

PROPOSAL

FOR INFORMATIONAL USE ONLY - NOT TO BE USED FOR BIDDING PURPOSES

TO BE COMPLETED BY CONTRACTOR SUBMITTING
A BID ON GENERAL CONSTRUCTION
CONTRACT NO. S3C067-22G

ITEM NO.	APPROXIMATE QUANTITIES	ITEMS WITH UNIT PRICE WRITTEN IN WORDS				
1	Lump Sum	Base Bid for furnishing all Labor, Materials and Equipment required for all Construction work for Cedar Creek Ocean Outfall Diffuser Modifications as specified and shown on the Contract Documents complete and ready for operation. <hr/>	N/A	N/A		
2	Allowance	For cleaning all attached sea life growth around entire perimeter of all existing riser pipes including, but not limited to, fishing nets, fishing lines from below the existing exposed joint to the sea floor. <u>One Hundred Thousand</u> No	N/A	N/A	\$100,000	00
3	Allowance	For testing, removing and disposing of sediment within the diffuser pipe. This allowance item shall apply to removal of sediment regardless of whether the material is determined to be hazardous or not. <u>Five Hundred Thousand</u> No	N/A	N/A	\$500,000	00

PROPOSAL

ITEM NO.	APPROXIMATE QUANTITIES	ITEMS WITH UNIT PRICE WRITTEN IN WORDS				
4	Allowance	<p>For repairing damage to the bell portion of the existing 36-inch riser pipes and repairing or replacing the lower anchor brackets affixed to the existing 36-inch riser pipe sections to remain.</p> <p><u>Two Hundred Thousand</u> No</p>	N/A	N/A	\$200,000	00

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ALLOWANCES: It is expressly understood and agreed that the total Bid presented in this Proposal is the basis for establishing the amount of the Bid Security and includes the following allowances:

1. Item No. 2: An allowance of one hundred thousand dollars (\$100,000) for cleaning all attached sea life growth around entire perimeter of all existing riser pipes including, but not limited to, fishing nets, fishing lines from below the existing exposed joint to the sea floor.
2. Item No.3: An allowance of five hundred thousand dollars (\$500,000) for testing, removing and disposing of sediment within the diffuser pipe. This allowance item shall apply to removal of sediment regardless of whether the material is determined to be hazardous or not.
3. Item No. 4: An allowance of two hundred thousand dollars (\$200,000) for repairing damage to the bell portion of the existing 36-inch riser pipes and repairing or replacing the lower anchor brackets affixed to the existing 36-inch riser pipe sections to remain.

All in accordance with the requirements of Division 1, Special Conditions; Section 01010, Summary of Work; Section 01020, Allowances; and Section 01150, Measurement and Payment.

Final Contract Payment for allowance items shall be based upon actual payments, and not on the approximate amounts cited herein.

DETERMINATION OF LOW BID: Determination of low Bid will be made by comparing the total Bid which shall include the lump sum Base Bid price, unit price totals and allowances.

PROPOSAL

MAJOR EQUIPMENT ITEMS: The Bidder shall fill the name and address of the proposed system suppliers for the major equipment items tabulated hereinafter. It is expressly understood that the furnishing of this information will not relieve the Bidder of any requirements of the Contract Documents and failure to fill out properly is grounds for rejection.

<u>Specification Number</u>	<u>Description</u>	<u>Manufacturer and/or Supplier</u>

**CEDAR CREEK OCEAN OUTFALL
DIFFUSER MODIFICATIONS**

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**CEDAR CREEK OCEAN OUTFALL
DIFFUSER MODIFICATIONS**

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SPECIFICATIONS

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15100	Process and Civil Valves

SUPPLEMENTAL INFORMATION

+ + END OF SECTION + +

SECTION 01010

SUMMARY OF WORK

PART 1 – GENERAL

1.1 SCOPE OF WORK

- A. The Work to be done under this Contract and in accordance with these Specifications consists of furnishing of equipment, superintendence, labor, skill, material and all other items necessary for Cedar Creek Ocean Outfall Diffuser Modification, Contract No. S3C067-22G located at approximately two and a half miles off shore from Jones Beach in the Atlantic Ocean, Nassau County, New York. The Contractor shall perform all Work required for such Modification in accordance with the Contract Documents and subject to the terms and conditions of the Contract, complete and ready for use.
- B. The principal features of the Work to be performed and equipment to be provided for this Project under this Contract include:
 - 1. All labor, equipment, fees, permits, and other related costs necessary to provide for Cedar Creek Ocean Outfall Diffuser Modifications:
 - a. Remove and dispose of 120 existing riser pipes and associated hardware.
 - b. Clean all attached sea life growth around entire perimeter of all 120 existing riser pipes from below existing joint to sea floor.
 - c. Remove and dispose of all accumulated sediment from within the interior of the existing diffuser header system and diffuser riser pipes.
 - d. Install 120 riser pipes and associated accessories onto the existing diffuser pipe.
 - e. Install two 6-inch diameter duckbill check valves onto 110 riser pipes for a total of 220 duckbill check valves.
 - f. Install two 6-in diameter blind flanges onto 10 riser pipes for a total of 20 blind flanges.
 - 2. The foregoing stated in Paragraph 1.1.B.1 is a general description only and shall not be construed as a complete description of the Work to be performed for this Project.
- C. Delays due to lack of available labor, supervision, equipment, or other resources necessary for the work are not grounds for changes in the Contract Price or Contract times. Delays attributed to Contractor's action or inaction and to the action or inaction by Subcontractors and Suppliers are not grounds for a change in the contract times or contract price.

- D. The existing Plant will be maintained in continuous operation by the County during the entire construction period and treated effluent wastewater will continue to flow through the plant outfall and diffusers at all times during the Work. Work under this Contract shall be so scheduled and conducted by the Contractor that such Work will not impede any treatment process, reduce the quality of the plant effluent or cause odor or other nuisance. In performing the Work shown and specified, the Contractor shall plan and schedule his Work to meet the plant and collection system operating requirements.
- E. The construction sequence, as described in Section 01700, Maintenance of Plant Operations, must be maintained so that the County will meet the appropriate State Pollutant Discharge Elimination System Permit.

1.2 GENERAL

- A. The Instructions to Bidders, Agreement, General Conditions, and Division 1, General Requirements, specifications shall apply to all Work under the Contract for this Project.
- B. Where articles of the Instructions to Bidders, Agreement, and General Conditions are repeated in the Sections of Division 1, General Requirements, it is intended to elaborate or qualify such articles. It is not intended that other articles of the above documents shall be omitted or that additional requirements set forth in the above documents and noted herein shall be excluded from Contract requirements unless specifically noted as such hereinafter.
- C. Where the words "Contract" and "Contractor" are used in Sections of Division 1, General Requirements, they shall apply equally to all parties entering into agreements with the County to perform Work specified herein and to all Contracts derived from said agreements.

1.3 CONTRACT DOCUMENTS

- A. The Contract Documents consist of the Notice and Instructions to Bidders, Bid Bond, Proposal, Agreement, General Conditions, the Technical Specifications, and the Contract Drawings.

1.4 GENERAL ARRANGEMENT

- A. The Contract Drawings indicate the extent and general arrangement of the Work. The specific equipment proposed for use by the Contractor on the Project may require changes in the construction detailed on the Contract Drawings, and all such changes shall be performed in accordance with the requirements of the General Conditions, Article GC 17, "Materials and Equipment, Approvals,

Substitutions and Deviations", and shall be made without additional cost to the County and shall include the increase in costs of the other Contracts.

- B. All materials involved in the redesign shall conform to the applicable provisions of the Technical Specifications.

1.5 TIME OF WORK

- A. Overtime work by the Contractor necessary to conform to the requirements of Division 1, General Requirements, Section 01700, Maintenance of Plant Operations, shall be considered as normal procedure under this Contract, and the Contractor shall make no claims for extra compensation as a result thereof. The Contractor shall be prepared to work around the clock and supply multiple work crews as necessary to complete the Work including testing and acceptance as specified, within the specified time frame and the time of completion set forth in the Contract Documents.
- B. The normal working hours for the project are between 7:00 AM and 3:30 PM Monday through Friday. When required to meet the Contract Completion dates, the Contractor is advised that they shall work scheduled overtime or second shifts as needed. The Contractors shall have sufficient construction materials, labor, equipment, tools and supervision to support scheduled overtime or second shifts when required.
- C. It is understood that the Contractor has reviewed the schedule and has included in their bid sufficient monies to meet the schedule and will make no claim for extra compensation because of additional costs to meet scheduled dates.
- D. The Contractor is advised that they will be directed to take remedial action as necessary to recover lost time on any critical items as determined from the Construction Schedule.
- E. If it shall become imperative to perform Work at night, the County shall be informed at least 24 hours in advance of Work done during off hours. Temporary lighting and all other necessary facilities for performing and inspecting the Work shall be provided as required and as specified in Division 1, Section 01500, Temporary Facilities and Controls, or as directed by the Engineer.
- F. Unless otherwise specifically permitted, all Work that would be subject to damage or create unsafe on-water work conditions shall be stopped during inclement, stormy or freezing weather. Only such work that will not cause injury to workmanship or materials will be permitted. The Contractor shall carefully protect his Work against damage or injury from the weather, and when Work is permitted during freezing weather, he/she shall provide and maintain approved facilities for heating the materials and for protecting the finished Work.

- G. The Contractor shall require permission, in writing, to perform contractual work outside the regular County working hours of 7:00 AM to 3:30 PM, Monday through Friday, or on official County holidays. This written request should be received by the County 24 hours in advance of beginning the work. The Contractor is responsible for coordination with the County Engineer and/or his duly authorized representative, prior to the start of the work to determine the dates of observance of the official County holidays that may occur during the course of the Contract. The official County holidays are:

- New Year's Day
- Martin Luther King, Jr. Day
- Lincoln's Birthday
- Washington's Birthday
- Memorial Day
- Independence Day
- Labor Day
- Columbus Day
- Election Day
- Veteran's Day
- Thanksgiving Day
- Friday after Thanksgiving Day
- Christmas Day

Failure of the Contractor to consider official County holidays during the preparation of their work plans and schedules shall not be cause for a delay claim against the County.

