of 75 consisting of post-consumer material.
3. Castings shall be of uniform quality, free from sand holes, gas holes, shrinkage, cracks and other surface defects ground smooth and clean by shot blasting.
4. Cast or machine bearing surfaces between rings and covers with such precision to prevent rocking.
5. Casting dimensional tolerances shall be +/- 1/16" per foot.
6. Conduct a first article proof load test and make the results of that proof load available upon request.
 - a. Conduct in accordance with the method and procedure outlined in AASHTO M-306.
 - b. Test casting on a suitable and calibrated load testing machine. Casting shall hold a 40,000 pound proof load for one minute without experiencing any cracks or detrimental permanent deformation.
 - c. Maintain test results for each lot of castings by the foundry for a minimum of seven years. Make available upon request.
7. Provide inspections in accordance with AASHTO M-306 and furnish results of these tests upon request.
8. Furnish a foundry certification stating that samples representing each lot have been tested, inspected, and are in accordance with this specification.
9. Each casting shall be identifiable and show, at a minimum, the following: name of the producing foundry, country of manufacturer, ASTM material designation, recycle symbol, individual part number, cast or heat date.
10. Provide frames and covers weighing not less than 155 lbs. with inside opening between 21.8" and 24".
11. Provide circular cover with two "pick" holes, one 1" diameter vent hole and weighing not less than 130 lbs.
12. Covers to have the words "SANITARY SEWER" cast in the metal.
13. Coat frames and covers with two (2) shop coats of water based bitumastic paint, MC4 MPFC by Molecular Coating Specialist of Cedar Hill, Texas or approved equal.
14. Provide East Jordan Iron Works, Inc. Model V-1384 or approved equal.

F. Precast grade rings:

1. Use Precast Grade Rings to adjust ring and covers to finished grade.
2. No more than 8 vertical inches of grade rings will be allowed per manhole.
3. Conform to ASTM C478
4. Provide no less than 4" in height.
5. Use comment brick for adjustments less than 4".

2.16 YARD HYDRANTS

A. Lever type:

1. Provide Woodford Model Y1 or approved equal.
2. Inlet opening, 1".
3. Casing - 1-1/4" galvanized steel pipe.
4. Provide 1" brass nozzle with 1" x 3/4" nozzle adapter.
5. Provide vacuum breaker.

2.17 MISCELLANEOUS PARTS AND ACCESSORIES

- A. Use standard commercial grade suitable for the type of installation or system involved, and conforming to the applicable standards and specifications of the AWWA and approved by the Engineer.

PART 3 - EXECUTION

3.1 HANDLING

- A. Handle pipe accessories so as to ensure delivery to the point of installation in sound, undamaged condition:
 - 1. Carry pipe into position - do not drag.
 - 2. Use pinch bars or tongs for aligning or turning the pipe only on the bare end of the pipe.
 - 3. Use care not to injure pipe linings.
- B. Thoroughly clean interior of pipe and accessories before installation. Keep clean during installation operations by plugging or other method approved by the Engineer.
- C. Before installation, inspect each piece of pipe and each fitting for defects:
 - 1. Material found to be defective before or after installation: Replace with sound material meeting the specified requirements, and without additional cost to the Owner.
- D. Rubber gaskets: Store in a cool dark place until just prior to time of installation.

3.2 PIPE CUTTING

- A. Cut pipe neatly and without damage to the pipe.
- B. Unless otherwise recommended by the pipe manufacturer, and authorized by the Engineer, cut pipe with mechanical cutter only.
 - 1. Use wheel cutters when practicable for ductile iron pipe.
 - 2. Cut plastic pipe square, using handsaw, and remove all burrs.

3.3 LOCATING

- A. Where possible, locate water line at least 10' away, horizontally, from sewer pipes.
- B. Should 10' separation not be practical, then the water main may be located closer provided:
 - 1. It is laid in a separate trench.
 - 2. It is laid in the same trench with the water main located at one side on a bench of undisturbed earth.
 - 3. In either of the above cases, crown elevation of the sewer shall be at least 18" below invert elevation of water line.
- C. Where water lines cross over sewers, maintain 18" minimum clearance between crown of sewer and invert of water line.
- D. Where water lines cross under sewers, each line shall be cast iron or ductile iron.
 - 1. A full length of water line shall be located over the sewer so that joints will be equal distance from the sewer.
- E. No water pipe shall pass through or come in contact with any part of a sewer manhole.

F. All piping shall be installed in strict accordance with 10 States Standards.

3.4 ALIGNMENT OF PIPE

- A. Pipe lines intended to be straight shall be so laid.
- B. Where vertical or horizontal alignment requires deflection from straight line or grade, such deflection shall not exceed maximum deflection recommended by the pipe manufacturer.
- C. If alignment requires deflection exceeding recommended limits, furnish special bends or a sufficient number of shorter lengths of pipe to provide angular deflections within the allowable limits.

3.5 PLACING AND LAYING

A. General:

- 1. Comply with pertinent OSHA regulations in regards to excavation of utilities.
- 2. Excavation and backfilling to comply with pertinent provisions of Section 02221.
- 3. Lower pipe and accessories into trench by means of derrick, ropes, belt slings, or other equipment approved by the Engineer.
- 4. Do not dump or drop any of the materials of this Section into the trench.
- 5. Except where necessary in making connections to other lines, lay pipe with the bells facing in the direction of laying.
- 6. Rest the full length of each section of pipe solidly on the pipe bed, with recesses excavated to accommodate bells, couplings, and joints.
- 7. Take up and relay pipe that has the grade or joint disturbed after laying.
- 8. Do not lay pipe in water, or when trench conditions are unsuitable for the work; keep water out of the trench until jointing is completed.
- 9. Securely close open ends of pipe, fittings, and valves when work is not in progress.
- 10. Where any part of coating or lining is damaged, repair to the approval of the Engineer and at no additional cost to the Owner.

B. Ductile iron pipe:

- 1. Install all pipe, fittings and accessories in accordance with ANSI/AWWA C600.
- 2. Gaskets: Handle, lubricate where necessary and install in strict accordance with manufacturer's recommendations.

C. Flanged joints:

- 1. Provide true face flanges, field clean and fit with one full face gasket and make bolts up finger tight.
- 2. Use torque wrench to alternately tighten bolts 180° apart until full gasket flow and seal are secured.
- 3. Bias cut or unusual refacing of any flange will not be acceptable.

D. Screw thread joints:

- 1. Make cuts square, with cuts thoroughly reamed and rough edges and burrs removed.
- 2. Make threads sound, clean out, and well fitting.
- 3. Use pipe dope on male fittings only.

4. Make screwed joints tight with all necessary wrenches but without handle extensions.
- E. Solvent weld joints:
1. Install solvent weld joints in strict accordance with solvent cement manufacturer's instructions.
 2. Make cuts square, remove burrs from pipe ends and bevel slightly if necessary.
 3. Visually inspect inside of pipe, couplings and fittings removing all dirt and moisture with clean rag.
 4. Apply primer to surface of pipe and socket of fitting if required for cement being used, or lightly sandpaper surfaces.
 5. Apply solvent cement evenly and quickly around the outside of the pipe at a width slightly greater than depth of fitting socket.
 6. Apply a light coat of cement around the inside of the fitting socket.
 7. Quickly insert pipe into fitting socket bottom and give pipe or fitting a 90° turn to evenly distribute the cement, hold in place to prevent fitting rebound.
 8. Remove excess cement from pipe and fitting while cement is still soft.
 9. Allow joints to cure at least 24 hours before applying pressure to the piping system.
- F. Restrained joints:
1. Install in accordance with manufacturer's instructions.
 2. Tighten set screws to the manufacturer's rated torque using a torque wrench. If twist-off nuts are provided, tighten screws until nut breaks loose.

3.6 INSTALLATION OF EXPOSED PIPE

- A. All pipe shall be installed in accordance with details as shown on the Drawings and/or as directed by the Engineer.
- B. Installation and pipe routing details shall be provided by the Contractor.
- C. Pipe shall be run parallel with or at right angles to walls, equipment, ceilings, etc. Forty-five degree (45°) fittings, or angle runs shall be avoided as much as possible and installed only as approved by the Engineer.
- D. Modifications to piping installation based on actual field conditions may be required and shall receive the Engineer's approval. Changes will be provided by the Contractor at no additional cost to the Owner.

3.7 INSTALLATION OF STAINLESS STEEL PIPE AND FITTINGS

- A. Exercise extreme care to avoid contacting pipe with any ferrous materials.
- B. Use saws, drills, files, brushes, etc. that are specifically designated for use on stainless steel piping only.
- C. Use nylon slings or straps to handle piping.
- D. After installation, wash and rinse all foreign matter from the pipe. Remove manufacturer's identification marking with paint thinner or solvent.
- E. Provide final cleaning with detergent and hot water and rinse clean.

F. Threaded pipe:

1. Thread cut pipe utilizing dies specifically for stainless steel pipe.
2. Remove all debris and grit and solvent clean cut threads.
3. Apply joint compound to completely fill all voids.
4. Clean excessive joint compound from piping after completing joint.

3.8 LINK SEAL SLEEVE SEAL

- A. Install seal between piping and sleeve.
- B. Tighten bolts to manufacturer's specified torques.
- C. Check for leaks.
- D. Install escutcheon plate at exposed locations.

3.9 ADAPTER FLANGE COUPLING

- A. End of pipe not to exceed 1/4" from mating flange.
- B. Apply "Never-Seize" to stainless steel set screws.
- C. Tighten set screws to manufacturer's recommendations using a torque wrench.

3.10 SETTING VALVE BOXES

- A. Center valve boxes on the valves, setting plumb.
- B. Tamp earth fill around each valve box to a distance of 4' on all sides, or to the undisturbed trench face if less than 4'.
- C. Fully open and close each valve to assure that all parts are in working condition.
- D. Place protective concrete slab around top of valve box as indicated on the plans.
 1. Install valve marker in concrete slab in accordance with Section 10445.
- E. Provide valve extension necessary to provide the operating nut within 2' of the top of the valve box.

3.11 MANHOLES

- A. Set bases level so that walls will be plumb.
- B. Clean bells and spigots.
- C. Apply joint sealer, or ring gasket to wall section(s), set firmly in place to assure watertight joints.
- D. Set risers and cones so steps align.
- E. Tightly connect pipe boot to piping with dual stainless steel straps.
- F. Grout lift holes from the outside.
- G. Install exterior joint collar.
 1. Follow manufacturer's recommendations.

2. Clean surface.
 3. Remove the protective paper and place the band around the manhole, mastic side to the manhole and spanning the joint.
 4. Secure the steel straps with the manufacturer's recommended tools.
 5. Cover exposed strap with the closing flap.
- H. Form the invert channels directly in the concrete of the manhole base, with mortar, or by laying full section sewer pipe through the manhole and breaking out the top half after surrounding concrete has hardened. Smooth the floor of the manhole outside the channels, and slope toward the channels at not less than 1" per foot nor more than 2" per foot.
1. Shape the invert channels to be smooth and semi-circular, conforming to the inside of the adjacent sewer section.
 2. Make changes in direction of flow with a smooth curve of as large a radius as the size of the manhole will permit.
 3. Make changes in size and grade of channels smoothly and evenly.
 4. Slope invert uniformly from invert of inlet to invert of outlet.
- I. Bring manhole top to grade using precast grade rings.
- J. Manholes to be leak tight.

3.12 PIPE SUPPORTS

- A. Install in accordance with manufacturer's recommendations using stainless steel anchors.
- B. Install plumb and level.

3.13 HYDROSTATIC TESTING - PRESSURE LINES

- A. General:
 1. Pressure and leakage testing must be conducted in accordance with AWWA Standards C600 – Installation of Ductile Iron Water Mains and Their Appurtenances.
 2. Clean and flush line of air, dirt and foreign material.
 3. Do not perform hydrostatic tests until at least five days after installation of concrete thrust blocking.
 4. Test pump, pipe connection, pressure gauges, measuring devices and all other necessary appurtenances to conduct tests are to be provided by the Contractor.
 5. Install brass corporation cocks at all high points that do not have permanent air vents. Corporation cocks are to be left in place and all costs for providing such cocks are to be borne by the Contractor.
 6. Conduct tests on each line or valved section of line.
 7. Test pressures to be 150 psi, or 1.5 times the maximum working pressure, whichever is greater, based on the elevation of the lowest point of the section under test and corrected to the elevation of the test gauge.
 8. Do not test pipe at pressures exceeding manufacturer's recommendations.
 9. The Contractor must provide documentation of the pressure and leakage tests. Documentation must include length of lines, diameter of pipe(s), amount of water required to fill line after test was performed, and amount of allowable leakage.
 10. The witness to the hydrostatic testing is to be someone other than the Contractor or the utility installing the lines.
- B. Pressure tests:

1. After the pipe is laid, the joints completed, and the trench backfilled, subject the newly laid piping and valved sections of the piping to the test pressure specified in Part A above.
2. Open and close each valve within the section being tested several times during the test period.
3. Replace or remake joints showing leakage.
 - a. Remove cracked pipe, defective pipe, and cracked or defective joints, fittings and valves. Replace with sound material and repeat the test until results are satisfactory.
 - b. Make repair and replacement without additional cost to the Owner.

C. Leakage test:

1. Conduct leakage test after the pressure test has been completed satisfactorily.
2. Duration of each leakage test: At least two hours.
3. During the test, subject water lines to the test pressure specified in Part A above.
4. Leakage is defined as the quantity of water to be supplied into the newly laid pipe, or any valved or approved section thereof, necessary to maintain the specified leakage test pressure after the pipe has been filled with water and the air expelled.
 - a. No piping installation will be accepted until the leakage is less than the number of gallons per hour as determined by the formula(s):

$$L = S \times D \times \sqrt{P} / 148,000; \text{ where}$$

L = allowable leakage in gallons per hour;
 S = length of pipe tested in feet;
 D = nominal diameter of pipe in inches; and
 P = average test pressure psi gauge.

- b. When testing against closed metal-seated valves, an additional leakage per closed valve of 0.0078 gallons per hour per inch of nominal valve size will be allowed.
 - 1) Should any test of pipe disclose leakage greater than that specified above, locate and repair the defective joint or joints until the leakage is within the specified allowance, and at no additional cost to the Owner.
 - 2) Repair all visible leaks regardless of test results.
 - 2) Repair all visible leaks regardless of test results.

3.14 INSTALLATION OF HYDRANTS

- A. Inspect carefully, insuring that all foreign material is removed from the barrel.
- B. Set plumb and at such elevation that connecting pipe and distribution main have same depth of cover.
- C. Install washed stone drainage bed and thrust blocking as indicated.
- D. Install blue hydrant reflector on centerline of paved roadway marking the perpendicular location of fire hydrant with reference to the road centerline.
- E. Fully open and close each hydrant to assure that all parts are in working condition.

3.15 PAINTING

- A. Paint all exposed piping complying with pertinent provisions of Section 09900.

3.16 MEASUREMENT AND PAYMENT

- A. No separate measurement or direct payment will be made for the items under this Section and all costs for same shall be included in the price bid for the project.

END OF SECTION

SECTION 09900

PAINTING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Prepare, paint and finish the exterior and interior surfaces indicated or specified, and as needed for a complete and proper installation.
- B. Work not included: Unless otherwise indicated, painting of following surfaces will not be required.
1. Concealed areas and inaccessible areas such as furred spaces, foundation spaces, utility tunnels, pipe spaces, and duct shafts.
 2. Metal surfaces of anodized aluminum, stainless steel, chromium plate, copper (except piping), bronze and similar non-ferrous materials.
 3. Moving parts of operating units, mechanical or electrical parts such as valve operators, linkages, sensing devices, and motor shafts.
 4. Exterior concrete surfaces, including interior walls of treatment tanks.
 5. Instruments, control panels, chlorinators, etc. having factory applied finishes.
- C. Related work:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 2. Priming or priming and finishing of certain surfaces may be specified to be factory performed or installer performed under pertinent other Sections.
- D. Definitions: "Paint", as used herein, means coating systems materials including primers, emulsions, epoxy, enamels, sealers, fillers and other applied materials whether used as prime, intermediate or finish coats.

1.2 QUALITY ASSURANCE

- A. Referenced manufacturers are the Tnemec Company, Inc. and Ameron, Protective Coatings Division, and are named to establish standards of quality. Equal products of other manufacturers may be provided for the project upon approval by the Engineer.
- B. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- C. Paint coordination:
1. Provide finish coats which are compatible with the prime coats actually used.
 2. Review other Sections of these Specifications as required, verifying the prime coats to be used and assuring compatibility of the total coating system for the various substrata.
 3. Upon request, furnish information on the characteristics of the specific finish materials to assure that compatible prime coats are used.

4. Provide barrier coats over noncompatible primers, or remove the primer and reprime as required.
5. Notify the Engineer in writing of anticipated problems in using the specified coating systems over prime coatings supplied under other Sections.

D. Subcontractor qualifications:

1. Paint subcontractor to have a minimum of three years practical experience and successful history in the application of specified products to surfaces of wastewater treatment plants.
2. Furnish a list of references and job completions.
3. Paint subcontractor to provide certification from the paint supplier to his knowledge and experience in applying the specified coatings.
4. Paint subcontractor shall provide a site mock up of the coating systems for the masonry walls, concrete floors, and concrete launders for approval by the engineer before any work is started. The approved mock ups shall be the quality standard for the project.

E. Technical services:

1. The coatings manufacturer shall provide a NACE certified manufacturer's representative to visit the work to verify compliance with these specifications, to assure coatings are properly applied, and the proper equipment is being used.
2. Provide for a minimum of two (2) interim site visits between initiation and completion of painting or as needed.
3. Provide a NACE certified manufacturer's representative at completion of painting to verify painting was installed according to specifications.
 - a. Provide Holliday mils thickness testing of all metal surfaces.

1.3 SUBMITTALS

A. Comply with pertinent provisions of Section 01340.

B. Product data: Within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:

1. Materials list of items proposed to be provided under this Section.
2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.

C. Subcontractor qualifications.

D. Color chips: Provide for each type of finish coat required.

E. Schedule:

1. Submit schedule listing of all surfaces to be painted, name, generic type, trade or brand name, system for each surface including number of coats and total dry film thickness.
2. Secure Engineer's approval of schedule, in writing, prior to ordering any materials.

1.4 PRODUCT HANDLING

A. Comply with pertinent provisions of Section 01640.

- B. Deliver all material to site in original, new, unopened containers, labeled and bearing manufacturer's name and stock number, product and brand name, contents by volume for major constituents, instructions for mixing and reducing, and application instruction.
- C. Provide adequate storage facilities designed exclusively for the purpose of paint storage and mixing.
- D. Facility area shall be located away from open flames, be well ventilated, and be capable of maintaining ambient storage temperature of no less than 45°F.
- E. Paint, coatings, reducing agents, and other solvents must be stored in original containers until opened. If not resealable, then must be transferred to UL approved safety containers.
- F. Provide proper ventilation, personal protection and fire protection for storage and use of same. Comply with requirements set forth by Occupational Safety and Health Act for storage and use of painting materials and equipment.
- G. All waste materials shall be disposed of by the Contractor in accordance with South Carolina Department of Health and Environmental Control (SCDHEC).

1.5 REFERENCES

- A. SSPC - Steel Structures Painting Council
- B. SSPC-SP 1 – Solvent Cleaning.
- C. SSPC-SP 2 – Hand Tool Cleaning.
- D. SSPC-SP 3 – Power Tool Cleaning.
- E. SSPC-SP 6/NACE 3 – Commercial Blast Cleaning.
- F. SSPC-SP 10/NACE 2 – Near-White Metal Blast Cleaning
- G. SSPC-SP 13/NACE 6 – Surface Preparation of Concrete.
- H. SSPC-PA2 Measurement of Dry Coating with Magnetic Gauges.

1.6 EXTRA STOCK

- A. Upon completion of the work of this Section, deliver to the Owner at least one gallon of each color, type, and gloss of paint used in the Work, tightly sealing each container and clearly labeling with contents and location where used.

PART 2 - PRODUCTS

2.1 PAINT MATERIALS

- A. Source of all paint material is subject to approval by the Engineer.
- B. All paint material that will be in contact with potable water shall have the approval of the South Carolina Department of Health and Environmental Control for such use.
- C. All paint materials to be used in any one system shall be the products of one manufacturer.
- D. Where products are proposed other than those specified by name and number in the Painting schedule, provide under the product data submittal required by Article 1.3 of this Section a new painting schedule compiled in the same format used for the Painting Schedule included in this Section.
- E. Use only the thinners recommended by the paint manufacturer, and use only to the recommended limits.

2.2 COLOR SCHEDULE

- A. The Engineer will prepare a color schedule for guidance in the painting.

2.3 APPLICATION EQUIPMENT

- A. Use only such equipment as is recommended by the paint manufacturer.

2.4 OTHER MATERIALS

- A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Engineer.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.2 ENVIRONMENTAL CONDITIONS

- A. Do not work under unfavorable weather conditions.
 - 1. Air and surface temperatures must be above 45°F, dew point not within 5° of surface temperature, and relative humidity less than 85%.

3.3 SURFACE PREPARATION

- A. General:
 - 1. Prepare and clean all surfaces to be painted in a workmanlike manner with the objective of obtaining a smooth, clean and dry surface, free from cracks, ridges, nail holes, etc.

2. Remove or mask items not to be painted.
 3. Schedule cleaning and painting so that dust and other contaminants from cleaning operations will not fall onto newly painted surfaces.
- B. Ferrous metals:
1. Remove all rust, dust, scale and other foreign substances.
 2. Give welded joints special attention, removing all welding flux, slag and weld spatter.
- C. Non-ferrous metals: Solvent clean prior to shop or field application of pretreatment and/or primer.
- D. Factory finished components: Solvent clean prior to field application of pretreatment and/or primer.

3.4 MATERIALS PREPARATION

- A. General:
1. Mix and prepare paint materials in strict accordance with the manufacturer's recommendations as approved by the Engineer.
 2. When materials are not in use, store in tightly covered containers.
 3. Maintain containers used in storage, mixing, and application of paint in a clean condition, free from foreign materials and residue.
- B. Mixing:
1. Mix materials in strict accordance with the manufacture's data sheet.
 2. Do not stir into the material any film which may form on the surface, but remove the film and, if necessary, strain the material before using.

3.5 PAINT APPLICATION

- A. General:
1. Touch-up shop applied prime coats which have been damaged, and touch-up bare areas prior to start of finish coats application (see subsection 3.7 of this Section).
 2. Slightly vary the color of succeeding coats.
 - a. Do not apply additional coats until the completed coat has been inspected and approved.
 - b. Only the inspected and approved coats of paint will be considered in determining the number of coats applied.
 3. Sand and dust between coats to remove defects visible to the unaided eye from a distance of five (5') feet.
 4. On guards, covers, removable panels and hinged panels:
 - a. Remove fasteners before painting and re-install after paint is completely dry.
 - b. Remove or open guard, cover or panel for painting.
 - c. Paint the back sides to match the exposed sides.
- B. Drying: Allow sufficient drying time between coats, modifying the period as recommended by the material manufacturer to suit adverse weather conditions.
- C. Brush or roller applications:
1. Brush or roll coats onto the surface in an even film.

2. Cloudiness, spotting, holidays, laps, brush or roller marks, runs, sags, ropiness and other surface imperfections will not be acceptable.

D. Spray application:

1. Except as specifically otherwise approved by the Engineer, confine spray application to metal framework and similar surfaces where handwork would be inferior.
2. Where spray application is used, apply each coat to provide the hiding equivalent of brush coats.
3. Do not double back with spray equipment to build up film thickness of two coats in one pass.

3.6 PAINTING SCHEDULE

- A. Provide one prime coat (shop or field) and two finish coats, unless otherwise specified, in accordance with the following:

B. Systems:

1. In the schedules following, the type of paint system is identified by symbol in parenthesis immediately behind the manufacturer's name:
 - a. Alkyd (A)
 - b. Acrylic (AC)
 - c. Acrylic Latex (ACL)
 - d. High Build Urethane (HBU)
 - e. High Solids Epoxy (HSE)
 - f. High Build Coal Tar Solution (HBCT)
 - g. Alkyd Gloss (AG)
 - h. Epoxy Polyamide (EP)
 - i. Silicone (S)
 - j. Silicone Aluminum (SA)
 - k. Modified epoxy (ME)

- C. Ferrous metal submerged, including ductile iron pipe, non-potable water and interior:

1. Surface preparation: SSPC-SP10/NACE 2 Near-White Blast Cleaning.
2. System: Tnemec (HSE):

Prime coat	Series 1 Omnithane, 2.5 – 3.5 dry mils
2nd coat	Series N69-1255 Beige Hi-Build Epoxoline II, 4.0 – 6.0 dry mils
3rd coat	Series 104-Color H.S. Epoxy, 8.0 -10.0 dry mils

3. System: Ameron (HSE):

Prime coat	Amercoat 385P, 4.0 dry mils
2nd coat	Amercoat 385, 4.0 dry mils
3rd coat	Amerlock 400 or 400FD, 8.0 dry mils

4. Type finish: Semi-gloss.

D. Ferrous metal, including D.I. pipe, non-immersion and exterior:

1. Surface preparation: SSPC-SP6/NACE 3 Commercial Blast Cleaning (fabrications) or SSPC-SP3 Power Tool Cleaning.
2. For ductile iron, "MC-FerroClad Primer, 3.0 - 5.0 dry mils", by Wasser High-Tech Coatings, may be substituted for the prime coat.
3. System: Tnemec (HBU):

Prime coat	Series 1 Omnithane, 2.5 - 3.5 dry mils
2nd coat	Series 135 Chembuild , 4.0 – 6.0 dry mils
3rd coat	Series 740 Endura-Shield, 3.0 – 5.0 dry mils

4. System: Ameron (HBU):

Prime coat	Amercoat 385P, 4.0 dry mils
2nd coat	Amercoat 385, 4.0 dry mils
3rd coat	Amershield, 5.0 dry mils
4th coat	Clear Polyurethane, 1.5 dry mils

5. Type finish: Gloss.

E. Cast iron or ductile iron pipe, bituminous coated:

1. Surface preparation: SSPC -SP3 power tool cleaning.
2. Provide one prime coat as specified below and finish with two coats of appropriate metal finish as specified in paragraph 3.6C above.
3. Tnemec Series 1 Omnithane, 2.5 - 3.5 dry mils.
4. Amercoat 385, 4.0 dry mils.

3.7 TOUCH-UP OF APPLIED COATINGS

A. Prior to any touch-up, the area is to be SP-3 brush cleaned.

B. Shop applied coatings:

1. Shop applied coatings with specified primer, as listed in Part 3.6 above, shall be touched up with the same listed primer before any topcoat(s) are applied.
2. Shop applied coatings with manufacturer's standard paint shall be touched up with a compatible barrier coating, Tnemec Series 135 Chembuild or Ameron Amercoat 385.
 - a. Manufacturer shall notify the Engineer in writing if the manufacturer's standard paint is unable to receive the specified top coat(s) or if problems are anticipated due to incompatible coating systems.

C. Field applied coatings: After cleaning, apply specified primer followed by specified finish coats.

3.8 COATING THICKNESS

A. General:

1. In all cases, the value stated for dry film thicknesses are average, based upon application to a smooth surface.
2. Dry film thickness gauges will be used as the application of each coat proceeds, to check the film thickness as applied.
3. Failure to obtain the proper dry thickness will require the application of additional coats until proper dry thickness is obtained.

3.9 INSPECTION AND ACCEPTANCE

- A. Examination of overall appearance and measurement of dry film thickness.
- B. Correct defects and/or deficiencies to satisfaction of the Engineer.
- C. Observation by the Engineer will be required at the following intervals:
 - 1. At the end of each surface cleaning operation before paint is applied.
 - 2. After each coat of paint is applied.
 - 3. The Contractor shall be responsible to contact and coordinate the time of each observation with the Engineer.

3.10 CLEAN-UP

- A. Upon completion, painting contractor shall clean-up and remove from site all surplus materials, tools, appliances, empty cans, cartons, and rubbish resulting from painting work. Site shall be left in neat, orderly condition.
- B. Remove all protective drop cloths and masking from surfaces not being painted. Provide touch-up around same areas as directed by the Engineer.
- C. Remove all misplaced paint splatters or drippings resulting from this work.

3.11 MEASUREMENT AND PAYMENT

- A. No separate measurement or direct payment will be made for the work under this Section and all costs for same shall be included in the price bid for the item to which it pertains.

END OF SECTION

SECTION 11306

ABOVE GROUND NATURAL GAS ENGINE EMERGENCY PUMP SYSTEM

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Work included: Furnish one factory built, natural gas engine driven, self-priming centrifugal pump, skid mounted with enclosure, as specified herein and appurtenances as needed to provide a complete and proper unit ready for operation.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 2. Section 01650 – General Equipment Requirements.
 - 3. Section 01660 – Technical Services.
 - 4. Section 02751 – Pump station piping, valves and appurtenances
 - 5. Section 16400 – Electrical

1.2 QUALITY ASSURANCE

- A. Referenced manufacturers is Thompson Pump the named to establish standards. Godwin (Xylem) Pumps Company is considered an equivalent.
 - 1. The plans show the installation of Thompson Pumps pumping equipment.
 - 2. The equipment supplier is responsible for informing the Contractor of any modifications required to install any other pumping equipment.
 - 3. All costs associated with these modifications shall be borne by the Contractor and included in the price bid for this item.
- B. The complete pump package shall be manufactured in a plant that is registered to ISO 9001:2008 and a copy of the Certificate shall be provided as a submittal. Failure to provide the Certificate shall result in rejection of the proposed pump.
- C. The pump shall be designated and manufactured in conformance with CPB / AEM standards
- D. Provide manufacturer's standard production model pump with experience of continuous use by municipal and industrial owners for a minimum of five years.
- C. Technical services: Provide service of pump manufacturer's service engineer, complying with Section 01660 and the following:
 - 1. Erection and installation – One day.
 - 2. Start-up and training – Two days.

1.3 SUBMITTALS

- A. Comply with pertinent provisions of Section 01340.
- B. Product data: Within 45 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.

2. Provide pump performance curve showing capacity, head and efficiency, impeller diameter, all at various speeds.
 3. Names and addresses of the nearest service and maintenance organization that readily stocks repair parts.
 4. Dimensioned layout drawings showing locations of all major components.
- C. Provide Operation and Maintenance manuals complying with Section 01650.
- D. Three (3) copies of field test reports.
- 1.4 PRODUCT HANDLING
- A. Comply with pertinent provisions of Section 01640.
- 1.5 WARRANTY
- A. Comply with provisions of Section 01650.
- B. The manufacturer of the pumping unit shall warrant for a period of one year from the date of shipment that the entire unit and all equipment therein shall be free from defects in design, material, and workmanship.

PART 2 – PRODUCTS

2.1 PUMP

- A. Provide pumping system capable of pumping raw sewage and capable of operation in class I, divisions 1 and 2, group D hazardous locations.
- B. Provide 4" x 4", self-priming, centrifugal, skid mounted natural gas engine driven pump.
- C. Provide pump capable of pumping raw sewage and passing 3" solids.
- D. Provide a fully automatic priming system incorporating a twin cylinder air compressor, air ejector assembly, and an air/water separation tank.
1. Capable of priming the pump from a completely dry pump casing.
 2. The air ejector to operate on the discharge side of the compressor, eliminating the possibility of water being drawn into the air source.
 3. Do not use a vacuum or diaphragm pump for the priming system, nor require the use of a "foot" type valve.
 4. Priming systems that require manual water additions to facilitate pump priming are not acceptable.
- E. Mount the natural gas engine driven pump unit on a structural steel skid base with integral fuel cell.F. Capable of static suction lifts to 28' vertical feet, at sea level. It also should be capable of operation using extended suction lines.
- G. Equipment acceptance will be contingent upon the pump's ability to run continuously at full speed in a completely dry condition for periods up to 24 hours, then re-priming and returning to normal pumping volumes.
- H. Engine to have 110 Volt Block heater and 12 volt trickle charger.

2.2 ENCLOSURE

- A. Completely enclose the engine and pump with 12 gauge sheet metal panels backed with 1" and 2" layers of polydamp acoustical sound deadening material.

- B. Enclosure to include 12 volt work lights and 12 Volt Yellow Strobe light mounted to the exterior. Work lights to include an on/off switch and strobe light will operate whenever pump is running.
- C. Provide an acoustical enclosure to reduce pump and engine noise to 70 dBA or less at a distance of 30 feet.
- D. Provide removable panels for easy access to the engine/pump for maintenance and repair.
- E. Provide a factory-mounted engine control panel inside enclosure with a locking door for visual inspection.
- F. Provide on pump discharge side of the enclosure a hinged door for quick access to the engine oil fill, fuel fill port, oil dipstick, and filters.
- G. Pump castings to be cast iron.
 - 1. Incorporate a direct suction flow path that is in axial alignment with the impeller eye.
 - 2. There will be no turns, chambers, or valves between the suction flange and the impeller eye.
- H. Provide a pump impeller, non-clog type with pump out vanes on the back shroud and fabricated from hardened cast chromium steel construction (minimum Brinell Hardness 340 HB).
- I. Provide fully adjustable and replaceable wearplates fabricated of cast iron or wear rings.
- J. Bearings and shafts:
 - 1. Fit pump with a bearing bracket to contain the shaft and bearings.
 - 2. Provide tapered roller bearings of adequate size to withstand imposed loads for sustained pumping at maximum duty points.
 - 3. Minimum ISO L₁₀ bearing life to be 100,000 hours. Impeller shafts shall be fabricated of 1.5% chromium alloy.
- K. Seals to be high pressure, mechanical self-adjusting type with silicon and/or Tungsten carbide faces capable of withstanding suction pressures to 100 psi.
 - 1. Cool and lubricate in an oil bath reservoir, requiring no maintenance or adjustment.
 - 2. Capable of running dry, with no damage, for periods up to 24 hours.
 - 3. All metal parts to be of stainless steel.
 - 4. Elastomers shall be Viton.
- L. Provide cast iron ANSI (B16.1) Class 150.
- M. Pump gaskets to be compressed fiber and/or Teflon.
- N. Pump O-rings to be Buna-N.
- O. Supply pump with an integral flap type check valve mounted on the discharge of the pump allowing unrestricted flow from the impeller. Field replaceable valve elastomers of Nitrile rubber.
- P. Performance:

Operating speed (maximum)	2,200 rpm
Minimum solids handling size	3 inches - diameter
Maximum suction lift	20 feet
Capacity	182 gpm
Total dynamic head	41 feet

2.3 NATURAL GAS ENGINE DRIVE

- A. The drive unit to be a natural gas water-cooled engine.
1. Drive the pump by use of direct connected intermediate drive plate.
 2. Starter to be 12 volt electric.
 3. Provide safety shut down switches for low oil pressure and high temperature.
 4. Battery to have 180-amp hour rating.
 5. Provide unit with a tachometer and an hourmeter.
 6. Provide a Ford TSG-415 or equal, rated at 27hp (continuous) at 2,200 RPM.
 7. Provide a certified continuous duty engine curve to the owner/engineer.
- B. Governor to be an electronic control type. Engine speed to be adjustable to operate the pump between maximum and minimum design operation speeds.
- C. Exhaust system to include a muffler and silencer.