- H. Contractor shall obtain permission from Owner, Owner's Representative and/or Plant management and staff prior to prosecuting any portion of the Work beyond the standard working days or hours. Should circumstances arise during the course of the Contract, where the Contractor works outside of the County's regular working hours (7:00 am to 3:30 pm, or as otherwise established for the project) or on weekends or official County holidays, regardless if this work is performed as a result of the Contractor's request or as required by the contract documents, or as required by the approved baseline schedule (resource loaded.) The Owner, Owner's Representative and Plant management and staff will review the scope of the operations and determine on a case-by-case basis the extent of construction oversight that may be required.

1.6 WORK BY OTHERS

- A. County will perform the following work:
1. Operate all potable, protected water, effluent water system and all other pertinent existing plant valves and plant functions.

1.7 REGULATORY AGENCY ACCESS TO CONSTRUCTION SITE

- A. Whenever construction work is in progress or preparation, the Contractor shall permit access and inspection and shall provide proper and necessary facilities to the representatives of the County, Engineer and Regulatory Agencies including, but not limited to, the New York State Department of Environmental Conservation, Army Corps of Engineers, and the New York State Environmental Facilities Corporation.

1.8 SITE INFORMATION

- A. The following documents are distributed with the Contract Documents (unless noted otherwise) for the convenience of the Contractor. These documents are:

Item No.	Agency/Firm	Contract	Year	Title
1	Marine Solutions	DEC Contract No. D-011883	2022	Bay Park Bay Park Conveyance Design-Build – Underwater Inspection Services, DEC Contract No. D-011883, Cedar Creek Wastewater Treatment Plant Ocean Outfall, Underwater Inspection of Diffuser Field – Summary of Findings
2	Marine Solutions	Bay Park Sewage Treatment Plant Ocean Outfall – Effluent Diversion Project, WSP #187917	2019	Bay Park Sewage Treatment Plant Ocean Outfall – Effluent Diversion Project, WSP #187917, Cedar Creek Water Pollution Control Plant Ocean Outfall, Underwater Inspection and Bathymetric Survey, Summary of Findings
3	Inspectronic Corporation	N/A	2013	Field Inspection Report, Nassau County, Cedar Creek Outfall
4	USACE	N/A	N/A	United States Army Corps of Engineers (USACE) – Nationwide Permit
5	NYSOPRHP	N/A	N/A	New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP) – Consultation & No Effects Letter
6	NYSDEC	N/A	N/A	New York State Department of Environmental Conservation (NYSDEC) – Excavation & Fill in Navigable Waters
7	NYSDEC	N/A	N/A	New York State Department of Environmental Conservation (NYSDEC) – 401 Water Quality Certification

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

++ END OF SECTION ++

Cedar Creek Ocean Outfall
Diffuser Modifications

01010-5

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SECTION 01020

ALLOWANCES

PART 1 – GENERAL

1.1 DESCRIPTION

- A. General: The Allowance described below shall be included in the Contractor's total bid. Any amounts not expended prior to completion of the Project shall be deducted from the final payment made to the Contractor.

1.2 SCHEDULE OF ALLOWANCES

- A. General Construction Contract:

1. Item No. 2: An allowance of One Hundred Thousand Dollars, No Cents (\$100,000.00) for costs associated with all work associated with cleaning all attached sea life growth around entire perimeter of all existing riser pipes including, but not limited to, fishing nets, fishing lines from below the existing exposed joint to the sea floor.
2. Item No. 3: An allowance of Five Hundred Thousand Dollars, No Cents (\$500,000.00) for costs associated with all work associated with testing, removing and disposing of sediment within the diffuser pipe. This allowance item shall apply to removal of sediment regardless of whether the material is determined to be hazardous or not.
3. Item No. 4: An allowance of Two Hundred Thousand Dollars, No Cents (\$200,000.00) for costs associated with all work associated with repairing damage to the bell portion of the existing 36-inch riser pipes and repairing or replacing the lower anchor brackets affixed to the existing 36-inch riser pipe sections to remain.

1.3 BASIS FOR PAYMENT

- A. General Construction Contract:

1. Item Nos. 2, 3 and 4: The amount of compensation to be paid to the contractor under the allowance for Item No. 2, 3 and 4, as directed or authorized by the County, shall be determined (1) by such applicable unit prices, if any, as are set forth in the Contract; or, (2) by lump sum or unit prices mutually agreed upon by the Commissioner and the Contractor; or, (3) the cost may be determined by the actual cost of labor and materials, plus overhead and profit, cost to be determined as the work progresses in the manner specified in Agreement Article XXII, ("Extra Work"), paragraph C. Any funds remaining at the end will be eliminated by a credit change order.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

+ + END OF SECTION + +

SECTION 01031

ADDITIONS, MODIFICATIONS AND ALTERATIONS TO EXISTING STRUCTURES

PART 1 – GENERAL

1.1 WORK INCLUDED

- A. Work includes all labor, materials, equipment and appurtenances required for the complete execution of additions, modifications and alterations to existing structures as shown on the Drawings and specified.
- B. The Contractor shall have examined all Work to be performed to the existing structures and familiarize himself with the nature and extent to which the existing structures will be damaged, items removed or re-arranged due to the Work under this Contract and that of other contracts.
 - 1. Cutting and patching shall conform to the requirements of the General Conditions, Article GC29, "Cutting and Patching", and as specified herein.
 - 2. Patching Work shall be performed with similar materials and in the same manner as adjoining Work. Joining between old and new Work shall be perfect and practically invisible. All due caution shall be taken to obtain a bond between old and new Work.
- C. Major portions of the Work are indicated on the Drawings for the Contract and the accompanying Specifications thereto. All Work must be complete in all respects and executed with high quality workmanship.
- D. Work to be performed due to damage caused by Contractor or his workers during demolition, removals, additions, modifications, and alterations that is not specifically indicated by details or general notes on the contract drawings may include the following:
 - 1. Repairs of chips in existing PCCP pipe or damage to lower brackets for tie down bolts.
 - 2. Cutting and modifying existing openings as necessary to receive new Work.
- E. The Contractor shall submit detailed description of methods and equipment and sequence for additions, modifications and alterations for Engineer's review.

1.2 SITE

- A. Prior to ordering any materials or doing any Work, the Contractor shall verify and be responsible for the correctness of all measurements, dimensions and other conditions of each structure scheduled for Work as necessary and required.

1.3 MATERIALS

- A. All materials to perform and complete the Work for Contract shall be new.

1.4 SHORING, UNDERPINNING AND BRACING

- A. When necessary and required, the Contractor shall provide underpinning and temporary shoring and bracings, all in accordance with code requirements, the Drawings, and as approved by Engineer.
- B. Shoring and bracing shall be of such form and so installed as to safely support the Work and interfere as little as possible with the progress of the Work. Suitable means shall be provided to adjust any settlement in the shoring supports. Temporary shoring shall consist of sound timbers or rolled shapes of required dimensions which shall be removed after necessity for same ceases to exist. All Work removed or damaged through installation of temporary shoring or through improper shoring shall be replaced or repaired after the shoring is removed, at no additional cost to the County.

1.5 WORK PREPARATION AND TEMPORARY ACCESS

- A. The Contractor, before commencing Work shall prepare a Progress Schedule in accordance with the requirements of Section 01300, Submittals and Section 01700, Maintenance of Plant Operations, in order to coordinate the Work of all trades and to insure completion on or before the completion date. The County and the Engineer reserve the right to revise or modify such schedules as required to expedite each phase of Work.
- B. It is required that no Work specified hereinafter shall disturb or interfere with the operation of the existing mechanical installation until proposed new Work has been completed or satisfactorily installed. Exception may be made to this requirement only by written approval from County and Engineer.
- C. The Contractor shall furnish and install all temporary fire exits, fire extinguishers, hose and safety devices as may be required by authorities having jurisdiction.

1.6 CUTTING, PATCHING, REPAIRING AND REFINISHING

- A. The Contractor shall be responsible for all finish patching operations of chips in joint sections of existing PCCP pipe to accommodate the alteration Work under the Contract. Patching Work shall be paid for under Item No. 4 as described in Section 01020 – Allowances.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

++ END OF SECTION ++

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SECTION 01040

REGULATORY REQUIREMENTS

PART 1 – GENERAL

1.1 DESCRIPTION

- A. The items listed in this Section are a summary of the regulatory requirements for the work in this contract including but not limited to relevant agencies, work permits, disposal requirements, and inspection requirements.
- B. In general, the Contractor shall keep themselves informed of all current local, state and federal laws, rules, regulations and ordinances. The work shall be performed by the Contractor, in all respects, in strict conformity with all such laws, rules, regulations, requirements and ordinances of the local, state, and federal governments and all departments and bureaus thereof.
- C. Permits and approvals listed in this Section are for reference. It is the responsibility of the Contractor to determine what permits they need for their work.

1.2 REGULATORY AGENCY ACCESS TO CONSTRUCTION SITE

- A. Whenever construction work is in progress or preparation, the Contractor shall permit access and inspection and shall provide proper and necessary facilities to the representatives of the County, Engineer and Regulatory Agencies including, but not limited to, the New York State Department of Environmental Conservation and the New York State Environmental Facilities Corporation.

1.3 WORK PERMITS AND APPROVALS

- A. The Contractor shall obtain, pay for, and comply with the terms and conditions of all necessary permits, licenses, approvals, certificates of inspection, and controlled inspection reports, and shall give all notices and pay all legal fees in connection with the work of this Contract.
- B. All work performed under the Contract shall conform to the rules and regulations of the Town of Hempstead, Town of Oyster Bay, and all State and Federal agencies or departments having jurisdiction.
- C. Upon completion of the various stages of construction, the Contractor shall schedule inspections and obtain certificates of approval and/or acceptance from the various agencies and Departments having jurisdiction and shall deliver these

certificates to the Engineer.

- D. In addition to the above, the Contractor shall also obtain and comply with the following permit(s):
1. New York State Department of Environmental Conservation (NYSDEC) – Solid Waste Management Facilities Permit for facility where materials is to be disposed.
 2. New York State Department of Environmental Conservation (NYSDEC) – Waste Transporter Permit.
 3. United States Coast Guard (USCG) – Notice to Mariners.
 4. Town of Hempstead Structure Permit – for structures that are installed within the Town which require a permit.
- E. The Contractor shall also comply with the conditions and regulations of the permits that are obtained by the County, or its Engineer. These permits include, but are not limited to, the following:
1. United States Army Corps of Engineers (USACE) – Nationwide Permit.
 2. New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP) – Consultation & No Effects Letter.
 3. New York State Department of State (NYSDOS) – Coastal Consistency Concurrence.
 4. New York State Department of Environmental Conservation (NYSDEC) – Excavation & Fill in Navigable Waters.
 5. New York State Department of Environmental Conservation (NYSDEC) – 401 Water Quality Certification.
 6. United States Department of Homeland Security U.S. Coast Guard (USCG) – Private Aids to Navigation Permit.
- F. The Contractor shall renew and maintain all permits for the life of the contract, as necessary.

1.4 EXISTING UTILITIES

- A. All utility and structure information shown on the Contract Drawings were obtained from various plans and maps and field investigations; however, they are not guaranteed to be complete or accurate. It shall be the Contractor's responsibility to locate all such necessary utilities or structures by the digging of test pits prior to the start of construction.
- B. During the progress of the Work, the Contractor shall protect from damage any existing utilities or services within the work areas until they have been re-routed, disconnected or capped off.

1.5 DISPOSALS

- A. Water from open cut and/or sheeted excavations, manholes, structures, trenches, or from whatever source, shall be disposed of strictly in accordance with methods approved by the Engineer.

1.6 CONFORMANCE TO INDUSTRIAL CODE

- A. The Contractor's attention is directed to requirements of the Industrial Code of the State of New York, Department of Labor, Board of Standard and Appeals, latest edition and amendments or supplements thereto. All mechanical equipment with respect to manufacture, fabrication, and safety devices for protection of personnel from electrical parts and mechanically moving parts such as belts, shafts, couplings, and other apparatus, appliances or equipment, all floors, stair surfaces, ladders, equipment, access stairs and platforms, all exit enclosures, vertical openings and stairs, shall comply with this code; and all provisions therein shall be deemed included in and required by these specifications and shall be detailed for approval and furnished without additional cost; the price thereof considered to be included in the applicable prices bid for the various Contract Items in the Contract.

1.7 NON-COMPLIANCE

- A. All fees/penalties incurred by the Contractor, County, Engineer or other such entity, resulting from non-compliance by the Contractor with permits or approvals obtained by the Contractor, permits obtained by the County or Engineer, conformance to the Industrial Code or conformance to other codes or standards governing the performance of this Contract will be paid for by the Contractor or deducted from the final payment.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

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SECTION 01050

FIELD ENGINEERING

PART 1 – GENERAL

1.1 GENERAL

- A. The Contractor shall establish at least two bench marks for use in accordance with the General Conditions, Article GC 28, "Layout and Levels" and the Agreement, Article XXIX, "Character and Competency" and Article XXX, "Superintendence". The Contractor shall comply with this article.
- B. Contractor shall:
 - 1. Provide professional engineering services specified, or required to execute Contractor's construction methods.
 - 2. Develop and make all bathymetric surveys based on the following requirements.
 - a. Provide 1-foot contour lines using NAVD88 U.S. survey feet as the vertical datum.
 - b. Horizontal Datum: State Plane New York Long Island NAD83.
 - c. Survey Standard: International Hydrographic Organization Order 1A.
 - d. Width of survey shall be a minimum of 100 feet centered around the alignment of the diffuser piping.
 - e. Length of survey shall be the entire length of the diffuser piping plus a minimum of 50 feet past the east and west ends of the diffuser piping.
 - 3. Contractor shall provide all materials and methods for a bathymetric survey. The suggested methods which shall be submitted to the Engineer for approval include, but are not limited to, the following:
 - a. Multi-Beam Surveying A multibeam echo sounder mounted to a boat sends out a wide variety of beams across a "swath" of the waterbody bottom.
 - b. Single-beam surveying.
 - c. Acoustic Doppler Current Profiler (ADCP).
 - d. Sub-bottom profilers.
 - e. Autonomous Underwater Vehicle Ecomapper.
 - 4. Be solely responsible for all locations, dimensions and levels. No data other than written orders of the Engineer shall justify departure from the dimensions and levels required by the Drawings.

1.2 CONTRACTOR'S FIELD ENGINEER

- A. The Contractor shall employ and retain at the Site of the Work a field engineer capable of performing all engineering tasks required of the Contractor. Tasks included are:

1. A projection of Work to be completed the following day must be submitted to the Engineer by 4:00 PM of the preceding workday. This projection must include:
 - a. Location of all areas in which construction will be done, including the Contractor and his Subcontractors.
 - b. Major construction equipment utilized.
 - c. Equipment and materials to be installed.
2. Furnish all required lines and grades for construction operations. Check that piping and all other materials and equipment are free from material and placement conflicts.
3. Maintain field office files and drawings, Record Drawings, and coordinate engineering services with Subcontractors. Prepare Layout and Coordination Drawings for construction operations.
4. Coordinate Work for conflicts and interference and immediately advise the Engineer of all discrepancies noted.
5. Cooperate with the Engineer in field inspections, as required.

1.3 QUALIFICATIONS OF SURVEYOR OR ENGINEER

- A. A qualified engineer or registered land surveyor, acceptable to the Engineer.

1.4 RECORDS

- A. Maintain a complete, accurate log of all control and survey Work as it progresses.

1.5 SUBMITTALS

- A. When requested by the Engineer, submit a certificate signed by a registered Engineer or surveyor certifying that elevations are in conformance with the Contract Documents. Explain all deviations.
- B. Pre- and post-construction bathymetric surveys of the work areas addressed in Specification 01620. Each survey will be completed under the direction of a New York State Licensed Land Surveyor and all final surveys will carry the signature and seal of the Licensed Land Surveyor.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

+ + END OF SECTION + +

SECTION 01072

REFERENCE STANDARDS

PART 1 – GENERAL

1.1 GENERAL

A. When a reference standard is specified, comply with the requirements and recommendations stated in that standard, except when they are modified by the Contract Documents, or when applicable laws, ordinances, rules, regulations or codes establish stricter standards. The latest provisions of applicable standards shall apply to the Work, unless otherwise specified. Reference standards include, but are not necessarily limited to, the following:

1. AMCA- Air Moving and Conditioning Association, Inc.
2. AASHTO- American Association of State Highway and Transportation Officials.
3. ABMA- American Boiler Manufacturers' Association.
4. ACGIH- American Conference of Government Industrial Hygienists.
5. ACI- American Concrete Institute.
6. ACIFS- American Cast Iron Flange Standards.
7. ADA- Americans with Disabilities Act.
8. AFBMA- Anti-Friction Bearing Manufacturers Association.
9. AGA- American Gas Association.
10. AGMA- American Gear Manufacturers Association.
11. AIA- American Institute of Architects.
12. AISC- American Institute of Steel Construction.
13. AISI- American Iron and Steel Institute.
14. ANSI- American National Standards Institute.
15. APA- American Plywood Association.
16. API- American Petroleum Institute.
17. ASCE- American Society of Civil Engineers.
18. ASME- American Society of Mechanical Engineers.
19. ASTM- American Society for Testing and Materials.
20. AWWA- American Water Works Association.
21. AWS- American Welding Society.
22. AWWA- American Water Works Association.
23. CGA- Compressed Gas Association.
24. CFR- Code of Federal Regulations.
25. CRSI- Concrete Reinforcing Steel Institute.
26. CMAA- Crane Manufacturers' Association of America.
27. DIPRA- Ductile Iron Pipe Research Association.
28. EEI- Edison Electric Institute.
29. EJMA- Expansion Joint Manufacturers' Association.

30. Fed Spec- Federal Specifications.
31. FM- Factory Mutual.
32. HMI- Hoist Manufacturers' Institute.
33. IEEE- Institute of Electrical and Electronic Engineers.
34. IHO- International Hydrographic Organization.
35. IPCEA- Insulated Power Cable Engineers Association.
36. NACE- National Association of Corrosion Engineers.
37. NB- National Board of Boiler Pressure Vessels.
38. NBS- National Bureau of Standards.
39. NEC- National Electric Code.
40. NEMA- National Electrical Manufacturers Association.
41. NFPA- National Fire Protection Association.
42. NSF- National Sanitation Foundation.
43. NYCRR- New York Code, Rules and Regulations.
44. NYSDOT- New York State Department of Transportation.
45. OSHA- Occupational Safety and Health Act.
46. PCA- Portland Cement Association.
47. PCI- Pre-stressed Concrete Institute.
48. RMA- Rubber Manufacturers' Association.
49. SMACCNA- Sheet Metal and Air Conditioning Contractors National Association.
50. SPI- Society of Plastics Industry.
51. SSPC- Steel Structures Painting Council.
52. STI- Steel Tank Institute.
53. UL- Underwriters' Laboratory.
54. USEPA- United States Environmental Protection Agency.

B. The Contractor shall, when required, furnish evidence satisfactory to the Engineer that materials and methods are in accordance with such standards where so specified.

C. In the event any questions arise as to the application of these standards or codes, copies shall be supplied on Site by Contractor.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

+ + END OF SECTION + +

SECTION 01150

MEASUREMENT AND PAYMENT

PART 1 – GENERAL

1.1 DESCRIPTION

- A. The items listed below, beginning with Article 1.3, refer to and are the same pay items listed in the Bid Schedule. They constitute all of the pay items for the completion of the Work. No direct or separate payment will be made for providing miscellaneous temporary or accessory works, plant services, Contractor's or Engineer's field offices, layout surveys, job signs, sanitary requirements, testing, safety devices, approval and Record Drawings, water supplies, power, maintaining traffic, removal of waste, watchmen, Bonds, insurance, and all other requirements of the Agreement, General Conditions and the Special Conditions. Compensation for all such services, items and materials shall be included in the prices stipulated for the lump sum and unit pay items listed herein. Unless otherwise specified, no separate payment will be made for stored equipment.