2.4 LEVEL CONTROL

- A. Provide automatic level control system with floats or level transducer.
1. Provide micro float switches, single action design, capable of withstanding water penetration under 25' of water with at least a 3 to 1 safety factor.
 2. Provide weighted floats:
 - a. Do not use float switches that require pole mounting.
 3. Switches:
 - a. Micro type switch sealed in a polypropylene housing with not less than 20' of cable.
 - b. Provide polypropylene cord grips and mounting hardware for switches.
 4. Level sequence:
 - a. One for "high water level" pump start.
 - b. One for "low water level" pump off.
- B. Engine/Pump Control
1. The engine shall be controlled, started and stopped by a high performance state of the art digital controller. The controller shall be weather proof and shall not be mounted inside a separate enclosure. A 12-position key pad shall be accessible without the need to remove or open any protective cover or enclosure. The control shall provide:
 - a. 24-Digital Inputs
 - b. 7-Analog Inputs
 - c. 1 -Magnetic Pick Up Inputs
 - d. 8-20 amp Form C Relays
 - e. 1-RS 232 Port
 - f. 1-RS 485 Port
 - g. 1-RS 232/RS485 Port
 - h. 1-J 1939 Port
 - i. 1-64 x 128 Pixel, Full Graphic LCD Display with Backlight
 - j. 1-12 Position Keypad

2. The Pump Control shall provide the following functions without modification, factory recalibration or change of chips or boards by simply accessing the keypad.
 - a. In automatic mode, go to "sleep" mode.
 - b. The keypad shall be a capacitive touch sensing system. No mechanical switches will be acceptable. The keypad shall operate in extreme temperatures, with gloves, through ice, snow, mud, grease, etc., and maintain complete weather tight sealing of the Panel.
 - c. The panel shall function interchangeably from float switches, pressure switch, or transducer as well as manual start/stop by selection at the keypad. No other equipment or hardware changes are required.
 - d. A two float assembly shall be furnished with the portable pump.
 - e. A start function can be programmed to provide 3 separate functions each day for 7 days, i.e., a start, warm up, exercise cycle on two separate days at different times and for a varying length of time all via the keypad.
 - f. The Panel shall have only one circuit board with 8 built in relays. Each relay can be named to provide any function all via the keypad without changing relays, chips, printed circuits or any hardware or software.

2.5 BATTERY CHARGER

- A. Provide 120VAC, 60-hertz charger, factory-mounted inside enclosure to maintain the charge on the 24VDC engine storage battery.
- B. Battery charger shall incorporate:
 1. Automatic charge sensing and charging rate adjustment circuit.
 2. Integral current limit circuit charging to 5 amperes maximum.
 3. Fuse for protection of charging circuit.
 4. Engine storage battery shall provide operating power for the engine control system.

2.6 FINISH

- A. Provide unit with factory painted finish on all components. Owner to chose color from standard color choice provided by manufacturer.

PART 3 - EXECUTION

3.1 DELIVERY

- A. Deliver unit complete as specified and ready for use.

3.2 TESTING

- A. Test and run unit via auto-controller for 24 hours and for at least two (2) hours in the presence of the Owner and the Engineer.
- B. Provide start up report, including:
 1. Level control settings.
 2. Pumping rate.
 3. Discharge head.
 4. Battery voltage check.
 5. Check of all the fluid levels.

3.3 MEASUREMENT AND PAYMENT

**ABOVE GROUND NATURAL GAS ENGINE EMERGENCY PUMP SYSTEM
11306-5**

- A. Payment will be made for the work under this Section and all costs for the same shall be included in the unit price as stated in the Bid Form.

END OF SECTION

SECTION 11313

SUBMERSIBLE SEWAGE PUMPS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work included: Provide submersible sewage pumps for one duplex sewage lift station, each station including, but not necessarily limited to, two submersible sewage pumps, guide rail mounting system, guide rails, wetwell access, discharge seal and elbow, and motor control center with liquid level control system, to provide station complete and ready for operation.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 2. Section 01650 - General Equipment Requirements.
 - 3. Section 16400 – Electrical.

1.2 QUALITY ASSURANCE

- A. Referenced manufacturer is the Sulzer Pump Solutions (OS), Inc. of Merden, Connecticut is named to establish standards quality. Flygt Corporation of Trumbull, Connecticut will be considered an equal.
- B. The Contractor's attention is directed to the fact that the pumps and controls are an integrated system in the view of the Engineer and as such shall be furnished by one vendor who shall provide all the equipment and appurtenances regardless of the manufacture, and be responsible to the Contractor for satisfactory operation of the total system.
- C. The pump manufacturer shall have a minimum of 1,000 pumping units of similar type pumps, installed and operating for not less than five (5) years in the United States.
- D. Technical services:
 - 1. Provide a service engineer, complying with requirements of Section 01660 for the following periods of time for each pump station:
 - a. For start-up and performance testing: Two days - Two trips.

1.3 SUBMITTALS

- A. Comply with pertinent provisions of Section 01340.
- B. Product data: Within 15 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
 - 2. Shop drawings showing plan, elevation and sectional views, materials of construction, and other pertinent information.
- C. Six (6) copies of factory and field test reports.

D. Provide Operation and Maintenance manuals complying with Section 01650.

1.4 PRODUCT DELIVERY

A. Comply with pertinent provisions of Section 01640.

1.5 SPARE PARTS

A. Provide the following minimum spare parts:

1. One of additional spare pump and motor
2. One of each seal assemblies.
3. One complete set of bearings.
4. One set of wear rings.
5. One of each type relay.
6. One pump starter.
7. One pump alternator.
8. One float switch.
9. One of each type pilot light.
10. One box of each type lamp.
11. One box of each type of fuse.
12. One set of cable grommets.

B. Package in one container all spare parts and clearly identify on the outside what the unit is for.

1. Seal tightly and properly protect for long term storage.
2. Deliver to the Engineer for transmittal to the Owner.

1.6 WARRANTY

A. Comply with provisions of Section 01650.

B. The pump manufacturer shall warrant the units being supplied to the Owner against defects in workmanship and material for a period of five (5) years or 10,000 hours under the Municipal Wastewater Permanent Installation Warranty Policy under normal use, operating and service. The warranty shall be in printed form and apply to all similar units.

PART 2 - PRODUCTS

2.1 PUMPS

A. General:

1. Provide submersible pumps capable of pumping raw sewage.
2. Provide 3-inch discharge with ANSI 125 lb standard cast iron flange fitting or cast with volute.
3. Provide pump openings and passages adequate to pass 3" diameter sphere and any trash or stringy material that can pass through an average house collection system.
4. Pump components shall be cast iron, ASTM A 48, Class 35B and all exposed fasteners and washers shall be Type 304 stainless steel or brass.
5. Pump lift handle to be Type 304 stainless steel.

B. Impeller:

1. Double shrouded non-clog type having a long throulet without acute turns.
 2. Gray cast iron, Class 35B, balanced dynamically to 0.5".
 3. Paint impeller with one coat of alkyd resin primer.
 4. Provide wear ring consisting of a replaceable stationary ring made of brass, drive fitted to the volute inlet.
 5. Provide sliding fit between the impeller and the shaft with one key.
- C. Volute: Provide single piece, non-concentric design with smooth fluid passages large enough at all points to pass any size solids which can pass through the impeller.
- D. Shaft: Provide AISI Type 431 stainless steel.
- E. Bearings:
1. The pump shaft shall rotate on two (2) permanently lubricated bearings with a B-10 bearing life of 50,000 hours.
 2. The upper bearing shall be single deep groove ball bearing.
 3. The lower bearing shall be a two row angular contact ball bearing.
- F. Watertight seals:
1. Machine and fit all mating surfaces where watertight sealing is required with nitrile rubber O-rings.
 2. Fittings shall be such that sealing is accomplished by metal-to-metal contact between machined surfaces.
 3. Do not provide gaskets, elliptical O-rings, grease or other devices.
- G. Mechanical seals:
1. Provide each pump with a tandem mechanical shaft seal system.
 2. Operate the upper of the tandem set of seals in an oil chamber located just below the stator housing.
 3. Provide upper seal set containing one stationary tungsten carbide ring soldered to a holder of stainless steel and one positively driven rotating tungsten carbide ring to function as an independent secondary barrier between the pumped liquid and the stator bearings.
 4. Provide lower seal set consisting of a stationary ring soldered to a holder of stainless steel and a positively driven rotating ring both of which shall be tungsten carbide.
 - a. Hold each interface in contact by its own spring system.
 5. Provide lower set of seals to function as the primary barrier between the pumped liquid and the stator housing.
 6. The seals shall require neither maintenance nor adjustment, but shall be easily inspected and replaceable.
 7. Do not provide shaft seals without positively driven rotating members, or conventional double mechanical seals containing either a common single or double spring acting between the upper and lower units.
 8. Provide all seal hardware of stainless steel.
- H. Performance:
1. Select each pump to have the necessary characteristics to perform under these operating conditions:

Capacity (gpm)	182
TDH (feet)	40

Efficiency (%)	54
Minimum shut-off head (feet)	48
Maximum speed (rpm)	1730

2. Total discharge head (TDH) as listed on schedule herein does not include losses in the pump from the suction flange to the discharge flange. Therefore, provision shall be made in the design of the pump to accommodate this additional head. These losses shall also be included in the pump efficiencies. The efficiency listed is field efficiency and includes the efficiencies of the bowl corrected for all losses chargeable to the pump, including losses for shafts, column, and discharge head or elbow. Motor efficiency is not included in the field efficiency.

2.2 PUMP MOTOR

A. General:

1. Provide submersible type motor, designed for continuous duty, capable of sustaining a minimum of fifteen (15) starts per hour.
2. Furnish motor and pump as integral unit.
3. Air filled, squirrel cage induction, shell type design, with Class H insulation system and Class H materials rated for continuous duty in 40° C (104° F) liquids.
4. Furnish motor frame and end shields of cast iron.
5. Provide stainless steel hardware and shaft.
6. Service factor to be 1.15.
7. Provide stator heat-shrink fitted to shaft.
 - a. Dip and bake stator in Class H varnish.
 - b. Do not use bolts, pins or other fastening devices requiring penetration of the stator housing.
8. Provide rotor bars and short circuit rings of aluminum.
9. Motor to be non-overloading through the range of pump's operating curve.

B. Provide a cable entry water seal system to preclude specific torque requirements to ensure a watertight and submersible seal.

1. Provide the cable entry of a single cylindrical elastomer grommet, flanked by stainless steel washers, all having a close tolerance fit against the cable outside diameter and the entry inside diameter and compressed by the entry body containing a strain relief function, separate from the function of sealing the cable.
2. The assembly shall bear against a shoulder in the pump top.
3. Separate the cable entry junction chamber and motor by a stator lead sealing gland or terminal board to isolate the motor interior from foreign material gaining access through the pump top.
4. Do not use epoxies, silicones, or other secondary sealing systems.

C. Provide prelubricated bearings with minimum B-10 life of 50,000 hours.

D. Thermal protection:

1. Provide motor rated thermally to NEMA MG1-12.42.
2. Protect by means of three (3) thermostatic switches (one in each phase) in the stator windings.

E. Junction chamber:

1. Seal the junction chamber containing the terminal board from the motor by elastomer compression seal (O-ring).
2. Make the connection between the cable conductors and stator leads with threaded compressed type binding, post permanently affixed to a terminal board.

F. Motor characteristics shall be:

Minimum Motor Hp	4.2
Speed (rpm)	1730
Operational Current	240 volt, 3 phase

2.3 DISCHARGE CONNECTION

- A. Provide a permanently installed discharge connection system which will permit removal and installation of pump without the necessity of an operator entering the wetwell.
- B. The pump(s) shall be automatically connected to the discharge connection elbow when lowered into place, and shall be easily removed for inspection or service.
- C. Sealing of the pumping unit to the discharge connection elbow shall be accomplished by a simple linear downward motion of the pump.
- D. Provide a sliding guide bracket to be an integral part of the pump unit.
- E. The entire weight of the pumping unit shall be guided by no less than two guide bars and pressed tightly against the discharge connection elbow with metal-to-metal contact.
- F. Do not use a diaphragm, o-ring or other devices to interface sealing of the discharge.
- G. Do not bear any portion of the pump directly on the floor of the sump.

2.4 DISCHARGE ELBOW

- A. Cast from gray cast iron complying with ASTM A 48, Class 30.
- B. Provide vertical leg with 3-inch ANSI Class 125 lb. flange.
- C. Provide horizontal or inlet leg with a flat machined face for forming an effective seal with the lip seal on pump.
- D. Provide elbow with an integral cast iron base for anchoring and support of discharge piping and pump to wetwell floor.

2.5 GUIDE RAILS

- A. Provide for each pump two lengths of Schedule 40, Type 304 stainless steel pipe with pilots as indicated on contract drawings.
 1. For pumps with motors less than 30 HP: 2" diameter.
 2. For pumps with motors 30 HP and greater: 3" diameter.
- B. Provide Type 316 stainless steel top pilots, Halliday Metals or equal.

2.6 PUMP GUIDES

- A. Attach to pump volute with stainless steel head cap screws.

2.7 LIFT CHAIN

- A. Provide each pump and motor with adequately sized Type 316L stainless steel lifting chain.
 - 1. Provide minimum 1/4" welded stainless steel link chain.
- B. Length shall reach top of station plus an additional 6 feet.
- C. Provision shall be made for attaching upper end of this chain to the wetwell access frame with Type 316 stainless steel clip and stainless steel eye nut.
- D. Connect chain to pump using a Type 316 stainless steel screw pin shackle

2.8 HARDWARE

- A. All bolts, machine screws, nuts, washers, and lockwashers for complete assembly of wetwell access cover, guide rails, and discharge elbow shall be furnished by manufacturer in Type 316 stainless steel.

2.9 WETWELL ACCESS

- A. Fabricate from welded aluminum sections.
- B. Provide hinged door of 1/4" aluminum treadplate for each pump.
- C. Upper surface shall be flush, with no protrusions.
- D. Fit door with recessed latch requiring a special square tool for access.
- E. Provide all hardware of Type 316 stainless steel.
- F. Provide Type 316 stainless steel support bracing with a self-locking hinge mechanism to lock into open position.
- G. Provide a recessed padlock hasp.
- H. Provide OSHA approved lettering on the top of the hatch stating "Confined Space Do Not Enter Without a Permit".
- I. Provide an aluminum safety grate system to cover the opening in accordance with OSHA 1910.23.
 - 1. Allow for visual inspection and float adjustment with grate in place.
 - 2. 300 psf pedestrian rated.
 - 3. Lockable.
 - 4. Provide pull open arm to safely position operator when opening the grate.
 - 5. Provide safety orange TGIC epoxy powder coating.
- J. Provide "Safe Hatch" by Syracuse Castings or Flygt.

2.10 LEVEL CONTROL

A. Ultrasonic Level Transmitters:

1. Provide one (1) ultrasonic level transmitter located at the wetwell, as shown on the drawings.
2. Provide a microprocessor based echo-time measuring type consisting of a transmitter and transducer.
3. Transducer:
 - a. Internal temperature sensor.
 - b. Range of the transducer: 1' to 50'.
 - c. KYNAR transducer housing.
 - d. 1" NPT conduit connection.
 - e. Operating ambient temperature shall be -40° F to 203° F.
 - f. 6-degree beam angle.
 - g. Adequate cable to run to transmitter location.
 - h. Transducer shall be water tight to a level of 25-feet.
 - i. Acceptable product: Milltronics Echomax XPS-15.
4. Transmitter:
 - a. Panel mount unit on inner swing panel.
 - b. Suitable for operation from a 100-230 VAC $\pm 15\%$ @ 50/60 Hz power supply or a 12-30 VDC power supply, depending on application.
 - c. NEMA 4X polycarbonate enclosure.
 - d. Operating ambient temperature shall be -58° to 302°F.
 - e. Outputs:
 - 1) 4-20mA into 750 ohms (isolated).
 - 2) 1 form C, SPDT multi-purpose relay rated at 5A/250 VAC non-inductive.
 - f. Programming: Enter all parameters and commands via a hand-held infrared keypad.
 - g. Multi-field backlit LCD indicator, with parameters displayed during setup and with eight digits for totalizer.
 - h. Transducer shall be a submergence depth of 25'.
 - i. Range: 1 to 50', depending on transducer.
5. Acceptable product: Milltronics Hydro-Ranger 200.

B. Float Switches:

1. Provide two (2) integrally weighted float switches by Anchor Scientific, Eco-Float Type GSI40NONC.
 - a. Units shall be S.P.D.T. design, capable of withstanding water penetration under 25' of water with at least a 3:1 safety factor.
 - b. Utilize a micro switch sealed in a polypropylene housing with not less than 40' of attached connection cable.
2. Support float switch connection cables using stainless steel cable supports with adjustable strain relief attachment devices.
3. Provide floats as follows:
 - a. Low level cutoff.
 - b. High-level emergency level and alarm.
4. Configure the control panel to allow the floats to control the pumps in the event the ultrasonic level fails.

2.11 PUMP CONTROL PANEL

A. Enclosure:

1. Provide 14 gauge Type 316 stainless steel enclosure complying with NEMA 4X, gasketed, with rain shield.

- a. Provide for rack mounting with exterior flanges, as indicated on the plans.
2. Provide a single 3-point locking latch.
 - a. Attach with stainless steel screws.
3. Include removable inner swing panel fabricated of aluminum having a minimum thickness of 0.125" mounted on a continuous stainless steel piano type hinge.
 - a. Panel shall be of adequate size to completely cover all wiring and components mounted on the back panel and shall make provisions for the mounting of all basic and optional controls and instruments.
 - b. Panel shall have a minimum horizontal swing of 90° and shall be held in the closed position with straight slot screws.
4. Provide removable back panel of 0.125" minimum thickness, aluminum, attached to enclosure on collar studs, and of adequate size to accommodate all basic and optional components.
 - a. Mount components to back panel securely utilizing screws and lockwashers.
 - b. Tap panel to accept mounting screws.
 - c. Do not use any self-tapping screws.
5. Back panel to be painted with two coats of white epoxy enamel.
6. Provide a fluorescent light in the top of the panel of maximum size to fit the panel. Minimum 18", maximum 48".
 - a. Wire to a two-pole limit switch mounted on the door of the enclosure.
 - b. Door opening will automatically turn light on.
 - c. Door closing will automatically turn light off.
 - d. Wire second pole of switch to a non-relay-isolated SCADA input to provide an intrusion signal.
7. Provide engraved nameplates on door-mounted hardware.
 - a. Attach with stainless steel screws.

B. Motor starters:

1. Provide for each motor a NEMA rated combination magnetic motor starter.
 - a. Equip with undervoltage release and overload protection on all three phases.
 - b. Furnish motor starter contacts that can be easily replaced without removing the motor's starter from its mounted position.
 - c. Use manual reset overload relays and do not provide means for converting to automatic reset.
2. For motors 15 horsepower or less in size:
 - a. Provide open frame, across-the-line, non-reversing type, as manufactured by Allen Bradley, Square D (Class 8539) or equal.

C. Components:

1. Provide power disconnect on each circuit breaker with operator handle located on exterior of inner swing panel.
 - a. Include interlock permitting swing panel to be opened only when circuit breakers are in the "OFF" position.
2. Provide "H-O-A" switches for each motor.
 - a. Provide UL rated, heavy duty, 600 VAC, NEMA 4X, oil-tight switches, Allen Bradley Series 800H or Square D Class 9001 SK.
 - b. "Hand" position not to override motor overload shutdown.
3. Provide the following components with the panel:
 - a. Pilot run light for each motor.
 - b. Lockable enclosure.
 - c. Condensation heater.

- d. Undervoltage, phase failure and phase reversal protection unit, TimeMark Model 265, or Engineer-approved equal.
 - e. High level alarm indication light.
 - f. Alarm horn silence.
 - g. Reset-motor over temperature.
 - h. GFI 20A duplex receptacle with stainless steel cover.
 - i. Control relays.
 - j. Remote alarm terminals.
 - k. "High temperature" indicator lamps.
 - l. "Power on" indicating lamp.
 - m. Temperature failure test pushbuttons.
 - n. "Seal failure" indicator lamps.
 - o. "Seal failure" test pushbuttons.
- D. Pump alternator relay:
- 1. Provide relay of electrical/mechanical industrial design, Series ARB, as manufactured by Diversified Electronics or equal.
 - a. Products of other manufacturers are not acceptable.
 - 2. Include three position selector switch to override automatic alternator and provide manual selection of either Pump No. 1 or No. 2 as the "LEAD" pump, Allen Bradley Series 800H or Square D Class 9001SK.
- E. High temperature shutdown:
- 1. Provide high temperature shutdown for each motor utilizing the temperature switches embedded in the motor windings.
 - a. Under high temperature conditions switch shall open, de-energizing the motor starter and stopping the pump motor.
 - b. High motor temperature shutdown device shall be automatic reset type.
- F. Moisture detector control:
- 1. Provide for each pump a float switch sensor that will detect moisture in the stator chamber.
 - 2. Detection of moisture by the sensor shall disrupt the motor starting circuit of the pump involved.
 - 3. Motor shall remain inoperative until problem is corrected and the control circuit is manually reset.
- G. Provide overload reset device operable without opening the inner swing panel.
- H. Provide the following components and mount on the back plate:
- 1. Provide a 115V control circuit transformer (open core and coil type) with primary circuit breaker and secondary circuit breakers for:
 - a. Control
 - b. Duplex receptacle
 - c. Condensation heater
 - d. Flood Light
 - e. Bypass Pump Battery Charger
 - f. Bypass Pump Block Heater
 - 2. Provide an automatic shut-off timer for alarm horn (0-20 min. adjustable).
 - 3. Provide lightning arrestor, Delta Type "LA".
 - a. Do not substitute.
 - 4. Provide power terminals and control terminals.

- I. Design control sequence so that panel is functioning automatically again after a power failure and manual reset is not necessary.
 - 1. Provide a time delay relay to prevent both pumps from starting simultaneously after power failure.
- J. Provide a terminal board for connection of line, pump leads and level sensors.
- K. Provide elapsed time meter wired to each motor starter, six digit, non-resettable, to indicate total running time in hours and tenths.
- L. Provide high water alarm activated by micro float switch.
 - 1. Include front panel mounted silence switch.
 - 2. Provide 115V AC, utilizing standard 40-watt incandescent bulb, vapor tight, alarm light with red globe, guard and mounting hardware.
 - a. Mount on top of panel.
 - 3. Provide 115V AC, single projector, vibrating type horn with weatherproof housing, including mounting lugs and conduit tap.
 - 4. Horn and light to operate simultaneously under alarm conditions.
 - 5. Horn and light to be on at high level.
- M. Pump ammeter:
 - 1. Provide a panel-mounted ammeter with a scale range greater than pump rating.
 - a. Provide an "Off-L1-L2-L3" selector switch.
 - b. Provide a "Pump 1 - Pump 2" selector switch.
 - 2. Provide General Electric or Simpson.
- N. Control relays: Provide heavy-duty industrial grade relays, tube base, plug-in type, Allen Bradley, Bulletin 700, Type H or Square D, Class 8501, Type K with silver cadmium oxide contacts and LED indicator.
- O. Electrical schematic:
 - 1. Provide a number indexed laminated electrical schematic diagram of the pump controls including terminal board connections.
 - 2. Permanently mount on the inside of the enclosure door.
- P. All attachment screws are to be stainless steel.

2.12 WIRING

- A. Pump control panel:
 - 1. Unit to be completely factory wired except for power supply, motor, temperature switches and moisture sensor; connections; and, micro float switches.
 - a. Comply with applicable standards of National Electric Code.
 - b. Color code and number as indicated on factory wiring diagram.
 - c. Control wire to be MTW 90° C #14 AWG.
 - 2. Electrically ground all components to a common ground screw mounted on the removable back panel.
 - 3. Neatly group all wiring in plastic wire troughs except wiring from the 14 backplate to the door shall be done in separate bundled harnesses for control circuits.

4. Provide sufficient motor lead wiring and float control wiring to make connections in the junction box to be mounted below the control panel.
- B. Level control and motor power cable:
1. Provide cable of adequate length to terminate in control panel junction box without splicing.

PART 3 - EXECUTION

3.1 STRUCTURE

- A. Install wetwell (precast utility vault sections) complying with pertinent provisions of Section 03405 and Contract Drawings.
- B. Use base plate as a template for drilling individual hole patterns and mount base plates using 3/4" Type 316 stainless steel expansion anchors.
- C. Set up 60° slope on both sides of wetwell as indicated on Contract Drawings, using portland cement grout.
- D. Assemble the guide rails to access frame and plumb the assembly.
- E. Install float switch support to precast top using Type 316 stainless steel anchors.
- F. Install pumps and piping, plumbing assembly for proper alignment and fit.
- G. Seal around inlet and discharge piping as indicated on Contract Drawings.
- H. Install power cables using the cable strain reliefs and cord grips.

3.2 FIELD WIRING

- A. Comply with pertinent provisions of Section 16400.
- B. Extend grounding wire from control panel main ground screw to external ground as indicated and complying with NEC and local electrical codes.
- C. Mount and connect alarm light and horn if provided for remote mounting.
- D. Make motor lead, micro float switch, temperature sensor, moisture sensor, and power supply connections.
- E. Seal all conduits between junction box and control panel in accordance with the plans and complying with all pertinent National Electric Code requirements.
- F. Seal conduit terminations in control panel with duct seal.
- G. Use licensed personnel.

3.3 PUMP TESTING

- A. Provide the following inspections and tests on each pump before shipment from factory by the manufacturer:
 1. Check impeller, motor rating and electrical connections for compliance to the customer's purchase order.

2. Make a motor and cable insulation test for moisture content or insulation defects.
3. Prior to submergence, the pump shall be run dry to establish correct rotation and mechanical integrity.
4. Run the pump for 30 minutes submerged, a minimum of six (6') feet under water.
5. After operational test No. 4, perform the insulation test (No. 2) again.
6. Supply a written report stating the foregoing steps have been done with each pump at the time of shipment.

B. Provide the following tests after installation:

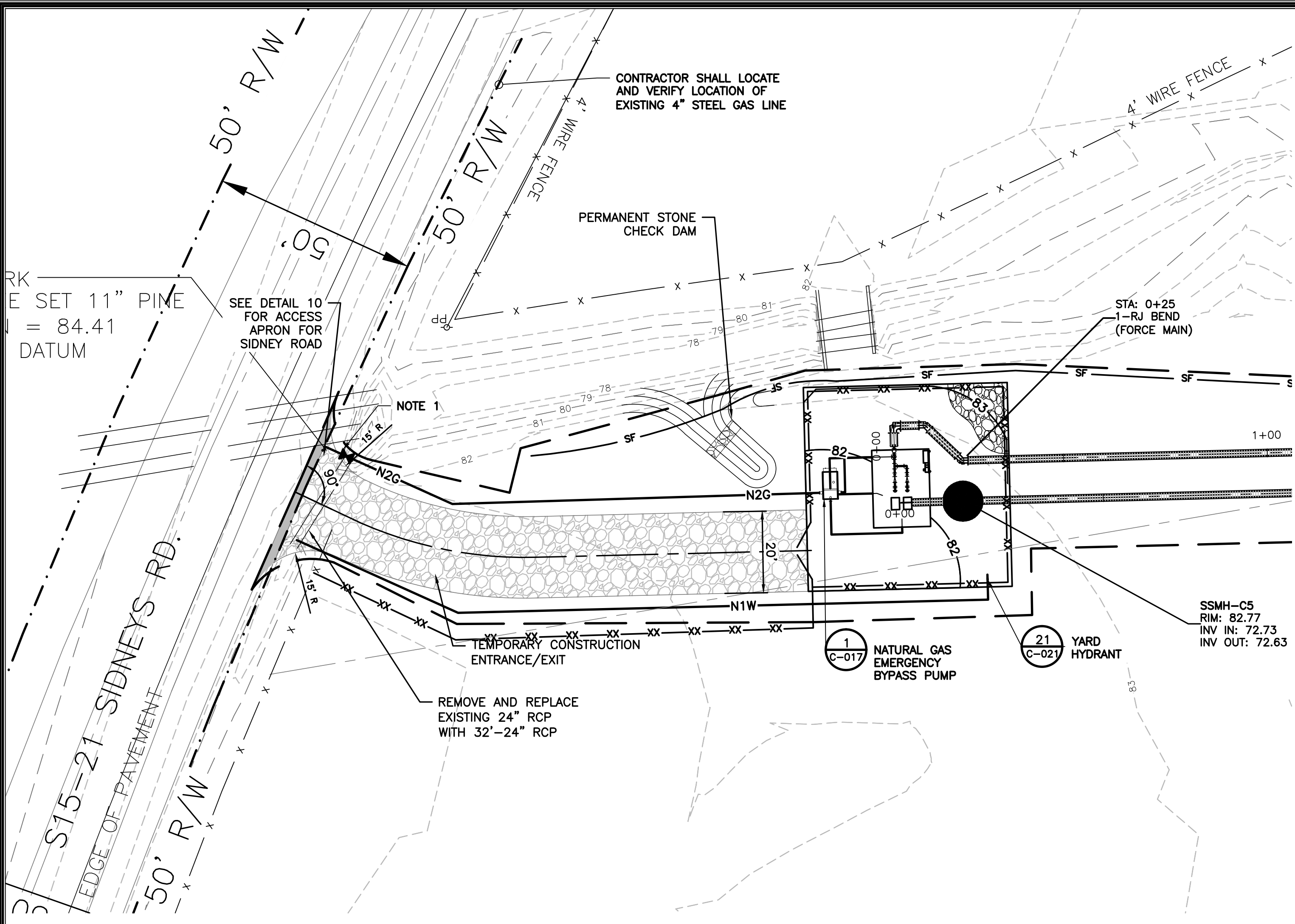
1. In presence of Engineer, remove pump from structure and replace, demonstrating proper alignment and operation of mating parts.
2. Operate pumps utilizing manual and automatic modes, demonstrating proper operational sequences including alarm conditions.
3. Measure amperage, voltage, pumping rate and discharge pressure for each pump operating separately and for both pumps operating simultaneously.
4. Submit six (6) copies of final test report for approval.

3.4 MEASUREMENT AND PAYMENT

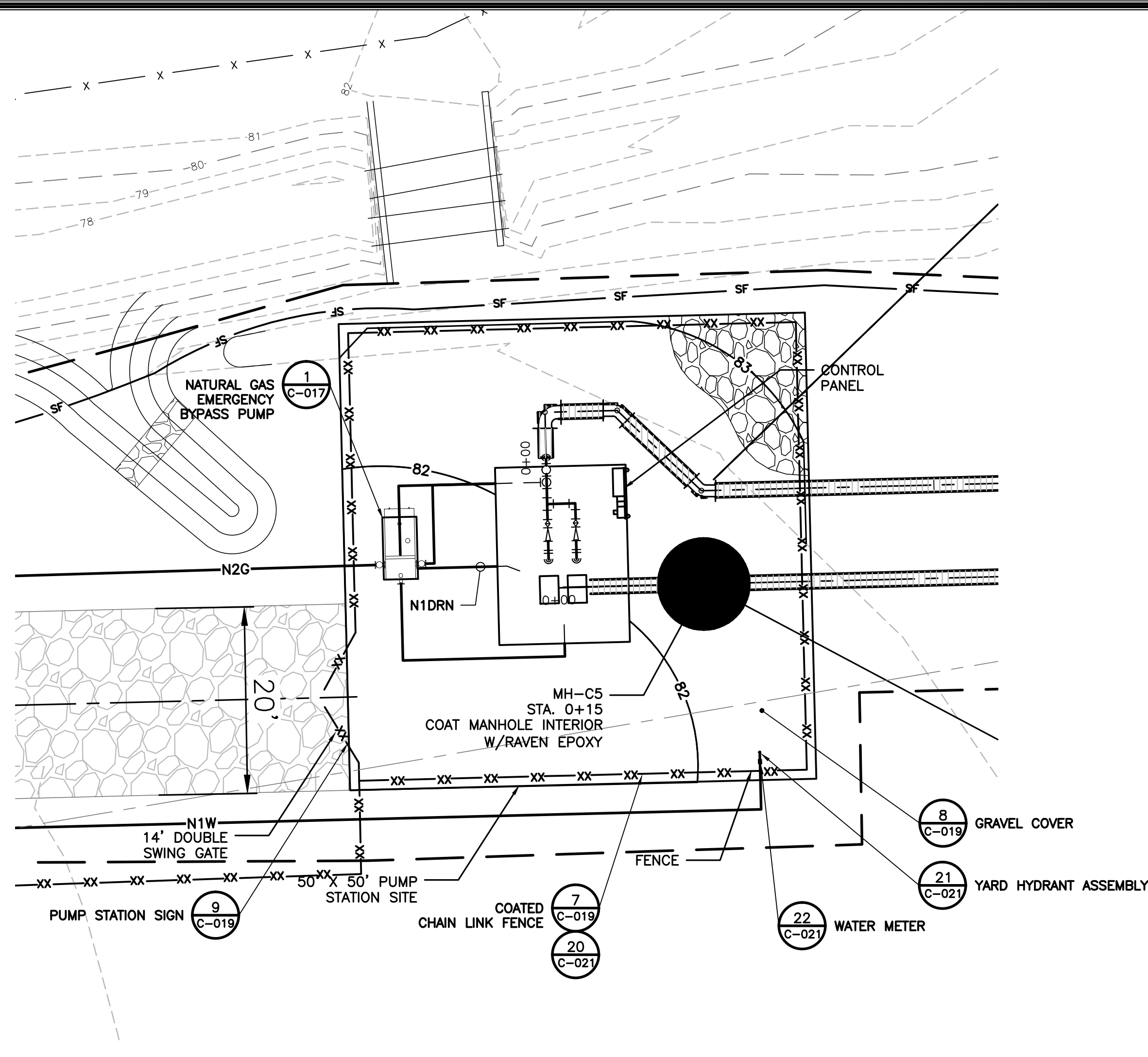
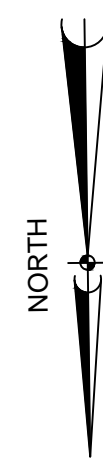
- A. No separate measurement or direct payment will be made for this work and all costs for same shall be included in the price bid for the work to which it pertains.

END OF SECTION

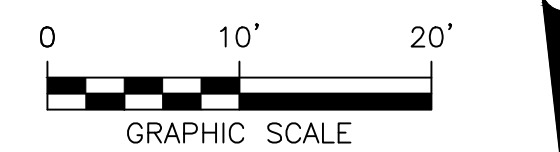
THIS DRAWING IS THE PROPERTY OF URS CORPORATION, AND IS NOT TO BE REPRODUCED OR COPIED IN WHOLE OR IN PART. IT IS ONLY TO BE USED FOR THE PROJECT AND SITE SPECIFICALLY IDENTIFIED HEREIN AND IS NOT TO BE USED ON ANY OTHER PROJECT.