1.2 RELATED PROVISIONS SPECIFIED ELSEWHERE

- A. Payments to the Contractor: Refer to the Agreement and the General Conditions.

1.3 CONTRACT NO. S3C067-22G – GENERAL CONSTRUCTION

- A. Item 1 – General Construction Contract:
 - 1. Payment for Item 1 will be the lump sum bid under this item and will be full compensation for completing the Work described in Section 01010, Summary of Work, as shown on the Contract Drawings, and as specified under Divisions 1 through 15.
- B. Allowance Items 2, 3 and 4 inclusive are described in the Proposal Section and in Section 01020. The total cost for these items shall be included in the total price.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

++ END OF SECTION ++

++ NO TEXT ON THIS PAGE ++

SECTION 01300

SUBMITTALS

PART 1 - GENERAL

1.1 DESCRIPTION OF REQUIREMENTS

- A. This Section specifies the general methods and requirements of submissions applicable to Shop Drawings, Product Data, Samples, Mock Ups, Construction Photographs, Underwater Video, Bathymetric Survey, Construction or Submittal Schedules. Detailed submittal requirements are specified in the technical Sections.
- B. All submittals shall be clearly identified by reference to Section Number, Paragraph, Drawing Number or Detail as applicable. Submittals shall be clear and legible and of sufficient size for presentation of data.

1.2 SHOP DRAWINGS, PRODUCT DATA, SAMPLES

- A. Shop Drawings
 - 1. Shop drawings as specified in individual Sections include, custom-prepared data such as fabrication and erection/installation (working) drawings, scheduled information, setting diagrams, actual shop work manufacturing instructions, custom templates, special wiring diagrams, coordination drawings, individual system or equipment inspection and test reports including performance curves and certifications, as applicable to the work.
 - 2. All shop drawings submitted by subcontractors shall be sent directly to the Contractor for checking. The Contractor shall be responsible for their submission at the proper time so as to prevent delays in delivery of materials.
 - 3. Check all subcontractor's shop drawings regarding measurements, size of members, materials and details to make sure that they conform to the intent of the Drawings and related Sections. Return shop drawings found to be inaccurate or otherwise in error to the subcontractors for correction before submission thereof.
 - 4. All details on shop drawings shall show clearly the relation of the various parts to the main members and lines of the structure and where correct fabrication of the work depends upon field measurements, such measurements shall be made and noted on the drawings before being submitted.
 - 5. Submittals for equipment specified under Division 10 and 15 shall include a listing of all installations where identical or similar equipment has been installed and been in operation for a period of at least one year.
- B. Product Data

1. Product data as specified in individual Sections include, standard prepared data for manufactured products (sometimes referred to as catalog data), such as the manufacturer's product specification and installation instructions, availability of colors and patterns, manufacturer's printed statements of compliances and applicability, roughing-in diagrams and templates, catalog cuts, product photographs, standard wiring diagrams, printed performance curves and operational-range diagrams, production or quality control inspection and test reports and certifications, mill reports, product operating and maintenance instructions and recommended spare-parts listing and printed product warranties, as applicable to the work.

C. Samples

1. Samples specified in individual Sections include, physical examples of the work such as sections of manufactured or fabricated work, small cuts or containers of materials, complete units of repetitively-used products, color/texture/pattern swatches and range sets, specimens for coordination of visual effect, graphic symbols and units of work to be used by the Engineer or Owner for independent inspection and testing, as applicable to the work.

1.3 CONTRACTOR'S RESPONSIBILITIES

- A. Review shop drawings, product data and samples, including those by subcontractors, prior to submission to determine and verify the following:
 1. Field measurements
 2. Field construction criteria
 3. Catalog numbers and similar data
 4. Conformance with related Sections
- B. Each shop drawing, sample and product data submitted by the Contractor shall have affixed to it the following Certification Statement including the Contractor's Company name and signed by the Contractor: "Certification Statement: by this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data and I have checked and coordinated each item with other applicable approved shop drawings and all Contract requirements." The cover sheet shall fully describe the packaged data and include a listing of all items within the package. Provide to the Resident Project Representative a copy of each transmittal sheet for shop drawings, product data and samples at the time of submittal to the Engineer.
- C. The Contractor shall utilize a 9 character submittal identification numbering system in the following manner:
 1. The first five digits shall be the applicable Section Number.

2. The next three digits shall be the numbers 001 to 999 to sequentially number each initial separate item or drawing submitted under each specific Section Number.
3. The last character shall be a letter, A to Z, indicating the submission, or resubmission of the same Drawing, i.e., "A=1st submission, B=2nd submission, C=3rd submission, etc. A typical submittal number would be as follows:

03300-008-B

03300 = Section for Concrete

008 = The eighth initial submittal under this section

B. = The second submission (first resubmission) of that particular shop drawing]

- D. Notify the Engineer in writing, at the time of submittal, of any deviations in the submittals from the requirements of the Contract Documents. All cost associated with any deviations shall be borne by the Contractor.
- E. The review and approval of shop drawings, samples or product data by the Engineer shall not relieve the Contractor from the responsibility for the fulfillment of the terms of the Contract. All risks of error and omission are assumed by the Contractor and the Engineer will have no responsibility therefor.
- F. No portion of the work requiring a shop drawing, sample, or product data shall be started nor shall any materials be fabricated or installed prior to the approval or qualified approval of such item. Fabrication performed, materials purchased or on-site construction accomplished which does not conform to approved shop drawings and data shall not be permitted. The Owner will not be liable for any expense or delay due to corrections or remedies required to accomplish conformity.
- G. Project work, materials, fabrication, and installation shall conform with approved shop drawings, applicable samples, and product data.

1.4 SUBMISSION REQUIREMENTS

- A. Make submittals promptly in accordance with approved schedule and in such sequence as to cause no delay in the Work or in the work of any other contractor.
- B. Contractor shall reference the General Conditions for additional submission requirements.
- C. Number of submittals required:
 1. Shop Drawings: See Article 1.05 below.
 2. Product Data: See Article 1.05 below.
 3. Samples: Submit the number stated in the respective Sections.

- D. Submittals shall contain:
1. The date of submission and the dates of any previous submissions.
 2. The Project title and number.
 3. Contractor identification.
 4. The names of:
 - a. Contractor
 - b. Supplier
 - c. Manufacturer
 5. Identification of the product, with the section number, page and paragraph(s).
 6. Field dimensions, clearly identified as such.
 7. Relation to adjacent or critical features of the work or materials.
 8. Applicable standards, such as ASTM or Federal Standards numbers.
 9. Identification of deviations from Contract Documents.
 10. Identification of revisions on resubmittals.
 11. A blank space suitably sized for Contractor and Engineer stamps as defined in the General Conditions.
 12. Where calculations are required to be submitted by the Contractor, the calculations shall have been checked by a qualified individual other than the preparer. The submitted calculations shall clearly show the names of the preparer and of the checker.

1.5 ELECTRONIC DATA SUBMITTAL FORMAT

- A. Files shall be electronically searchable based on County and Engineer established standard file naming convention.
- B. Quality and Legibility: Electronic submittal files shall be made from the original and shall be clear and legible. Do not provide scans of faxed copies. Electronic file shall be made at the full size of the original paper documents. All pages shall be properly oriented for reading on a computer screen without rotating.
- C. Organization and Content:
1. Each electronic submittal shall be one electronic file. Do not divide and submit individual submittals into multiple electronic files unless directed by Engineer.
 2. When submittal is large or contains multiple parts, provide PDF file with bookmark for each section of submittal.
 3. Submittal content shall include Contractor's letter of transmittal and Contractor's review and stamp.
- D. Electronic file format:
1. PDF (Portable Document Format): .pdf, Adobe PDF documents; created through electronic conversion rather than optically scanned whenever possible.

2. Video files: .mp4 or some other video file format that is compatible with Windows 10 or 11 that does not require additional software, proprietary or otherwise, for opening.

1.6 REVIEW OF SHOP DRAWINGS, PRODUCT DATA, WORKING DRAWINGS AND SAMPLES

- A. The review of shop drawings, data and samples will be for general conformance with the design concept and Contract Documents. They shall not be construed:
 1. as permitting any departure from the Contract requirements;
 2. as relieving the Contractor of responsibility for any errors, including details, dimensions, and materials;
 3. as approving departures from details furnished by the Engineer, except as otherwise provided herein.
- B. The Contractor remains responsible for details and accuracy, for coordinating the work with all other associated work and trades, for selecting fabrication processes, for techniques of assembly, and for performing work in a safe manner.
- C. If the shop drawings, data or samples as submitted describe variations and show a departure from the Contract requirements which Engineer finds to be in the interest of the Owner and to be so minor as not to involve a change in Contract Price or Contract Time, the Engineer may return the reviewed drawings without noting an exception.
- D. Submittals will be returned to the Contractor under one of the following codes.

Code 1 - "APPROVED" is assigned when there are no notations or comments on the submittal. When returned under this code the Contractor may release the equipment and/or material for manufacture.

Code 2 - "APPROVED AS NOTED". This code is assigned when a confirmation of the notations and comments IS NOT required by the Contractor. The Contractor may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product.

Code 3 - "APPROVED AS NOTED/CONFIRM". This combination of codes is assigned when a confirmation of the notations and comments IS required by the Contractor. The Contractor may, at his own risk, release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product. This confirmation shall specifically address each omission and nonconforming item that was noted. Confirmation is to be received by

the Engineer within 14 calendar days of the date of the Engineer's transmittal requiring the confirmation.

Code 4 - "APPROVED AS NOTED/RESUBMIT". This combination of codes is assigned when notations and comments are extensive enough to require a resubmittal of the package. This resubmittal is to address all comments, omissions and non-conforming items that were noted. Resubmittal is to be received by the Engineer within 14 calendar days of the date of the Engineer's transmittal requiring the resubmittal.

Code 5 - "NOT APPROVED" is assigned when the submittal does not meet the intent of the Contract Documents. The Contractor must resubmit the entire package revised to bring the submittal into conformance. It may be necessary to resubmit using a different manufacturer/vendor to meet the Contract Documents.

Code 6 - "COMMENTS ATTACHED" is assigned where there are comments attached to the returned submittal which provide additional data to aid the Contractor.

Code 7 - "SUBMITTED FOR THE RECORD" is assigned when the contractor has submitted information for record purposes.

Codes 1 through 5 designate the status of the reviewed submittal with Code 6 showing there has been an attachment of additional data.

- E. Resubmittals will be handled in the same manner as first submittals. On resubmittals the Contractor shall identify all revisions made to the submittals, either in writing on the letter of transmittal or on the shop drawings by use of revision triangles or other similar methods. The resubmittal shall clearly respond to each comment made by the Engineer on the previous submission. Additionally, the Contractor shall direct specific attention to any revisions made other than the corrections requested by the Engineer on previous submissions.
- F. Partial submittals may not be reviewed. The Engineer will be the only judge as to the completeness of a submittal. Submittals not complete will be returned to the Contractor and will be considered "Not Approved" until resubmitted. The Engineer may at his option provide a list or mark the submittal directing the Contractor to the areas that are incomplete.
- G. Repetitive Review
 - 1. Shop drawings and other submittals will be reviewed no more than three times at the Owner's and Engineer's expense. All subsequent reviews will be performed at times convenient to the Owner and Engineer and at the Contractor's expense, based on the Owner's and Engineer's then prevailing

rates. The Contractor shall reimburse the Owner and Engineer for all such fees invoiced to the Owner by the Engineer as defined in Article GC-18 of the General Conditions. Submittals are required until approved.

2. Any need for more than one resubmission, or any other delay in obtaining Engineer's review of submittals, will not entitle Contractor to extension of the Contract Time.
- H. If the Contractor considers any correction indicated on the shop drawings to constitute a change to the Contract Documents, the Contractor shall give written notice thereof to the Engineer at least 7 working days prior to release for manufacture. If such notice is not received within 7 day the Contractor will not be eligible for a claim against the County for additional compensation.
- I. When the shop drawings have been completed to the satisfaction of the Engineer, the Contractor shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the Engineer.

1.7 DISTRIBUTION

- A. Distribute reproductions of approved shop drawings and copies of approved product data and samples, where required, to the job site file and elsewhere as directed by the Engineer. Number of copies shall be as directed by the Engineer but shall not exceed six.

1.8 MOCK UPS

- A. Mock Up units as specified in individual Sections, include but are not necessarily limited to, complete units of the standard of acceptance for that type of work to be used on the project. Remove at the completion of the work or when directed.

1.9 CONSTRUCTION VIDEO

- A. Requirements for job videos are provided in Article GC-37 of the General Conditions.

1.10 PROFESSIONAL ENGINEER (P.E.) CERTIFICATION FORM

- A. If specifically required in other related Sections, submit a P.E. Certification for each item required, in the form attached to this Section, completely filled in and stamped.

1.11 ADDITIONAL SUBMITTAL REQUIREMENTS

- A. Additional Contractor submission requirements are included in Article GC-14 of the General Conditions.

1.12 GENERAL PROCEDURES FOR SUBMITTALS

- A. Coordination of Submittal Times: Prepare and transmit each submittal sufficiently in advance of performing the related work or other applicable activities, or within the time specified in the individual work of other related Sections, so that the installation will not be delayed by processing times including disapproval and resubmittal (if required), coordination with other submittals, testing, purchasing, fabrication, delivery and similar sequenced activities. No extension of time will be authorized because of the Contractor's failure to transmit submittals sufficiently in advance of the Work.

+ + END OF SECTION + +

P.E. CERTIFICATION FORM

The undersigned hereby certifies that he/she is a Professional Engineer registered in the State
of New York and that he/she has been employed by

_____ to design
(Name of _____ of _____ Contractor)

(Insert P.E. Responsibilities)

in accordance with Section _____ for the

(Name of Project)

The undersigned further certifies that he/she has performed the design of the
_____,
(Name of Project)

that said design is in conformance with all applicable local, state and federal codes, rules, and regulations, and that his/her signature and P.E. stamp have been affixed to all calculations and drawings used in, and resulting from, the design.

The undersigned hereby agrees to make all original design drawings and calculations available to the

Nassau County Department of Public Works
(Insert Name of Owner)

or Owner's representative within seven days following written request therefor by the Owner.

P.E. Name

Contractor's Name

Signature

Signature

Address

Title

Address

Cedar Creek Ocean Outfall
Diffuser Modifications

01300-9

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SECTION 01311

CONSTRUCTION SCHEDULING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The work shall consist of preparing, submitting, and maintaining a computerized CPM (Critical Path Method) progress schedule using Primavera P6 software.
- B. The purpose of the computerized CPM progress schedule is to ensure timely completion of the contract and to establish a standard methodology for time adjustment analysis based on the principles of the Critical Path Method of Scheduling.
- C. For this specification, 'Engineer' means County authorized Construction Manager.
- D. The Contractor shall ensure that any and all computer files submitted to the Engineer are in a format that can be imported directly using Primavera P6 software, version 16.2 or later.
- E. The Contractor shall retain a CPM Consultant, approved by the Engineer, to assist in the development and preparation of the CPM schedule, and in subsequent schedule updating. The CPM Consultant shall have acceptable certifications such as AACE's Planning & Scheduling Professional (PSP), Project Management Institute's PMI-SP, or approved equal. The CPM Consultant is required to attend the Monthly Schedule Update Meetings. The Contractor is deemed to have included in the Bid price sufficient monies to pay all expenses required to develop the CPM Schedule and to guarantee its successful operation, implementation and maintenance.

1.2 DETAILS

- A. PRE CONSTRUCTION SCHEDULE MEETING
 - 1. The Engineer will schedule and conduct a Pre-construction Scheduling Meeting with the Contractor within ten (10) working days after the contract has been awarded. The requirements of this specification will be reviewed at this meeting. Additionally, the following topics will be discussed:
 - a. Specifics of any contract Time-Related Clauses.
 - b. The representation in the schedule of the Time Related work.
 - c. The calendar, activity coding, and resource definition requirements unique to and consistent with the contract.

- d. The Contractor's schedule methodology employed, proposed work sequence and any proposed deviations of sequences from the contract plans.
- e. The factors that the Contractor determines to control the completion of the project and any milestone completions contained therein.
- f. Narrative content for Initial Baseline and Monthly Updates.
- g. Schedule submission protocol for Initial Baseline and Monthly Updates.
- 2. The Contractors attendance at the Pre-construction Scheduling Meeting is mandatory. No field work will be allowed, with the exception of set up of the field office, until this meeting is held.

B. INITIAL BASELINE CPM CONSTRUCTION SCHEDULE

- 1. Within sixty (60) work days following the Notice to Proceed, the Contractor shall prepare and submit to the Engineer the Initial Baseline CPM Construction Schedule for the entire project. This submission shall include the electronic Schedule file and paper reports as required and approved by the Engineer.
- 2. The Initial Baseline Schedule must be cost and resource loaded and shall represent the Contractor's plan to construct the project. This schedule shall include all work and activities necessary to complete the project including but not limited to activities for the preparation, submittal, review, approval, fabrication, and delivery of all procurement related items. The Initial Baseline CPM Construction Schedule must be set up to conform to the staging/phasing and other requirements defined in or required by the contract.
- 3. The Initial Baseline Schedule shall meet all interim milestone dates and shall not extend beyond the contract completion date.

C. SCHEDULE REQUIREMENTS

- 1. The Contractors Initial Baseline CPM Construction Schedule shall meet the following requirements:
 - a. CPM ACTIVITY NETWORK FORMAT - The schedule network shall use the Precedence Diagramming Method.
 - b. PROJECT DEFINITIONS - The following project specific properties within the schedule shall be defined:
 - 1) CALENDAR - All calendars created shall encompass and account for the total duration of the contract time period. The standard calendar shall be 8-hour days, five days per week and shall account for holidays and non-working days as defined in the contract documents. Additional calendars shall be created and included as required for:
 - a) Work week (5 or 6 day). (When or if the contractor elects to utilize a 6-day work week he shall be responsible for the county's overtime costs as applicable by the contract requirements)
 - b) Seasonal restrictions (asphalt, landscape, etc.).

- c) Concrete curing/calendar days.
- d) Any project specifics as required by the Engineer.
- e) Expected and contemplated weather conditions shall be accounted for in the schedule and described in the narrative.
- 2) **ACTIVITY CODE** - As a minimum following activity codes shall be established:
 - a) **Responsibility** - The party responsible for each activity. Only one party can be responsible for an activity. Include Values for "Nassau County Department of Public Works (NC)", "Prime Contractor" and third parties to the contract as appropriate (utilities, etc).
 - b) **Phase** - Phasing consistent with Contract plans where each activity is performed; Include Values for "None", and "Project Wide".
 - c) **Location** - Location of activity work by Stationing; Include Value for "None", and "Project Wide".
 - d) **Type** - The type of work for each activity; Include a Value for "Administrative"
 - e) **Added Work** - Work added to the Contract and incorporated into the schedule with the Engineers Approval.
 - f) **As Required by Project** - Any coding unique to or as required by the Engineer to facilitate the use and analysis of the Schedule. This coding shall be established in consultation with the Engineer at the Pre-construction Scheduling Meeting.
- 3) **RESOURCES** - The Resource Dictionary shall be established as required by the Engineer. The Resource Dictionary shall be limited to Labor and Equipment. Labor may be represented by work crews. The composition of each crew must be detailed and included as an appendix to the Narrative Report. Sub-Contractors shall be represented as a labor crew(s).
- 4) **COST LOADING** - Basis of cost loading will be the approved Schedule of Values.
- 5) **ACTIVITY DATA**
 - a) **ACTIVITY IDENTIFICATION** - Each activity shall have a unique identifier. The identifier may be alpha-numeric, but at a minimum must be a unique number.
 - b) **ACTIVITY DESCRIPTION** - Each activity shall be unambiguously described. Descriptions such as "construct 30% of Y" are unacceptable. Activities shall be discrete to the extent necessary to accurately schedule the work.
 - c) **ACTIVITY DURATION** - Durations of individual work activities shall not exceed twenty (20) working days. The minimum activity duration increment is one full day. Durations of individual shop drawing review activities may exceed fifteen working days and shall be consistent with Contract

Requirements. Exceptions to this will be reviewed by the Engineer on an activity-by-activity basis. If requested by the Engineer, production rates or other supporting information shall be supplied justifying the reasonableness of any given activity time duration. A Method Statement including the labor, equipment, production rates and any additional information, required to achieve a given activity shall be supplied within 5 working days when requested by the Engineer.