SITE PLAN

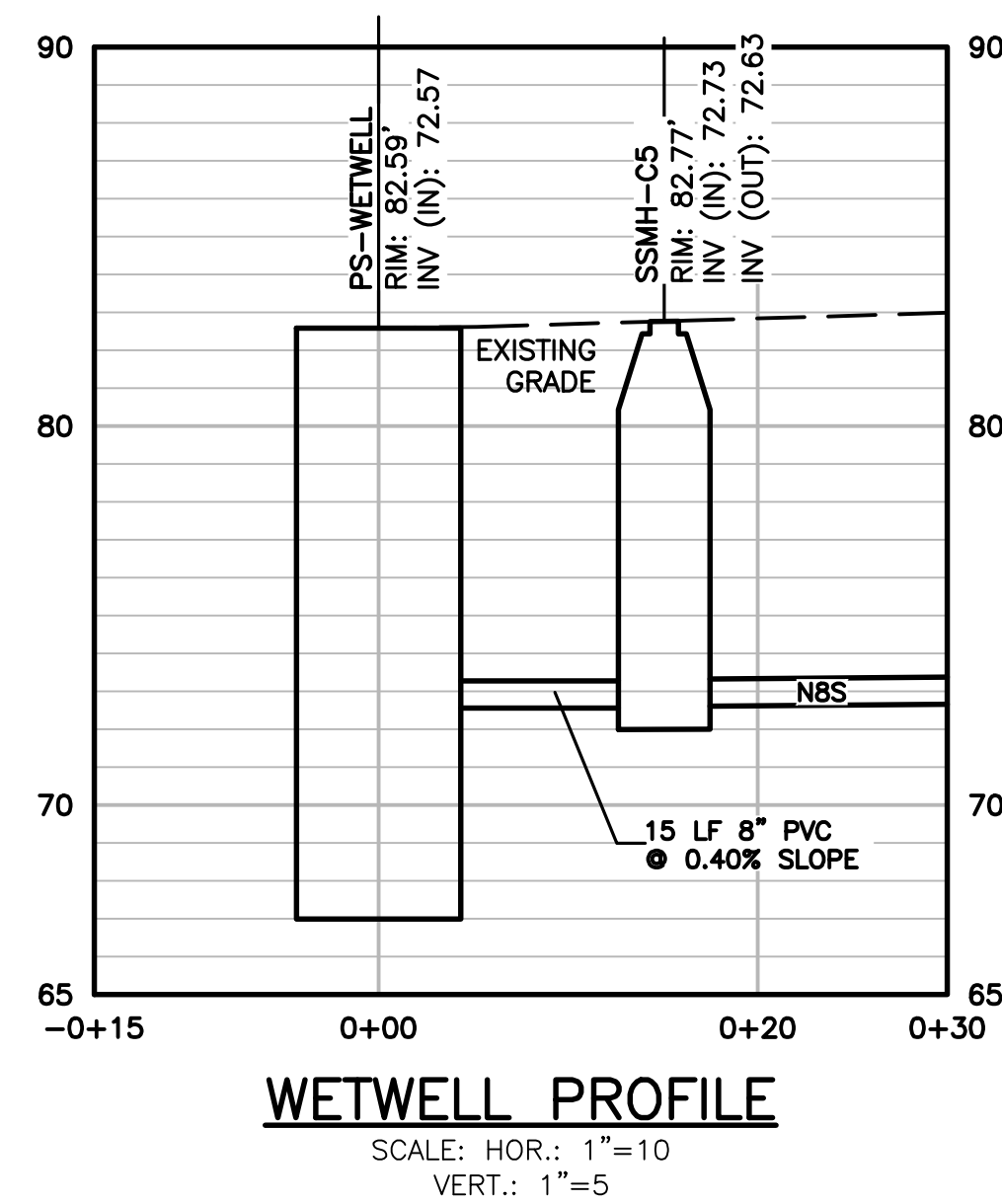


PIPING PLAN



NOTES:

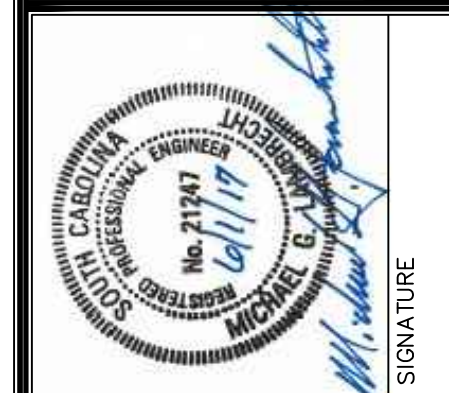
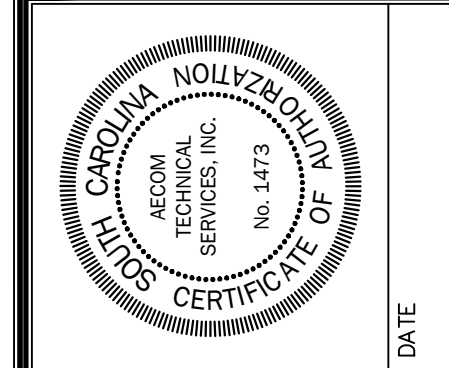
- CONTRACTOR TO CONFIRM GAS LINE SIZING AND MATERIAL WITH SCE&G. CONTRACTOR TO COORDINATE WITH AND PAY SCE&G FOR THE 2" TAP, SHUTOFF VALVE, 2" GAS SERVICE LINE, GAS METER, PRIMARY REGULATOR, OR ANY OTHER ASSOCIATED EQUIPMENT AND LABOR ASSOCIATED FOR THE COMPLETE OPERATIONAL NATURAL GAS SERVICE TO THE GENERATOR.
- FLEXIBLE GAS LINE BETWEEN RIGID PIPING AND GAS CONNECTION AT THE ENGINE, FUEL, SHUT-OFF VALVE, AND SECONDARY REGULATOR PER MANUFACTURER'S RECOMMENDATION.
- SLOPE SITE TO MAINTAIN POSITIVE DRAINAGE.
- EXISTING UNDERGROUND UTILITIES LOCATIONS ARE APPROXIMATE. CONTRACTOR SHALL LOCATE ALL UTILITIES PRIOR TO CONSTRUCTION.



WETWELL PROFILE

REVISIONS	
NO.	DESCRIPTION
2	ADDENDUM

PROJECT ENG: MCL	DESIGNED BY: MCL	DRAWN BY: LAF	CHECKED BY: CCS	APPROVED BY: MCL
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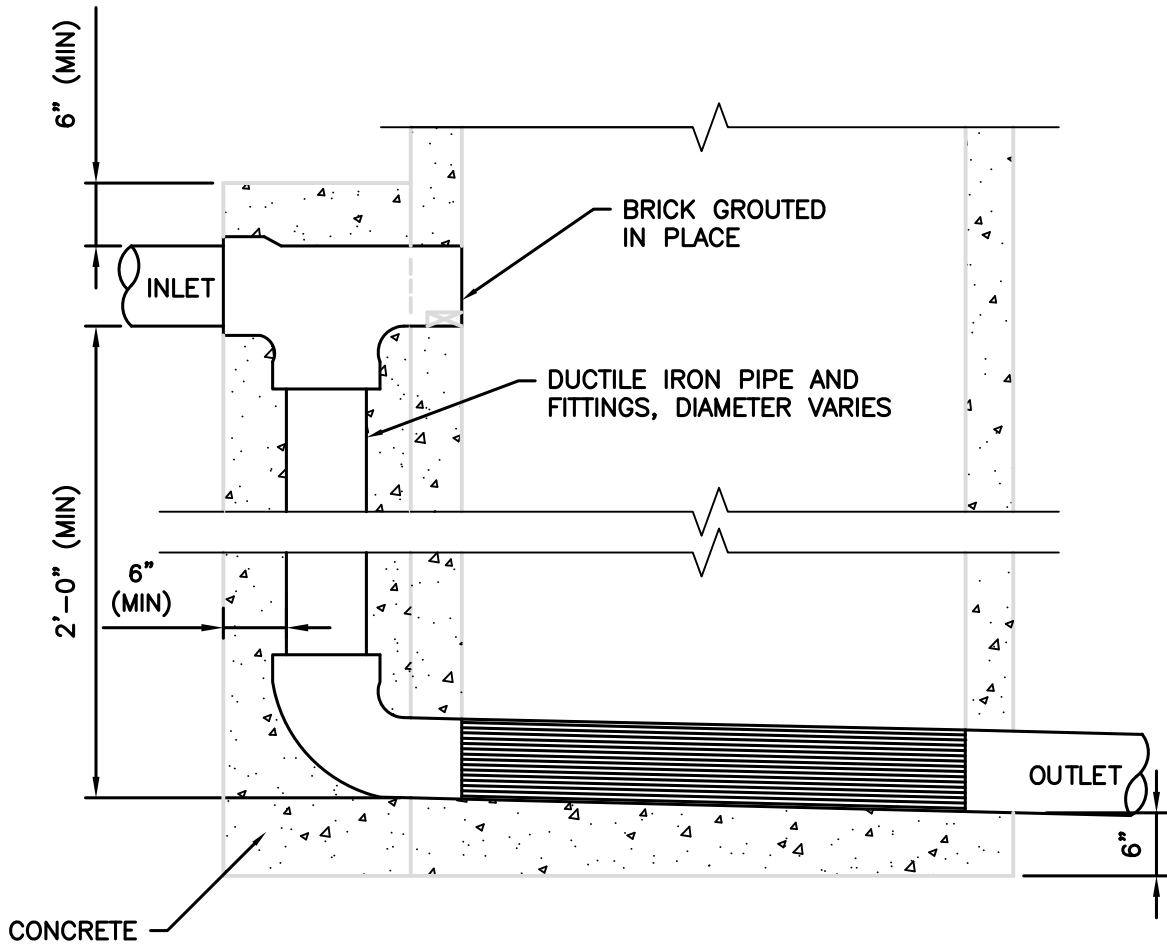
AECOM
101 Research Drive
Columbia, South Carolina 29203
Telephone (803) 254-4400; Fax (803) 771-6676
www.AECOM.com

SHEET TITLE
PUMP STATION SITE PLAN
DATE: 7-7-17 SCALE: AS SHOWN

PROJECT
WATER & WASTEWATER IMPROVEMENTS FOR THE AIRPORT SITE PREPARED FOR COLLETON COUNTY
COLLETON COUNTY SOUTH CAROLINA

DWG NAME	SHEET NO.
N.B. NO.	
REF.	
PROJECT NO. 60433388	C-014
FILE NO. 36,698-B92	

BID DOCUMENTS
THESE DOCUMENTS ARE FOR THE PURPOSE OF SOLICITATION OF BIDS AND ARE NOT FOR USE FOR CONSTRUCTION



DROP MANHOLE

DETAIL

SCALE: NONE



South Carolina Operations
Columbia • Greenville • Florence • Charleston
www.AECOM.com

APPROVED BY:

RTH

INSERTION SCALE:

1 = 1

DATE:

03/03/10

REVISED:

—

DETAIL NUMBER:

SS-005



December 22, 2015

Mr. Rick Bushey
Breakwater Contracting, Inc.
P.O. Box 15410
Surfside Beach, South Carolina 29587

Reference: Limited Soil Sampling and Analytical Testing Report
Sewer Line Installation
Robertson Boulevard
Walterboro, South Carolina
ECS Project No. 34-2748

Dear Mr. Bushey:

ECS Carolinas, LLP (ECS) is pleased to provide you with our Limited Soil Sampling and Analytical Testing Report for the above referenced project. This report outlines our understanding of the project, the scope of services, results, and our conclusions and recommendations.

PROJECT INFORMATION

The site is located along Robertson Boulevard in Walterboro, South Carolina. ECS understands that during excavation activities associated with the installation of a sewer line an apparent former landfill area was unearthed. In an effort to determine whether the material within the landfill area was environmentally impacted, ECS was requested to collect several soil samples within the proposed sewer line easement and submit the samples for laboratory analysis.

SCOPE OF WORK AND FIELD OBSERVATIONS

On December 9, 2015, ECS observed the advancement of eleven test pits along the proposed sewer line easement adjacent to Roberson Boulevard. The test pit activities were performed by Breakwater Contracting, Inc. The test pit depths ranged from approximately 10 to 16 feet below the ground surface (bgs) and were advance to the approximate invert depth of the buried material observed. ECS screened soils within each test pit for relative levels of volatile organic vapors using a photo ionization detector (PID). Samples collected from Test Pit 1 exhibited PID readings of approximately 37.6 part per million (ppm) in the vicinity of an apparent waste oil drum. As a result, ECS collected a representative sample of soils (TP-1) in the vicinity of the drum. In addition, PID readings within soils collected from Test Pit 4 were noted to range from 1.8-2.1 ppm. Elevated PID readings were not identified within the balance of the test pits advanced. Based on the PID readings and our field observations, ECS collected two additional soil samples from Test Pit 4 (TP-4) and Test Pit 10 (TP-10). It should be noted that Test Pit 1 was located in the vicinity of marker 133+00, Test Pit 4 was located in the vicinity of marker 131+00, and Test Pit 10 was located in the vicinity of 134+50.

After the sample bottles were labeled, the samples were placed into an iced cooler to maintain the samples at approximately 4° Celsius. The soil samples were appropriately packaged and submitted to Prism Laboratories Inc. (Prism) in Charlotte, North Carolina (SC Certification No. 99012) for analysis of volatile organic compounds (VOCS) via EPA methodology 8260, semi-volatile organic compounds (SVOCS) via EPA methodology 8270, priority pollutant metals (PPL

Metals) via EPA methodology 6010, and polychlorinated biphenyls (PCBs) via EPA methodology 8082 under chain of custody protocol. Laboratory Data Sheets and Chain of Custody Records are attached.

RESULTS

The attached table (*Table 1: Soil Sample Analytical Summary*) summarizes the laboratory test results from the soil samples analyzed as part of our assessment.

Based on the laboratory analytical results, detectable levels of several VOCs, SVOCs, PPL Metals, and/or PCBs were detected within the soil samples collected. The constituents identified were not reported at concentrations above the applicable South Carolina Department of Health and Environmental Control (SCDHEC) Risk Based Screening Levels (RBSLs) or the Environmental Protection Agency (EPA) Regional Screening Levels (RSL) for Industrial Use.

CONCLUSIONS AND RECOMMENDATIONS

ECS has completed our Limited Soil Sampling and Analytical Testing Report of the site associated with the testing of apparent landfill material identified within a portion of the proposed sewer line easement. The majority of the material within the test pits advanced was observed to consist of fan belts, plastic and fabric. In addition, ECS noted an apparent waste oil drum within Test Pit 1. ECS collected three soil samples for laboratory analysis along the sewer line easement. Based on the soil sample laboratory data, detectable levels of several VOCs, SVOCs, PPL Metals, and/or PCBs were detected within the soil samples collected. The constituents identified were not reported at concentrations above the applicable SCDHEC RBSLs or the EPA RSL for Industrial Use.

Based on the presence of contamination within the landfill material, ECS recommends that the material excavated as part of the sewer line installation be properly handled and disposed of in accordance with local, state, and federal regulations.

QUALIFICATIONS OF REPORT

The activities and investigative approaches used in this assessment are consistent with those normally employed in soil assessment projects of this type. Our evaluation of site conditions has been based on our understanding of the site project information and the data obtained during our field activities.

CLOSURE

ECS appreciates the opportunity to provide our services to you. If there are questions regarding this report, or a need for further information, please contact us at 843-654-4448.

Sincerely,

ECS Carolinas, LLP

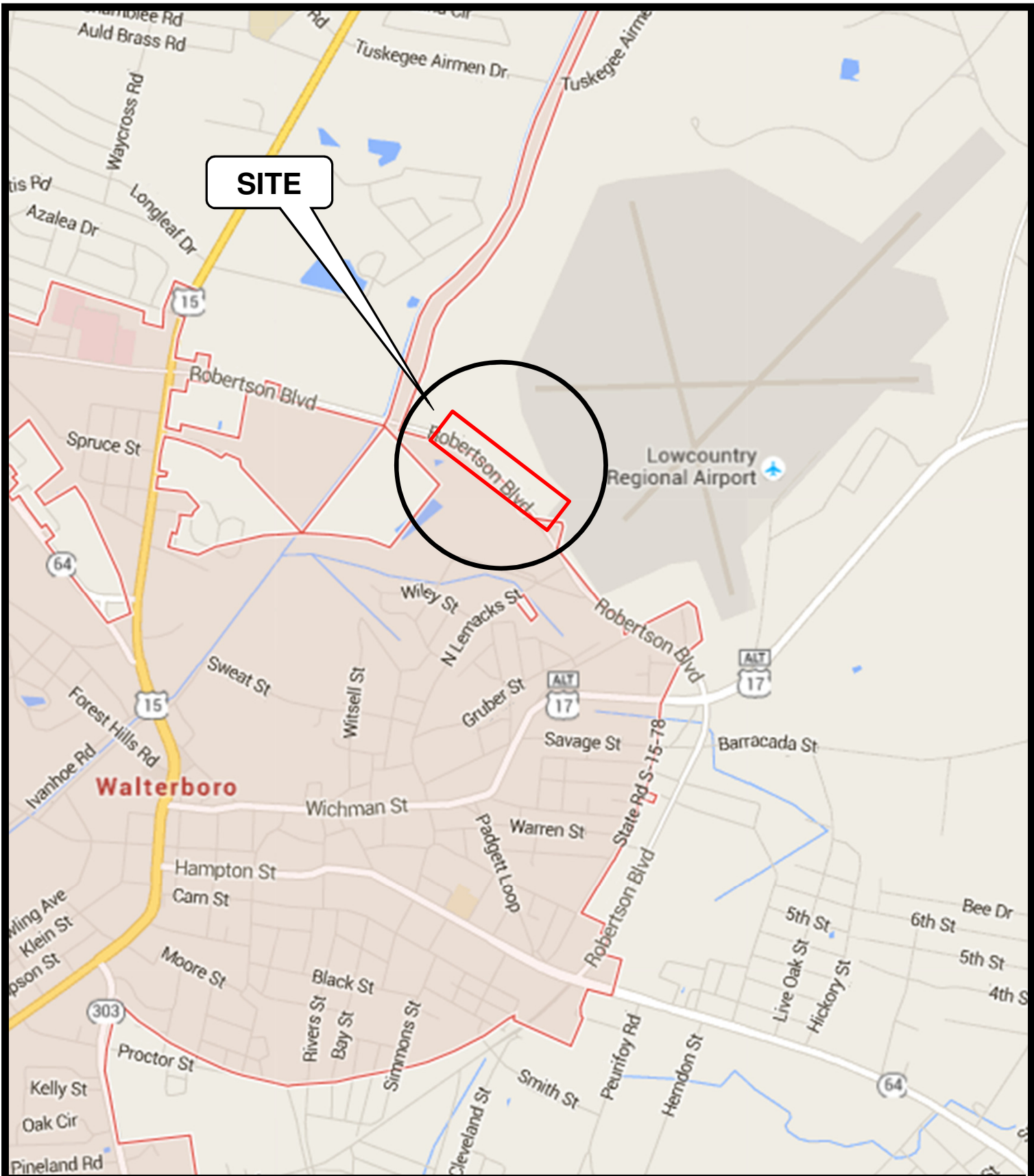


Heather Flowers
Environmental Scientist



Justin A. Roth, CHMM
Environmental Services Manager

Enclosures: Figure 1 Site Location Map
Table 1 Summary of Soil Analytical Data
Photographs
Laboratory Results



SOURCE:

GOOGLE MAPS

1 INCH = 500 FEET



FIGURE 1

SITE LOCATION MAP
 SEWER LINE ENVIRONMENTAL TESTING
 ROBERTSON BOULEVARD
 WALTERBORO, SOUTH CAROLINA

ECS PROJECT NO. 34-2748

TABLE 1: SOIL SAMPLE ANALYTICAL SUMMARY

Parameter	Analytical Results			Comparison Criteria	Comparison Criteria	Comparison Criteria
	TP-1	TP-4	TP-10			
Sample ID	TP-1	TP-4	TP-10	DHEC	EPA SL - Industrial	EPA SL - Protection of GW
Collection Date	12/9/15	12/9/15	12/9/15	RBSLs		
Collection Depth (feet)	6	8	8			
Volatile Organic Compounds by EPA Method 8260						
Acetone	0.19	0.16	0.034	NPS	67,000	0.29
Chlorobenzene	BRL	0.0026 J	BRL	NPS	130	0.068*
Ethylbenzene	0.0084	BRL	BRL	1.15	25	0.78*
Isopropylbenzene	0.16	0.0022J	BRL	NPS	990	0.074
1,4-Dichlorobenzene	BRL	0.014	BRL	NPS	11	0.072*
4-Isopropyltoluene	0.012 J	0.0078 J	BRL	NPS	NPS	NPS
Methyl Ethyl Ketone	0.0093 J	0.03	BRL	NPS	19,000	0.12
Naphthalene	0.011	0.011	BRL	0.036	17	0.00054
n-Butylbenzene	0.035	0.0028 J	BRL	NPS	5,800	0.32
tert-Butylbenzene	BRL	0.0027 J	BRL	NPS	12,000	0.16
sec-Butylbenzene	0.029	0.0027 J	BRL	NPS	12,000	0.59
Toluene	0.0032 J	0.0093	BRL	1.45	4,700	0.69*
1,2,4-Trimethylbenzene	5.7	0.042	BRL	NPS	24	0.0021
1,3,5-Trimethylbenzene	0.96	0.021	BRL	NPS	1,200	0.017
n-Propylbenzene	1.5	0.0049 J	BRL	NPS	2,200	0.12
m,p-Xylenes	0.015	0.004 J	BRL	14.5	240	0.019
o-Xylenes	0.011	BRL	BRL	14.5	280	0.019
Total Xylenes	0.026	0.004 J	BRL	14.5	250	9.8*
Remaining VOCs	BRL	BRL	BRL	-	-	-
Polyaromatic Hydrocarbons by EPA Method 8270						
Bis(2-Ethylhexyl)phthalate	31	16	0.19 J	NPS	160	1.4*
Di-n-octyl phthalate	39	44	0.21 J	NPS	820	5.7
Remaining PAHs	BRL	BRL	BRL	-	-	-
Total Arsenic by EPA Method 6010 (Mercury - EPA Method 7471B)						
Antimony	2	13	BRL	NPS	47	0.27*
Arsenic	0.77	1	1.2	NPS	3	0.29*
Cadmium	BRL	0.5	BRL	NPS	98	NPS
Chromium	10	10	5.6	NPS	180,000	180,000
Copper	4.6	6.6	13	NPS	4,700	46
Lead	20	61	210	NPS	800	14
Mercury	0.052	0.023	BRL	NPS	4	0.1*
Nickel	4.7	7.4	1.9	NPS	2,200	2.6
Zinc	38	100	49	NPS	35,000	37
PCBs by EPA Method 8082						
Aroclor-1016	0.345	BRL	BRL	NPS	5.2	0.013
Aroclor-1254	0.296	BRL	BRL	NPS	1	0.01
Remaining PCBs	BRL	BRL	BRL	-	-	-

NOTES:

All concentrations in parts per million (ppm)

BRL = Below Reporting Limit

EPA SL = USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites Table dated May 2014

EPA SL - Industrial = Environmental Protection Agency Regional Screening Level for Industrial Soil

EPA SL - Protection of GW = Environmental Protection Agency Regional Screening Level for Protection of Groundwater RBSL or MCL*

DHEC RBSLs = South Carolina Department of Health and Environmental Control Risk Based Screening Levels.

NPS = No Published Standard

Bold Values Exceed DHEC RBSL or EPA Industrial SL

J = Estimated Value



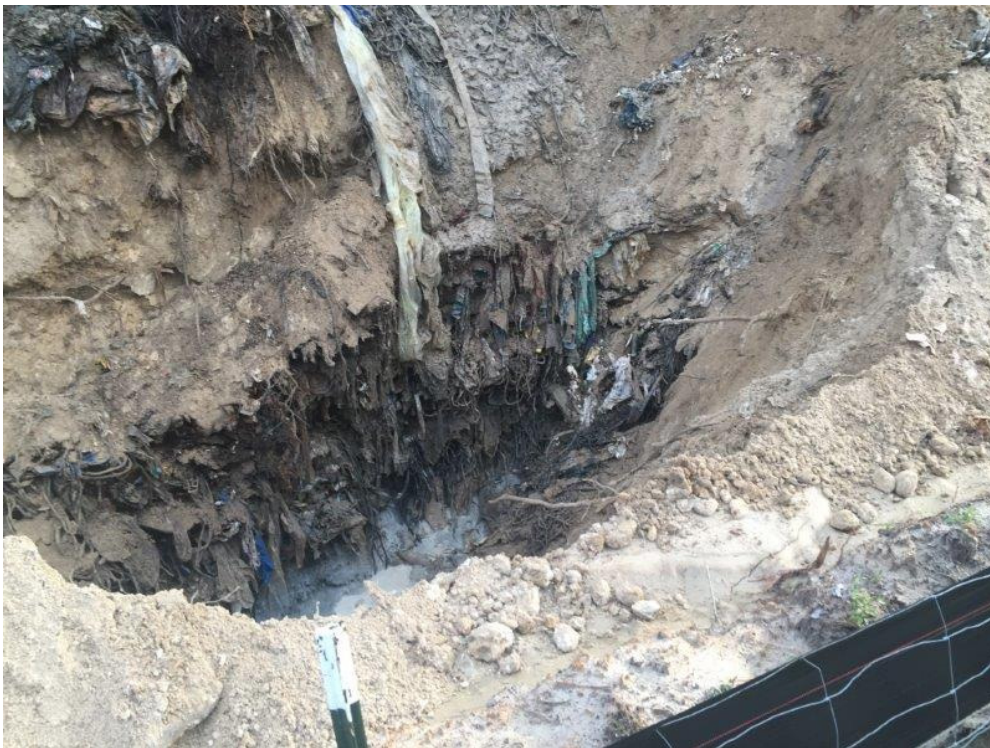
Photograph 1: View of the material within Test Pit 1.



Photograph 2: View of the suspect waste oil drum within Test Pit 1.



Photograph 3: Typical view of fan belts located within most of the test pits.



Photograph 4: View of the material within Test Pit 4.



Photograph 5: View of the material within Test Pit 10.



Photograph 6: View of Test Pit 10.

12/21/2015

ECS Carolinas, LLP (North Charleston)
Justin Roth
3820 Faber Place Drive, Suite 500
North Charleston, SC 29405

Project: Waltersboro

Lab Submittal Date: 12/10/2015
Prism Work Order: 5120159

This data package contains the analytical results for the project identified above and includes a Case Narrative, Sample Results and Chain of Custody. Unless otherwise noted, all samples were received in acceptable condition and processed according to the referenced methods.

Data qualifiers are flagged individually on each sample. A key reference for the data qualifiers appears at the end of this case narrative.

Please call if you have any questions relating to this analytical report.

Respectfully,

PRISM LABORATORIES, INC.



Angela D. Overcash
VP Laboratory Services



Reviewed By Terri W. Cole For Angela D. Overcash
Project Manager

Data Qualifiers Key Reference:

BH	MB greater than one half of the RL, but the sample concentrations are greater than 10x the MB.
D	RPD value outside of the control limits.
E	Estimated concentration above the calibration range
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
M	Matrix spike outside of the control limits.
BRL	Below Reporting Limit
MDL	Method Detection Limit
RPD	Relative Percent Difference
*	Results reported to the reporting limit. All other results are reported to the MDL with values between MDL and reporting limit indicated with a J.

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Client Sample ID	Lab Sample ID	Matrix	Date Sampled	Date Received
TP-1	5120159-01	Solid	12/09/15	12/10/15
TP-4	5120159-02	Solid	12/09/15	12/10/15
TP-10	5120159-03	Solid	12/09/15	12/10/15

Samples were received in good condition at 3.5 degrees C unless otherwise noted.



Summary of Detections

12/21/2015

Prism Work Order: 5120159

Prism ID	Client ID	Parameter	Method	Result	Units
5120159-01	TP-1	Bis(2-Ethylhexyl)phthalate	8270D	31	mg/kg dry
5120159-01	TP-1	Di-n-octyl phthalate	8270D	39	mg/kg dry
5120159-01	TP-1	Mercury	*7471B	0.052	mg/kg dry
5120159-01	TP-1	Antimony	*6010C	2.0	mg/kg dry
5120159-01	TP-1	Arsenic	*6010C	0.77	mg/kg dry
5120159-01	TP-1	Chromium	*6010C	10	mg/kg dry
5120159-01	TP-1	Copper	*6010C	4.6	mg/kg dry
5120159-01	TP-1	Lead	*6010C	20	BH mg/kg dry
5120159-01	TP-1	Nickel	*6010C	4.7	mg/kg dry
5120159-01	TP-1	Zinc	*6010C	38	mg/kg dry
5120159-01	TP-1	4-Isopropyltoluene	8260B	0.012	J mg/kg dry
5120159-01	TP-1	Acetone	8260B	0.19	mg/kg dry
5120159-01	TP-1	Ethylbenzene	8260B	0.0084	mg/kg dry
5120159-01	TP-1	Isopropylbenzene (Cumene)	8260B	0.16	mg/kg dry
5120159-01	TP-1	m,p-Xylenes	8260B	0.015	mg/kg dry
5120159-01	TP-1	Methyl Ethyl Ketone (2-Butanone)	8260B	0.0093	J mg/kg dry
5120159-01	TP-1	Naphthalene	8260B	0.011	mg/kg dry
5120159-01	TP-1	n-Butylbenzene	8260B	0.035	mg/kg dry
5120159-01	TP-1	o-Xylene	8260B	0.011	mg/kg dry
5120159-01	TP-1	sec-Butylbenzene	8260B	0.029	mg/kg dry
5120159-01	TP-1	Toluene	8260B	0.0032	J mg/kg dry
5120159-01	TP-1	Xylenes, total	8260B	0.026	mg/kg dry
5120159-01	TP-1	1,2,4-Trimethylbenzene	8260B	5.7	mg/kg dry
5120159-01	TP-1	1,3,5-Trimethylbenzene	8260B	0.96	mg/kg dry
5120159-01	TP-1	n-Propylbenzene	8260B	1.5	mg/kg dry
5120159-02	TP-4	Bis(2-Ethylhexyl)phthalate	8270D	16	mg/kg dry
5120159-02	TP-4	Di-n-octyl phthalate	8270D	44	E mg/kg dry
5120159-02	TP-4	Mercury	*7471B	0.023	mg/kg dry
5120159-02	TP-4	Antimony	*6010C	13	mg/kg dry
5120159-02	TP-4	Arsenic	*6010C	1.0	mg/kg dry
5120159-02	TP-4	Cadmium	*6010C	0.50	mg/kg dry
5120159-02	TP-4	Chromium	*6010C	10	mg/kg dry
5120159-02	TP-4	Copper	*6010C	6.6	mg/kg dry
5120159-02	TP-4	Lead	*6010C	61	BH mg/kg dry
5120159-02	TP-4	Nickel	*6010C	7.4	mg/kg dry
5120159-02	TP-4	Zinc	*6010C	100	mg/kg dry
5120159-02	TP-4	1,2,4-Trimethylbenzene	8260B	0.042	mg/kg dry
5120159-02	TP-4	1,3,5-Trimethylbenzene	8260B	0.021	mg/kg dry
5120159-02	TP-4	1,4-Dichlorobenzene	8260B	0.014	mg/kg dry
5120159-02	TP-4	4-Isopropyltoluene	8260B	0.0078	J mg/kg dry
5120159-02	TP-4	Acetone	8260B	0.16	mg/kg dry
5120159-02	TP-4	Chlorobenzene	8260B	0.0026	J mg/kg dry
5120159-02	TP-4	Isopropylbenzene (Cumene)	8260B	0.0022	J mg/kg dry
5120159-02	TP-4	m,p-Xylenes	8260B	0.0040	J mg/kg dry

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Prism ID	Client ID	Parameter	Method	Result	Units
5120159-02	TP-4	Methyl Ethyl Ketone (2-Butanone)	8260B	0.030	mg/kg dry
5120159-02	TP-4	Naphthalene	8260B	0.011	mg/kg dry
5120159-02	TP-4	n-Butylbenzene	8260B	0.0028	J mg/kg dry
5120159-02	TP-4	n-Propylbenzene	8260B	0.0049	J mg/kg dry
5120159-02	TP-4	sec-Butylbenzene	8260B	0.0027	J mg/kg dry
5120159-02	TP-4	tert-Butylbenzene	8260B	0.0027	J mg/kg dry
5120159-02	TP-4	Toluene	8260B	0.0093	mg/kg dry
5120159-02	TP-4	Xylenes, total	8260B	0.0040	J mg/kg dry
5120159-03	TP-10	Bis(2-Ethylhexyl)phthalate	8270D	0.19	J mg/kg dry
5120159-03	TP-10	Di-n-octyl phthalate	8270D	0.21	J mg/kg dry
5120159-03	TP-10	Arsenic	*6010C	1.2	mg/kg dry
5120159-03	TP-10	Chromium	*6010C	5.6	mg/kg dry
5120159-03	TP-10	Copper	*6010C	13	mg/kg dry
5120159-03	TP-10	Lead	*6010C	210	BH mg/kg dry
5120159-03	TP-10	Nickel	*6010C	1.9	mg/kg dry
5120159-03	TP-10	Zinc	*6010C	49	mg/kg dry
5120159-03	TP-10	Acetone	8260B	0.034	mg/kg dry

ECS Carolinas, LLP (North Charleston)
 Attn: Justin Roth
 3820 Faber Place Drive, Suite 500
 North Charleston, SC 29405

Project: Waltersboro
 Sample Matrix: Solid

Client Sample ID: TP-1
 Prism Sample ID: 5120159-01
 Prism Work Order: 5120159
 Time Collected: 12/09/15 08:50
 Time Submitted: 12/10/15 08:32

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
General Chemistry Parameters									
% Solids	78.4	% by Weight	0.100	0.100	1	*SM2540 G	12/10/15 16:00	ARC	P5L0179
Semivolatile Organic Compounds by GC/MS									
1,2,4-Trichlorobenzene	BRL	mg/kg dry	2.1	0.33	5	8270D	12/18/15 2:47	JMV	P5L0241
1,2-Dichlorobenzene	BRL	mg/kg dry	2.1	0.30	5	8270D	12/18/15 2:47	JMV	P5L0241
1,3-Dichlorobenzene	BRL	mg/kg dry	2.1	0.34	5	8270D	12/18/15 2:47	JMV	P5L0241
1,4-Dichlorobenzene	BRL	mg/kg dry	2.1	0.26	5	8270D	12/18/15 2:47	JMV	P5L0241
2,4,5-Trichlorophenol	BRL	mg/kg dry	2.1	0.34	5	8270D	12/18/15 2:47	JMV	P5L0241
2,4,6-Trichlorophenol	BRL	mg/kg dry	2.1	0.24	5	8270D	12/18/15 2:47	JMV	P5L0241
2,4-Dichlorophenol	BRL	mg/kg dry	2.1	0.25	5	8270D	12/18/15 2:47	JMV	P5L0241
2,4-Dimethylphenol	BRL	mg/kg dry	2.1	0.24	5	8270D	12/18/15 2:47	JMV	P5L0241
2,4-Dinitrophenol	BRL	mg/kg dry	2.1	0.78	5	8270D	12/18/15 2:47	JMV	P5L0241
2,4-Dinitrotoluene	BRL	mg/kg dry	2.1	0.40	5	8270D	12/18/15 2:47	JMV	P5L0241
2,6-Dinitrotoluene	BRL	mg/kg dry	2.1	0.38	5	8270D	12/18/15 2:47	JMV	P5L0241
2-Chloronaphthalene	BRL	mg/kg dry	2.1	0.33	5	8270D	12/18/15 2:47	JMV	P5L0241
2-Chlorophenol	BRL	mg/kg dry	2.1	0.28	5	8270D	12/18/15 2:47	JMV	P5L0241
2-Methylnaphthalene	BRL	mg/kg dry	2.1	0.29	5	8270D	12/18/15 2:47	JMV	P5L0241
2-Methylphenol	BRL	mg/kg dry	2.1	0.32	5	8270D	12/18/15 2:47	JMV	P5L0241
2-Nitroaniline	BRL	mg/kg dry	2.1	0.33	5	8270D	12/18/15 2:47	JMV	P5L0241
2-Nitrophenol	BRL	mg/kg dry	2.1	0.26	5	8270D	12/18/15 2:47	JMV	P5L0241
3,3'-Dichlorobenzidine	BRL	mg/kg dry	2.1	0.17	5	8270D	12/18/15 2:47	JMV	P5L0241
3/4-Methylphenol	BRL	mg/kg dry	2.1	0.25	5	8270D	12/18/15 2:47	JMV	P5L0241
3-Nitroaniline	BRL	mg/kg dry	2.1	0.67	5	8270D	12/18/15 2:47	JMV	P5L0241
4,6-Dinitro-2-methylphenol	BRL	mg/kg dry	2.1	0.58	5	8270D	12/18/15 2:47	JMV	P5L0241
4-Bromophenyl phenyl ether	BRL	mg/kg dry	2.1	0.28	5	8270D	12/18/15 2:47	JMV	P5L0241
4-Chloro-3-methylphenol	BRL	mg/kg dry	2.1	0.20	5	8270D	12/18/15 2:47	JMV	P5L0241
4-Chloroaniline	BRL	mg/kg dry	2.1	0.33	5	8270D	12/18/15 2:47	JMV	P5L0241
4-Chlorophenyl phenyl ether	BRL	mg/kg dry	2.1	0.25	5	8270D	12/18/15 2:47	JMV	P5L0241
4-Nitroaniline	BRL	mg/kg dry	2.1	0.51	5	8270D	12/18/15 2:47	JMV	P5L0241
4-Nitrophenol	BRL	mg/kg dry	2.1	0.51	5	8270D	12/18/15 2:47	JMV	P5L0241
Acenaphthene	BRL	mg/kg dry	2.1	0.23	5	8270D	12/18/15 2:47	JMV	P5L0241
Acenaphthylene	BRL	mg/kg dry	2.1	0.25	5	8270D	12/18/15 2:47	JMV	P5L0241
Aniline	BRL	mg/kg dry	2.1	0.41	5	8270D	12/18/15 2:47	JMV	P5L0241
Anthracene	BRL	mg/kg dry	2.1	0.24	5	8270D	12/18/15 2:47	JMV	P5L0241
Azobenzene	BRL	mg/kg dry	2.1	0.27	5	8270D	12/18/15 2:47	JMV	P5L0241
Benzo(a)anthracene	BRL	mg/kg dry	2.1	0.25	5	8270D	12/18/15 2:47	JMV	P5L0241
Benzo(a)pyrene	BRL	mg/kg dry	2.1	0.25	5	8270D	12/18/15 2:47	JMV	P5L0241
Benzo(b)fluoranthene	BRL	mg/kg dry	2.1	0.29	5	8270D	12/18/15 2:47	JMV	P5L0241
Benzo(g,h,i)perylene	BRL	mg/kg dry	2.1	0.28	5	8270D	12/18/15 2:47	JMV	P5L0241
Benzo(k)fluoranthene	BRL	mg/kg dry	2.1	0.25	5	8270D	12/18/15 2:47	JMV	P5L0241
Benzoic Acid	BRL	mg/kg dry	2.1	0.95	5	8270D	12/18/15 2:47	JMV	P5L0241
Benzyl alcohol	BRL	mg/kg dry	2.1	0.15	5	8270D	12/18/15 2:47	JMV	P5L0241

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ECS Carolinas, LLP (North Charleston)
 Attn: Justin Roth
 3820 Faber Place Drive, Suite 500
 North Charleston, SC 29405

Project: Waltersboro
 Sample Matrix: Solid

Client Sample ID: TP-1
 Prism Sample ID: 5120159-01
 Prism Work Order: 5120159
 Time Collected: 12/09/15 08:50
 Time Submitted: 12/10/15 08:32

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
bis(2-Chloroethoxy)methane	BRL	mg/kg dry	2.1	0.22	5	8270D	12/18/15 2:47	JMV	P5L0241
Bis(2-Chloroethyl)ether	BRL	mg/kg dry	2.1	0.25	5	8270D	12/18/15 2:47	JMV	P5L0241
Bis(2-chloroisopropyl)ether	BRL	mg/kg dry	2.1	0.26	5	8270D	12/18/15 2:47	JMV	P5L0241
Bis(2-Ethylhexyl)phthalate	31	mg/kg dry	2.1	0.54	5	8270D	12/18/15 2:47	JMV	P5L0241
Butyl benzyl phthalate	BRL	mg/kg dry	2.1	0.42	5	8270D	12/18/15 2:47	JMV	P5L0241
Chrysene	BRL	mg/kg dry	2.1	0.39	5	8270D	12/18/15 2:47	JMV	P5L0241
Dibenzo(a,h)anthracene	BRL	mg/kg dry	2.1	0.33	5	8270D	12/18/15 2:47	JMV	P5L0241
Dibenzofuran	BRL	mg/kg dry	2.1	0.28	5	8270D	12/18/15 2:47	JMV	P5L0241
Diethyl phthalate	BRL	mg/kg dry	2.1	0.43	5	8270D	12/18/15 2:47	JMV	P5L0241
Dimethyl phthalate	BRL	mg/kg dry	2.1	0.29	5	8270D	12/18/15 2:47	JMV	P5L0241
Di-n-butyl phthalate	BRL	mg/kg dry	2.1	0.35	5	8270D	12/18/15 2:47	JMV	P5L0241
Di-n-octyl phthalate	39	mg/kg dry	2.1	0.24	5	8270D	12/18/15 2:47	JMV	P5L0241
Fluoranthene	BRL	mg/kg dry	2.1	0.28	5	8270D	12/18/15 2:47	JMV	P5L0241
Fluorene	BRL	mg/kg dry	2.1	0.31	5	8270D	12/18/15 2:47	JMV	P5L0241
Hexachlorobenzene	BRL	mg/kg dry	2.1	0.33	5	8270D	12/18/15 2:47	JMV	P5L0241
Hexachlorobutadiene	BRL	mg/kg dry	2.1	0.31	5	8270D	12/18/15 2:47	JMV	P5L0241
Hexachlorocyclopentadiene	BRL	mg/kg dry	2.1	0.37	5	8270D	12/18/15 2:47	JMV	P5L0241
Hexachloroethane	BRL	mg/kg dry	2.1	0.31	5	8270D	12/18/15 2:47	JMV	P5L0241
Indeno(1,2,3-cd)pyrene	BRL	mg/kg dry	2.1	0.29	5	8270D	12/18/15 2:47	JMV	P5L0241
Isophorone	BRL	mg/kg dry	2.1	0.20	5	8270D	12/18/15 2:47	JMV	P5L0241
Naphthalene	BRL	mg/kg dry	2.1	0.29	5	8270D	12/18/15 2:47	JMV	P5L0241
Nitrobenzene	BRL	mg/kg dry	2.1	0.28	5	8270D	12/18/15 2:47	JMV	P5L0241
N-Nitroso-di-n-propylamine	BRL	mg/kg dry	2.1	0.28	5	8270D	12/18/15 2:47	JMV	P5L0241
N-Nitrosodiphenylamine	BRL	mg/kg dry	2.1	0.25	5	8270D	12/18/15 2:47	JMV	P5L0241
Pentachlorophenol	BRL	mg/kg dry	2.1	0.48	5	8270D	12/18/15 2:47	JMV	P5L0241
Phenanthrene	BRL	mg/kg dry	2.1	0.28	5	8270D	12/18/15 2:47	JMV	P5L0241
Phenol	BRL	mg/kg dry	2.1	0.19	5	8270D	12/18/15 2:47	JMV	P5L0241
Pyrene	BRL	mg/kg dry	2.1	0.31	5	8270D	12/18/15 2:47	JMV	P5L0241

Surrogate	Recovery	Control Limits
2,4,6-Tribromophenol	89 %	37-131
2-Fluorobiphenyl	90 %	47-130
2-Fluorophenol	77 %	44-117
Nitrobenzene-d5	86 %	45-121
Phenol-d5	82 %	37-127
Terphenyl-d14	96 %	38-135

Total Metals

Mercury	0.052	mg/kg dry	0.024	0.0015	1	*7471B	12/15/15 12:44	JAB	P5L0187
Antimony	2.0	mg/kg dry	0.33	0.051	1	*6010C	12/16/15 19:00	BGM	P5L0186
Arsenic	0.77	mg/kg dry	0.33	0.072	1	*6010C	12/16/15 19:00	BGM	P5L0186
Beryllium	BRL	mg/kg dry	0.33	0.011	1	*6010C	12/16/15 19:00	BGM	P5L0186
Cadmium	BRL	mg/kg dry	0.33	0.0069	1	*6010C	12/16/15 19:00	BGM	P5L0186
Chromium	10	mg/kg dry	0.33	0.044	1	*6010C	12/16/15 19:00	BGM	P5L0186
Copper	4.6	mg/kg dry	0.65	0.11	1	*6010C	12/16/15 19:00	BGM	P5L0186

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ECS Carolinas, LLP (North Charleston)
 Attn: Justin Roth
 3820 Faber Place Drive, Suite 500
 North Charleston, SC 29405

Project: Waltersboro
 Sample Matrix: Solid

Client Sample ID: TP-1
 Prism Sample ID: 5120159-01
 Prism Work Order: 5120159
 Time Collected: 12/09/15 08:50
 Time Submitted: 12/10/15 08:32

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Lead	20 BH	mg/kg dry	0.33	0.034	1	*6010C	12/16/15 19:00	BGM	P5L0186
Nickel	4.7	mg/kg dry	0.65	0.061	1	*6010C	12/16/15 19:00	BGM	P5L0186
Selenium	BRL	mg/kg dry	0.65	0.047	1	*6010C	12/16/15 19:00	BGM	P5L0186
Silver	BRL	mg/kg dry	0.33	0.0053	1	*6010C	12/16/15 19:00	BGM	P5L0186
Thallium	BRL	mg/kg dry	0.65	0.047	1	*6010C	12/16/15 19:00	BGM	P5L0186
Zinc	38	mg/kg dry	3.3	0.040	1	*6010C	12/16/15 19:00	BGM	P5L0186

Volatile Organic Compounds by GC/MS

1,1,1,2-Tetrachloroethane	BRL	mg/kg dry	0.0054	0.00045	1	8260B	12/15/15 20:50	MWW&	P5L0243
1,1,1-Trichloroethane	BRL	mg/kg dry	0.0054	0.00026	1	8260B	12/15/15 20:50	MWW&	P5L0243
1,1,2,2-Tetrachloroethane	BRL	mg/kg dry	0.0054	0.00037	1	8260B	12/15/15 20:50	MWW&	P5L0243
1,1,2-Trichloroethane	BRL	mg/kg dry	0.0054	0.00048	1	8260B	12/15/15 20:50	MWW&	P5L0243
1,1-Dichloroethane	BRL	mg/kg dry	0.0054	0.00015	1	8260B	12/15/15 20:50	MWW&	P5L0243
1,1-Dichloroethylene	BRL	mg/kg dry	0.0054	0.00024	1	8260B	12/15/15 20:50	MWW&	P5L0243
1,1-Dichloropropylene	BRL	mg/kg dry	0.0054	0.00030	1	8260B	12/15/15 20:50	MWW&	P5L0243
1,2,3-Trichlorobenzene	BRL	mg/kg dry	0.011	0.00031	1	8260B	12/15/15 20:50	MWW&	P5L0243
1,2,3-Trichloropropane	BRL	mg/kg dry	0.0054	0.00069	1	8260B	12/15/15 20:50	MWW&	P5L0243
1,2,4-Trichlorobenzene	BRL	mg/kg dry	0.011	0.00040	1	8260B	12/15/15 20:50	MWW&	P5L0243
1,2,4-Trimethylbenzene	See 8260ML	mg/kg dry	0.011	0.00041	1	8260B	12/15/15 20:50	MWW&	P5L0243
1,2-Dibromo-3-chloropropane	BRL	mg/kg dry	0.0054	0.00040	1	8260B	12/15/15 20:50	MWW&	P5L0243
1,2-Dibromoethane	BRL	mg/kg dry	0.0054	0.00022	1	8260B	12/15/15 20:50	MWW&	P5L0243
1,2-Dichlorobenzene	BRL	mg/kg dry	0.011	0.00026	1	8260B	12/15/15 20:50	MWW&	P5L0243
1,2-Dichloroethane	BRL	mg/kg dry	0.0054	0.00032	1	8260B	12/15/15 20:50	MWW&	P5L0243
1,2-Dichloropropane	BRL	mg/kg dry	0.0054	0.00034	1	8260B	12/15/15 20:50	MWW&	P5L0243
1,3,5-Trimethylbenzene	See 8260ML	mg/kg dry	0.011	0.00041	1	8260B	12/15/15 20:50	MWW&	P5L0243
1,3-Dichlorobenzene	BRL	mg/kg dry	0.011	0.00036	1	8260B	12/15/15 20:50	MWW&	P5L0243
1,3-Dichloropropane	BRL	mg/kg dry	0.0054	0.00027	1	8260B	12/15/15 20:50	MWW&	P5L0243
1,4-Dichlorobenzene	BRL	mg/kg dry	0.011	0.00021	1	8260B	12/15/15 20:50	MWW&	P5L0243
2,2-Dichloropropane	BRL	mg/kg dry	0.0054	0.00026	1	8260B	12/15/15 20:50	MWW&	P5L0243
2-Chloroethyl Vinyl Ether	BRL	mg/kg dry	0.011	0.0010	1	8260B	12/15/15 20:50	MWW&	P5L0243
2-Chlorotoluene	BRL	mg/kg dry	0.011	0.00028	1	8260B	12/15/15 20:50	MWW&	P5L0243
4-Chlorotoluene	BRL	mg/kg dry	0.011	0.00032	1	8260B	12/15/15 20:50	MWW&	P5L0243
4-Isopropyltoluene	0.012 J	mg/kg dry	0.016	0.00026	1	8260B	12/15/15 20:50	MWW&	P5L0243
Acetone	0.19	mg/kg dry	0.022	0.0013	1	8260B	12/15/15 20:50	MWW&	P5L0243
Acrolein	BRL	mg/kg dry	0.11	0.0016	1	8260B	12/15/15 20:50	MWW&	P5L0243
Acrylonitrile	BRL	mg/kg dry	0.11	0.0014	1	8260B	12/15/15 20:50	MWW&	P5L0243
Benzene	BRL	mg/kg dry	0.0033	0.00032	1	8260B	12/15/15 20:50	MWW&	P5L0243
Bromobenzene	BRL	mg/kg dry	0.0054	0.00045	1	8260B	12/15/15 20:50	MWW&	P5L0243
Bromochloromethane	BRL	mg/kg dry	0.0054	0.00030	1	8260B	12/15/15 20:50	MWW&	P5L0243
Bromodichloromethane	BRL	mg/kg dry	0.0054	0.00030	1	8260B	12/15/15 20:50	MWW&	P5L0243
Bromoform	BRL	mg/kg dry	0.0054	0.00062	1	8260B	12/15/15 20:50	MWW&	P5L0243
Bromomethane	BRL	mg/kg dry	0.011	0.00067	1	8260B	12/15/15 20:50	MWW&	P5L0243
Carbon disulfide	BRL	mg/kg dry	0.011	0.00027	1	8260B	12/15/15 20:50	MWW&	P5L0243
Carbon Tetrachloride	BRL	mg/kg dry	0.0054	0.00027	1	8260B	12/15/15 20:50	MWW&	P5L0243

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ECS Carolinas, LLP (North Charleston)
 Attn: Justin Roth
 3820 Faber Place Drive, Suite 500
 North Charleston, SC 29405

Project: Waltersboro
 Sample Matrix: Solid

Client Sample ID: TP-1
 Prism Sample ID: 5120159-01
 Prism Work Order: 5120159
 Time Collected: 12/09/15 08:50
 Time Submitted: 12/10/15 08:32

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Chlorobenzene	BRL	mg/kg dry	0.0054	0.00029	1	8260B	12/15/15 20:50	MWW&	P5L0243
Chloroethane	BRL	mg/kg dry	0.011	0.00045	1	8260B	12/15/15 20:50	MWW&	P5L0243
Chloroform	BRL	mg/kg dry	0.0054	0.00039	1	8260B	12/15/15 20:50	MWW&	P5L0243
Chloromethane	BRL	mg/kg dry	0.011	0.00036	1	8260B	12/15/15 20:50	MWW&	P5L0243
cis-1,2-Dichloroethylene	BRL	mg/kg dry	0.0054	0.00023	1	8260B	12/15/15 20:50	MWW&	P5L0243
cis-1,3-Dichloropropylene	BRL	mg/kg dry	0.0054	0.00018	1	8260B	12/15/15 20:50	MWW&	P5L0243
Dibromochloromethane	BRL	mg/kg dry	0.0054	0.00022	1	8260B	12/15/15 20:50	MWW&	P5L0243
Dibromomethane	BRL	mg/kg dry	0.0054	0.00046	1	8260B	12/15/15 20:50	MWW&	P5L0243
Dichlorodifluoromethane	BRL	mg/kg dry	0.011	0.00025	1	8260B	12/15/15 20:50	MWW&	P5L0243
Ethylbenzene	0.0084	mg/kg dry	0.0054	0.00021	1	8260B	12/15/15 20:50	MWW&	P5L0243
Hexachlorobutadiene	BRL	mg/kg dry	0.016	0.00043	1	8260B	12/15/15 20:50	MWW&	P5L0243
Isopropyl Ether	BRL	mg/kg dry	0.0054	0.00022	1	8260B	12/15/15 20:50	MWW&	P5L0243
Isopropylbenzene (Cumene)	0.16	mg/kg dry	0.011	0.00032	1	8260B	12/15/15 20:50	MWW&	P5L0243
m,p-Xylenes	0.015	mg/kg dry	0.011	0.00050	1	8260B	12/15/15 20:50	MWW&	P5L0243
Methyl Butyl Ketone (2-Hexanone)	BRL	mg/kg dry	0.054	0.00049	1	8260B	12/15/15 20:50	MWW&	P5L0243
Methyl Ethyl Ketone (2-Butanone)	0.0093 J	mg/kg dry	0.022	0.00049	1	8260B	12/15/15 20:50	MWW&	P5L0243
Methyl Isobutyl Ketone	BRL	mg/kg dry	0.011	0.00046	1	8260B	12/15/15 20:50	MWW&	P5L0243
Methylene Chloride	BRL	mg/kg dry	0.011	0.00031	1	8260B	12/15/15 20:50	MWW&	P5L0243
Methyl-tert-Butyl Ether	BRL	mg/kg dry	0.0054	0.00017	1	8260B	12/15/15 20:50	MWW&	P5L0243
Naphthalene	0.011	mg/kg dry	0.0054	0.00017	1	8260B	12/15/15 20:50	MWW&	P5L0243
n-Butylbenzene	0.035	mg/kg dry	0.016	0.00028	1	8260B	12/15/15 20:50	MWW&	P5L0243
n-Propylbenzene	See 8260ML	mg/kg dry	0.011	0.00032	1	8260B	12/15/15 20:50	MWW&	P5L0243
o-Xylene	0.011	mg/kg dry	0.0054	0.00022	1	8260B	12/15/15 20:50	MWW&	P5L0243
sec-Butylbenzene	0.029	mg/kg dry	0.016	0.00026	1	8260B	12/15/15 20:50	MWW&	P5L0243
Styrene	BRL	mg/kg dry	0.0054	0.00033	1	8260B	12/15/15 20:50	MWW&	P5L0243
tert-Butylbenzene	BRL	mg/kg dry	0.022	0.00018	1	8260B	12/15/15 20:50	MWW&	P5L0243
Tetrachloroethylene	BRL	mg/kg dry	0.011	0.00026	1	8260B	12/15/15 20:50	MWW&	P5L0243
Toluene	0.0032 J	mg/kg dry	0.0054	0.00031	1	8260B	12/15/15 20:50	MWW&	P5L0243
trans-1,2-Dichloroethylene	BRL	mg/kg dry	0.0054	0.00032	1	8260B	12/15/15 20:50	MWW&	P5L0243
trans-1,3-Dichloropropylene	BRL	mg/kg dry	0.0054	0.00029	1	8260B	12/15/15 20:50	MWW&	P5L0243
Trichloroethylene	BRL	mg/kg dry	0.0054	0.00035	1	8260B	12/15/15 20:50	MWW&	P5L0243
Trichlorofluoromethane	BRL	mg/kg dry	0.0054	0.00035	1	8260B	12/15/15 20:50	MWW&	P5L0243
Vinyl acetate	BRL	mg/kg dry	0.011	0.00074	1	8260B	12/15/15 20:50	MWW&	P5L0243
Vinyl chloride	BRL	mg/kg dry	0.011	0.00026	1	8260B	12/15/15 20:50	MWW&	P5L0243
Xylenes, total	0.026	mg/kg dry	0.016	0.0010	1	8260B	12/15/15 20:50	MWW&	P5L0243

Surrogate	Recovery	Control Limits
4-Bromofluorobenzene	100 %	70-130
Dibromofluoromethane	95 %	84-123
Toluene-d8	98 %	76-129

Volatile Organic Compounds by GC/MS (Medium Level)

1,2,4-Trimethylbenzene	5.7	mg/kg dry	0.36	0.079	50	8260B	12/18/15 15:48	MWW&	P5L0284
1,3,5-Trimethylbenzene	0.96	mg/kg dry	0.36	0.088	50	8260B	12/18/15 15:48	MWW&	P5L0284

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ECS Carolinas, LLP (North Charleston)
Attn: Justin Roth
3820 Faber Place Drive, Suite 500
North Charleston, SC 29405

Project: Waltersboro

Sample Matrix: Solid

Client Sample ID: TP-1
Prism Sample ID: 5120159-01
Prism Work Order: 5120159
Time Collected: 12/09/15 08:50
Time Submitted: 12/10/15 08:32

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
n-Propylbenzene	1.5	mg/kg dry	0.36	0.084	50	8260B	12/18/15 15:48	MWW&	P5L0284
			Surrogate				Recovery		Control Limits
			4-Bromofluorobenzene				101 %		70-130
			Dibromofluoromethane				101 %		70-130
			Toluene-d8				106 %		70-130

ECS Carolinas, LLP (North Charleston)
 Attn: Justin Roth
 3820 Faber Place Drive, Suite 500
 North Charleston, SC 29405

Project: Waltersboro
 Sample Matrix: Solid

Client Sample ID: TP-4
 Prism Sample ID: 5120159-02
 Prism Work Order: 5120159
 Time Collected: 12/09/15 09:10
 Time Submitted: 12/10/15 08:32

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
General Chemistry Parameters									
% Solids	81.8	% by Weight	0.100	0.100	1	*SM2540 G	12/10/15 16:00	ARC	P5L0179
Semivolatile Organic Compounds by GC/MS									
1,2,4-Trichlorobenzene	BRL	mg/kg dry	2.0	0.31	5	8270D	12/18/15 3:08	JMV	P5L0241
1,2-Dichlorobenzene	BRL	mg/kg dry	2.0	0.29	5	8270D	12/18/15 3:08	JMV	P5L0241
1,3-Dichlorobenzene	BRL	mg/kg dry	2.0	0.33	5	8270D	12/18/15 3:08	JMV	P5L0241
1,4-Dichlorobenzene	BRL	mg/kg dry	2.0	0.25	5	8270D	12/18/15 3:08	JMV	P5L0241
2,4,5-Trichlorophenol	BRL	mg/kg dry	2.0	0.33	5	8270D	12/18/15 3:08	JMV	P5L0241
2,4,6-Trichlorophenol	BRL	mg/kg dry	2.0	0.23	5	8270D	12/18/15 3:08	JMV	P5L0241
2,4-Dichlorophenol	BRL	mg/kg dry	2.0	0.24	5	8270D	12/18/15 3:08	JMV	P5L0241
2,4-Dimethylphenol	BRL	mg/kg dry	2.0	0.23	5	8270D	12/18/15 3:08	JMV	P5L0241
2,4-Dinitrophenol	BRL	mg/kg dry	2.0	0.74	5	8270D	12/18/15 3:08	JMV	P5L0241
2,4-Dinitrotoluene	BRL	mg/kg dry	2.0	0.38	5	8270D	12/18/15 3:08	JMV	P5L0241
2,6-Dinitrotoluene	BRL	mg/kg dry	2.0	0.36	5	8270D	12/18/15 3:08	JMV	P5L0241
2-Chloronaphthalene	BRL	mg/kg dry	2.0	0.32	5	8270D	12/18/15 3:08	JMV	P5L0241
2-Chlorophenol	BRL	mg/kg dry	2.0	0.27	5	8270D	12/18/15 3:08	JMV	P5L0241
2-Methylnaphthalene	BRL	mg/kg dry	2.0	0.28	5	8270D	12/18/15 3:08	JMV	P5L0241
2-Methylphenol	BRL	mg/kg dry	2.0	0.31	5	8270D	12/18/15 3:08	JMV	P5L0241
2-Nitroaniline	BRL	mg/kg dry	2.0	0.32	5	8270D	12/18/15 3:08	JMV	P5L0241
2-Nitrophenol	BRL	mg/kg dry	2.0	0.25	5	8270D	12/18/15 3:08	JMV	P5L0241
3,3'-Dichlorobenzidine	BRL	mg/kg dry	2.0	0.16	5	8270D	12/18/15 3:08	JMV	P5L0241
3/4-Methylphenol	BRL	mg/kg dry	2.0	0.24	5	8270D	12/18/15 3:08	JMV	P5L0241
3-Nitroaniline	BRL	mg/kg dry	2.0	0.65	5	8270D	12/18/15 3:08	JMV	P5L0241
4,6-Dinitro-2-methylphenol	BRL	mg/kg dry	2.0	0.55	5	8270D	12/18/15 3:08	JMV	P5L0241
4-Bromophenyl phenyl ether	BRL	mg/kg dry	2.0	0.27	5	8270D	12/18/15 3:08	JMV	P5L0241
4-Chloro-3-methylphenol	BRL	mg/kg dry	2.0	0.19	5	8270D	12/18/15 3:08	JMV	P5L0241
4-Chloroaniline	BRL	mg/kg dry	2.0	0.32	5	8270D	12/18/15 3:08	JMV	P5L0241
4-Chlorophenyl phenyl ether	BRL	mg/kg dry	2.0	0.24	5	8270D	12/18/15 3:08	JMV	P5L0241
4-Nitroaniline	BRL	mg/kg dry	2.0	0.49	5	8270D	12/18/15 3:08	JMV	P5L0241
4-Nitrophenol	BRL	mg/kg dry	2.0	0.49	5	8270D	12/18/15 3:08	JMV	P5L0241
Acenaphthene	BRL	mg/kg dry	2.0	0.22	5	8270D	12/18/15 3:08	JMV	P5L0241
Acenaphthylene	BRL	mg/kg dry	2.0	0.24	5	8270D	12/18/15 3:08	JMV	P5L0241
Aniline	BRL	mg/kg dry	2.0	0.40	5	8270D	12/18/15 3:08	JMV	P5L0241
Anthracene	BRL	mg/kg dry	2.0	0.23	5	8270D	12/18/15 3:08	JMV	P5L0241
Azobenzene	BRL	mg/kg dry	2.0	0.26	5	8270D	12/18/15 3:08	JMV	P5L0241
Benzo(a)anthracene	BRL	mg/kg dry	2.0	0.24	5	8270D	12/18/15 3:08	JMV	P5L0241
Benzo(a)pyrene	BRL	mg/kg dry	2.0	0.24	5	8270D	12/18/15 3:08	JMV	P5L0241
Benzo(b)fluoranthene	BRL	mg/kg dry	2.0	0.28	5	8270D	12/18/15 3:08	JMV	P5L0241
Benzo(g,h,i)perylene	BRL	mg/kg dry	2.0	0.27	5	8270D	12/18/15 3:08	JMV	P5L0241
Benzo(k)fluoranthene	BRL	mg/kg dry	2.0	0.24	5	8270D	12/18/15 3:08	JMV	P5L0241
Benzoic Acid	BRL	mg/kg dry	2.0	0.92	5	8270D	12/18/15 3:08	JMV	P5L0241
Benzyl alcohol	BRL	mg/kg dry	2.0	0.15	5	8270D	12/18/15 3:08	JMV	P5L0241

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ECS Carolinas, LLP (North Charleston)
 Attn: Justin Roth
 3820 Faber Place Drive, Suite 500
 North Charleston, SC 29405

Project: Waltersboro
 Sample Matrix: Solid

Client Sample ID: TP-4
 Prism Sample ID: 5120159-02
 Prism Work Order: 5120159
 Time Collected: 12/09/15 09:10
 Time Submitted: 12/10/15 08:32

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
bis(2-Chloroethoxy)methane	BRL	mg/kg dry	2.0	0.21	5	8270D	12/18/15 3:08	JMV	P5L0241
Bis(2-Chloroethyl)ether	BRL	mg/kg dry	2.0	0.24	5	8270D	12/18/15 3:08	JMV	P5L0241
Bis(2-chloroisopropyl)ether	BRL	mg/kg dry	2.0	0.25	5	8270D	12/18/15 3:08	JMV	P5L0241
Bis(2-Ethylhexyl)phthalate	16	mg/kg dry	2.0	0.52	5	8270D	12/18/15 3:08	JMV	P5L0241
Butyl benzyl phthalate	BRL	mg/kg dry	2.0	0.40	5	8270D	12/18/15 3:08	JMV	P5L0241
Chrysene	BRL	mg/kg dry	2.0	0.37	5	8270D	12/18/15 3:08	JMV	P5L0241
Dibenzo(a,h)anthracene	BRL	mg/kg dry	2.0	0.32	5	8270D	12/18/15 3:08	JMV	P5L0241
Dibenzofuran	BRL	mg/kg dry	2.0	0.26	5	8270D	12/18/15 3:08	JMV	P5L0241
Diethyl phthalate	BRL	mg/kg dry	2.0	0.41	5	8270D	12/18/15 3:08	JMV	P5L0241
Dimethyl phthalate	BRL	mg/kg dry	2.0	0.28	5	8270D	12/18/15 3:08	JMV	P5L0241
Di-n-butyl phthalate	BRL	mg/kg dry	2.0	0.34	5	8270D	12/18/15 3:08	JMV	P5L0241
Di-n-octyl phthalate	44 E	mg/kg dry	2.0	0.23	5	8270D	12/18/15 3:08	JMV	P5L0241
Fluoranthene	BRL	mg/kg dry	2.0	0.27	5	8270D	12/18/15 3:08	JMV	P5L0241
Fluorene	BRL	mg/kg dry	2.0	0.29	5	8270D	12/18/15 3:08	JMV	P5L0241
Hexachlorobenzene	BRL	mg/kg dry	2.0	0.32	5	8270D	12/18/15 3:08	JMV	P5L0241
Hexachlorobutadiene	BRL	mg/kg dry	2.0	0.29	5	8270D	12/18/15 3:08	JMV	P5L0241
Hexachlorocyclopentadiene	BRL	mg/kg dry	2.0	0.36	5	8270D	12/18/15 3:08	JMV	P5L0241
Hexachloroethane	BRL	mg/kg dry	2.0	0.30	5	8270D	12/18/15 3:08	JMV	P5L0241
Indeno(1,2,3-cd)pyrene	BRL	mg/kg dry	2.0	0.28	5	8270D	12/18/15 3:08	JMV	P5L0241
Isophorone	BRL	mg/kg dry	2.0	0.19	5	8270D	12/18/15 3:08	JMV	P5L0241
Naphthalene	BRL	mg/kg dry	2.0	0.27	5	8270D	12/18/15 3:08	JMV	P5L0241
Nitrobenzene	BRL	mg/kg dry	2.0	0.27	5	8270D	12/18/15 3:08	JMV	P5L0241
N-Nitroso-di-n-propylamine	BRL	mg/kg dry	2.0	0.27	5	8270D	12/18/15 3:08	JMV	P5L0241
N-Nitrosodiphenylamine	BRL	mg/kg dry	2.0	0.24	5	8270D	12/18/15 3:08	JMV	P5L0241
Pentachlorophenol	BRL	mg/kg dry	2.0	0.46	5	8270D	12/18/15 3:08	JMV	P5L0241
Phenanthrene	BRL	mg/kg dry	2.0	0.27	5	8270D	12/18/15 3:08	JMV	P5L0241
Phenol	BRL	mg/kg dry	2.0	0.18	5	8270D	12/18/15 3:08	JMV	P5L0241
Pyrene	BRL	mg/kg dry	2.0	0.29	5	8270D	12/18/15 3:08	JMV	P5L0241

Surrogate	Recovery	Control Limits
2,4,6-Tribromophenol	99 %	37-131
2-Fluorobiphenyl	99 %	47-130
2-Fluorophenol	87 %	44-117
Nitrobenzene-d5	95 %	45-121
Phenol-d5	92 %	37-127
Terphenyl-d14	110 %	38-135

Total Metals

Mercury	0.023	mg/kg dry	0.023	0.0015	1	*7471B	12/15/15 12:49	JAB	P5L0187
Antimony	13	mg/kg dry	0.31	0.048	1	*6010C	12/16/15 19:08	BGM	P5L0186
Arsenic	1.0	mg/kg dry	0.31	0.068	1	*6010C	12/16/15 19:08	BGM	P5L0186
Beryllium	BRL	mg/kg dry	0.31	0.010	1	*6010C	12/16/15 19:08	BGM	P5L0186
Cadmium	0.50	mg/kg dry	0.31	0.0065	1	*6010C	12/16/15 19:08	BGM	P5L0186
Chromium	10	mg/kg dry	0.31	0.042	1	*6010C	12/16/15 19:08	BGM	P5L0186
Copper	6.6	mg/kg dry	0.61	0.11	1	*6010C	12/16/15 19:08	BGM	P5L0186

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ECS Carolinas, LLP (North Charleston)
 Attn: Justin Roth
 3820 Faber Place Drive, Suite 500
 North Charleston, SC 29405

Project: Waltersboro
 Sample Matrix: Solid

Client Sample ID: TP-4
 Prism Sample ID: 5120159-02
 Prism Work Order: 5120159
 Time Collected: 12/09/15 09:10
 Time Submitted: 12/10/15 08:32

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Lead	61 BH	mg/kg dry	0.31	0.032	1	*6010C	12/16/15 19:08	BGM	P5L0186
Nickel	7.4	mg/kg dry	0.61	0.057	1	*6010C	12/16/15 19:08	BGM	P5L0186
Selenium	BRL	mg/kg dry	0.61	0.044	1	*6010C	12/16/15 19:08	BGM	P5L0186
Silver	BRL	mg/kg dry	0.31	0.0050	1	*6010C	12/16/15 19:08	BGM	P5L0186
Thallium	BRL	mg/kg dry	0.61	0.044	1	*6010C	12/16/15 19:08	BGM	P5L0186
Zinc	100	mg/kg dry	3.1	0.037	1	*6010C	12/16/15 19:08	BGM	P5L0186
Volatile Organic Compounds by GC/MS									
1,1,1,2-Tetrachloroethane	BRL	mg/kg dry	0.0052	0.00043	1	8260B	12/10/15 20:19	MWW&	P5L0182
1,1,1-Trichloroethane	BRL	mg/kg dry	0.0052	0.00025	1	8260B	12/10/15 20:19	MWW&	P5L0182
1,1,2,2-Tetrachloroethane	BRL	mg/kg dry	0.0052	0.00035	1	8260B	12/10/15 20:19	MWW&	P5L0182
1,1,2-Trichloroethane	BRL	mg/kg dry	0.0052	0.00046	1	8260B	12/10/15 20:19	MWW&	P5L0182
1,1-Dichloroethane	BRL	mg/kg dry	0.0052	0.00015	1	8260B	12/10/15 20:19	MWW&	P5L0182
1,1-Dichloroethylene	BRL	mg/kg dry	0.0052	0.00023	1	8260B	12/10/15 20:19	MWW&	P5L0182
1,1-Dichloropropylene	BRL	mg/kg dry	0.0052	0.00029	1	8260B	12/10/15 20:19	MWW&	P5L0182
1,2,3-Trichlorobenzene	BRL	mg/kg dry	0.010	0.00030	1	8260B	12/10/15 20:19	MWW&	P5L0182
1,2,3-Trichloropropane	BRL	mg/kg dry	0.0052	0.00067	1	8260B	12/10/15 20:19	MWW&	P5L0182
1,2,4-Trichlorobenzene	BRL	mg/kg dry	0.010	0.00039	1	8260B	12/10/15 20:19	MWW&	P5L0182
1,2,4-Trimethylbenzene	0.042	mg/kg dry	0.010	0.00040	1	8260B	12/10/15 20:19	MWW&	P5L0182
1,2-Dibromo-3-chloropropane	BRL	mg/kg dry	0.0052	0.00039	1	8260B	12/10/15 20:19	MWW&	P5L0182
1,2-Dibromoethane	BRL	mg/kg dry	0.0052	0.00021	1	8260B	12/10/15 20:19	MWW&	P5L0182
1,2-Dichlorobenzene	BRL	mg/kg dry	0.010	0.00025	1	8260B	12/10/15 20:19	MWW&	P5L0182
1,2-Dichloroethane	BRL	mg/kg dry	0.0052	0.00031	1	8260B	12/10/15 20:19	MWW&	P5L0182
1,2-Dichloropropane	BRL	mg/kg dry	0.0052	0.00032	1	8260B	12/10/15 20:19	MWW&	P5L0182
1,3,5-Trimethylbenzene	0.021	mg/kg dry	0.010	0.00040	1	8260B	12/10/15 20:19	MWW&	P5L0182
1,3-Dichlorobenzene	BRL	mg/kg dry	0.010	0.00035	1	8260B	12/10/15 20:19	MWW&	P5L0182
1,3-Dichloropropane	BRL	mg/kg dry	0.0052	0.00026	1	8260B	12/10/15 20:19	MWW&	P5L0182
1,4-Dichlorobenzene	0.014	mg/kg dry	0.010	0.00021	1	8260B	12/10/15 20:19	MWW&	P5L0182
2,2-Dichloropropane	BRL	mg/kg dry	0.0052	0.00025	1	8260B	12/10/15 20:19	MWW&	P5L0182
2-Chloroethyl Vinyl Ether	BRL	mg/kg dry	0.010	0.00097	1	8260B	12/10/15 20:19	MWW&	P5L0182
2-Chlorotoluene	BRL	mg/kg dry	0.010	0.00027	1	8260B	12/10/15 20:19	MWW&	P5L0182
4-Chlorotoluene	BRL	mg/kg dry	0.010	0.00031	1	8260B	12/10/15 20:19	MWW&	P5L0182
4-Isopropyltoluene	0.0078 J	mg/kg dry	0.016	0.00025	1	8260B	12/10/15 20:19	MWW&	P5L0182
Acetone	0.16	mg/kg dry	0.021	0.0013	1	8260B	12/10/15 20:19	MWW&	P5L0182
Acrolein	BRL	mg/kg dry	0.10	0.0015	1	8260B	12/10/15 20:19	MWW&	P5L0182
Acrylonitrile	BRL	mg/kg dry	0.10	0.0014	1	8260B	12/10/15 20:19	MWW&	P5L0182
Benzene	BRL	mg/kg dry	0.0031	0.00030	1	8260B	12/10/15 20:19	MWW&	P5L0182
Bromobenzene	BRL	mg/kg dry	0.0052	0.00044	1	8260B	12/10/15 20:19	MWW&	P5L0182
Bromochloromethane	BRL	mg/kg dry	0.0052	0.00029	1	8260B	12/10/15 20:19	MWW&	P5L0182
Bromodichloromethane	BRL	mg/kg dry	0.0052	0.00029	1	8260B	12/10/15 20:19	MWW&	P5L0182
Bromoform	BRL	mg/kg dry	0.0052	0.00059	1	8260B	12/10/15 20:19	MWW&	P5L0182
Bromomethane	BRL	mg/kg dry	0.010	0.00065	1	8260B	12/10/15 20:19	MWW&	P5L0182
Carbon disulfide	BRL	mg/kg dry	0.010	0.00026	1	8260B	12/10/15 20:19	MWW&	P5L0182
Carbon Tetrachloride	BRL	mg/kg dry	0.0052	0.00026	1	8260B	12/10/15 20:19	MWW&	P5L0182