- d) **ACTIVITY RELATIONSHIPS** - Activity relationships shall be finish-to-start with no lags unless directed otherwise by the Engineer. Contractor requests for exemptions will be made on a case by case basis. Each activity with the exception of the required “Project Notice To Proceed” and “Completion” activities shall have a predecessor and a successor activity relationship.
 - e) **ACTIVITY START and FINISH DATES** - The earliest start date, earliest finish date, latest start date, and latest finish date shall be calculated for each activity.
 - f) **ACTIVITY TOTAL FLOAT** - The total float shall be calculated for each activity. Total float is the full amount of time by which the start on an activity may be delayed without causing the project to last longer.
 - g) **ACTIVITY CALENDARS** - The appropriate calendar assignment shall be made to each activity
 - h) **ACTIVITY CODES** - Coding shall be assigned to each activity from the defined activity dictionary. Each code shall have a value assigned in a given activity.
 - i) **ACTIVITY CONSTRAINTS** - The start or completion of any activity shall not be constrained. Exceptions to this must receive prior approval in writing by the Engineer. A “Must-Finish-By” Date for the overall project is a constraint and must be pre-approved by the Engineer.
 - j) **ACTIVITY RESOURCES** - The schedule shall be “Resource” loaded as required by the Engineer. The resources required to accomplish each activity shall be assigned to that activity from the ‘Resource Dictionary’
- 6) **REQUIRED ACTIVITIES** - The following activities shall be incorporated into the Schedule:

<u>Activity ID</u>	<u>Activity Description</u>	<u>Activity Type</u>	<u>Logic Relationship</u>
000010	Contract “Notice to Proceed”	Start Milestone	No Predecessors to this First Schedule Activity
999999	Completion	Finish Milestone	No Successors to this Last Schedule Activity

- 7) DATA DATE - The Data Date and Project Start Date in the Initial Baseline Schedule shall be the NOTICE TO PROCEED DATE. The Data Date for each Monthly Update shall be the first work day of the month.

D. REVIEW AND ACCEPTANCE OF THE INITIAL BASELINE CPM CONSTRUCTION SCHEDULE

1. The Contractor shall submit to the Engineer the following items to facilitate review of the Initial Baseline CPM Construction Schedule:
 - a. Narrative - A statement explaining the general sequence of work in the Contractor's schedule, a detailed definition of the work on the Critical Path, a statement regarding the meeting of any Time Restrictive Clause dates, and the explanation of any other ambiguities in the schedule.
2. The following Activity Reports generated from the software shall be provided or as required and approved by the Engineer:
 - a. Critical Path Activity Sort - The activities that comprise the projects Critical Path. The list shall start with the first activity in the path and then ascend by Early Start date to the final activity in the path.
 - b. Time Related Activity Sort - For the activities necessary to complete the work within each specific Time Frame provision in the contract, shall be listed. The list shall start with the first milestone activity and then ascend by Early Start date to the final milestone activity in the network comprising each Time Frame period. Include a Critical Path activity sort for each specific Time Frame in the contract.
 - c. Constraint Activity Sort - Listing of Constrained Activities and type of constraint.
 - d. Listing of Calendars and Activity Coding incorporated in the Schedule.
3. Electronic copies of the Initial CPM Construction Schedule shall be provided in format approved by the Engineer.
4. The Engineer will review the Initial Baseline CPM Construction Schedule and forward any comments, revisions, or requests to the Contractor. Within ten (10) work days of the Engineer's reply, the Contractor shall make adjustment to the Initial Baseline CPM Construction Schedule in accordance with the Engineer's comments and resubmit copies for review consistent with the above directives.
5. Upon final revisions, the Contractor shall submit electronic file copies of the Initial Baseline CPM Construction Schedule to the Engineer. A sort of activities scheduled to start (ES) & finish (EF) in the next update period shall be included. The Logic Diagram shall be submitted as directed by the Engineer. The final submission shall be submitted for approval within five (5) work days of the Contractor's receipt of the final comments by the Engineer.
6. Approval of the Initial Baseline CPM Construction Schedule by the Engineer shall not be construed to imply approval of any particular method or sequence of construction or to relieve the Contractor of providing sufficient materials,

equipment, and labor to guarantee completion of the project in accordance with the contract proposal, plans, and specifications. Approval shall not be construed to modify or amend the completion date. Completion dates can only be modified or amended by standard contractual means.

7. Failure to include in the Initial Baseline CPM Construction Schedule any element of work required for the performance of the contract shall not excuse the Contractor from completing all work required within the completion date(s) specified in the contract.

E. SCHEDULE UPDATES

1. MONTHLY PROGRESS UPDATES

The Contractor shall update the schedule monthly. The schedule shall be updated to include all work and progress up to and including the last working day of the month. This will establish the "Data Date". The Monthly update shall detail progress based on actual dates of activities started and completed, the percent of work completed to date on each activity started but not yet completed and the status of procurement of critical materials. The updated schedule data shall be submitted in an electronic file format acceptable to the Engineer.

2. A Narrative Report is required for each update and shall provide the following information:
 - a. Contractors transmittal letter to the Engineer stating the update period and schedule "Data Date".
 - b. Work started, completed and ongoing during the update period by activity with "Actual Dates".
 - c. Description of current Critical Path and any change from previous Critical Path.
 - d. Any activities added or deleted and any proposed changes in Activity Logic (Engineer's approval in writing is required).
 - e. Current Delays or Advancements:
 - 1) Delayed or Advanced Activities.
 - 2) Proposed corrective action and schedule adjustments to address any Delays.
 - 3) Impact of Delays or Advancement on other activities (duration, ES,EF,LS,LF), milestone and completion dates.
 - 4) Impact of Delays or Advancement on the Critical Path.
 - f. Outstanding Items that effect the schedule and status thereof (including but not limited to):
 - 1) Permits.
 - 2) Shop Drawings.
 - 3) Change Orders.
 - 4) Reviews of submittals.
 - 5) Approvals.
 - 6) Fabrication and Delivery.
 - g. Scheduled Completion Date Status:

- 1) Contract Completion.
 - 2) Interim Milestones / Time Frame if any.
3. The following Activity Reports generated from the Software shall be provided:
 - a. Current Critical Path Activity Sort.
 - b. Near Critical Activities Sort.
 - c. Report of Activities scheduled to start (ES) & finish (EF) in the next Monthly update period.
 - d. Any other "Report" as directed by the Engineer and/or as discussed in the pre-construction scheduling meeting.
4. The Monthly Progress Updates shall be submitted to the Engineer within five (5) work days of the "Data Date". The Engineer shall prepare a written response within five (5) work days of receipt of the Monthly Update approving, approving with comments, or returning for resubmission within five (5) work days.
5. If the Contractor fails to comply with the Monthly Progress Update submission requirements the Commissioner reserves the right to withhold any or all contract payments.
6. Monthly Schedule Meetings and Reports
 - a. Monthly, on a date established by the Engineer prior to the Data Date, a CPM Progress Meeting will be held, at which time the schedule update will be reviewed. The meeting shall be attended by the Engineer and representative(s) of the Contractor including the scheduling consultant. The Contractor representative(s) at the meetings shall have the competence and authority to make any necessary decisions and their statement shall commit the Contractor to the agreed procedures, sequencing of Work, coordination and time schedules.
 - b. Prior to the meeting, the CPM scheduling consultant shall obtain, through any required means including Site meetings, the necessary information to update the CPM schedule to reflect progress to date and to update/revise the schedule for the balance of the Project. The updated schedule and draft narrative report shall be furnished to the Engineer at least 48 hours prior to the meeting and be distributed by the Contractor in hard copy at the meeting for review. To update the CPM schedule, the Contractor shall:
 - 1) Enter actual start and completion dates for those Activities started and/or completed during the previous reporting period.
 - 2) For Activities in progress, indicate the Remaining Duration correlating to an accurate forecasted completion date and physical percentage complete to date (Percent Complete is to reflect the actual quantity of Work completed, and is separate from any actual or Remaining Duration calculation). Review, and revise as necessary, the network logic for the Remaining Duration of the Work from the update to the estimated completion date.