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ECS Carolinas, LLP (North Charleston)
 Attn: Justin Roth
 3820 Faber Place Drive, Suite 500
 North Charleston, SC 29405

Project: Waltersboro
 Sample Matrix: Solid

Client Sample ID: TP-4
 Prism Sample ID: 5120159-02
 Prism Work Order: 5120159
 Time Collected: 12/09/15 09:10
 Time Submitted: 12/10/15 08:32

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Chlorobenzene	0.0026 J	mg/kg dry	0.0052	0.00028	1	8260B	12/10/15 20:19	MWW&	P5L0182
Chloroethane	BRL	mg/kg dry	0.010	0.00044	1	8260B	12/10/15 20:19	MWW&	P5L0182
Chloroform	BRL	mg/kg dry	0.0052	0.00038	1	8260B	12/10/15 20:19	MWW&	P5L0182
Chloromethane	BRL	mg/kg dry	0.010	0.00035	1	8260B	12/10/15 20:19	MWW&	P5L0182
cis-1,2-Dichloroethylene	BRL	mg/kg dry	0.0052	0.00022	1	8260B	12/10/15 20:19	MWW&	P5L0182
cis-1,3-Dichloropropylene	BRL	mg/kg dry	0.0052	0.00018	1	8260B	12/10/15 20:19	MWW&	P5L0182
Dibromochloromethane	BRL	mg/kg dry	0.0052	0.00022	1	8260B	12/10/15 20:19	MWW&	P5L0182
Dibromomethane	BRL	mg/kg dry	0.0052	0.00045	1	8260B	12/10/15 20:19	MWW&	P5L0182
Dichlorodifluoromethane	BRL	mg/kg dry	0.010	0.00024	1	8260B	12/10/15 20:19	MWW&	P5L0182
Ethylbenzene	BRL	mg/kg dry	0.0052	0.00020	1	8260B	12/10/15 20:19	MWW&	P5L0182
Hexachlorobutadiene	BRL	mg/kg dry	0.016	0.00042	1	8260B	12/10/15 20:19	MWW&	P5L0182
Isopropyl Ether	BRL	mg/kg dry	0.0052	0.00021	1	8260B	12/10/15 20:19	MWW&	P5L0182
Isopropylbenzene (Cumene)	0.0022 J	mg/kg dry	0.010	0.00031	1	8260B	12/10/15 20:19	MWW&	P5L0182
m,p-Xylenes	0.0040 J	mg/kg dry	0.010	0.00048	1	8260B	12/10/15 20:19	MWW&	P5L0182
Methyl Butyl Ketone (2-Hexanone)	BRL	mg/kg dry	0.052	0.00047	1	8260B	12/10/15 20:19	MWW&	P5L0182
Methyl Ethyl Ketone (2-Butanone)	0.030	mg/kg dry	0.021	0.00047	1	8260B	12/10/15 20:19	MWW&	P5L0182
Methyl Isobutyl Ketone	BRL	mg/kg dry	0.010	0.00045	1	8260B	12/10/15 20:19	MWW&	P5L0182
Methylene Chloride	BRL	mg/kg dry	0.010	0.00029	1	8260B	12/10/15 20:19	MWW&	P5L0182
Methyl-tert-Butyl Ether	BRL	mg/kg dry	0.0052	0.00017	1	8260B	12/10/15 20:19	MWW&	P5L0182
Naphthalene	0.011	mg/kg dry	0.0052	0.00017	1	8260B	12/10/15 20:19	MWW&	P5L0182
n-Butylbenzene	0.0028 J	mg/kg dry	0.016	0.00027	1	8260B	12/10/15 20:19	MWW&	P5L0182
n-Propylbenzene	0.0049 J	mg/kg dry	0.010	0.00031	1	8260B	12/10/15 20:19	MWW&	P5L0182
o-Xylene	BRL	mg/kg dry	0.0052	0.00021	1	8260B	12/10/15 20:19	MWW&	P5L0182
sec-Butylbenzene	0.0027 J	mg/kg dry	0.016	0.00025	1	8260B	12/10/15 20:19	MWW&	P5L0182
Styrene	BRL	mg/kg dry	0.0052	0.00031	1	8260B	12/10/15 20:19	MWW&	P5L0182
tert-Butylbenzene	0.0027 J	mg/kg dry	0.021	0.00018	1	8260B	12/10/15 20:19	MWW&	P5L0182
Tetrachloroethylene	BRL	mg/kg dry	0.010	0.00025	1	8260B	12/10/15 20:19	MWW&	P5L0182
Toluene	0.0093	mg/kg dry	0.0052	0.00030	1	8260B	12/10/15 20:19	MWW&	P5L0182
trans-1,2-Dichloroethylene	BRL	mg/kg dry	0.0052	0.00031	1	8260B	12/10/15 20:19	MWW&	P5L0182
trans-1,3-Dichloropropylene	BRL	mg/kg dry	0.0052	0.00028	1	8260B	12/10/15 20:19	MWW&	P5L0182
Trichloroethylene	BRL	mg/kg dry	0.0052	0.00034	1	8260B	12/10/15 20:19	MWW&	P5L0182
Trichlorofluoromethane	BRL	mg/kg dry	0.0052	0.00034	1	8260B	12/10/15 20:19	MWW&	P5L0182
Vinyl acetate	BRL	mg/kg dry	0.010	0.00072	1	8260B	12/10/15 20:19	MWW&	P5L0182
Vinyl chloride	BRL	mg/kg dry	0.010	0.00025	1	8260B	12/10/15 20:19	MWW&	P5L0182
Xylenes, total	0.0040 J	mg/kg dry	0.016	0.00098	1	8260B	12/10/15 20:19	MWW&	P5L0182

Surrogate	Recovery	Control Limits
4-Bromofluorobenzene	102 %	70-130
Dibromofluoromethane	105 %	84-123
Toluene-d8	94 %	76-129

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ECS Carolinas, LLP (North Charleston)
 Attn: Justin Roth
 3820 Faber Place Drive, Suite 500
 North Charleston, SC 29405

Project: Waltersboro
 Sample Matrix: Solid

Client Sample ID: TP-10
 Prism Sample ID: 5120159-03
 Prism Work Order: 5120159
 Time Collected: 12/09/15 10:20
 Time Submitted: 12/10/15 08:32

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
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General Chemistry Parameters

% Solids	75.5	% by Weight	0.100	0.100	1	*SM2540 G	12/10/15 16:00	ARC	P5L0179
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Semivolatile Organic Compounds by GC/MS

1,2,4-Trichlorobenzene	BRL	mg/kg dry	0.44	0.068	1	8270D	12/18/15 3:29	JMV	P5L0241
1,2-Dichlorobenzene	BRL	mg/kg dry	0.44	0.062	1	8270D	12/18/15 3:29	JMV	P5L0241
1,3-Dichlorobenzene	BRL	mg/kg dry	0.44	0.071	1	8270D	12/18/15 3:29	JMV	P5L0241
1,4-Dichlorobenzene	BRL	mg/kg dry	0.44	0.053	1	8270D	12/18/15 3:29	JMV	P5L0241
2,4,5-Trichlorophenol	BRL	mg/kg dry	0.44	0.070	1	8270D	12/18/15 3:29	JMV	P5L0241
2,4,6-Trichlorophenol	BRL	mg/kg dry	0.44	0.049	1	8270D	12/18/15 3:29	JMV	P5L0241
2,4-Dichlorophenol	BRL	mg/kg dry	0.44	0.053	1	8270D	12/18/15 3:29	JMV	P5L0241
2,4-Dimethylphenol	BRL	mg/kg dry	0.44	0.050	1	8270D	12/18/15 3:29	JMV	P5L0241
2,4-Dinitrophenol	BRL	mg/kg dry	0.44	0.16	1	8270D	12/18/15 3:29	JMV	P5L0241
2,4-Dinitrotoluene	BRL	mg/kg dry	0.44	0.083	1	8270D	12/18/15 3:29	JMV	P5L0241
2,6-Dinitrotoluene	BRL	mg/kg dry	0.44	0.079	1	8270D	12/18/15 3:29	JMV	P5L0241
2-Chloronaphthalene	BRL	mg/kg dry	0.44	0.069	1	8270D	12/18/15 3:29	JMV	P5L0241
2-Chlorophenol	BRL	mg/kg dry	0.44	0.059	1	8270D	12/18/15 3:29	JMV	P5L0241
2-Methylnaphthalene	BRL	mg/kg dry	0.44	0.061	1	8270D	12/18/15 3:29	JMV	P5L0241
2-Methylphenol	BRL	mg/kg dry	0.44	0.067	1	8270D	12/18/15 3:29	JMV	P5L0241
2-Nitroaniline	BRL	mg/kg dry	0.44	0.069	1	8270D	12/18/15 3:29	JMV	P5L0241
2-Nitrophenol	BRL	mg/kg dry	0.44	0.053	1	8270D	12/18/15 3:29	JMV	P5L0241
3,3'-Dichlorobenzidine	BRL	mg/kg dry	0.44	0.035	1	8270D	12/18/15 3:29	JMV	P5L0241
3/4-Methylphenol	BRL	mg/kg dry	0.44	0.052	1	8270D	12/18/15 3:29	JMV	P5L0241
3-Nitroaniline	BRL	mg/kg dry	0.44	0.14	1	8270D	12/18/15 3:29	JMV	P5L0241
4,6-Dinitro-2-methylphenol	BRL	mg/kg dry	0.44	0.12	1	8270D	12/18/15 3:29	JMV	P5L0241
4-Bromophenyl phenyl ether	BRL	mg/kg dry	0.44	0.059	1	8270D	12/18/15 3:29	JMV	P5L0241
4-Chloro-3-methylphenol	BRL	mg/kg dry	0.44	0.041	1	8270D	12/18/15 3:29	JMV	P5L0241
4-Chloroaniline	BRL	mg/kg dry	0.44	0.068	1	8270D	12/18/15 3:29	JMV	P5L0241
4-Chlorophenyl phenyl ether	BRL	mg/kg dry	0.44	0.052	1	8270D	12/18/15 3:29	JMV	P5L0241
4-Nitroaniline	BRL	mg/kg dry	0.44	0.11	1	8270D	12/18/15 3:29	JMV	P5L0241
4-Nitrophenol	BRL	mg/kg dry	0.44	0.11	1	8270D	12/18/15 3:29	JMV	P5L0241
Acenaphthene	BRL	mg/kg dry	0.44	0.048	1	8270D	12/18/15 3:29	JMV	P5L0241
Acenaphthylene	BRL	mg/kg dry	0.44	0.051	1	8270D	12/18/15 3:29	JMV	P5L0241
Aniline	BRL	mg/kg dry	0.44	0.086	1	8270D	12/18/15 3:29	JMV	P5L0241
Anthracene	BRL	mg/kg dry	0.44	0.049	1	8270D	12/18/15 3:29	JMV	P5L0241
Azobenzene	BRL	mg/kg dry	0.44	0.056	1	8270D	12/18/15 3:29	JMV	P5L0241
Benzo(a)anthracene	BRL	mg/kg dry	0.44	0.052	1	8270D	12/18/15 3:29	JMV	P5L0241
Benzo(a)pyrene	BRL	mg/kg dry	0.44	0.052	1	8270D	12/18/15 3:29	JMV	P5L0241
Benzo(b)fluoranthene	BRL	mg/kg dry	0.44	0.061	1	8270D	12/18/15 3:29	JMV	P5L0241
Benzo(g,h,i)perylene	BRL	mg/kg dry	0.44	0.058	1	8270D	12/18/15 3:29	JMV	P5L0241
Benzo(k)fluoranthene	BRL	mg/kg dry	0.44	0.053	1	8270D	12/18/15 3:29	JMV	P5L0241
Benzoic Acid	BRL	mg/kg dry	0.44	0.20	1	8270D	12/18/15 3:29	JMV	P5L0241
Benzyl alcohol	BRL	mg/kg dry	0.44	0.032	1	8270D	12/18/15 3:29	JMV	P5L0241

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ECS Carolinas, LLP (North Charleston)
 Attn: Justin Roth
 3820 Faber Place Drive, Suite 500
 North Charleston, SC 29405

Project: Waltersboro
 Sample Matrix: Solid

Client Sample ID: TP-10
 Prism Sample ID: 5120159-03
 Prism Work Order: 5120159
 Time Collected: 12/09/15 10:20
 Time Submitted: 12/10/15 08:32

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
bis(2-Chloroethoxy)methane	BRL	mg/kg dry	0.44	0.046	1	8270D	12/18/15 3:29	JMV	P5L0241
Bis(2-Chloroethyl)ether	BRL	mg/kg dry	0.44	0.051	1	8270D	12/18/15 3:29	JMV	P5L0241
Bis(2-chloroisopropyl)ether	BRL	mg/kg dry	0.44	0.053	1	8270D	12/18/15 3:29	JMV	P5L0241
Bis(2-Ethylhexyl)phthalate	0.19 J	mg/kg dry	0.44	0.11	1	8270D	12/18/15 3:29	JMV	P5L0241
Butyl benzyl phthalate	BRL	mg/kg dry	0.44	0.087	1	8270D	12/18/15 3:29	JMV	P5L0241
Chrysene	BRL	mg/kg dry	0.44	0.081	1	8270D	12/18/15 3:29	JMV	P5L0241
Dibenzo(a,h)anthracene	BRL	mg/kg dry	0.44	0.070	1	8270D	12/18/15 3:29	JMV	P5L0241
Dibenzofuran	BRL	mg/kg dry	0.44	0.057	1	8270D	12/18/15 3:29	JMV	P5L0241
Diethyl phthalate	BRL	mg/kg dry	0.44	0.089	1	8270D	12/18/15 3:29	JMV	P5L0241
Dimethyl phthalate	BRL	mg/kg dry	0.44	0.060	1	8270D	12/18/15 3:29	JMV	P5L0241
Di-n-butyl phthalate	BRL	mg/kg dry	0.44	0.073	1	8270D	12/18/15 3:29	JMV	P5L0241
Di-n-octyl phthalate	0.21 J	mg/kg dry	0.44	0.050	1	8270D	12/18/15 3:29	JMV	P5L0241
Fluoranthene	BRL	mg/kg dry	0.44	0.058	1	8270D	12/18/15 3:29	JMV	P5L0241
Fluorene	BRL	mg/kg dry	0.44	0.064	1	8270D	12/18/15 3:29	JMV	P5L0241
Hexachlorobenzene	BRL	mg/kg dry	0.44	0.069	1	8270D	12/18/15 3:29	JMV	P5L0241
Hexachlorobutadiene	BRL	mg/kg dry	0.44	0.063	1	8270D	12/18/15 3:29	JMV	P5L0241
Hexachlorocyclopentadiene	BRL	mg/kg dry	0.44	0.078	1	8270D	12/18/15 3:29	JMV	P5L0241
Hexachloroethane	BRL	mg/kg dry	0.44	0.065	1	8270D	12/18/15 3:29	JMV	P5L0241
Indeno(1,2,3-cd)pyrene	BRL	mg/kg dry	0.44	0.060	1	8270D	12/18/15 3:29	JMV	P5L0241
Isophorone	BRL	mg/kg dry	0.44	0.042	1	8270D	12/18/15 3:29	JMV	P5L0241
Naphthalene	BRL	mg/kg dry	0.44	0.059	1	8270D	12/18/15 3:29	JMV	P5L0241
Nitrobenzene	BRL	mg/kg dry	0.44	0.059	1	8270D	12/18/15 3:29	JMV	P5L0241
N-Nitroso-di-n-propylamine	BRL	mg/kg dry	0.44	0.058	1	8270D	12/18/15 3:29	JMV	P5L0241
N-Nitrosodiphenylamine	BRL	mg/kg dry	0.44	0.051	1	8270D	12/18/15 3:29	JMV	P5L0241
Pentachlorophenol	BRL	mg/kg dry	0.44	0.099	1	8270D	12/18/15 3:29	JMV	P5L0241
Phenanthrene	BRL	mg/kg dry	0.44	0.059	1	8270D	12/18/15 3:29	JMV	P5L0241
Phenol	BRL	mg/kg dry	0.44	0.039	1	8270D	12/18/15 3:29	JMV	P5L0241
Pyrene	BRL	mg/kg dry	0.44	0.064	1	8270D	12/18/15 3:29	JMV	P5L0241

Surrogate	Recovery	Control Limits
2,4,6-Tribromophenol	109 %	37-131
2-Fluorobiphenyl	105 %	47-130
2-Fluorophenol	88 %	44-117
Nitrobenzene-d5	97 %	45-121
Phenol-d5	94 %	37-127
Terphenyl-d14	117 %	38-135

Total Metals

Mercury	BRL	mg/kg dry	0.026	0.0017	1	*7471B	12/15/15 12:54	JAB	P5L0187
Antimony	BRL	mg/kg dry	0.34	0.053	1	*6010C	12/16/15 19:15	BGM	P5L0186
Arsenic	1.2	mg/kg dry	0.34	0.075	1	*6010C	12/16/15 19:15	BGM	P5L0186
Beryllium	BRL	mg/kg dry	0.34	0.011	1	*6010C	12/16/15 19:15	BGM	P5L0186
Cadmium	BRL	mg/kg dry	0.34	0.0071	1	*6010C	12/16/15 19:15	BGM	P5L0186
Chromium	5.6	mg/kg dry	0.34	0.046	1	*6010C	12/16/15 19:15	BGM	P5L0186
Copper	13	mg/kg dry	0.67	0.12	1	*6010C	12/16/15 19:15	BGM	P5L0186

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ECS Carolinas, LLP (North Charleston)
 Attn: Justin Roth
 3820 Faber Place Drive, Suite 500
 North Charleston, SC 29405

Project: Waltersboro
 Sample Matrix: Solid

Client Sample ID: TP-10
 Prism Sample ID: 5120159-03
 Prism Work Order: 5120159
 Time Collected: 12/09/15 10:20
 Time Submitted: 12/10/15 08:32

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Lead	210 BH	mg/kg dry	0.34	0.035	1	*6010C	12/16/15 19:15	BGM	P5L0186
Nickel	1.9	mg/kg dry	0.67	0.063	1	*6010C	12/16/15 19:15	BGM	P5L0186
Selenium	BRL	mg/kg dry	0.67	0.049	1	*6010C	12/16/15 19:15	BGM	P5L0186
Silver	BRL	mg/kg dry	0.34	0.0055	1	*6010C	12/16/15 19:15	BGM	P5L0186
Thallium	BRL	mg/kg dry	0.67	0.049	1	*6010C	12/16/15 19:15	BGM	P5L0186
Zinc	49	mg/kg dry	3.4	0.041	1	*6010C	12/16/15 19:15	BGM	P5L0186
Volatile Organic Compounds by GC/MS									
1,1,1,2-Tetrachloroethane	BRL	mg/kg dry	0.0064	0.00053	1	8260B	12/10/15 20:47	MWW&	P5L0182
1,1,1-Trichloroethane	BRL	mg/kg dry	0.0064	0.00031	1	8260B	12/10/15 20:47	MWW&	P5L0182
1,1,2,2-Tetrachloroethane	BRL	mg/kg dry	0.0064	0.00043	1	8260B	12/10/15 20:47	MWW&	P5L0182
1,1,2-Trichloroethane	BRL	mg/kg dry	0.0064	0.00057	1	8260B	12/10/15 20:47	MWW&	P5L0182
1,1-Dichloroethane	BRL	mg/kg dry	0.0064	0.00018	1	8260B	12/10/15 20:47	MWW&	P5L0182
1,1-Dichloroethylene	BRL	mg/kg dry	0.0064	0.00028	1	8260B	12/10/15 20:47	MWW&	P5L0182
1,1-Dichloropropylene	BRL	mg/kg dry	0.0064	0.00035	1	8260B	12/10/15 20:47	MWW&	P5L0182
1,2,3-Trichlorobenzene	BRL	mg/kg dry	0.013	0.00037	1	8260B	12/10/15 20:47	MWW&	P5L0182
1,2,3-Trichloropropane	BRL	mg/kg dry	0.0064	0.00082	1	8260B	12/10/15 20:47	MWW&	P5L0182
1,2,4-Trichlorobenzene	BRL	mg/kg dry	0.013	0.00048	1	8260B	12/10/15 20:47	MWW&	P5L0182
1,2,4-Trimethylbenzene	BRL	mg/kg dry	0.013	0.00049	1	8260B	12/10/15 20:47	MWW&	P5L0182
1,2-Dibromo-3-chloropropane	BRL	mg/kg dry	0.0064	0.00048	1	8260B	12/10/15 20:47	MWW&	P5L0182
1,2-Dibromoethane	BRL	mg/kg dry	0.0064	0.00026	1	8260B	12/10/15 20:47	MWW&	P5L0182
1,2-Dichlorobenzene	BRL	mg/kg dry	0.013	0.00030	1	8260B	12/10/15 20:47	MWW&	P5L0182
1,2-Dichloroethane	BRL	mg/kg dry	0.0064	0.00038	1	8260B	12/10/15 20:47	MWW&	P5L0182
1,2-Dichloropropane	BRL	mg/kg dry	0.0064	0.00040	1	8260B	12/10/15 20:47	MWW&	P5L0182
1,3,5-Trimethylbenzene	BRL	mg/kg dry	0.013	0.00049	1	8260B	12/10/15 20:47	MWW&	P5L0182
1,3-Dichlorobenzene	BRL	mg/kg dry	0.013	0.00043	1	8260B	12/10/15 20:47	MWW&	P5L0182
1,3-Dichloropropane	BRL	mg/kg dry	0.0064	0.00032	1	8260B	12/10/15 20:47	MWW&	P5L0182
1,4-Dichlorobenzene	BRL	mg/kg dry	0.013	0.00025	1	8260B	12/10/15 20:47	MWW&	P5L0182
2,2-Dichloropropane	BRL	mg/kg dry	0.0064	0.00031	1	8260B	12/10/15 20:47	MWW&	P5L0182
2-Chloroethyl Vinyl Ether	BRL	mg/kg dry	0.013	0.0012	1	8260B	12/10/15 20:47	MWW&	P5L0182
2-Chlorotoluene	BRL	mg/kg dry	0.013	0.00033	1	8260B	12/10/15 20:47	MWW&	P5L0182
4-Chlorotoluene	BRL	mg/kg dry	0.013	0.00038	1	8260B	12/10/15 20:47	MWW&	P5L0182
4-Isopropyltoluene	BRL	mg/kg dry	0.019	0.00031	1	8260B	12/10/15 20:47	MWW&	P5L0182
Acetone	0.034	mg/kg dry	0.026	0.0016	1	8260B	12/10/15 20:47	MWW&	P5L0182
Acrolein	BRL	mg/kg dry	0.13	0.0019	1	8260B	12/10/15 20:47	MWW&	P5L0182
Acrylonitrile	BRL	mg/kg dry	0.13	0.0017	1	8260B	12/10/15 20:47	MWW&	P5L0182
Benzene	BRL	mg/kg dry	0.0039	0.00037	1	8260B	12/10/15 20:47	MWW&	P5L0182
Bromobenzene	BRL	mg/kg dry	0.0064	0.00054	1	8260B	12/10/15 20:47	MWW&	P5L0182
Bromochloromethane	BRL	mg/kg dry	0.0064	0.00035	1	8260B	12/10/15 20:47	MWW&	P5L0182
Bromodichloromethane	BRL	mg/kg dry	0.0064	0.00036	1	8260B	12/10/15 20:47	MWW&	P5L0182
Bromoform	BRL	mg/kg dry	0.0064	0.00073	1	8260B	12/10/15 20:47	MWW&	P5L0182
Bromomethane	BRL	mg/kg dry	0.013	0.00079	1	8260B	12/10/15 20:47	MWW&	P5L0182
Carbon disulfide	BRL	mg/kg dry	0.013	0.00031	1	8260B	12/10/15 20:47	MWW&	P5L0182
Carbon Tetrachloride	BRL	mg/kg dry	0.0064	0.00032	1	8260B	12/10/15 20:47	MWW&	P5L0182

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ECS Carolinas, LLP (North Charleston)
 Attn: Justin Roth
 3820 Faber Place Drive, Suite 500
 North Charleston, SC 29405

Project: Waltersboro
 Sample Matrix: Solid

Client Sample ID: TP-10
 Prism Sample ID: 5120159-03
 Prism Work Order: 5120159
 Time Collected: 12/09/15 10:20
 Time Submitted: 12/10/15 08:32

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Chlorobenzene	BRL	mg/kg dry	0.0064	0.00034	1	8260B	12/10/15 20:47	MWW&	P5L0182
Chloroethane	BRL	mg/kg dry	0.013	0.00054	1	8260B	12/10/15 20:47	MWW&	P5L0182
Chloroform	BRL	mg/kg dry	0.0064	0.00046	1	8260B	12/10/15 20:47	MWW&	P5L0182
Chloromethane	BRL	mg/kg dry	0.013	0.00043	1	8260B	12/10/15 20:47	MWW&	P5L0182
cis-1,2-Dichloroethylene	BRL	mg/kg dry	0.0064	0.00027	1	8260B	12/10/15 20:47	MWW&	P5L0182
cis-1,3-Dichloropropylene	BRL	mg/kg dry	0.0064	0.00022	1	8260B	12/10/15 20:47	MWW&	P5L0182
Dibromochloromethane	BRL	mg/kg dry	0.0064	0.00026	1	8260B	12/10/15 20:47	MWW&	P5L0182
Dibromomethane	BRL	mg/kg dry	0.0064	0.00055	1	8260B	12/10/15 20:47	MWW&	P5L0182
Dichlorodifluoromethane	BRL	mg/kg dry	0.013	0.00029	1	8260B	12/10/15 20:47	MWW&	P5L0182
Ethylbenzene	BRL	mg/kg dry	0.0064	0.00025	1	8260B	12/10/15 20:47	MWW&	P5L0182
Hexachlorobutadiene	BRL	mg/kg dry	0.019	0.00051	1	8260B	12/10/15 20:47	MWW&	P5L0182
Isopropyl Ether	BRL	mg/kg dry	0.0064	0.00026	1	8260B	12/10/15 20:47	MWW&	P5L0182
Isopropylbenzene (Cumene)	BRL	mg/kg dry	0.013	0.00038	1	8260B	12/10/15 20:47	MWW&	P5L0182
m,p-Xylenes	BRL	mg/kg dry	0.013	0.00059	1	8260B	12/10/15 20:47	MWW&	P5L0182
Methyl Butyl Ketone (2-Hexanone)	BRL	mg/kg dry	0.064	0.00058	1	8260B	12/10/15 20:47	MWW&	P5L0182
Methyl Ethyl Ketone (2-Butanone)	BRL	mg/kg dry	0.026	0.00058	1	8260B	12/10/15 20:47	MWW&	P5L0182
Methyl Isobutyl Ketone	BRL	mg/kg dry	0.013	0.00055	1	8260B	12/10/15 20:47	MWW&	P5L0182
Methylene Chloride	BRL	mg/kg dry	0.013	0.00036	1	8260B	12/10/15 20:47	MWW&	P5L0182
Methyl-tert-Butyl Ether	BRL	mg/kg dry	0.0064	0.00021	1	8260B	12/10/15 20:47	MWW&	P5L0182
Naphthalene	BRL	mg/kg dry	0.0064	0.00020	1	8260B	12/10/15 20:47	MWW&	P5L0182
n-Butylbenzene	BRL	mg/kg dry	0.019	0.00033	1	8260B	12/10/15 20:47	MWW&	P5L0182
n-Propylbenzene	BRL	mg/kg dry	0.013	0.00038	1	8260B	12/10/15 20:47	MWW&	P5L0182
o-Xylene	BRL	mg/kg dry	0.0064	0.00026	1	8260B	12/10/15 20:47	MWW&	P5L0182
sec-Butylbenzene	BRL	mg/kg dry	0.019	0.00031	1	8260B	12/10/15 20:47	MWW&	P5L0182
Styrene	BRL	mg/kg dry	0.0064	0.00039	1	8260B	12/10/15 20:47	MWW&	P5L0182
tert-Butylbenzene	BRL	mg/kg dry	0.026	0.00022	1	8260B	12/10/15 20:47	MWW&	P5L0182
Tetrachloroethylene	BRL	mg/kg dry	0.013	0.00031	1	8260B	12/10/15 20:47	MWW&	P5L0182
Toluene	BRL	mg/kg dry	0.0064	0.00037	1	8260B	12/10/15 20:47	MWW&	P5L0182
trans-1,2-Dichloroethylene	BRL	mg/kg dry	0.0064	0.00038	1	8260B	12/10/15 20:47	MWW&	P5L0182
trans-1,3-Dichloropropylene	BRL	mg/kg dry	0.0064	0.00034	1	8260B	12/10/15 20:47	MWW&	P5L0182
Trichloroethylene	BRL	mg/kg dry	0.0064	0.00042	1	8260B	12/10/15 20:47	MWW&	P5L0182
Trichlorofluoromethane	BRL	mg/kg dry	0.0064	0.00042	1	8260B	12/10/15 20:47	MWW&	P5L0182
Vinyl acetate	BRL	mg/kg dry	0.013	0.00088	1	8260B	12/10/15 20:47	MWW&	P5L0182
Vinyl chloride	BRL	mg/kg dry	0.013	0.00031	1	8260B	12/10/15 20:47	MWW&	P5L0182
Xylenes, total	BRL	mg/kg dry	0.019	0.0012	1	8260B	12/10/15 20:47	MWW&	P5L0182

Surrogate	Recovery	Control Limits
4-Bromofluorobenzene	106 %	70-130
Dibromofluoromethane	106 %	84-123
Toluene-d8	98 %	76-129

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ECS Carolinas, LLP (North Charleston) Project: Waltersboro
 Attn: Justin Roth
 3820 Faber Place Drive, Suite 500
 North Charleston, SC 29405

Prism Work Order: 5120159
 Time Submitted: 12/10/2015 8:32:00AM

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P5L0182 - 5035										
Blank (P5L0182-BLK1)										
Prepared & Analyzed: 12/10/15										
1,1,1,2-Tetrachloroethane	BRL	0.0050	mg/kg wet							
1,1,1-Trichloroethane	BRL	0.0050	mg/kg wet							
1,1,2,2-Tetrachloroethane	BRL	0.0050	mg/kg wet							
1,1,2-Trichloroethane	BRL	0.0050	mg/kg wet							
1,1-Dichloroethane	BRL	0.0050	mg/kg wet							
1,1-Dichloroethylene	BRL	0.0050	mg/kg wet							
1,1-Dichloropropylene	BRL	0.0050	mg/kg wet							
1,2,3-Trichlorobenzene	BRL	0.010	mg/kg wet							
1,2,3-Trichloropropane	BRL	0.0050	mg/kg wet							
1,2,4-Trichlorobenzene	BRL	0.010	mg/kg wet							
1,2,4-Trimethylbenzene	BRL	0.010	mg/kg wet							
1,2-Dibromo-3-chloropropane	BRL	0.0050	mg/kg wet							
1,2-Dibromoethane	BRL	0.0050	mg/kg wet							
1,2-Dichlorobenzene	BRL	0.010	mg/kg wet							
1,2-Dichloroethane	BRL	0.0050	mg/kg wet							
1,2-Dichloropropane	BRL	0.0050	mg/kg wet							
1,3,5-Trimethylbenzene	BRL	0.010	mg/kg wet							
1,3-Dichlorobenzene	BRL	0.010	mg/kg wet							
1,3-Dichloropropane	BRL	0.0050	mg/kg wet							
1,4-Dichlorobenzene	BRL	0.010	mg/kg wet							
2,2-Dichloropropane	BRL	0.0050	mg/kg wet							
2-Chloroethyl Vinyl Ether	BRL	0.010	mg/kg wet							
2-Chlorotoluene	BRL	0.010	mg/kg wet							
4-Chlorotoluene	BRL	0.010	mg/kg wet							
4-Isopropyltoluene	BRL	0.015	mg/kg wet							
Acetone	BRL	0.020	mg/kg wet							
Acrolein	BRL	0.10	mg/kg wet							
Acrylonitrile	BRL	0.10	mg/kg wet							
Benzene	BRL	0.0030	mg/kg wet							
Bromobenzene	BRL	0.0050	mg/kg wet							
Bromochloromethane	BRL	0.0050	mg/kg wet							
Bromodichloromethane	BRL	0.0050	mg/kg wet							
Bromoform	BRL	0.0050	mg/kg wet							
Bromomethane	BRL	0.010	mg/kg wet							
Carbon disulfide	BRL	0.010	mg/kg wet							
Carbon Tetrachloride	BRL	0.0050	mg/kg wet							
Chlorobenzene	BRL	0.0050	mg/kg wet							
Chloroethane	BRL	0.010	mg/kg wet							
Chloroform	BRL	0.0050	mg/kg wet							
Chloromethane	BRL	0.010	mg/kg wet							
cis-1,2-Dichloroethylene	BRL	0.0050	mg/kg wet							
cis-1,3-Dichloropropylene	BRL	0.0050	mg/kg wet							
Dibromochloromethane	BRL	0.0050	mg/kg wet							
Dibromomethane	BRL	0.0050	mg/kg wet							
Dichlorodifluoromethane	BRL	0.010	mg/kg wet							
Ethylbenzene	BRL	0.0050	mg/kg wet							

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ECS Carolinas, LLP (North Charleston) Project: Waltersboro
 Attn: Justin Roth
 3820 Faber Place Drive, Suite 500
 North Charleston, SC 29405

Prism Work Order: 5120159
 Time Submitted: 12/10/2015 8:32:00AM

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P5L0182 - 5035										
Blank (P5L0182-BLK1)										
Prepared & Analyzed: 12/10/15										
Hexachlorobutadiene	BRL	0.015	mg/kg wet							
Isopropyl Ether	BRL	0.0050	mg/kg wet							
Isopropylbenzene (Cumene)	BRL	0.010	mg/kg wet							
m,p-Xylenes	BRL	0.010	mg/kg wet							
Methyl Butyl Ketone (2-Hexanone)	BRL	0.050	mg/kg wet							
Methyl Ethyl Ketone (2-Butanone)	BRL	0.020	mg/kg wet							
Methyl Isobutyl Ketone	BRL	0.010	mg/kg wet							
Methylene Chloride	BRL	0.010	mg/kg wet							
Methyl-tert-Butyl Ether	BRL	0.0050	mg/kg wet							
Naphthalene	BRL	0.0050	mg/kg wet							
n-Butylbenzene	BRL	0.015	mg/kg wet							
n-Propylbenzene	BRL	0.010	mg/kg wet							
o-Xylene	BRL	0.0050	mg/kg wet							
sec-Butylbenzene	BRL	0.015	mg/kg wet							
Styrene	BRL	0.0050	mg/kg wet							
tert-Butylbenzene	BRL	0.020	mg/kg wet							
Tetrachloroethylene	BRL	0.010	mg/kg wet							
Toluene	BRL	0.0050	mg/kg wet							
trans-1,2-Dichloroethylene	BRL	0.0050	mg/kg wet							
trans-1,3-Dichloropropylene	BRL	0.0050	mg/kg wet							
Trichloroethylene	BRL	0.0050	mg/kg wet							
Trichlorofluoromethane	BRL	0.0050	mg/kg wet							
Vinyl acetate	BRL	0.010	mg/kg wet							
Vinyl chloride	BRL	0.010	mg/kg wet							
Xylenes, total	BRL	0.015	mg/kg wet							
Surrogate: 4-Bromofluorobenzene	50.0		ug/L	50.00		100	70-130			
Surrogate: Dibromofluoromethane	51.4		ug/L	50.00		103	84-123			
Surrogate: Toluene-d8	49.1		ug/L	50.00		98	76-129			

ECS Carolinas, LLP (North Charleston) Project: Waltersboro
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Prism Work Order: 5120159
 Time Submitted: 12/10/2015 8:32:00AM

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P5L0182 - 5035										
LCS (P5L0182-BS1)										
Prepared & Analyzed: 12/10/15										
1,1,1,2-Tetrachloroethane	0.0521	0.0050	mg/kg wet	0.05000		104	72-115			
1,1,1-Trichloroethane	0.0512	0.0050	mg/kg wet	0.05000		102	67-131			
1,1,2,2-Tetrachloroethane	0.0500	0.0050	mg/kg wet	0.05000		100	56-126			
1,1,2-Trichloroethane	0.0492	0.0050	mg/kg wet	0.05000		98	70-133			
1,1-Dichloroethane	0.0479	0.0050	mg/kg wet	0.05000		96	74-127			
1,1-Dichloroethylene	0.0467	0.0050	mg/kg wet	0.05000		93	67-149			
1,1-Dichloropropylene	0.0508	0.0050	mg/kg wet	0.05000		102	71-130			
1,2,3-Trichlorobenzene	0.0503	0.010	mg/kg wet	0.05000		101	68-130			
1,2,3-Trichloropropane	0.0516	0.0050	mg/kg wet	0.05000		103	60-137			
1,2,4-Trichlorobenzene	0.0514	0.010	mg/kg wet	0.05000		103	66-125			
1,2,4-Trimethylbenzene	0.0533	0.010	mg/kg wet	0.05000		107	69-129			
1,2-Dibromo-3-chloropropane	0.0571	0.0050	mg/kg wet	0.05000		114	55-157			
1,2-Dibromoethane	0.0526	0.0050	mg/kg wet	0.05000		105	70-132			
1,2-Dichlorobenzene	0.0493	0.010	mg/kg wet	0.05000		99	72-123			
1,2-Dichloroethane	0.0480	0.0050	mg/kg wet	0.05000		96	68-128			
1,2-Dichloropropane	0.0500	0.0050	mg/kg wet	0.05000		100	73-130			
1,3,5-Trimethylbenzene	0.0531	0.010	mg/kg wet	0.05000		106	69-128			
1,3-Dichlorobenzene	0.0494	0.010	mg/kg wet	0.05000		99	71-120			
1,3-Dichloropropane	0.0512	0.0050	mg/kg wet	0.05000		102	75-124			
1,4-Dichlorobenzene	0.0488	0.010	mg/kg wet	0.05000		98	71-123			
2,2-Dichloropropane	0.0530	0.0050	mg/kg wet	0.05000		106	50-142			
2-Chloroethyl Vinyl Ether	0.0560	0.010	mg/kg wet	0.05000		112	43-149			
2-Chlorotoluene	0.0497	0.010	mg/kg wet	0.05000		99	67-124			
4-Chlorotoluene	0.0504	0.010	mg/kg wet	0.05000		101	71-126			
4-Isopropyltoluene	0.0541	0.015	mg/kg wet	0.05000		108	68-129			
Acetone	0.0943	0.020	mg/kg wet	0.1000		94	29-198			
Acrolein	0.100	0.10	mg/kg wet	0.1000		100	70-130			
Acrylonitrile	0.0965	0.10	mg/kg wet	0.1000		96	65-134			J
Benzene	0.0483	0.0030	mg/kg wet	0.05000		97	74-127			
Bromobenzene	0.0502	0.0050	mg/kg wet	0.05000		100	73-125			
Bromochloromethane	0.0489	0.0050	mg/kg wet	0.05000		98	72-134			
Bromodichloromethane	0.0522	0.0050	mg/kg wet	0.05000		104	75-122			
Bromoform	0.0551	0.0050	mg/kg wet	0.05000		110	66-135			
Bromomethane	0.0545	0.010	mg/kg wet	0.05000		109	20-180			
Carbon disulfide	0.0563	0.010	mg/kg wet	0.05000		113	61-129			
Carbon Tetrachloride	0.0501	0.0050	mg/kg wet	0.05000		100	64-143			
Chlorobenzene	0.0486	0.0050	mg/kg wet	0.05000		97	74-118			
Chloroethane	0.0440	0.010	mg/kg wet	0.05000		88	33-149			
Chloroform	0.0483	0.0050	mg/kg wet	0.05000		97	73-127			
Chloromethane	0.0524	0.010	mg/kg wet	0.05000		105	45-143			
cis-1,2-Dichloroethylene	0.0471	0.0050	mg/kg wet	0.05000		94	76-134			
cis-1,3-Dichloropropylene	0.0536	0.0050	mg/kg wet	0.05000		107	71-125			
Dibromochloromethane	0.0519	0.0050	mg/kg wet	0.05000		104	73-122			
Dibromomethane	0.0488	0.0050	mg/kg wet	0.05000		98	74-133			
Dichlorodifluoromethane	0.0414	0.010	mg/kg wet	0.05000		83	26-146			
Ethylbenzene	0.0499	0.0050	mg/kg wet	0.05000		100	74-128			

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Prism Work Order: 5120159
 Time Submitted: 12/10/2015 8:32:00AM

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P5L0182 - 5035										
LCS (P5L0182-BS1)										
Prepared & Analyzed: 12/10/15										
Hexachlorobutadiene	0.0512	0.015	mg/kg wet	0.05000		102	64-125			
Isopropyl Ether	0.0463	0.0050	mg/kg wet	0.05000		93	59-159			
Isopropylbenzene (Cumene)	0.0521	0.010	mg/kg wet	0.05000		104	68-126			
m,p-Xylenes	0.102	0.010	mg/kg wet	0.1000		102	75-124			
Methyl Butyl Ketone (2-Hexanone)	0.0552	0.050	mg/kg wet	0.05000		110	61-157			
Methyl Ethyl Ketone (2-Butanone)	0.0463	0.020	mg/kg wet	0.05000		93	63-149			
Methyl Isobutyl Ketone	0.0505	0.010	mg/kg wet	0.05000		101	57-162			
Methylene Chloride	0.0501	0.010	mg/kg wet	0.05000		100	74-129			
Methyl-tert-Butyl Ether	0.0464	0.0050	mg/kg wet	0.05000		93	70-130			
Naphthalene	0.0543	0.0050	mg/kg wet	0.05000		109	57-157			
n-Butylbenzene	0.0535	0.015	mg/kg wet	0.05000		107	65-135			
n-Propylbenzene	0.0512	0.010	mg/kg wet	0.05000		102	67-130			
o-Xylene	0.0515	0.0050	mg/kg wet	0.05000		103	74-126			
sec-Butylbenzene	0.0506	0.015	mg/kg wet	0.05000		101	66-131			
Styrene	0.0541	0.0050	mg/kg wet	0.05000		108	77-121			
tert-Butylbenzene	0.0517	0.020	mg/kg wet	0.05000		103	67-132			
Tetrachloroethylene	0.0561	0.010	mg/kg wet	0.05000		112	68-130			
Toluene	0.0486	0.0050	mg/kg wet	0.05000		97	71-129			
trans-1,2-Dichloroethylene	0.0470	0.0050	mg/kg wet	0.05000		94	73-132			
trans-1,3-Dichloropropylene	0.0552	0.0050	mg/kg wet	0.05000		110	68-123			
Trichloroethylene	0.0484	0.0050	mg/kg wet	0.05000		97	75-133			
Trichlorofluoromethane	0.0457	0.0050	mg/kg wet	0.05000		91	44-146			
Vinyl acetate	0.0537	0.010	mg/kg wet	0.05000		107	85-161			
Vinyl chloride	0.0478	0.010	mg/kg wet	0.05000		96	48-147			
Xylenes, total	0.153	0.015	mg/kg wet	0.1500		102	74-126			
Surrogate: 4-Bromofluorobenzene	50.5		ug/L	50.00		101	70-130			
Surrogate: Dibromofluoromethane	49.3		ug/L	50.00		99	84-123			
Surrogate: Toluene-d8	49.9		ug/L	50.00		100	76-129			



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Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P5L0182 - 5035										
LCS Dup (P5L0182-BSD1)										
Prepared & Analyzed: 12/10/15										
1,1,1,2-Tetrachloroethane	0.0524	0.0050	mg/kg wet	0.05000		105	72-115	0.6	20	
1,1,1-Trichloroethane	0.0509	0.0050	mg/kg wet	0.05000		102	67-131	0.6	20	
1,1,2,2-Tetrachloroethane	0.0519	0.0050	mg/kg wet	0.05000		104	56-126	4	20	
1,1,2-Trichloroethane	0.0508	0.0050	mg/kg wet	0.05000		102	70-133	3	20	
1,1-Dichloroethane	0.0493	0.0050	mg/kg wet	0.05000		99	74-127	3	20	
1,1-Dichloroethylene	0.0483	0.0050	mg/kg wet	0.05000		97	67-149	3	20	
1,1-Dichloropropylene	0.0500	0.0050	mg/kg wet	0.05000		100	71-130	2	20	
1,2,3-Trichlorobenzene	0.0510	0.010	mg/kg wet	0.05000		102	68-130	1	20	
1,2,3-Trichloropropane	0.0530	0.0050	mg/kg wet	0.05000		106	60-137	3	20	
1,2,4-Trichlorobenzene	0.0507	0.010	mg/kg wet	0.05000		101	66-125	1	20	
1,2,4-Trimethylbenzene	0.0525	0.010	mg/kg wet	0.05000		105	69-129	2	20	
1,2-Dibromo-3-chloropropane	0.0592	0.0050	mg/kg wet	0.05000		118	55-157	4	20	
1,2-Dibromoethane	0.0548	0.0050	mg/kg wet	0.05000		110	70-132	4	20	
1,2-Dichlorobenzene	0.0498	0.010	mg/kg wet	0.05000		100	72-123	1	20	
1,2-Dichloroethane	0.0501	0.0050	mg/kg wet	0.05000		100	68-128	4	20	
1,2-Dichloropropane	0.0513	0.0050	mg/kg wet	0.05000		103	73-130	3	20	
1,3,5-Trimethylbenzene	0.0524	0.010	mg/kg wet	0.05000		105	69-128	1	20	
1,3-Dichlorobenzene	0.0495	0.010	mg/kg wet	0.05000		99	71-120	0.3	20	
1,3-Dichloropropane	0.0529	0.0050	mg/kg wet	0.05000		106	75-124	3	20	
1,4-Dichlorobenzene	0.0490	0.010	mg/kg wet	0.05000		98	71-123	0.4	20	
2,2-Dichloropropane	0.0527	0.0050	mg/kg wet	0.05000		105	50-142	0.5	20	
2-Chloroethyl Vinyl Ether	0.0579	0.010	mg/kg wet	0.05000		116	43-149	3	20	
2-Chlorotoluene	0.0496	0.010	mg/kg wet	0.05000		99	67-124	0.3	20	
4-Chlorotoluene	0.0503	0.010	mg/kg wet	0.05000		101	71-126	0.1	20	
4-Isopropyltoluene	0.0529	0.015	mg/kg wet	0.05000		106	68-129	2	20	
Acetone	0.0996	0.020	mg/kg wet	0.1000		100	29-198	5	20	
Acrolein	0.105	0.10	mg/kg wet	0.1000		105	70-130	4	20	
Acrylonitrile	0.100	0.10	mg/kg wet	0.1000		100	65-134	4	20	
Benzene	0.0486	0.0030	mg/kg wet	0.05000		97	74-127	0.7	20	
Bromobenzene	0.0504	0.0050	mg/kg wet	0.05000		101	73-125	0.4	20	
Bromochloromethane	0.0519	0.0050	mg/kg wet	0.05000		104	72-134	6	20	
Bromodichloromethane	0.0538	0.0050	mg/kg wet	0.05000		108	75-122	3	20	
Bromoform	0.0575	0.0050	mg/kg wet	0.05000		115	66-135	4	20	
Bromomethane	0.0566	0.010	mg/kg wet	0.05000		113	20-180	4	20	
Carbon disulfide	0.0569	0.010	mg/kg wet	0.05000		114	61-129	1	20	
Carbon Tetrachloride	0.0495	0.0050	mg/kg wet	0.05000		99	64-143	1	20	
Chlorobenzene	0.0492	0.0050	mg/kg wet	0.05000		98	74-118	1	20	
Chloroethane	0.0440	0.010	mg/kg wet	0.05000		88	33-149	0	20	
Chloroform	0.0495	0.0050	mg/kg wet	0.05000		99	73-127	2	20	
Chloromethane	0.0522	0.010	mg/kg wet	0.05000		104	45-143	0.4	20	
cis-1,2-Dichloroethylene	0.0478	0.0050	mg/kg wet	0.05000		96	76-134	2	20	
cis-1,3-Dichloropropylene	0.0554	0.0050	mg/kg wet	0.05000		111	71-125	3	20	
Dibromochloromethane	0.0536	0.0050	mg/kg wet	0.05000		107	73-122	3	20	
Dibromomethane	0.0517	0.0050	mg/kg wet	0.05000		103	74-133	6	20	
Dichlorodifluoromethane	0.0404	0.010	mg/kg wet	0.05000		81	26-146	2	20	
Ethylbenzene	0.0496	0.0050	mg/kg wet	0.05000		99	74-128	0.6	20	

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 North Charleston, SC 29405

Prism Work Order: 5120159
 Time Submitted: 12/10/2015 8:32:00AM

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P5L0182 - 5035										
LCS Dup (P5L0182-BSD1)										
Prepared & Analyzed: 12/10/15										
Hexachlorobutadiene	0.0497	0.015	mg/kg wet	0.05000		99	64-125	3	20	
Isopropyl Ether	0.0477	0.0050	mg/kg wet	0.05000		95	59-159	3	20	
Isopropylbenzene (Cumene)	0.0515	0.010	mg/kg wet	0.05000		103	68-126	1	20	
m,p-Xylenes	0.101	0.010	mg/kg wet	0.1000		101	75-124	1	20	
Methyl Butyl Ketone (2-Hexanone)	0.0581	0.050	mg/kg wet	0.05000		116	61-157	5	20	
Methyl Ethyl Ketone (2-Butanone)	0.0496	0.020	mg/kg wet	0.05000		99	63-149	7	20	
Methyl Isobutyl Ketone	0.0537	0.010	mg/kg wet	0.05000		107	57-162	6	20	
Methylene Chloride	0.0524	0.010	mg/kg wet	0.05000		105	74-129	5	20	
Methyl-tert-Butyl Ether	0.0483	0.0050	mg/kg wet	0.05000		97	70-130	4	20	
Naphthalene	0.0554	0.0050	mg/kg wet	0.05000		111	57-157	2	20	
n-Butylbenzene	0.0520	0.015	mg/kg wet	0.05000		104	65-135	3	20	
n-Propylbenzene	0.0506	0.010	mg/kg wet	0.05000		101	67-130	1	20	
o-Xylene	0.0515	0.0050	mg/kg wet	0.05000		103	74-126	0	20	
sec-Butylbenzene	0.0496	0.015	mg/kg wet	0.05000		99	66-131	2	20	
Styrene	0.0550	0.0050	mg/kg wet	0.05000		110	77-121	2	20	
tert-Butylbenzene	0.0504	0.020	mg/kg wet	0.05000		101	67-132	3	20	
Tetrachloroethylene	0.0558	0.010	mg/kg wet	0.05000		112	68-130	0.5	20	
Toluene	0.0488	0.0050	mg/kg wet	0.05000		98	71-129	0.4	20	
trans-1,2-Dichloroethylene	0.0476	0.0050	mg/kg wet	0.05000		95	73-132	1	20	
trans-1,3-Dichloropropylene	0.0570	0.0050	mg/kg wet	0.05000		114	68-123	3	20	
Trichloroethylene	0.0488	0.0050	mg/kg wet	0.05000		98	75-133	1	20	
Trichlorofluoromethane	0.0443	0.0050	mg/kg wet	0.05000		89	44-146	3	20	
Vinyl acetate	0.0586	0.010	mg/kg wet	0.05000		117	85-161	9	20	
Vinyl chloride	0.0473	0.010	mg/kg wet	0.05000		95	48-147	1	20	
Xylenes, total	0.152	0.015	mg/kg wet	0.1500		102	74-126	0.8	20	
Surrogate: 4-Bromofluorobenzene	49.7		ug/L	50.00		99	70-130			
Surrogate: Dibromofluoromethane	49.7		ug/L	50.00		99	84-123			
Surrogate: Toluene-d8	49.4		ug/L	50.00		99	76-129			



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Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P5L0243 - 5035										
Blank (P5L0243-BLK1)										
Prepared & Analyzed: 12/15/15										
1,1,1,2-Tetrachloroethane	BRL	0.0050	mg/kg wet							
1,1,1-Trichloroethane	BRL	0.0050	mg/kg wet							
1,1,1,2,2-Tetrachloroethane	BRL	0.0050	mg/kg wet							
1,1,2-Trichloroethane	BRL	0.0050	mg/kg wet							
1,1-Dichloroethane	BRL	0.0050	mg/kg wet							
1,1-Dichloroethylene	BRL	0.0050	mg/kg wet							
1,1-Dichloropropylene	BRL	0.0050	mg/kg wet							
1,2,3-Trichlorobenzene	BRL	0.010	mg/kg wet							
1,2,3-Trichloropropane	BRL	0.0050	mg/kg wet							
1,2,4-Trichlorobenzene	BRL	0.010	mg/kg wet							
1,2,4-Trimethylbenzene	BRL	0.010	mg/kg wet							
1,2-Dibromo-3-chloropropane	BRL	0.0050	mg/kg wet							
1,2-Dibromoethane	BRL	0.0050	mg/kg wet							
1,2-Dichlorobenzene	BRL	0.010	mg/kg wet							
1,2-Dichloroethane	BRL	0.0050	mg/kg wet							
1,2-Dichloropropane	BRL	0.0050	mg/kg wet							
1,3,5-Trimethylbenzene	BRL	0.010	mg/kg wet							
1,3-Dichlorobenzene	BRL	0.010	mg/kg wet							
1,3-Dichloropropane	BRL	0.0050	mg/kg wet							
1,4-Dichlorobenzene	BRL	0.010	mg/kg wet							
2,2-Dichloropropane	BRL	0.0050	mg/kg wet							
2-Chloroethyl Vinyl Ether	BRL	0.010	mg/kg wet							
2-Chlorotoluene	BRL	0.010	mg/kg wet							
4-Chlorotoluene	BRL	0.010	mg/kg wet							
4-Isopropyltoluene	BRL	0.015	mg/kg wet							
Acetone	BRL	0.020	mg/kg wet							
Acrolein	BRL	0.10	mg/kg wet							
Acrylonitrile	BRL	0.10	mg/kg wet							
Benzene	BRL	0.0030	mg/kg wet							
Bromobenzene	BRL	0.0050	mg/kg wet							
Bromochloromethane	BRL	0.0050	mg/kg wet							
Bromodichloromethane	BRL	0.0050	mg/kg wet							
Bromoform	BRL	0.0050	mg/kg wet							
Bromomethane	BRL	0.010	mg/kg wet							
Carbon disulfide	BRL	0.010	mg/kg wet							
Carbon Tetrachloride	BRL	0.0050	mg/kg wet							
Chlorobenzene	BRL	0.0050	mg/kg wet							
Chloroethane	BRL	0.010	mg/kg wet							
Chloroform	BRL	0.0050	mg/kg wet							
Chloromethane	BRL	0.010	mg/kg wet							
cis-1,2-Dichloroethylene	BRL	0.0050	mg/kg wet							
cis-1,3-Dichloropropylene	BRL	0.0050	mg/kg wet							
Dibromochloromethane	BRL	0.0050	mg/kg wet							
Dibromomethane	BRL	0.0050	mg/kg wet							
Dichlorodifluoromethane	BRL	0.010	mg/kg wet							
Ethylbenzene	BRL	0.0050	mg/kg wet							

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ECS Carolinas, LLP (North Charleston) Project: Waltersboro
 Attn: Justin Roth
 3820 Faber Place Drive, Suite 500
 North Charleston, SC 29405

Prism Work Order: 5120159
 Time Submitted: 12/10/2015 8:32:00AM

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P5L0243 - 5035										
Blank (P5L0243-BLK1)										
Prepared & Analyzed: 12/15/15										
Hexachlorobutadiene	BRL	0.015	mg/kg wet							
Isopropyl Ether	BRL	0.0050	mg/kg wet							
Isopropylbenzene (Cumene)	BRL	0.010	mg/kg wet							
m,p-Xylenes	BRL	0.010	mg/kg wet							
Methyl Butyl Ketone (2-Hexanone)	BRL	0.050	mg/kg wet							
Methyl Ethyl Ketone (2-Butanone)	BRL	0.020	mg/kg wet							
Methyl Isobutyl Ketone	BRL	0.010	mg/kg wet							
Methylene Chloride	BRL	0.010	mg/kg wet							
Methyl-tert-Butyl Ether	BRL	0.0050	mg/kg wet							
Naphthalene	BRL	0.0050	mg/kg wet							
n-Butylbenzene	BRL	0.015	mg/kg wet							
n-Propylbenzene	BRL	0.010	mg/kg wet							
o-Xylene	BRL	0.0050	mg/kg wet							
sec-Butylbenzene	BRL	0.015	mg/kg wet							
Styrene	BRL	0.0050	mg/kg wet							
tert-Butylbenzene	BRL	0.020	mg/kg wet							
Tetrachloroethylene	BRL	0.010	mg/kg wet							
Toluene	BRL	0.0050	mg/kg wet							
trans-1,2-Dichloroethylene	BRL	0.0050	mg/kg wet							
trans-1,3-Dichloropropylene	BRL	0.0050	mg/kg wet							
Trichloroethylene	BRL	0.0050	mg/kg wet							
Trichlorofluoromethane	BRL	0.0050	mg/kg wet							
Vinyl acetate	BRL	0.010	mg/kg wet							
Vinyl chloride	BRL	0.010	mg/kg wet							
Xylenes, total	BRL	0.015	mg/kg wet							
Surrogate: 4-Bromofluorobenzene	0.0528		mg/kg wet	0.05000		106	70-130			
Surrogate: Dibromofluoromethane	0.0468		mg/kg wet	0.05000		94	84-123			
Surrogate: Toluene-d8	0.0500		mg/kg wet	0.05000		100	76-129			

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Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P5L0243 - 5035										
LCS (P5L0243-BS1)										
Prepared & Analyzed: 12/15/15										
1,1,1,2-Tetrachloroethane	0.0481	0.0050	mg/kg wet	0.05000		96	72-115			
1,1,1-Trichloroethane	0.0453	0.0050	mg/kg wet	0.05000		91	67-131			
1,1,2,2-Tetrachloroethane	0.0473	0.0050	mg/kg wet	0.05000		95	56-126			
1,1,2-Trichloroethane	0.0501	0.0050	mg/kg wet	0.05000		100	70-133			
1,1-Dichloroethane	0.0455	0.0050	mg/kg wet	0.05000		91	74-127			
1,1-Dichloroethylene	0.0434	0.0050	mg/kg wet	0.05000		87	67-149			
1,1-Dichloropropylene	0.0464	0.0050	mg/kg wet	0.05000		93	71-130			
1,2,3-Trichlorobenzene	0.0509	0.010	mg/kg wet	0.05000		102	68-130			
1,2,3-Trichloropropane	0.0492	0.0050	mg/kg wet	0.05000		98	60-137			
1,2,4-Trichlorobenzene	0.0492	0.010	mg/kg wet	0.05000		98	66-125			
1,2,4-Trimethylbenzene	0.0485	0.010	mg/kg wet	0.05000		97	69-129			
1,2-Dibromo-3-chloropropane	0.0529	0.0050	mg/kg wet	0.05000		106	55-157			
1,2-Dibromoethane	0.0536	0.0050	mg/kg wet	0.05000		107	70-132			
1,2-Dichlorobenzene	0.0464	0.010	mg/kg wet	0.05000		93	72-123			
1,2-Dichloroethane	0.0429	0.0050	mg/kg wet	0.05000		86	68-128			
1,2-Dichloropropane	0.0454	0.0050	mg/kg wet	0.05000		91	73-130			
1,3,5-Trimethylbenzene	0.0482	0.010	mg/kg wet	0.05000		96	69-128			
1,3-Dichlorobenzene	0.0466	0.010	mg/kg wet	0.05000		93	71-120			
1,3-Dichloropropane	0.0498	0.0050	mg/kg wet	0.05000		100	75-124			
1,4-Dichlorobenzene	0.0462	0.010	mg/kg wet	0.05000		92	71-123			
2,2-Dichloropropane	0.0486	0.0050	mg/kg wet	0.05000		97	50-142			
2-Chloroethyl Vinyl Ether	0.0560	0.010	mg/kg wet	0.05000		112	43-149			
2-Chlorotoluene	0.0454	0.010	mg/kg wet	0.05000		91	67-124			
4-Chlorotoluene	0.0452	0.010	mg/kg wet	0.05000		90	71-126			
4-Isopropyltoluene	0.0492	0.015	mg/kg wet	0.05000		98	68-129			
Acetone	0.109	0.020	mg/kg wet	0.1000		109	29-198			
Acrolein	0.0795	0.10	mg/kg wet	0.1000		80	70-130			J
Acrylonitrile	0.0863	0.10	mg/kg wet	0.1000		86	65-134			J
Benzene	0.0456	0.0030	mg/kg wet	0.05000		91	74-127			
Bromobenzene	0.0455	0.0050	mg/kg wet	0.05000		91	73-125			
Bromochloromethane	0.0461	0.0050	mg/kg wet	0.05000		92	72-134			
Bromodichloromethane	0.0485	0.0050	mg/kg wet	0.05000		97	75-122			
Bromoform	0.0528	0.0050	mg/kg wet	0.05000		106	66-135			
Bromomethane	0.0486	0.010	mg/kg wet	0.05000		97	20-180			
Carbon disulfide	0.0531	0.010	mg/kg wet	0.05000		106	61-129			
Carbon Tetrachloride	0.0442	0.0050	mg/kg wet	0.05000		88	64-143			
Chlorobenzene	0.0464	0.0050	mg/kg wet	0.05000		93	74-118			
Chloroethane	0.0555	0.010	mg/kg wet	0.05000		111	33-149			
Chloroform	0.0459	0.0050	mg/kg wet	0.05000		92	73-127			
Chloromethane	0.0586	0.010	mg/kg wet	0.05000		117	45-143			
cis-1,2-Dichloroethylene	0.0438	0.0050	mg/kg wet	0.05000		88	76-134			
cis-1,3-Dichloropropylene	0.0502	0.0050	mg/kg wet	0.05000		100	71-125			
Dibromochloromethane	0.0490	0.0050	mg/kg wet	0.05000		98	73-122			
Dibromomethane	0.0459	0.0050	mg/kg wet	0.05000		92	74-133			
Dichlorodifluoromethane	0.0507	0.010	mg/kg wet	0.05000		101	26-146			
Ethylbenzene	0.0467	0.0050	mg/kg wet	0.05000		93	74-128			

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Prism Work Order: 5120159
 Time Submitted: 12/10/2015 8:32:00AM

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P5L0243 - 5035										
LCS (P5L0243-BS1)										
Prepared & Analyzed: 12/15/15										
Hexachlorobutadiene	0.0473	0.015	mg/kg wet	0.05000		95	64-125			
Isopropyl Ether	0.0389	0.0050	mg/kg wet	0.05000		78	59-159			
Isopropylbenzene (Cumene)	0.0474	0.010	mg/kg wet	0.05000		95	68-126			
m,p-Xylenes	0.0968	0.010	mg/kg wet	0.1000		97	75-124			
Methyl Butyl Ketone (2-Hexanone)	0.0528	0.050	mg/kg wet	0.05000		106	61-157			
Methyl Ethyl Ketone (2-Butanone)	0.0418	0.020	mg/kg wet	0.05000		84	63-149			
Methyl Isobutyl Ketone	0.0449	0.010	mg/kg wet	0.05000		90	57-162			
Methylene Chloride	0.0474	0.010	mg/kg wet	0.05000		95	74-129			
Methyl-tert-Butyl Ether	0.0479	0.0050	mg/kg wet	0.05000		96	70-130			
Naphthalene	0.0534	0.0050	mg/kg wet	0.05000		107	57-157			
n-Butylbenzene	0.0482	0.015	mg/kg wet	0.05000		96	65-135			
n-Propylbenzene	0.0463	0.010	mg/kg wet	0.05000		93	67-130			
o-Xylene	0.0484	0.0050	mg/kg wet	0.05000		97	74-126			
sec-Butylbenzene	0.0459	0.015	mg/kg wet	0.05000		92	66-131			
Styrene	0.0509	0.0050	mg/kg wet	0.05000		102	77-121			
tert-Butylbenzene	0.0470	0.020	mg/kg wet	0.05000		94	67-132			
Tetrachloroethylene	0.0463	0.010	mg/kg wet	0.05000		93	68-130			
Toluene	0.0460	0.0050	mg/kg wet	0.05000		92	71-129			
trans-1,2-Dichloroethylene	0.0468	0.0050	mg/kg wet	0.05000		94	73-132			
trans-1,3-Dichloropropylene	0.0492	0.0050	mg/kg wet	0.05000		98	68-123			
Trichloroethylene	0.0461	0.0050	mg/kg wet	0.05000		92	75-133			
Trichlorofluoromethane	0.0544	0.0050	mg/kg wet	0.05000		109	44-146			
Vinyl acetate	0.0464	0.010	mg/kg wet	0.05000		93	85-161			
Vinyl chloride	0.0603	0.010	mg/kg wet	0.05000		121	48-147			
Xylenes, total	0.145	0.015	mg/kg wet	0.1500		97	74-126			
Surrogate: 4-Bromofluorobenzene	0.0504		mg/kg wet	0.05000		101	70-130			
Surrogate: Dibromofluoromethane	0.0475		mg/kg wet	0.05000		95	84-123			
Surrogate: Toluene-d8	0.0506		mg/kg wet	0.05000		101	76-129			

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Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P5L0243 - 5035										
LCS Dup (P5L0243-BSD1)										
Prepared & Analyzed: 12/15/15										
1,1,1,2-Tetrachloroethane	0.0457	0.0050	mg/kg wet	0.05000		91	72-115	5	20	
1,1,1-Trichloroethane	0.0434	0.0050	mg/kg wet	0.05000		87	67-131	4	20	
1,1,2,2-Tetrachloroethane	0.0493	0.0050	mg/kg wet	0.05000		99	56-126	4	20	
1,1,2-Trichloroethane	0.0459	0.0050	mg/kg wet	0.05000		92	70-133	9	20	
1,1-Dichloroethane	0.0428	0.0050	mg/kg wet	0.05000		86	74-127	6	20	
1,1-Dichloroethylene	0.0367	0.0050	mg/kg wet	0.05000		73	67-149	17	20	
1,1-Dichloropropylene	0.0430	0.0050	mg/kg wet	0.05000		86	71-130	7	20	
1,2,3-Trichlorobenzene	0.0501	0.010	mg/kg wet	0.05000		100	68-130	2	20	
1,2,3-Trichloropropane	0.0501	0.0050	mg/kg wet	0.05000		100	60-137	2	20	
1,2,4-Trichlorobenzene	0.0490	0.010	mg/kg wet	0.05000		98	66-125	0.4	20	
1,2,4-Trimethylbenzene	0.0485	0.010	mg/kg wet	0.05000		97	69-129	0.08	20	
1,2-Dibromo-3-chloropropane	0.0532	0.0050	mg/kg wet	0.05000		106	55-157	0.5	20	
1,2-Dibromoethane	0.0495	0.0050	mg/kg wet	0.05000		99	70-132	8	20	
1,2-Dichlorobenzene	0.0441	0.010	mg/kg wet	0.05000		88	72-123	5	20	
1,2-Dichloroethane	0.0437	0.0050	mg/kg wet	0.05000		87	68-128	2	20	
1,2-Dichloropropane	0.0430	0.0050	mg/kg wet	0.05000		86	73-130	5	20	
1,3,5-Trimethylbenzene	0.0479	0.010	mg/kg wet	0.05000		96	69-128	0.5	20	
1,3-Dichlorobenzene	0.0454	0.010	mg/kg wet	0.05000		91	71-120	3	20	
1,3-Dichloropropane	0.0482	0.0050	mg/kg wet	0.05000		96	75-124	3	20	
1,4-Dichlorobenzene	0.0445	0.010	mg/kg wet	0.05000		89	71-123	4	20	
2,2-Dichloropropane	0.0444	0.0050	mg/kg wet	0.05000		89	50-142	9	20	
2-Chloroethyl Vinyl Ether	0.0487	0.010	mg/kg wet	0.05000		97	43-149	14	20	
2-Chlorotoluene	0.0456	0.010	mg/kg wet	0.05000		91	67-124	0.5	20	
4-Chlorotoluene	0.0461	0.010	mg/kg wet	0.05000		92	71-126	2	20	
4-Isopropyltoluene	0.0474	0.015	mg/kg wet	0.05000		95	68-129	4	20	
Acetone	0.0982	0.020	mg/kg wet	0.1000		98	29-198	10	20	
Acrolein	0.0755	0.10	mg/kg wet	0.1000		76	70-130	5	20	J
Acrylonitrile	0.0901	0.10	mg/kg wet	0.1000		90	65-134	4	20	J
Benzene	0.0432	0.0030	mg/kg wet	0.05000		86	74-127	6	20	
Bromobenzene	0.0472	0.0050	mg/kg wet	0.05000		94	73-125	4	20	
Bromochloromethane	0.0446	0.0050	mg/kg wet	0.05000		89	72-134	3	20	
Bromodichloromethane	0.0451	0.0050	mg/kg wet	0.05000		90	75-122	7	20	
Bromoform	0.0497	0.0050	mg/kg wet	0.05000		99	66-135	6	20	
Bromomethane	0.0438	0.010	mg/kg wet	0.05000		88	20-180	10	20	
Carbon disulfide	0.0446	0.010	mg/kg wet	0.05000		89	61-129	18	20	
Carbon Tetrachloride	0.0415	0.0050	mg/kg wet	0.05000		83	64-143	6	20	
Chlorobenzene	0.0441	0.0050	mg/kg wet	0.05000		88	74-118	5	20	
Chloroethane	0.0493	0.010	mg/kg wet	0.05000		99	33-149	12	20	
Chloroform	0.0432	0.0050	mg/kg wet	0.05000		86	73-127	6	20	
Chloromethane	0.0506	0.010	mg/kg wet	0.05000		101	45-143	15	20	
cis-1,2-Dichloroethylene	0.0430	0.0050	mg/kg wet	0.05000		86	76-134	2	20	
cis-1,3-Dichloropropylene	0.0459	0.0050	mg/kg wet	0.05000		92	71-125	9	20	
Dibromochloromethane	0.0466	0.0050	mg/kg wet	0.05000		93	73-122	5	20	
Dibromomethane	0.0447	0.0050	mg/kg wet	0.05000		89	74-133	3	20	
Dichlorodifluoromethane	0.0425	0.010	mg/kg wet	0.05000		85	26-146	18	20	
Ethylbenzene	0.0442	0.0050	mg/kg wet	0.05000		88	74-128	6	20	