- 3) For Activities not yet started, review, and revise as required, the necessary Logic, the Durations of Work and the estimated start and completion dates.
 - 4) Enter, for each applicable Activity, actual installed quantities information.
- a. The total Duration to be initially added to any schedule update reflecting the Change Order Activities from identification to the approval of any specific change order shall be in approved by the Engineer and shall be incorporated into the monthly schedule update following the identification of the changed in Work. The forecasted construction Activities shall be logically tied to the appropriate predecessor and successor base Contract Activities and contain all of the required Logic, Duration, Coding and Resource/Cost Loading specified for the detailed CPM schedule activities.
 - b. In the event the Contractor begins performance in the field of Extra Work during the update period, the monthly progress schedule update shall reflect the actual start date of the Work, and any predecessor Logic ties or restraints shall be broken in order to accurately forecast completion of the identified Extra Work Activity. This will allow for accurate forecasting of the successor Work Activities and completion Milestones.
 - c. Default progress data provided from the scheduling system is not be allowed. Actual start and finish dates and Remaining Durations of Activities shall not be automatically updated by default mechanisms that may be included in CPM scheduling software systems. Actual start and finish dates on the CPM schedule shall match those dates provided from the Contractor's Daily Quality Control Reports. Failure of the Contractor to document the actual start and finish dates on the Contractor Daily Quality Control Report for every in-progress or completed Activity and ensure that the data contained on the Contractor Daily Quality Control Reports is the sole basis for schedule updating shall result in the disapproval of the Contractor's submittal.
 - d. Activities that have reported progress without predecessor Activities being completed (out-of-sequence progress) will not be allowed except on a case- by-case basis with the approval of the Engineer. A written explanation for each instance shall be included in the monthly submittal.
 - e. The Contractor shall not constrain the schedule with artificial Logic ties and/or constraint dates and/or any other scheduling techniques that may distort the Activity Float and Total Float associated with the critical path Activities and the schedule in general.

F. TOTAL FLOAT OWNERSHIP

Total Float belongs to the contract and shall not be considered as available for the exclusive use or benefit of either the County or the Contractor. Total Float is the number of days an activity may be delayed without extending the completion of either the project or an interim milestone. Float is available on a first-come, first-

served basis to all identified “Responsible” parties in the schedule.

G. FLOAT MANIPULATION NOT PERMITTED

The Schedule shall not sequester float through such strategies as calendar manipulation, resource/labor manipulation or the extension of activity durations to fill up available float time. The Initial Baseline CPM Construction Schedule shall not attribute negative float to any activity.

H. CHANGES TO THE SCHEDULE

The Initial Baseline CPM Construction Schedule shall accurately reflect the manner in which the Contractor intends to proceed with the project. Changes to the schedule (the addition or deletion of activities, logic changes, and duration changes) shall be submitted in writing to the Engineer for approval and inclusion in the next Monthly Progress Update. The process of comparing the Schedule Update to Baseline shall be followed throughout the contract. Revision to any contract milestones, or contractually mandated schedule provisions will not be permitted without written authorization from the Engineer.

I. CRITICAL ACTIVITIES AND BASIS FOR TIME ADJUSTMENTS

The measure for Time Adjustments in the schedule shall be based on the criticality, and responsibility of the delay or advancement. Criticality is defined as the presence of the delayed or advanced activity on the projects Critical Path. The Critical Path is defined to be the longest continuous chain of activities through the schedule network that establishes the minimum overall duration in the absence of constraints in the program software. Time adjustment does not mean an extension of time for this contract.

J. CHANGES TO THE CONTRACT

In the event a notice of a change to the contract is received the Contractor shall notify the Engineer in writing within 10 (ten) calendar days of the effect of such change to the schedule. Change to the contract includes, but is not limited to, extra work, change orders, work suspensions, changed condition, Value Engineering Change Proposal, etc. The effect of the change to the contract on the projects Critical Path shall be stated. Any proposed revisions to the Schedule to incorporate the change to the contract shall be stated. No changes shall be made to the Schedule without prior written approval of the Engineer. The approved changes shall be incorporated in the next Monthly Progress Update.

1.3 TIME IMPACT ANALYSIS

- A. This analysis will be performed by the Engineer (CM’s scheduler) based on schedule updates as accepted in monthly schedule updates.
- B. Events, actions, and progress that cause delays or gains to the Project Schedule will be analyzed solely by the "Contemporaneous Period Analysis" method. The

Contemporaneous Period Analysis evaluates delays or gains in the period in which it occurred. The analysis period for the purpose of this Specification shall be the period covered in each Monthly update to the schedule.

- C. Impact of delay will be evaluated at the completion of the project. However, an interim extension of time for payment purposes only may be granted by the Commissioner at his or her sole discretion at the end of contractual completion date.

1.4 RECOVERY SCHEDULES

A. General Provisions for Recovery Schedules:

1. When updated Progress Schedule indicates and the Engineer determines that the ability to comply with the Contract Times falls behind schedule due to delay attributed to the CONTRACTOR, the Contractor shall prepare and submit a Progress Schedule demonstrating responsible Contractor's plan to accelerate related work to achieve compliance with the Contract Times ("recovery schedule") for Engineer's acceptance.
2. Submit recovery schedule within 10 workdays after submittal of updated Progress Schedule where need for recovery schedule is indicated or include in next update as directed by the Engineer.

B. Implementation of Recovery Schedule:

1. At no additional cost to OWNER, do one or more of the following: furnish additional labor, provide additional construction equipment, provide suitable materials, employ additional work shifts, expedite procurement of materials and equipment to be incorporated into the Work, and other measures necessary to complete the Work within the Contract Times.
2. Item 1 above is also applicable when the Contractor is required to accelerate their Work to recover lost time.
3. Upon acceptance of recovery schedule by Engineer, incorporate recovery schedule into the next Progress Schedule update.

C. Lack of Action:

1. The Contractor's refusal, failure, or neglect to take appropriate recovery action, or the Contractor's refusal to submit a recovery schedule and take appropriate recovery action, shall constitute reasonable evidence that CONTRACTOR is not prosecuting the Work or separable part thereof with the diligence that will ensure completion within the Contract Times. Such lack of action shall constitute sufficient basis for OWNER to exercise remedies available to OWNER under the Contract Documents.

1.5 METHOD OF MEASUREMENT

- A. The CPM (Critical Path Method) Progress Schedule will be measured for payment on a Lump Sum Basis.

1.6 BASIS OF PAYMENT

- A. The lump sum price bid for the Critical Path Method Scheduling system shall include the cost of preparation and submission of the Initial Baseline Schedule and the preparation and submission of the monthly updates. Payment will be made as follows:
 - 1. Upon submission of the Initial Baseline CPM Construction Schedule 20%
 - 2. Upon acceptance of the Baseline CPM Construction Schedule 20%
 - 3. The balance will be paid in equal monthly payments distributed 60% over the contract. These payments will be contingent on the submission of acceptable monthly payments.
 - 4. No additional payment over and above the lump sum price bid will be made for addition or deletion of work, delays, or any other reason whatsoever.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

+ + END OF SECTION + +

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SECTION 01355

HAZARDOUS MATERIALS CONTROL

PART 1 – GENERAL

1.1 DESCRIPTION

A. Scope

1. This section describes the minimum health, safety, and emergency response requirements for the activities at the site. Site activities may involve worker exposure to potentially hazardous materials.
2. Contractor shall implement health and safety criteria and practices sufficient to protect onsite personnel, the public, and the environment from physical and chemical hazards particular to each site.
3. The Contractor shall furnish all labor, materials, equipment and incidentals to remediate any hazardous materials discovered during the performance of the work in this Contract.

B. References: Where conflicts arise between requirements of the regulatory requirements listed below, the most restrictive of the requirements shall be followed.

1. 29 CFR 1910 OSHA Standards; General Industry
2. 29 CFR 1910.120(q) OSHA Standards; Hazardous Waste Operations and Emergency Response
3. 29 CFR 1926 OSHA Standards; Construction Industry
4. DOT Standards and Regulations 49 CFR 171 Hazardous Materials Regulations; General Information, Regulations, and Definitions
5. DOT Standards and Regulations 49 CFR 172 Hazardous Materials Tables and Military Standards
6. Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, ACGIH
7. Guide to Occupational Exposure Values, ACGIH
8. US Coast Guard 46 CFR Chapter 1, Subchapter C - Uninspected Vessels

C. Related Sections

1. Section 01356, Safe and Healthful Working Conditions.
2. Section 02050, Demolition, Removals, and Modifications.

1.2 REMEDIAL ACTION FOR UNFORESEEN HAZARDOUS MATERIAL

- ###### A.
- When remedial action is necessary for unforeseen hazardous materials, the Design Engineer will submit the scope of work in writing to the Contractor. The Contractor shall then obtain proposals for the work, including prices, from three separate County approved certified hazardous material remediation specialists,

and submit them in writing to the Engineer within ten (10) consecutive calendar days of receiving the scope of work. The Engineer may select one proposal and direct the Contractor to engage the selected remediation specialist as a Subcontractor. Remediation work shall not commence until the Contractor receives written notice from the Engineer to proceed with the work. All remediation work shall be performed by the certified remediation specialist.

- B. Some of the remediation work may be critical to maintaining construction schedules. When this occurs, a time of completion shall be indicated in the scope of work submitted to the Contractor by the Engineer, and the work shall be subject to liquidated damages as set forth in the Agreement, Article XIV, "Liquidated Damages."
- C. Disposal of wastes generated by remediation work will be based on the results of the testing performed by the Contractor. Disposal of remediated hazardous material must be at a site approved by the County and applicable state agency to accept such waste. The Contractor shall notify the Engineer at least fourteen (14) days prior to removal of the containers of hazardous material to allow for inspection of the containers and the hazardous waste manifest.
- D. The Contractor shall submit written evidence that the receiving waste treatment, storage, or disposal facility to receive such waste is permitted by the EPA, DEC and State or local regulatory agencies. The Contractor shall coordinate with the PMJV Site Safety Officer, who represents the County, and is authorized to sign hazardous waste manifests in accordance with the Resource Conservation and Recovery Act EPA regulations. The Contractor shall also submit copies of the complete manifest, signed by the PMJV Site Safety Officer, and dated by the initial transporter, in accordance with Federal and State requirements. Completed and signed manifests from the treatment or disposal facility shall be provided to the PMJV Site Safety Officer within seven (7) days of disposal.

PART 2 – PRODUCTS

2.1 HEALTH AND SAFETY PLAN

- A. The Contractor shall have a site-specific Health and Safety Plan (HASP) prepared, prior to the start of any construction. The HASP shall be available to workers on site and be submitted to the Engineer, PMJV Site Safety Officer, and the County at least two weeks before the beginning of any field work. Copies of the plan shall be provided to the Contractors' insurers and their risk managers, if any, by the Contractor.
 - 1. The Contractor will abide by the work specific Health and Safety requirements as directed by the County.
 - 2. The provisions of the site HASP in no way relieves the Contractor of his primary obligation to provide for the safety of his employees and to ensure

that all operations under this Contract are carried to protect persons and property on the site and in the surrounding work area.