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North Charleston, SC 29405

Prism Work Order: 5120159
Time Submitted: 12/10/2015 8:32:00AM

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P5L0243 - 5035										
LCS Dup (P5L0243-BSD1)										
Prepared & Analyzed: 12/15/15										
Hexachlorobutadiene	0.0462	0.015	mg/kg wet	0.05000		92	64-125	2	20	
Isopropyl Ether	0.0424	0.0050	mg/kg wet	0.05000		85	59-159	9	20	
Isopropylbenzene (Cumene)	0.0468	0.010	mg/kg wet	0.05000		94	68-126	1	20	
m,p-Xylenes	0.0906	0.010	mg/kg wet	0.1000		91	75-124	7	20	
Methyl Butyl Ketone (2-Hexanone)	0.0518	0.050	mg/kg wet	0.05000		104	61-157	2	20	
Methyl Ethyl Ketone (2-Butanone)	0.0445	0.020	mg/kg wet	0.05000		89	63-149	6	20	
Methyl Isobutyl Ketone	0.0476	0.010	mg/kg wet	0.05000		95	57-162	6	20	
Methylene Chloride	0.0415	0.010	mg/kg wet	0.05000		83	74-129	13	20	
Methyl-tert-Butyl Ether	0.0444	0.0050	mg/kg wet	0.05000		89	70-130	8	20	
Naphthalene	0.0539	0.0050	mg/kg wet	0.05000		108	57-157	1	20	
n-Butylbenzene	0.0463	0.015	mg/kg wet	0.05000		93	65-135	4	20	
n-Propylbenzene	0.0459	0.010	mg/kg wet	0.05000		92	67-130	0.8	20	
o-Xylene	0.0464	0.0050	mg/kg wet	0.05000		93	74-126	4	20	
sec-Butylbenzene	0.0448	0.015	mg/kg wet	0.05000		90	66-131	2	20	
Styrene	0.0485	0.0050	mg/kg wet	0.05000		97	77-121	5	20	
tert-Butylbenzene	0.0466	0.020	mg/kg wet	0.05000		93	67-132	1	20	
Tetrachloroethylene	0.0426	0.010	mg/kg wet	0.05000		85	68-130	8	20	
Toluene	0.0399	0.0050	mg/kg wet	0.05000		80	71-129	14	20	
trans-1,2-Dichloroethylene	0.0393	0.0050	mg/kg wet	0.05000		79	73-132	17	20	
trans-1,3-Dichloropropylene	0.0485	0.0050	mg/kg wet	0.05000		97	68-123	1	20	
Trichloroethylene	0.0428	0.0050	mg/kg wet	0.05000		86	75-133	7	20	
Trichlorofluoromethane	0.0474	0.0050	mg/kg wet	0.05000		95	44-146	14	20	
Vinyl acetate	0.0458	0.010	mg/kg wet	0.05000		92	85-161	1	20	
Vinyl chloride	0.0515	0.010	mg/kg wet	0.05000		103	48-147	16	20	
Xylenes, total	0.137	0.015	mg/kg wet	0.1500		91	74-126	6	20	
Surrogate: 4-Bromofluorobenzene	0.0517		mg/kg wet	0.05000		103	70-130			
Surrogate: Dibromofluoromethane	0.0490		mg/kg wet	0.05000		98	84-123			
Surrogate: Toluene-d8	0.0455		mg/kg wet	0.05000		91	76-129			

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Volatile Organic Compounds by GC/MS (Medium Level) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P5L0284 - 5035										
Blank (P5L0284-BLK1)										
Prepared: 12/17/15 Analyzed: 12/18/15										
1,2,4-Trimethylbenzene	BRL	0.25	mg/kg wet							
1,3,5-Trimethylbenzene	BRL	0.25	mg/kg wet							
Naphthalene	BRL	0.50	mg/kg wet							
n-Butylbenzene	BRL	0.25	mg/kg wet							
n-Propylbenzene	BRL	0.25	mg/kg wet							
Tetrachloroethylene	BRL	0.25	mg/kg wet							
Trichloroethylene	BRL	0.25	mg/kg wet							
Surrogate: 4-Bromofluorobenzene	1.06		mg/kg wet	1.000		106	70-130			
Surrogate: Dibromofluoromethane	0.972		mg/kg wet	1.000		97	70-130			
Surrogate: Toluene-d8	1.01		mg/kg wet	1.000		101	70-130			
LCS (P5L0284-BS1)										
Prepared: 12/17/15 Analyzed: 12/18/15										
1,2,4-Trimethylbenzene	1.09	0.25	mg/kg wet	1.000		109	69-126			
1,3,5-Trimethylbenzene	1.08	0.25	mg/kg wet	1.000		108	69-124			
Naphthalene	1.13	0.50	mg/kg wet	1.000		113	58-129			
n-Butylbenzene	1.10	0.25	mg/kg wet	1.000		110	71-126			
n-Propylbenzene	1.11	0.25	mg/kg wet	1.000		111	68-128			
Tetrachloroethylene	1.12	0.25	mg/kg wet	1.000		112	71-124			
Trichloroethylene	1.13	0.25	mg/kg wet	1.000		113	68-133			
Surrogate: 4-Bromofluorobenzene	1.01		mg/kg wet	1.000		101	70-130			
Surrogate: Dibromofluoromethane	1.03		mg/kg wet	1.000		103	70-130			
Surrogate: Toluene-d8	1.01		mg/kg wet	1.000		101	70-130			
LCS Dup (P5L0284-BSD1)										
Prepared: 12/17/15 Analyzed: 12/18/15										
1,2,4-Trimethylbenzene	1.04	0.25	mg/kg wet	1.000		104	69-126	4	20	
1,3,5-Trimethylbenzene	1.03	0.25	mg/kg wet	1.000		103	69-124	5	20	
Naphthalene	1.12	0.50	mg/kg wet	1.000		112	58-129	2	20	
n-Butylbenzene	1.06	0.25	mg/kg wet	1.000		106	71-126	4	20	
n-Propylbenzene	1.09	0.25	mg/kg wet	1.000		109	68-128	2	20	
Tetrachloroethylene	1.07	0.25	mg/kg wet	1.000		107	71-124	5	20	
Trichloroethylene	1.08	0.25	mg/kg wet	1.000		108	68-133	5	20	
Surrogate: 4-Bromofluorobenzene	0.968		mg/kg wet	1.000		97	70-130			
Surrogate: Dibromofluoromethane	0.988		mg/kg wet	1.000		99	70-130			
Surrogate: Toluene-d8	0.969		mg/kg wet	1.000		97	70-130			

ECS Carolinas, LLP (North Charleston) Project: Waltersboro
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 North Charleston, SC 29405

Prism Work Order: 5120159
 Time Submitted: 12/10/2015 8:32:00AM

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P5L0241 - 3550C MS

Blank (P5L0241-BLK1)

Prepared: 12/16/15 Analyzed: 12/17/15

1,2,4-Trichlorobenzene	BRL	0.33	mg/kg wet							
1,2-Dichlorobenzene	BRL	0.33	mg/kg wet							
1,3-Dichlorobenzene	BRL	0.33	mg/kg wet							
1,4-Dichlorobenzene	BRL	0.33	mg/kg wet							
2,4,5-Trichlorophenol	BRL	0.33	mg/kg wet							
2,4,6-Trichlorophenol	BRL	0.33	mg/kg wet							
2,4-Dichlorophenol	BRL	0.33	mg/kg wet							
2,4-Dimethylphenol	BRL	0.33	mg/kg wet							
2,4-Dinitrophenol	BRL	0.33	mg/kg wet							
2,4-Dinitrotoluene	BRL	0.33	mg/kg wet							
2,6-Dinitrotoluene	BRL	0.33	mg/kg wet							
2-Chloronaphthalene	BRL	0.33	mg/kg wet							
2-Chlorophenol	BRL	0.33	mg/kg wet							
2-Methylnaphthalene	BRL	0.33	mg/kg wet							
2-Methylphenol	BRL	0.33	mg/kg wet							
2-Nitroaniline	BRL	0.33	mg/kg wet							
2-Nitrophenol	BRL	0.33	mg/kg wet							
3,3'-Dichlorobenzidine	BRL	0.33	mg/kg wet							
3/4-Methylphenol	BRL	0.33	mg/kg wet							
3-Nitroaniline	BRL	0.33	mg/kg wet							
4,6-Dinitro-2-methylphenol	BRL	0.33	mg/kg wet							
4-Bromophenyl phenyl ether	BRL	0.33	mg/kg wet							
4-Chloro-3-methylphenol	BRL	0.33	mg/kg wet							
4-Chloroaniline	BRL	0.33	mg/kg wet							
4-Chlorophenyl phenyl ether	BRL	0.33	mg/kg wet							
4-Nitroaniline	BRL	0.33	mg/kg wet							
4-Nitrophenol	BRL	0.33	mg/kg wet							
Acenaphthene	BRL	0.33	mg/kg wet							
Acenaphthylene	BRL	0.33	mg/kg wet							
Aniline	BRL	0.33	mg/kg wet							
Anthracene	BRL	0.33	mg/kg wet							
Azobenzene	BRL	0.33	mg/kg wet							
Benzo(a)anthracene	BRL	0.33	mg/kg wet							
Benzo(a)pyrene	BRL	0.33	mg/kg wet							
Benzo(b)fluoranthene	BRL	0.33	mg/kg wet							
Benzo(g,h,i)perylene	BRL	0.33	mg/kg wet							
Benzo(k)fluoranthene	BRL	0.33	mg/kg wet							
Benzoic Acid	BRL	0.33	mg/kg wet							
Benzyl alcohol	BRL	0.33	mg/kg wet							
bis(2-Chloroethoxy)methane	BRL	0.33	mg/kg wet							
Bis(2-Chloroethyl)ether	BRL	0.33	mg/kg wet							
Bis(2-chloroisopropyl)ether	BRL	0.33	mg/kg wet							
Bis(2-Ethylhexyl)phthalate	BRL	0.33	mg/kg wet							
Butyl benzyl phthalate	BRL	0.33	mg/kg wet							
Chrysene	BRL	0.33	mg/kg wet							
Dibenzo(a,h)anthracene	BRL	0.33	mg/kg wet							

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ECS Carolinas, LLP (North Charleston) Project: Waltersboro
 Attn: Justin Roth
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 North Charleston, SC 29405

Prism Work Order: 5120159
 Time Submitted: 12/10/2015 8:32:00AM

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P5L0241 - 3550C MS

Blank (P5L0241-BLK1)

Prepared: 12/16/15 Analyzed: 12/17/15

Dibenzofuran	BRL	0.33	mg/kg wet							
Diethyl phthalate	BRL	0.33	mg/kg wet							
Dimethyl phthalate	BRL	0.33	mg/kg wet							
Di-n-butyl phthalate	BRL	0.33	mg/kg wet							
Di-n-octyl phthalate	BRL	0.33	mg/kg wet							
Fluoranthene	BRL	0.33	mg/kg wet							
Fluorene	BRL	0.33	mg/kg wet							
Hexachlorobenzene	BRL	0.33	mg/kg wet							
Hexachlorobutadiene	BRL	0.33	mg/kg wet							
Hexachlorocyclopentadiene	BRL	0.33	mg/kg wet							
Hexachloroethane	BRL	0.33	mg/kg wet							
Indeno(1,2,3-cd)pyrene	BRL	0.33	mg/kg wet							
Isophorone	BRL	0.33	mg/kg wet							
Naphthalene	BRL	0.33	mg/kg wet							
Nitrobenzene	BRL	0.33	mg/kg wet							
N-Nitroso-di-n-propylamine	BRL	0.33	mg/kg wet							
N-Nitrosodiphenylamine	BRL	0.33	mg/kg wet							
Pentachlorophenol	BRL	0.33	mg/kg wet							
Phenanthrene	BRL	0.33	mg/kg wet							
Phenol	BRL	0.33	mg/kg wet							
Pyrene	BRL	0.33	mg/kg wet							
<i>Surrogate: 2,4,6-Tribromophenol</i>	3.38		mg/kg wet	3.333		101	37-131			
<i>Surrogate: 2-Fluorobiphenyl</i>	1.56		mg/kg wet	1.667		94	47-130			
<i>Surrogate: 2-Fluorophenol</i>	2.78		mg/kg wet	3.333		83	44-117			
<i>Surrogate: Nitrobenzene-d5</i>	1.36		mg/kg wet	1.667		81	45-121			
<i>Surrogate: Phenol-d5</i>	2.89		mg/kg wet	3.333		87	37-127			
<i>Surrogate: Terphenyl-d14</i>	1.85		mg/kg wet	1.667		111	38-135			

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Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P5L0241 - 3550C MS										
LCS (P5L0241-BS1)										
				Prepared: 12/16/15 Analyzed: 12/17/15						
1,2,4-Trichlorobenzene	1.45	0.33	mg/kg wet	1.667		87	54-110			
1,2-Dichlorobenzene	1.34	0.33	mg/kg wet	1.667		81	53-107			
1,3-Dichlorobenzene	1.32	0.33	mg/kg wet	1.667		79	52-108			
1,4-Dichlorobenzene	1.35	0.33	mg/kg wet	1.667		81	52-108			
2,4,5-Trichlorophenol	1.60	0.33	mg/kg wet	1.667		96	62-124			
2,4,6-Trichlorophenol	1.55	0.33	mg/kg wet	1.667		93	62-120			
2,4-Dichlorophenol	1.50	0.33	mg/kg wet	1.667		90	58-113			
2,4-Dimethylphenol	1.52	0.33	mg/kg wet	1.667		91	59-110			
2,4-Dinitrophenol	1.30	0.33	mg/kg wet	1.667		78	29-134			
2,4-Dinitrotoluene	1.67	0.33	mg/kg wet	1.667		100	63-137			
2,6-Dinitrotoluene	1.67	0.33	mg/kg wet	1.667		100	59-134			
2-Chloronaphthalene	1.84	0.33	mg/kg wet	1.667		110	41-147			
2-Chlorophenol	1.39	0.33	mg/kg wet	1.667		84	55-108			
2-Methylnaphthalene	1.55	0.33	mg/kg wet	1.667		93	57-116			
2-Methylphenol	1.48	0.33	mg/kg wet	1.667		89	56-111			
2-Nitroaniline	1.58	0.33	mg/kg wet	1.667		95	62-125			
2-Nitrophenol	1.38	0.33	mg/kg wet	1.667		83	58-112			
3,3'-Dichlorobenzidine	1.43	0.33	mg/kg wet	1.667		86	51-161			
3/4-Methylphenol	1.51	0.33	mg/kg wet	1.667		91	56-111			
3-Nitroaniline	1.47	0.33	mg/kg wet	1.667		88	65-136			
4,6-Dinitro-2-methylphenol	1.45	0.33	mg/kg wet	1.667		87	46-148			
4-Bromophenyl phenyl ether	1.66	0.33	mg/kg wet	1.667		100	58-137			
4-Chloro-3-methylphenol	1.59	0.33	mg/kg wet	1.667		95	60-118			
4-Chloroaniline	1.50	0.33	mg/kg wet	1.667		90	53-144			
4-Chlorophenyl phenyl ether	1.74	0.33	mg/kg wet	1.667		104	59-131			
4-Nitroaniline	1.55	0.33	mg/kg wet	1.667		93	62-143			
4-Nitrophenol	1.43	0.33	mg/kg wet	1.667		86	48-148			
Acenaphthene	1.70	0.33	mg/kg wet	1.667		102	62-118			
Acenaphthylene	1.68	0.33	mg/kg wet	1.667		101	64-116			
Aniline	1.41	0.33	mg/kg wet	1.667		85	24-190			
Anthracene	1.85	0.33	mg/kg wet	1.667		111	71-132			
Azobenzene	1.70	0.33	mg/kg wet	1.667		102	56-125			
Benzo(a)anthracene	1.76	0.33	mg/kg wet	1.667		105	71-129			
Benzo(a)pyrene	1.86	0.33	mg/kg wet	1.667		112	74-129			
Benzo(b)fluoranthene	1.72	0.33	mg/kg wet	1.667		104	63-138			
Benzo(g,h,i)perylene	1.79	0.33	mg/kg wet	1.667		107	41-154			
Benzo(k)fluoranthene	1.89	0.33	mg/kg wet	1.667		113	62-145			
Benzoic Acid	1.22	0.33	mg/kg wet	1.667		73	10-83			
Benzyl alcohol	1.68	0.33	mg/kg wet	1.667		101	55-112			
bis(2-Chloroethoxy)methane	1.55	0.33	mg/kg wet	1.667		93	52-118			
Bis(2-Chloroethyl)ether	1.40	0.33	mg/kg wet	1.667		84	50-116			
Bis(2-chloroisopropyl)ether	1.41	0.33	mg/kg wet	1.667		85	48-119			
Bis(2-Ethylhexyl)phthalate	1.82	0.33	mg/kg wet	1.667		109	62-135			
Butyl benzyl phthalate	1.72	0.33	mg/kg wet	1.667		103	62-133			
Chrysene	1.78	0.33	mg/kg wet	1.667		107	72-129			
Dibenzo(a,h)anthracene	1.82	0.33	mg/kg wet	1.667		109	41-158			

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ECS Carolinas, LLP (North Charleston) Project: Waltersboro
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 3820 Faber Place Drive, Suite 500
 North Charleston, SC 29405

Prism Work Order: 5120159
 Time Submitted: 12/10/2015 8:32:00AM

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P5L0241 - 3550C MS

LCS (P5L0241-BS1)		Prepared: 12/16/15 Analyzed: 12/17/15								
Dibenzofuran	1.69	0.33	mg/kg wet	1.667		101	64-115			
Diethyl phthalate	1.73	0.33	mg/kg wet	1.667		104	73-120			
Dimethyl phthalate	1.72	0.33	mg/kg wet	1.667		103	71-115			
Di-n-butyl phthalate	1.83	0.33	mg/kg wet	1.667		110	68-127			
Di-n-octyl phthalate	1.81	0.33	mg/kg wet	1.667		108	53-150			
Fluoranthene	1.81	0.33	mg/kg wet	1.667		109	64-136			
Fluorene	1.70	0.33	mg/kg wet	1.667		102	67-120			
Hexachlorobenzene	1.63	0.33	mg/kg wet	1.667		98	63-134			
Hexachlorobutadiene	1.43	0.33	mg/kg wet	1.667		86	55-112			
Hexachlorocyclopentadiene	1.52	0.33	mg/kg wet	1.667		91	43-135			
Hexachloroethane	1.32	0.33	mg/kg wet	1.667		79	49-113			
Indeno(1,2,3-cd)pyrene	1.73	0.33	mg/kg wet	1.667		104	40-160			
Isophorone	1.73	0.33	mg/kg wet	1.667		104	55-118			
Naphthalene	1.58	0.33	mg/kg wet	1.667		94	62-111			
Nitrobenzene	1.53	0.33	mg/kg wet	1.667		92	50-116			
N-Nitroso-di-n-propylamine	1.50	0.33	mg/kg wet	1.667		90	53-113			
N-Nitrosodiphenylamine	1.69	0.33	mg/kg wet	1.667		101	76-144			
Pentachlorophenol	1.54	0.33	mg/kg wet	1.667		92	36-145			
Phenanthrene	1.72	0.33	mg/kg wet	1.667		103	72-123			
Phenol	1.42	0.33	mg/kg wet	1.667		85	56-108			
Pyrene	1.80	0.33	mg/kg wet	1.667		108	51-141			
Surrogate: 2,4,6-Tribromophenol	3.58		mg/kg wet	3.333		107	37-131			
Surrogate: 2-Fluorobiphenyl	1.67		mg/kg wet	1.667		100	47-130			
Surrogate: 2-Fluorophenol	3.01		mg/kg wet	3.333		90	44-117			
Surrogate: Nitrobenzene-d5	1.54		mg/kg wet	1.667		92	45-121			
Surrogate: Phenol-d5	3.10		mg/kg wet	3.333		93	37-127			
Surrogate: Terphenyl-d14	1.74		mg/kg wet	1.667		105	38-135			

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Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P5L0241 - 3550C MS										
LCS Dup (P5L0241-BSD1)										
				Prepared: 12/16/15 Analyzed: 12/18/15						
1,2,4-Trichlorobenzene	1.53	0.33	mg/kg wet	1.667		92	54-110	5	20	
1,2-Dichlorobenzene	1.39	0.33	mg/kg wet	1.667		83	53-107	3	20	
1,3-Dichlorobenzene	1.35	0.33	mg/kg wet	1.667		81	52-108	2	20	
1,4-Dichlorobenzene	1.38	0.33	mg/kg wet	1.667		83	52-108	2	20	
2,4,5-Trichlorophenol	1.79	0.33	mg/kg wet	1.667		107	62-124	11	20	
2,4,6-Trichlorophenol	1.74	0.33	mg/kg wet	1.667		105	62-120	12	20	
2,4-Dichlorophenol	1.65	0.33	mg/kg wet	1.667		99	58-113	9	20	
2,4-Dimethylphenol	1.61	0.33	mg/kg wet	1.667		97	59-110	6	20	
2,4-Dinitrophenol	1.26	0.33	mg/kg wet	1.667		75	29-134	3	20	
2,4-Dinitrotoluene	1.82	0.33	mg/kg wet	1.667		109	63-137	9	20	
2,6-Dinitrotoluene	1.86	0.33	mg/kg wet	1.667		112	59-134	11	20	
2-Chloronaphthalene	2.07	0.33	mg/kg wet	1.667		124	41-147	12	20	
2-Chlorophenol	1.45	0.33	mg/kg wet	1.667		87	55-108	4	20	
2-Methylnaphthalene	1.68	0.33	mg/kg wet	1.667		101	57-116	8	20	
2-Methylphenol	1.57	0.33	mg/kg wet	1.667		94	56-111	6	20	
2-Nitroaniline	1.73	0.33	mg/kg wet	1.667		104	62-125	9	20	
2-Nitrophenol	1.48	0.33	mg/kg wet	1.667		89	58-112	7	20	
3,3'-Dichlorobenzidine	1.66	0.33	mg/kg wet	1.667		100	51-161	15	20	
3/4-Methylphenol	1.61	0.33	mg/kg wet	1.667		96	56-111	6	20	
3-Nitroaniline	1.68	0.33	mg/kg wet	1.667		100	65-136	13	20	
4,6-Dinitro-2-methylphenol	1.54	0.33	mg/kg wet	1.667		92	46-148	6	20	
4-Bromophenyl phenyl ether	1.85	0.33	mg/kg wet	1.667		111	58-137	11	20	
4-Chloro-3-methylphenol	1.72	0.33	mg/kg wet	1.667		103	60-118	8	20	
4-Chloroaniline	1.74	0.33	mg/kg wet	1.667		104	53-144	15	20	
4-Chlorophenyl phenyl ether	1.91	0.33	mg/kg wet	1.667		115	59-131	10	20	
4-Nitroaniline	1.75	0.33	mg/kg wet	1.667		105	62-143	12	20	
4-Nitrophenol	1.61	0.33	mg/kg wet	1.667		96	48-148	11	20	
Acenaphthene	1.90	0.33	mg/kg wet	1.667		114	62-118	11	20	
Acenaphthylene	1.85	0.33	mg/kg wet	1.667		111	64-116	9	20	
Aniline	1.74	0.33	mg/kg wet	1.667		105	24-190	21	20	D
Anthracene	2.06	0.33	mg/kg wet	1.667		123	71-132	10	20	
Azobenzene	1.85	0.33	mg/kg wet	1.667		111	56-125	8	20	
Benzo(a)anthracene	1.95	0.33	mg/kg wet	1.667		117	71-129	11	20	
Benzo(a)pyrene	2.05	0.33	mg/kg wet	1.667		123	74-129	10	20	
Benzo(b)fluoranthene	1.88	0.33	mg/kg wet	1.667		113	63-138	9	20	
Benzo(g,h,i)perylene	1.98	0.33	mg/kg wet	1.667		119	41-154	10	20	
Benzo(k)fluoranthene	2.08	0.33	mg/kg wet	1.667		125	62-145	10	20	
Benzoic Acid	1.10	0.33	mg/kg wet	1.667		66	10-83	11	20	
Benzyl alcohol	1.79	0.33	mg/kg wet	1.667		107	55-112	6	20	
bis(2-Chloroethoxy)methane	1.65	0.33	mg/kg wet	1.667		99	52-118	6	20	
Bis(2-Chloroethyl)ether	1.46	0.33	mg/kg wet	1.667		88	50-116	4	20	
Bis(2-chloroisopropyl)ether	1.48	0.33	mg/kg wet	1.667		89	48-119	5	20	
Bis(2-Ethylhexyl)phthalate	1.99	0.33	mg/kg wet	1.667		120	62-135	9	20	
Butyl benzyl phthalate	1.91	0.33	mg/kg wet	1.667		115	62-133	11	20	
Chrysene	1.96	0.33	mg/kg wet	1.667		117	72-129	9	20	
Dibenzo(a,h)anthracene	1.99	0.33	mg/kg wet	1.667		119	41-158	9	20	

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 North Charleston, SC 29405

Prism Work Order: 5120159
 Time Submitted: 12/10/2015 8:32:00AM

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P5L0241 - 3550C MS

LCS Dup (P5L0241-BSD1)		Prepared: 12/16/15 Analyzed: 12/18/15								
Dibenzofuran	1.87	0.33	mg/kg wet	1.667		112	64-115	10	20	
Diethyl phthalate	1.92	0.33	mg/kg wet	1.667		115	73-120	10	20	
Dimethyl phthalate	1.89	0.33	mg/kg wet	1.667		114	71-115	9	20	
Di-n-butyl phthalate	2.00	0.33	mg/kg wet	1.667		120	68-127	9	20	
Di-n-octyl phthalate	1.98	0.33	mg/kg wet	1.667		119	53-150	9	20	
Fluoranthene	1.99	0.33	mg/kg wet	1.667		119	64-136	9	20	
Fluorene	1.91	0.33	mg/kg wet	1.667		115	67-120	12	20	
Hexachlorobenzene	1.79	0.33	mg/kg wet	1.667		107	63-134	9	20	
Hexachlorobutadiene	1.51	0.33	mg/kg wet	1.667		91	55-112	5	20	
Hexachlorocyclopentadiene	1.67	0.33	mg/kg wet	1.667		100	43-135	10	20	
Hexachloroethane	1.34	0.33	mg/kg wet	1.667		81	49-113	2	20	
Indeno(1,2,3-cd)pyrene	1.90	0.33	mg/kg wet	1.667		114	40-160	9	20	
Isophorone	1.89	0.33	mg/kg wet	1.667		113	55-118	9	20	
Naphthalene	1.68	0.33	mg/kg wet	1.667		101	62-111	7	20	
Nitrobenzene	1.59	0.33	mg/kg wet	1.667		95	50-116	4	20	
N-Nitroso-di-n-propylamine	1.61	0.33	mg/kg wet	1.667		97	53-113	7	20	
N-Nitrosodiphenylamine	1.87	0.33	mg/kg wet	1.667		112	76-144	10	20	
Pentachlorophenol	1.63	0.33	mg/kg wet	1.667		98	36-145	6	20	
Phenanthrene	1.91	0.33	mg/kg wet	1.667		115	72-123	10	20	
Phenol	1.52	0.33	mg/kg wet	1.667		91	56-108	7	20	
Pyrene	1.99	0.33	mg/kg wet	1.667		119	51-141	10	20	
Surrogate: 2,4,6-Tribromophenol	3.90		mg/kg wet	3.333		117	37-131			
Surrogate: 2-Fluorobiphenyl	1.83		mg/kg wet	1.667		110	47-130			
Surrogate: 2-Fluorophenol	3.06		mg/kg wet	3.333		92	44-117			
Surrogate: Nitrobenzene-d5	1.58		mg/kg wet	1.667		95	45-121			
Surrogate: Phenol-d5	3.27		mg/kg wet	3.333		98	37-127			
Surrogate: Terphenyl-d14	1.92		mg/kg wet	1.667		115	38-135			

ECS Carolinas, LLP (North Charleston) Project: Waltersboro
 Attn: Justin Roth
 3820 Faber Place Drive, Suite 500
 North Charleston, SC 29405

Prism Work Order: 5120159
 Time Submitted: 12/10/2015 8:32:00AM

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P5L0241 - 3550C MS										
Matrix Spike (P5L0241-MS1)	Source: 5120159-02			Prepared: 12/16/15		Analyzed: 12/18/15				
1,2,4-Trichlorobenzene	1.84	0.40	mg/kg dry	2.036	BRL	90	25-104			
1,2-Dichlorobenzene	1.66	0.40	mg/kg dry	2.036	BRL	81	22-103			
1,3-Dichlorobenzene	1.60	0.40	mg/kg dry	2.036	BRL	79	18-101			
1,4-Dichlorobenzene	1.70	0.40	mg/kg dry	2.036	BRL	83	14-108			
2,4,5-Trichlorophenol	2.03	0.40	mg/kg dry	2.036	BRL	100	45-121			
2,4,6-Trichlorophenol	2.01	0.40	mg/kg dry	2.036	BRL	99	44-115			
2,4-Dichlorophenol	1.91	0.40	mg/kg dry	2.036	BRL	94	26-120			
2,4-Dimethylphenol	1.88	0.40	mg/kg dry	2.036	BRL	92	33-113			
2,4-Dinitrophenol	1.95	0.40	mg/kg dry	2.036	BRL	96	14-148			
2,4-Dinitrotoluene	2.17	0.40	mg/kg dry	2.036	BRL	106	49-134			
2,6-Dinitrotoluene	2.18	0.40	mg/kg dry	2.036	BRL	107	44-131			
2-Chloronaphthalene	2.40	0.40	mg/kg dry	2.036	BRL	118	38-112			M
2-Chlorophenol	1.70	0.40	mg/kg dry	2.036	BRL	84	26-108			
2-Methylnaphthalene	2.00	0.40	mg/kg dry	2.036	BRL	98	12-128			
2-Methylphenol	1.85	0.40	mg/kg dry	2.036	BRL	91	26-116			
2-Nitroaniline	2.02	0.40	mg/kg dry	2.036	BRL	99	45-135			
2-Nitrophenol	1.80	0.40	mg/kg dry	2.036	BRL	88	20-119			
3,3'-Dichlorobenzidine	1.75	0.40	mg/kg dry	2.036	BRL	86	10-191			
3/4-Methylphenol	1.84	0.40	mg/kg dry	2.036	BRL	91	28-116			
3-Nitroaniline	1.97	0.40	mg/kg dry	2.036	BRL	97	45-135			
4,6-Dinitro-2-methylphenol	2.03	0.40	mg/kg dry	2.036	BRL	100	30-148			
4-Bromophenyl phenyl ether	2.07	0.40	mg/kg dry	2.036	BRL	102	43-126			
4-Chloro-3-methylphenol	1.97	0.40	mg/kg dry	2.036	BRL	97	41-120			
4-Chloroaniline	1.98	0.40	mg/kg dry	2.036	BRL	97	35-115			
4-Chlorophenyl phenyl ether	2.20	0.40	mg/kg dry	2.036	BRL	108	45-123			
4-Nitroaniline	1.95	0.40	mg/kg dry	2.036	BRL	96	45-135			
4-Nitrophenol	1.91	0.40	mg/kg dry	2.036	BRL	94	33-136			
Acenaphthene	2.16	0.40	mg/kg dry	2.036	BRL	106	46-115			
Acenaphthylene	2.16	0.40	mg/kg dry	2.036	BRL	106	40-125			
Aniline	2.40	0.40	mg/kg dry	2.036	BRL	118	20-150			
Anthracene	2.34	0.40	mg/kg dry	2.036	BRL	115	56-127			
Azobenzene	2.09	0.40	mg/kg dry	2.036	BRL	103	49-123			
Benzo(a)anthracene	2.18	0.40	mg/kg dry	2.036	BRL	107	50-134			
Benzo(a)pyrene	2.90	0.40	mg/kg dry	2.036	BRL	143	59-129			M
Benzo(b)fluoranthene	2.06	0.40	mg/kg dry	2.036	BRL	101	46-141			
Benzo(g,h,i)perylene	2.20	0.40	mg/kg dry	2.036	BRL	108	47-136			
Benzo(k)fluoranthene	2.35	0.40	mg/kg dry	2.036	BRL	115	36-151			
Benzoic Acid	1.84	0.40	mg/kg dry	2.036	BRL	90	10-122			
Benzyl alcohol	2.03	0.40	mg/kg dry	2.036	BRL	100	29-112			
bis(2-Chloroethoxy)methane	1.93	0.40	mg/kg dry	2.036	BRL	95	31-119			
Bis(2-Chloroethyl)ether	1.50	0.40	mg/kg dry	2.036	BRL	73	23-111			
Bis(2-chloroisopropyl)ether	1.75	0.40	mg/kg dry	2.036	BRL	86	22-109			
Bis(2-Ethylhexyl)phthalate	12.1	0.40	mg/kg dry	2.036	16.4	NR	45-153			M
Butyl benzyl phthalate	2.21	0.40	mg/kg dry	2.036	BRL	108	43-156			
Chrysene	2.33	0.40	mg/kg dry	2.036	BRL	115	46-140			
Dibenzo(a,h)anthracene	2.24	0.40	mg/kg dry	2.036	BRL	110	43-141			

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ECS Carolinas, LLP (North Charleston) Project: Waltersboro
Attn: Justin Roth
3820 Faber Place Drive, Suite 500
North Charleston, SC 29405

Prism Work Order: 5120159
Time Submitted: 12/10/2015 8:32:00AM

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P5L0241 - 3550C MS

Matrix Spike (P5L0241-MS1)	Source: 5120159-02			Prepared: 12/16/15		Analyzed: 12/18/15				
Dibenzofuran	2.14	0.40	mg/kg dry	2.036	BRL	105	45-121			
Diethyl phthalate	2.16	0.40	mg/kg dry	2.036	BRL	106	53-128			
Dimethyl phthalate	2.20	0.40	mg/kg dry	2.036	BRL	108	54-123			
Di-n-butyl phthalate	2.88	0.40	mg/kg dry	2.036	BRL	142	44-137			M
Di-n-octyl phthalate	19.4	0.40	mg/kg dry	2.036	43.6	NR	45-151			M
Fluoranthene	2.24	0.40	mg/kg dry	2.036	BRL	110	37-140			
Fluorene	2.17	0.40	mg/kg dry	2.036	BRL	107	49-119			
Hexachlorobenzene	1.96	0.40	mg/kg dry	2.036	BRL	96	47-128			
Hexachlorobutadiene	1.87	0.40	mg/kg dry	2.036	BRL	92	24-107			
Hexachlorocyclopentadiene	1.90	0.40	mg/kg dry	2.036	BRL	94	20-121			
Hexachloroethane	1.73	0.40	mg/kg dry	2.036	BRL	85	17-102			
Indeno(1,2,3-cd)pyrene	2.13	0.40	mg/kg dry	2.036	BRL	105	27-156			
Isophorone	2.19	0.40	mg/kg dry	2.036	BRL	108	22-130			
Naphthalene	2.21	0.40	mg/kg dry	2.036	BRL	108	27-111			
Nitrobenzene	1.95	0.40	mg/kg dry	2.036	BRL	96	23-120			
N-Nitroso-di-n-propylamine	1.91	0.40	mg/kg dry	2.036	BRL	94	27-120			
N-Nitrosodiphenylamine	2.13	0.40	mg/kg dry	2.036	BRL	105	46-153			
Pentachlorophenol	2.13	0.40	mg/kg dry	2.036	BRL	105	36-155			
Phenanthrene	2.18	0.40	mg/kg dry	2.036	BRL	107	48-137			
Phenol	1.79	0.40	mg/kg dry	2.036	BRL	88	23-115			
Pyrene	2.33	0.40	mg/kg dry	2.036	BRL	114	43-146			
Surrogate: 2,4,6-Tribromophenol	4.39		mg/kg dry	4.073		108	37-131			
Surrogate: 2-Fluorobiphenyl	2.12		mg/kg dry	2.036		104	47-130			
Surrogate: 2-Fluorophenol	3.50		mg/kg dry	4.073		86	44-117			
Surrogate: Nitrobenzene-d5	1.95		mg/kg dry	2.036		96	45-121			
Surrogate: Phenol-d5	3.82		mg/kg dry	4.073		94	37-127			
Surrogate: Terphenyl-d14	2.22		mg/kg dry	2.036		109	38-135			

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Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P5L0241 - 3550C MS										
Matrix Spike Dup (P5L0241-MSD1)		Source: 5120159-02			Prepared: 12/16/15		Analyzed: 12/18/15			
1,2,4-Trichlorobenzene	1.80	0.40	mg/kg dry	2.036	BRL	88	25-104	2	46	
1,2-Dichlorobenzene	1.64	0.40	mg/kg dry	2.036	BRL	81	22-103	1	49	
1,3-Dichlorobenzene	1.61	0.40	mg/kg dry	2.036	BRL	79	18-101	0.3	55	
1,4-Dichlorobenzene	1.66	0.40	mg/kg dry	2.036	BRL	82	14-108	2	50	
2,4,5-Trichlorophenol	2.00	0.40	mg/kg dry	2.036	BRL	98	45-121	2	35	
2,4,6-Trichlorophenol	1.96	0.40	mg/kg dry	2.036	BRL	96	44-115	2	35	
2,4-Dichlorophenol	1.85	0.40	mg/kg dry	2.036	BRL	91	26-120	3	45	
2,4-Dimethylphenol	1.83	0.40	mg/kg dry	2.036	BRL	90	33-113	3	47	
2,4-Dinitrophenol	2.01	0.40	mg/kg dry	2.036	BRL	99	14-148	3	39	
2,4-Dinitrotoluene	2.07	0.40	mg/kg dry	2.036	BRL	102	49-134	5	28	
2,6-Dinitrotoluene	2.13	0.40	mg/kg dry	2.036	BRL	105	44-131	2	31	
2-Chloronaphthalene	2.37	0.40	mg/kg dry	2.036	BRL	116	38-112	1	37	M
2-Chlorophenol	1.67	0.40	mg/kg dry	2.036	BRL	82	26-108	2	51	
2-Methylnaphthalene	1.97	0.40	mg/kg dry	2.036	BRL	97	12-128	2	48	
2-Methylphenol	1.80	0.40	mg/kg dry	2.036	BRL	88	26-116	3	48	
2-Nitroaniline	2.01	0.40	mg/kg dry	2.036	BRL	99	45-135	0.4	60	
2-Nitrophenol	1.78	0.40	mg/kg dry	2.036	BRL	87	20-119	1	44	
3,3'-Dichlorobenzidine	1.67	0.40	mg/kg dry	2.036	BRL	82	10-191	5	35	
3/4-Methylphenol	1.81	0.40	mg/kg dry	2.036	BRL	89	28-116	2	45	
3-Nitroaniline	1.83	0.40	mg/kg dry	2.036	BRL	90	45-135	7	60	
4,6-Dinitro-2-methylphenol	2.05	0.40	mg/kg dry	2.036	BRL	101	30-148	0.9	27	
4-Bromophenyl phenyl ether	2.07	0.40	mg/kg dry	2.036	BRL	102	43-126	0.05	26	
4-Chloro-3-methylphenol	1.92	0.40	mg/kg dry	2.036	BRL	95	41-120	2	35	
4-Chloroaniline	1.84	0.40	mg/kg dry	2.036	BRL	90	35-115	7	41	
4-Chlorophenyl phenyl ether	2.14	0.40	mg/kg dry	2.036	BRL	105	45-123	3	30	
4-Nitroaniline	1.84	0.40	mg/kg dry	2.036	BRL	91	45-135	6	60	
4-Nitrophenol	1.88	0.40	mg/kg dry	2.036	BRL	93	33-136	2	31	
Acenaphthene	2.10	0.40	mg/kg dry	2.036	BRL	103	46-115	3	35	
Acenaphthylene	2.13	0.40	mg/kg dry	2.036	BRL	105	40-125	2	35	
Aniline	1.83	0.40	mg/kg dry	2.036	BRL	90	20-150	27	60	
Anthracene	2.30	0.40	mg/kg dry	2.036	BRL	113	56-127	2	26	
Azobenzene	2.06	0.40	mg/kg dry	2.036	BRL	101	49-123	1	30	
Benzo(a)anthracene	2.12	0.40	mg/kg dry	2.036	BRL	104	50-134	3	25	
Benzo(a)pyrene	2.83	0.40	mg/kg dry	2.036	BRL	139	59-129	3	22	M
Benzo(b)fluoranthene	1.96	0.40	mg/kg dry	2.036	BRL	96	46-141	5	33	
Benzo(g,h,i)perylene	2.11	0.40	mg/kg dry	2.036	BRL	104	47-136	4	26	
Benzo(k)fluoranthene	2.32	0.40	mg/kg dry	2.036	BRL	114	36-151	1	38	
Benzoic Acid	1.68	0.40	mg/kg dry	2.036	BRL	83	10-122	9	60	
Benzyl alcohol	2.01	0.40	mg/kg dry	2.036	BRL	99	29-112	1	43	
bis(2-Chloroethoxy)methane	1.90	0.40	mg/kg dry	2.036	BRL	93	31-119	2	46	
Bis(2-Chloroethyl)ether	1.89	0.40	mg/kg dry	2.036	BRL	93	23-111	23	54	
Bis(2-chloroisopropyl)ether	1.69	0.40	mg/kg dry	2.036	BRL	83	22-109	3	50	
Bis(2-Ethylhexyl)phthalate	16.3	0.40	mg/kg dry	2.036	16.4	NR	45-153	30	26	M
Butyl benzyl phthalate	2.24	0.40	mg/kg dry	2.036	BRL	110	43-156	2	22	
Chrysene	2.21	0.40	mg/kg dry	2.036	BRL	109	46-140	5	32	
Dibenzo(a,h)anthracene	2.13	0.40	mg/kg dry	2.036	BRL	105	43-141	5	25	

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ECS Carolinas, LLP (North Charleston) Project: Waltersboro
Attn: Justin Roth
3820 Faber Place Drive, Suite 500
North Charleston, SC 29405

Prism Work Order: 5120159
Time Submitted: 12/10/2015 8:32:00AM

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P5L0241 - 3550C MS										
Matrix Spike Dup (P5L0241-MSD1)										
		Source: 5120159-02			Prepared: 12/16/15		Analyzed: 12/18/15			
Dibenzofuran	2.09	0.40	mg/kg dry	2.036	BRL	103	45-121	2	36	
Diethyl phthalate	2.10	0.40	mg/kg dry	2.036	BRL	103	53-128	2	20	
Dimethyl phthalate	2.15	0.40	mg/kg dry	2.036	BRL	106	54-123	2	24	
Di-n-butyl phthalate	2.45	0.40	mg/kg dry	2.036	BRL	120	44-137	16	33	
Di-n-octyl phthalate	27.8	0.40	mg/kg dry	2.036	43.6	NR	45-151	36	25	D, M
Fluoranthene	2.16	0.40	mg/kg dry	2.036	BRL	106	37-140	4	35	
Fluorene	2.11	0.40	mg/kg dry	2.036	BRL	103	49-119	3	31	
Hexachlorobenzene	1.94	0.40	mg/kg dry	2.036	BRL	95	47-128	1	23	
Hexachlorobutadiene	1.80	0.40	mg/kg dry	2.036	BRL	88	24-107	4	50	
Hexachlorocyclopentadiene	1.98	0.40	mg/kg dry	2.036	BRL	97	20-121	4	50	
Hexachloroethane	1.71	0.40	mg/kg dry	2.036	BRL	84	17-102	1	50	
Indeno(1,2,3-cd)pyrene	2.02	0.40	mg/kg dry	2.036	BRL	99	27-156	5	35	
Isophorone	2.08	0.40	mg/kg dry	2.036	BRL	102	22-130	5	37	
Naphthalene	2.13	0.40	mg/kg dry	2.036	BRL	105	27-111	3	51	
Nitrobenzene	1.91	0.40	mg/kg dry	2.036	BRL	94	23-120	2	43	
N-Nitroso-di-n-propylamine	1.85	0.40	mg/kg dry	2.036	BRL	91	27-120	3	47	
N-Nitrosodiphenylamine	2.11	0.40	mg/kg dry	2.036	BRL	103	46-153	1	29	
Pentachlorophenol	2.12	0.40	mg/kg dry	2.036	BRL	104	36-155	0.6	31	
Phenanthrene	2.14	0.40	mg/kg dry	2.036	BRL	105	48-137	2	32	
Phenol	1.72	0.40	mg/kg dry	2.036	BRL	85	23-115	4	56	
Pyrene	2.26	0.40	mg/kg dry	2.036	BRL	111	43-146	3	31	
Surrogate: 2,4,6-Tribromophenol	4.28		mg/kg dry	4.072		105	37-131			
Surrogate: 2-Fluorobiphenyl	2.08		mg/kg dry	2.036		102	47-130			
Surrogate: 2-Fluorophenol	3.45		mg/kg dry	4.072		85	44-117			
Surrogate: Nitrobenzene-d5	1.94		mg/kg dry	2.036		95	45-121			
Surrogate: Phenol-d5	3.76		mg/kg dry	4.072		92	37-127			
Surrogate: Terphenyl-d14	2.13		mg/kg dry	2.036		104	38-135			

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Project: Waltersboro

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Time Submitted: 12/10/2015 8:32:00AM

Total Metals - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P5L0186 - 3050B										
Blank (P5L0186-BLK1)										
Prepared: 12/11/15 Analyzed: 12/16/15										
Antimony	BRL	0.25	mg/kg wet							
Arsenic	BRL	0.25	mg/kg wet							
Beryllium	BRL	0.25	mg/kg wet							
Cadmium	BRL	0.25	mg/kg wet							
Chromium	BRL	0.25	mg/kg wet							
Copper	BRL	0.50	mg/kg wet							
Lead	BRL	0.25	mg/kg wet							BH
Nickel	BRL	0.50	mg/kg wet							
Selenium	BRL	0.50	mg/kg wet							
Silver	BRL	0.25	mg/kg wet							
Thallium	BRL	0.50	mg/kg wet							
Zinc	BRL	2.5	mg/kg wet							
LCS (P5L0186-BS1)										
Prepared: 12/11/15 Analyzed: 12/16/15										
Antimony	25.2	0.25	mg/kg wet	25.00		101	80-120			
Arsenic	22.3	0.25	mg/kg wet	25.00		89	80-120			
Beryllium	22.9	0.25	mg/kg wet	25.00		92	80-120			
Cadmium	23.0	0.25	mg/kg wet	25.00		92	80-120			
Chromium	23.2	0.25	mg/kg wet	25.00		93	80-120			
Copper	24.3	0.50	mg/kg wet	25.00		97	80-120			
Lead	22.9	0.25	mg/kg wet	25.00		92	80-120			
Nickel	22.8	0.50	mg/kg wet	25.00		91	80-120			
Selenium	21.6	0.50	mg/kg wet	25.00		86	80-120			
Silver	9.08	0.25	mg/kg wet	10.00		91	80-120			
Thallium	23.0	0.50	mg/kg wet	25.00		92	80-120			
Zinc	22.8	2.5	mg/kg wet	25.00		91	80-120			

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Total Metals - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P5L0187 - 7471B										
Blank (P5L0187-BLK1)										
					Prepared: 12/11/15 Analyzed: 12/15/15					
Mercury	BRL	0.020	mg/kg wet							
LCS (P5L0187-BS1)										
					Prepared: 12/11/15 Analyzed: 12/15/15					
Mercury	0.404	0.020	mg/kg wet	0.4167		97	80-120			

ECS Carolinas, LLP (North Charleston) Project: Waltersboro
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Prism Work Order: 5120159
 Time Submitted: 12/10/2015 8:32:00AM

General Chemistry Parameters - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch P5L0179 - Solids, Dry Weight

Blank (P5L0179-BLK1) Prepared & Analyzed: 12/10/15

% Solids	99.9	0.100	% by Weight							
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Sample Extraction Data

Prep Method: Solids, Dry Weight

Lab Number	Batch	Initial	Final	Date/Time
5120159-01	P5L0179	30 g	30 g	12/10/15 16:00
5120159-02	P5L0179	30 g	30 g	12/10/15 16:00
5120159-03	P5L0179	30 g	30 g	12/10/15 16:00

Prep Method: 3550C MS

Lab Number	Batch	Initial	Final	Date/Time
5120159-01	P5L0241	30.04 g	1 mL	12/16/15 8:15
5120159-02	P5L0241	30.02 g	1 mL	12/16/15 8:15
5120159-03	P5L0241	30.05 g	1 mL	12/16/15 8:15

Prep Method: 3050B

Lab Number	Batch	Initial	Final	Date/Time
5120159-01	P5L0186	1.96 g	50 mL	12/11/15 7:50
5120159-02	P5L0186	2 g	50 mL	12/11/15 7:50
5120159-03	P5L0186	1.97 g	50 mL	12/11/15 7:50

Prep Method: 7471B

Lab Number	Batch	Initial	Final	Date/Time
5120159-01	P5L0187	0.65 g	50 mL	12/11/15 8:45
5120159-02	P5L0187	0.65 g	50 mL	12/11/15 8:45
5120159-03	P5L0187	0.61 g	50 mL	12/11/15 8:45

Prep Method: 5035

Lab Number	Batch	Initial	Final	Date/Time
5120159-01	P5L0243	5.87 g	5 mL	12/15/15 8:32
5120159-02	P5L0182	5.84 g	5 mL	12/10/15 12:30
5120159-03	P5L0182	5.15 g	5 mL	12/10/15 12:30

Prep Method: 5035

Lab Number	Batch	Initial	Final	Date/Time
5120159-01	P5L0284	4.46 g	5 mL	12/17/15 14:09

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Subcontracted Analyses

The following analyses were subcontracted to Gulf Coast Analytical Labs, Inc.

Lab Number	Analysis
5120159-01	8082 (Sub)
5120159-02	8082 (Sub)
5120159-03	8082 (Sub)

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449 Springbrook Road - P.O. Box 240543 - Charlotte, NC 28224-0543
Phone: 704/529-6364 - Toll Free Number: 1-800/529-6364 - Fax: 704/525-0409

449 Springbrook Road • Charlotte, NC 28217
 Phone 704/529-6384 • Fax: 704/525-0409

Client Company Name: ECS Carolinas

Report To/Contact Name: Justin Peth

Reporting Address: 3820 Faber Place Dr.

Site-500 W. Charleston, SC 29405

Phone: 843-654-4448 Fax (Yes) (No):

Email Address: Justin.Peth@prism-lab.com

EDD Type: PDF Excel Other

Site Location Name: Waterboro

Site Location Physical Address:

CHAIN OF CUSTODY RECORD

PAGE 1 OF QUOTE # TO ENSURE PROPER BILLING:

Project Name: Waterboro

Short Hold Analysis: (Yes) (No) UST Project: (Yes) (No)

*Please ATTACH any project specific reporting (QC LEVEL III III IV) provisions and/or QC Requirements

Invoice To: STATE

Address:

Purchase Order No./Billing Reference: Waterboro

Requested Due Date 1 Day 2 Days 3 Days 4 Days 5 Days
 "Working Days" 6-9 Days Standard 10 days Rush Work Must Be Pre-Approved

Samples received after 14:00 will be processed next business day.
 Turnaround time is based on business days, excluding weekends and holidays.
 (SEE REVERSE FOR TERMS & CONDITIONS REGARDING SERVICES RENDERED BY PRISM LABORATORIES, INC. TO CLIENT)

TO BE FILLED IN BY CLIENT/SAMPLING PERSONNEL

Certification: NELAC DOD FL NC

Water Chlorinated: YES NO

Sample Iced Upon Collection: YES NO

LAB USE ONLY

YES NO N/A

Samples INTACT upon arrival?

Received ON WET ICE?

PROPER PRESERVATIVES indicated?

Received WITHIN HOLDING TIMES?

CUSTODY SEALS: INTACT?

VOLATILES rec'd W/OUT HEADSPACE?

PROPER CONTAINERS used?

TEMP: Therm ID: MTV Observed: 48 °C / Cor: 3.5 °C

CLIENT SAMPLE DESCRIPTION	DATE COLLECTED	TIME COLLECTED MILITARY HOURS	MATRIX (SOIL, WATER OR SLUDGE)	SAMPLE CONTAINER			PRESERVATIVES	ANALYSIS REQUESTED	REMARKS	PRISM LAB ID NO.
				*TYPE SEE BELOW	NO.	SIZE				
TP-1	12/9/15	8:50	Soil	7	40ml	502	MOON	VOCs SVOCs S20 S270 PP1 P20 P200		01
TP-4	12/9/15	9:10	Soil	7	"	"	"			02
TP-10	12/9/15	10:20	Soil	"	"	"	"			03

Sampler's Signature: [Signature] Sampled By (Print Name): Justin Peth Affiliation: ECS

Upon relinquishing, this Chain of Custody is your authorization for Prism to proceed with the analyses as requested above. Any changes must be submitted in writing to the Prism Project Manager. There will be charges for any changes after analyses have been initialized.

Relinquished By: (Signature) [Signature] Received By: (Signature) [Signature] Date 12/9/15 Military/Hours 0800

Relinquished By: (Signature) [Signature] Received By: (Signature) [Signature] Date 12/9/15 Military/Hours 0832

Relinquished By: (Signature) [Signature] Received For Prism Laboratories By: [Signature] Date 12/9/15 Military/Hours 0832

Method of Shipment: Fed Ex UPS Hand-delivered Prism Field Service Other Beaver Leaker
 NOTE: ALL SAMPLE COOLERS SHOULD BE TAPED SHUT WITH CUSTODY SEALS FOR TRANSPORTATION TO THE LABORATORY. SAMPLES ARE NOT ACCEPTED AND VERIFIED AGAINST COC UNTIL RECEIVED AT THE LABORATORY.

NPDES: NC SC GROUNDWATER: NC SC DRINKING WATER: NC SC SOLID WASTE: NC SC RCRA: NC SC CERCLA NC SC LANDFILL NC SC OTHER: NC SC COC Group No: 912-0159

Additional Comments:

PRESS DOWN FIRMLY - 3 COPIES

PRISM USE ONLY

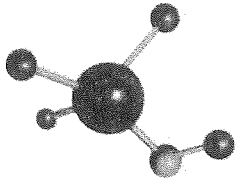
Site Arrival Time:

Site Departure Time:

Field Tech Fee:

Mileage:

SEE REVERSE FOR TERMS & CONDITIONS



ACCESS
ANALYTICAL, INC.

ANALYTICAL REPORT

CLIENT

Prism Laboratories, Inc.
PO BOX 240543
Charlotte, NC 28224

ATTENTION

Angie Overcash

PROJECT ID

5120159

LABORATORY REPORT NUMBER

215121123

DATE

12/16/2015

Primary Data Review By

Authorized Signature

Secondary Data Review By

Ashley B. Amick

Project Manager, Access Analytical, Inc.
aamick@accessanalyticalinc.com

PLEASE NOTE:

- Unless otherwise noted, all analysis on this report performed at Gulf Coast Analytical Labs (GCAL), 7979 Innovation Park Dr., Baton Rouge, LA 70820.
- GCAL is SCDHEC certified laboratory # 73006, NCDENR certified lab # 618, GA certified lab # LA-01955, NELAP certified laboratory # 01955
- Local support services for this project are provided by Access Analytical, Inc.. Access Analytical is a representative of GCAL serving clients in the SC/NC/GA areas. All questions regarding this report should be directed to your local Access Analytical representative at 803.781.4243 or toll free at 888.315.4243.



NELAP CERTIFICATE NUMBER: 01955
DOD ELAP CERTIFICATE NUMBER: L14-243

ANALYTICAL RESULTS

PERFORMED BY

GCAL, LLC
7979 Innovation Park Dr.
Baton Rouge, LA 70820

Report Date 12/16/2015

GCAL Report 215121123



Project 5120159

<i>Deliver To</i>	<i>Additional Recipients</i>
Angie Overcash Prism Laboratories, Inc. PO BOX 240543 Charlotte, NC 28224 706-529-6364	NONE



Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with GCAL's Standard Operating Procedures.

Common Abbreviations that may be Utilized in this Report

ND	Indicates the result was Not Detected at the specified reporting limit
DO	Indicates the result was Diluted Out
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous To Count
SUBC	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
DL	Detection Limit
DL	Diluted analysis – when appended to Client Sample ID
LOD	Limit of Detection
LOQ	Limit of Quantitation
RE	Re-analysis
00:01	Reported as a time equivalent to 12:00 AM

Reporting Flags that may be Utilized in this Report

J or I	Indicates the result is between the MDL and LOQ
J	DOD flag on analyte in the parent sample for MS/MSD outside acceptance criteria
U	Indicates the compound was analyzed for but not detected
B or V	Indicates the analyte was detected in the associated Method Blank
Q	Indicates a non-compliant QC Result (See Q Flag Application Report)
*	Indicates a non-compliant or not applicable QC recovery or RPD – see narrative
E	The result is estimated because it exceeded the instrument calibration range
E	Metals - % difference for the serial dilution is > 10%

Sample receipt at GCAL is documented through the attached chain of custody. In accordance with NELAC, this report shall be reproduced only in full and with the written permission of GCAL. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with the NELAC Institute standard and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Estimated uncertainty of measurement is available upon request. This report is in compliance with the DOD QSM as specified in the contract if applicable.



Authorized Signature
GCAL Report 215121123

Certifications

10/02/2015

Certification	Certification Number
DOD ELAP	L14-243
Alabama	01955
Arizona	AZ0718
Arkansas	12-060-0
Colorado	01955
Delaware	01955
Florida	E87854
Georgia	01955
Hawaii	01955
Idaho	01955
Illinois	200048
Indiana	01955
Kansas	E-10354
Kentucky	95
Louisiana	01955
Maryland	01955
Massachusetts	01955
Michigan	01955
Mississippi	01955
Missouri	01955
Montana	N/A
Nebraska	01955
New Mexico	01955
North Carolina	618
North Dakota	R-195
Oklahoma	9403
South Carolina	73006001
South Dakota	01955
Tennessee	01955
Texas	T104704178
Vermont	01955
Virginia	460215
USDA Soil Permit	P330-10-00117



Report#: 215121123

Project ID: 5120159

Report Date: 12/16/2015

Case Narrative

Client: Access Analytical **Report:** 215121123

Gulf Coast Analytical Laboratories received and analyzed the sample(s) listed on the Report Sample Summary page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

SEMI-VOLATILES GAS CHROMATOGRAPHY

In the EPA 8082A analysis for prep batch 574403, the MS/MSD exhibited recovery failures. The LCS/LCSD recoveries are acceptable.



Report#: 215121123

Project ID: 5120159

Report Date: 12/16/2015

Sample Summary

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21512112301	TP-1	Solid	12/09/2015 08:50	12/11/2015 10:10
21512112302	TP-4	Solid	12/09/2015 09:10	12/11/2015 10:10
21512112303	TP-10	Solid	12/09/2015 10:20	12/11/2015 10:10



Report#: 215121123
Project ID: 5120159

Report Date: 12/16/2015

Summary of Compounds Detected

TP-1	Collect Date	12/09/2015 08:50	GCAL ID	21512112301
	Receive Date	12/11/2015 10:10	Matrix	Solid

EPA 8082A *Results Reported on Dry Weight Basis

CAS#	Parameter	Result	DL	LOQ	Units
12674-11-2	Aroclor-1016	345	16.1	40.2	ug/Kg
11097-69-1	Aroclor-1254	296	16.1	40.2	ug/Kg



Report#: 215121123

Project ID: 5120159

Report Date: 12/16/2015

Sample Results

TP-1	Collect Date	12/09/2015 08:50	GCAL ID	21512112301
	Receive Date	12/11/2015 10:10	Matrix	Solid

EPA 8082A *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/13/2015 07:30	574403	EPA 3550C	1	12/14/2015 14:05	TLS	574700

CAS#	Parameter	Result	DL	LOQ	Units
12674-11-2	Aroclor-1016	345	16.1	40.2	ug/Kg
11104-28-2	Aroclor-1221	16.1U	16.1	40.2	ug/Kg
11141-16-5	Aroclor-1232	16.1U	16.1	40.2	ug/Kg
53469-21-9	Aroclor-1242	16.1U	16.1	40.2	ug/Kg
12672-29-6	Aroclor-1248	16.1U	16.1	40.2	ug/Kg
11097-69-1	Aroclor-1254	296	16.1	40.2	ug/Kg
11096-82-5	Aroclor-1260	16.1U	16.1	40.2	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
2051-24-3	Decachlorobiphenyl	16.60	18.9	ug/Kg	114	55 - 139

TP-4	Collect Date	12/09/2015 09:10	GCAL ID	21512112302
	Receive Date	12/11/2015 10:10	Matrix	Solid

EPA 8082A *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/13/2015 07:30	574403	EPA 3550C	1	12/14/2015 10:09	TLS	574700

CAS#	Parameter	Result	DL	LOQ	Units
12674-11-2	Aroclor-1016	17.2U	17.2	43.0	ug/Kg
11104-28-2	Aroclor-1221	17.2U	17.2	43.0	ug/Kg
11141-16-5	Aroclor-1232	17.2U	17.2	43.0	ug/Kg
53469-21-9	Aroclor-1242	17.2U	17.2	43.0	ug/Kg
12672-29-6	Aroclor-1248	17.2U	17.2	43.0	ug/Kg
11097-69-1	Aroclor-1254	17.2U	17.2	43.0	ug/Kg
11096-82-5	Aroclor-1260	17.2U	17.2	43.0	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
2051-24-3	Decachlorobiphenyl	16.70	22.9	ug/Kg	137	55 - 139



Report#: 215121123

Project ID: 5120159

Report Date: 12/16/2015

Sample Results

TP-10	Collect Date	12/09/2015 10:20	GCAL ID	21512112303
	Receive Date	12/11/2015 10:10	Matrix	Solid

EPA 8082A *Results Reported on Dry Weight Basis

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/13/2015 07:30	574403	EPA 3550C	1	12/14/2015 10:21	TLS	574700

CAS#	Parameter	Result	DL	LOQ	Units
12674-11-2	Aroclor-1016	18.1U	18.1	45.3	ug/Kg
11104-28-2	Aroclor-1221	18.1U	18.1	45.3	ug/Kg
11141-16-5	Aroclor-1232	18.1U	18.1	45.3	ug/Kg
53469-21-9	Aroclor-1242	18.1U	18.1	45.3	ug/Kg
12672-29-6	Aroclor-1248	18.1U	18.1	45.3	ug/Kg
11097-69-1	Aroclor-1254	18.1U	18.1	45.3	ug/Kg
11096-82-5	Aroclor-1260	18.1U	18.1	45.3	ug/Kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
2051-24-3	Decachlorobiphenyl	16.60	11.8	ug/Kg	71	55 - 139



Report#: 215121123

Project ID: 5120159

Report Date: 12/16/2015

GC Semi-Volatiles QC Summary

Analytical Batch		Client ID	MB574403	LCS574403			LCSD574403						
574700		GCAL ID	1518753	1518754			1518755						
Prep Batch		Sample Type	MB	LCS			LCSD						
574403		Prep Date	12/13/2015 07:30	12/13/2015 07:30			12/13/2015 07:30						
Prep Method		Analysis Date	12/14/2015 13:27	12/14/2015 13:39			12/14/2015 13:52						
EPA 3550C		Matrix	Solid	Solid			Solid						
EPA 8082A			Units Result	ug/Kg DL	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
Aroclor-1221	11104-28-2		13.3U	13.3									
Aroclor-1232	11141-16-5		13.3U	13.3									
Aroclor-1242	53469-21-9		13.3U	13.3									
Aroclor-1248	12672-29-6		13.3U	13.3									
Aroclor-1254	11097-69-1		13.3U	13.3									
Aroclor-1016	12674-11-2		13.3U	13.3	133	126	95	47 - 134	133	135	101	7	30
Aroclor-1260	11096-82-5		13.3U	13.3	133	104	78	53 - 140	133	114	86	9	30
Surrogate													
Decachlorobiphenyl	2051-24-3		15.2	91	16.7	15.9	95	55 - 139	16.7	15.7	94		NA

Analytical Batch		Client ID	TP-1	1518510MS			1518510MSD						
574700		GCAL ID	21512112301	1518756			1518757						
Prep Batch		Sample Type	SAMPLE	MS			MSD						
574403		Prep Date	12/13/2015 07:30	12/13/2015 07:30			12/13/2015 07:30						
Prep Method		Analysis Date	12/14/2015 14:05	12/14/2015 14:18			12/14/2015 14:31						
EPA 3550C		Matrix	Solid	Solid			Solid						
EPA 8082A			Units Result	ug/Kg DL	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
Aroclor-1016	12674-11-2		345	16.1	161	188	-98*	47 - 134	161	142	-126*	28	30
Aroclor-1260	11096-82-5		0.00	16.1	161	277	172*	53 - 140	161	241	149*	14	30
Surrogate													
Decachlorobiphenyl	2051-24-3		18.9	114	16.7	14.7	88	55 - 139	16.7	12.9	77		NA



Full-Service Analytical & Environmental Solutions

SUBCONTRACT ORDER
Prism Laboratories, Inc.
5120159

Certification: NELAC	USACE
NC	SC <input checked="" type="checkbox"/> Other
N/A	

SENDING LABORATORY:

Prism Laboratories, Inc.
P. O. Box 240543
Charlotte, NC 28224-0543
Phone: 800-529-6364
Fax: 704-525-0409
Project Manager: Angela D. Overcash

RECEIVING LABORATORY:

Gulf Coast Analytical Labs, Inc.
7979 GSRI Avenue
Baton Rouge, LA 70820
Phone: (225) 769-4900
Fax: (225) 767-5717

Analysis	Due	Expires	Laboratory ID	Comments
Sample ID: 5120159-01 8082 (Sub)	Solid	Sampled: 12/09/15 08:50 01/06/16 08:50	TP-1	-1 5-day TAT FIRM
Containers Supplied:				
Sample ID: 5120159-02 8082 (Sub)	Solid	Sampled: 12/09/15 09:10 01/06/16 09:10	TP-4	-2
Containers Supplied:				
Sample ID: 5120159-03 8082 (Sub)	Solid	Sampled: 12/09/15 10:20 01/06/16 10:20	TP-10	-3
Containers Supplied:				

Client ID: 4565 - Access Analytical
SDG: 215121123
PM: SAK

21504

Released By: <i>[Signature]</i>	Date: 12/10/15	Received By: <i>Feder</i>	Date: 12/10/15
Released By: <i>Feder</i>	Date: 12/11/15	Received By: <i>Doane McCreane</i>	Date: 12/11/15 10:10
Released By:	Date:	Received By:	Date:
Released By:	Date:	Received By: <i>7751 7023 2793</i>	Date:



SAMPLE RECEIVING CHECKLIST



SAMPLE DELIVERY GROUP 215121123		CHECKLIST		
Client	Transport Method	YES	NO	NA
PM SAK 4565 - Access Analytical	FEDEX	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Profile Number 80251	Received By McCune, Dodie N.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Line Item(s) 2 - Solid	Receive Date(s) 12/11/15	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were all samples received using proper thermal preservation?		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When used, were all custody seals intact?		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were all samples received in proper containers?		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were all samples received using proper chemical preservation?		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Was preservative added to any container at the lab?		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Were all containers received in good condition?		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were all VOC water samples received without head space?		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Do all sample labels match the Chain of Custody?		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did the Chain of Custody list the sampling technician?		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Was the COC maintained i.e. all signatures, dates and time of receipt included?		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

COOLERS		LAB PRESERVATIONS	
Airbill	Thermometer ID: E24	Temp(°C)	None
775176232793		2.1	None

NOTES

Revision 1.4 Page 1 of 1

ARTICLE 5 – BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents and the following unit prices are established for this project.

- A. When changes in the work are ordered by the Owner, and such changes involve the following items, the following unit prices will be used to calculate adjustments to the Contract Sum. These unit prices shall be for the Work as specified.
- B. **Subcontractor** labor, supervision, administrative support, materials, equipment, accessories, shipping, preparation, insurance, testing, overhead, profit, applicable taxes, permits, fees, warranties and all other associated costs for the finished and completed Work shall be listed in item #2 thru #34. All unit prices for utility conduits shall include sweeps, bends, couplings, caps, fittings, etc. which shall be included in the unit price per linear foot. Unit prices for undercut soils shall include material in place, surveyed and compacted pursuant to the Contract Documents.
- C. **General Contractor** labor, supervision, administrative support, materials, equipment, accessories, shipping, preparation, insurance, testing, overhead, profit, applicable taxes, permits, fees, warranties and all other associated costs for the finished and completed Work shall be listed in item #01..

Submit unit prices for the following items. This list may not include all components necessary to provide a completed product, therefore any applicable items necessary to provide a completed product should be added in your unit price response.

Base Bid – Colleton County Airport Water and Wastewater Improvements					
<u>Item No.</u>	<u>Description</u>	<u>Unit</u>	<u>Estimated Quantity</u>	<u>Unit Price</u>	<u>Bid Price</u>
Pump Station and Force Main		LS	1	\$	\$
1	OHP, Testing, Administration, Etc. (see 5.01, (C))	LS	1	\$	\$
2	Mobilization	LS	1	\$	\$
3	Erosion Control	LS	1	\$	\$
4	Clearing & Grubbing	AC	7.3	\$	\$
5	Pump Station (180gpm) (including site work, fencing, etc.)	LS	1	\$	\$
6	Natural Gas By-pass System (including 2" gas line)	LS	1	\$	\$
7	6" PVC Force Main	LF	7,650	\$	\$
8	Fittings	TON	0.3	\$	\$
9	Air Release Valve w/ Manhole	EA	4	\$	\$
10	Remove & Replace Asphalt (Roadway)	SF	500	\$	\$
11	Remove & Replace Asphalt (Driveway)	SF	4,500	\$	\$
12	Remove & Replace Concrete	SF	3,000	\$	\$
13	Remove & Replace Gravel	SF	800	\$	\$
14	Remove & Replace Brick Wall	LF	94	\$	\$
15	Remove & Replace 24" RCP at PS Access Road	LF	32	\$	\$
12" Gravity Sewer Main					
16	Erosion Control and Seeding	LS	1	\$	\$
17	12" PVC Gravity Sewer Line (0' – 8')	LF	1,205	\$	\$
18	12" PVC Gravity Sewer Line (>8')	LF	1,050	\$	\$
19	4' Dia. Concrete Manhole (0' – 8')	EA	3	\$	\$
20	4' Dia. Concrete Manhole (>8')	EA	4	\$	\$
21	Tie-in to Existing Manhole	EA	1	\$	\$
8" Gravity Sewer (Serving Airport Terminal)					

22	Erosion Control and Seeding	LS	1	\$	\$
23	8" PVC Gravity Sewer Line (0' – 8')	LF	1,325	\$	\$
24	8" PVC Gravity Sewer Line (>8')	LF	2,500	\$	\$
25	4' Dia. Concrete Manhole (0' – 8')	EA	5	\$	\$
26	4' Dia. Concrete Manhole (>8')	EA	6	\$	\$
27	Remove & Replace Asphalt (Aviation Way)	SF	1,000	\$	\$

10" Waterline

28	Erosion Control and Seeding	LS	1	\$	\$
29	10" PVC Waterline	LF	1,200	\$	\$
30	Fittings	TON	0.15	\$	\$
31	10" Gate Valve w/ Valve Box and Marker	EA	1	\$	\$
32	Tie-in to Existing 10" Water Main	EA	1	\$	\$
33	Fire Hydrant Assembly	EA	1	\$	\$
34	Remove and replace Asphalt (Roadway)	SF	1,200	\$	\$

Total Base Bid: \$

_____ Dollar _____ Cents (\$ _____)

CONTRACTOR

DATE