- B. These minimum health and safety requirements are based on the potential for physical, biological, and chemical hazards associated with the work activities, including the potential exposure to hazardous materials that may be present. The HASP shall be prepared by a Board of Safety Professionals Certified Safety Professional (CSP) who is qualified by training and experienced to perform this work. The CSP should be familiar with projects working on or over the water in an open ocean environment. The HASP shall be submitted to the Engineer, PMJV Site Safety Officer, and the County for review. The purpose of the HASP is to establish site-specific health and safety requirements for protecting the health and safety of the Contractor, subcontractor personnel, and visitors during all activities conducted on-site.
1. Construction activities which need to be addressed in the HASP include, but are not limited to:
 - a. Soil excavation and grading.
 - b. Demolition.
 - c. Paving.
 - d. Installation of equipment.
 - e. Working on or over the water in an open ocean environment, per 29 CFR1926.106.
 2. The HASP shall include as a minimum the following items tabulated in Paragraph 2.1.E through Paragraph 2.1.S, below.
- C. The Contractor shall identify an individual who shall serve as the Site Safety Representative for this project. The individual shall:
1. Have a working knowledge of pertinent federal, state, and local health and safety regulations, program development and implementation, and air monitoring techniques.
 2. Be certified as having completed training in first aid and CPR by a recognized, approved organization, such as the American Red Cross.
 3. Be continuously onsite during all operations covered by this Contract.
 4. Be familiar with the Site Health and Safety Plan and its requirements and be responsible for the Plan's implementation.
 5. The Site Safety Representative shall have PADI (Professional Association of Diving Instructors) Open Water Diver Certification.
 6. The Site Safety Officer may designate an alternate to assist him/her, provided the alternate meets all the above requirements. The Contractor shall submit the name, qualifications (education summary and documentation), and work experience of the Site Safety Officer, and any alternates to the Engineer and PMJV Site Safety Officer, prior to commencement of work at the site.
- D. Personnel Qualifications - Certified Safety Professional (CSP): The Contractor

shall identify an individual who shall serve as the CSP for this project. This individual shall:

1. Have a minimum of five (5) years' professional safety management experience in the types of construction and conditions expected to be encountered on the site.
2. Be familiar with all applicable OSHA, USEPA, and NYSDEC standards.
3. The CSP shall have PADI (Professional Association of Diving Instructors) Open Water Diver Certification.

E. Standards and Regulations: The HASP shall be developed in accordance with the Occupational Safety and Health Administration (OSHA) Standards and Regulations contained in Title 29, Code of Federal Regulations, Parts 1910 and 1926 (29 CFR 1910 and 1926) and all pertinent laws, rules, and regulations existing at the time of the work, including, but not limited to:

1. Hazardous Waste Management System, Title 40 CFR 261-264.
2. OSHA Standard, Hazardous Waste Operations and Emergency Response, Title 29 CFR 1910.120(q).
3. OSHA Standards, Asbestos Regulations, Title 29 1910.1001.
4. OSHA Standards, Subpart Z, Toxic and Hazardous Substance, Title 29 CFR 1926. 1100.
5. OSHA Standards, Title X, Lead in Construction, 1926.62.
6. EPA National Emission Standard for Hazardous Air Pollutants, National Emission Standard for Asbestos, Title 40 CFR, Part 51.
7. Subpart M, OSHA Standards, Hazard Communication, Title 29 CFR 1926.59.
8. OSHA Standards, Access to Employee Exposure and Medical Records, Title 29 CFR 1910.1020.
9. OSHA Standards, Personal Protective Equipment, Title 29 CFR 1910.132.
10. OSHA Standards, Record Keeping, Title 29 CFR 1904.
11. OSHA Standards, Respiratory Protection, Title 29 CFR 1910.134.
12. The American National Standard Institute (ANSI) Practices for Respiratory Protection, ANSI Z88.2.
13. OSHA Standards, Ventilation, Title 29 CFR 1910.94.
14. ANSI Fundamentals Governing the Design and Operation of Local Exhaust System, ANSI Z9 2.
15. Hazardous Waste Management System, Title 6 NYCRR Parts 370-373.
16. Asbestos Safety Program Requirements, NYCRR Chapter 11, Title 10, Part 73.
17. Industrial Code Rule 56, NYCRR Title 12, Part 56.
18. Transportation Act, Title 49 CFR Parts 106, 107, 171-179.
19. New York State Solid Waste Hauling and Disposal Regulations, NYCRR Title 6, Parts 360 and 364.
20. New York State Department of Labor Part 23 Protection in Construction, Demolition and Excavation Operations.
21. US Coast Guard 46 CFR Chapter 1, Subchapter C, Uninspected Vessels
22. US Coast Guard 33 CFR § 83.30 - Vessels anchored, aground and moored

barges (Rule 30).

23. OSHA 1926.106 Working Over or Near Water.

24. OSHA 1926 Subpart Y – Diving.

F. Identification of Key Health and Safety Personnel and Alternates:

1. List key personnel and alternates for site health and safety on a project responsibility chart, which includes phone numbers.
2. Identify roles and responsibilities of key personnel.

G. Project Task/Operation Health and Safety Risk Analysis (Job Safety Analysis/JHA):

1. Identify and describe the project tasks.
2. Provide a hazard assessment of each project task, which shall include descriptions of potential chemical, biological, and physical hazards associated with the performance of the activity. Attention to health and safety hazards and required PPE (Tyvek and insect-repellant spray) related to insects, i.e., ticks, flies, and mosquitos, shall be addressed.
3. Provide a description of health and safety mitigative actions for each project task which shall include, but not be limited to, first, administrative controls, second, engineering controls, third, safe work practice controls and lastly, personal protective equipment.

H. Personnel Training Requirements:

1. Confirm that personnel are adequately trained to conduct their job responsibilities and handle the specific hazardous situations they may encounter during the project in accordance with OSHA and US Coast Guard regulations.
2. Provide, as required, certification of personnel training and First Aid/Cardio-Pulmonary Resuscitation (CPR).
3. Establish procedures and training for Hazard Communication Program in accordance with 29 CFR 1926.59 .
4. Provide information regarding training and experience of the person(s) who will oversee excavation activities be responsible as the project's OSHA defined Competent Person(s).
5. Provide copies of training cards demonstrating that employees have completed the OSHA 10 Hour Construction Safety Course.

I. Personnel Protective Equipment (PPE) and PPE Reassessment Program: Describe the protective clothing and equipment to be worn by personnel during task-specific operations of the project.

1. Describe the PPE reassessment program for the upgrading/downgrading of PPE levels associated with the task-specific operations of the project, including, but not limited to, working on or over the water in an open ocean environment per OSHA Regulations Working Over or Near Water (29 CFR 1926.106) and Subpart Y – Diving (29 CFR 1926).

2. Provide a written respiratory protection program and reassessment program, which shall be implemented during task-specific operations. The written program must include the procedure for proper selection and use of respirators, instructions on proper cleaning, storage, and inspection of respirators.
- J. Medical Surveillance:
1. Describe the program for medical monitoring for each task-specific activity.
 2. Confirm and provide documentation, as applicable, that all project personnel are currently under a medical surveillance program.
 3. Provide documentation, as applicable, that all project personnel have respiratory clearance.
- K. Site Control Measures:
1. Define site control methods and site communications and include a site map delineating the control areas, if appropriate.
 2. Delineate the work area, including an exclusion zone (EZ), contamination reduction zone (CRZ) and the support zone, and describe the activities allowed in each zone.
- L. Identify engineering controls (e.g., tent enclosure, wetting of surfaces) to control generation of dusts when conducting dust-generating activities indoors (e.g., demolition of concrete).
- M. Decontamination Program:
1. Establish decontamination procedures for personnel and equipment.
 2. The decontamination plan shall include provisions for hand wash facilities, and lunch/break areas, and a description of proper housekeeping practices.
- N. Emergency Response/Contingency Plan:
1. Describe instruction and procedures for evacuation of personnel.
 2. Describe instructions and procedures for methods of reporting fires. If the Contractor will be conducting activities such as welding, hot cutting or burning, grinding, working with flammable materials such as paints, glues, solvents, or any activity that could cause sparks, the Contractor shall provide a minimum of two Class ABC fire extinguishers (minimum 10 pounds) in the work area. The Contractor shall obtain an off-site "Hot Works Permit" from the PMJV Site Safety Officer and submit copies to him upon daily verification of completion of hot work activities.
 3. Describe instructions and procedures for medical emergencies, including emergency notification and response procedures and a description of the route to the hospital.
 4. The medical emergency contingency plan shall include provisions for a minimum of two first aid kits (minimum 24-unit industrial first aid kit).
 5. Describe procedures addressing emergencies and equipment failures and

barrier failures during work activities.

O. Surveillance Methods:

1. Describe safety surveillance methods.
2. Provide schedules of both walk-through surveys and in-depth safety audits to be performed on site.

P. Safety Inspection Sheets:

1. Provide safety inspection checklists to be used on a daily basis in evaluation the site work and methods.

Q. Safety Evacuation Drill: A quarterly evacuation drill shall be held in coordination with the Plant alarm signal under the control of the Plant Chief. Conducting the safety drill shall be coordinated during regular scheduled work hours and timed to minimize disruption of major contract work. Upon evacuation, the Contractor shall immediately notify the PMJV Site Safety Officer that all personnel have evacuated.

R. While being transported by water, the vessel operator will follow the USCG-mandated 46 CFR 26.03-1 safety orientation. Before going underway on any uninspected passenger vessel, the operator or master must ensure that suitable public announcements, instructive placards, or both, are provided in a manner that affords all passengers the opportunity to become acquainted with stowage locations of life preservers, proper method of donning and adjusting life preservers of the type(s) carried on the vessel, the type and location of all lifesaving devices carried on the vessel; and the location and contents of the Emergency Checkoff List required by § 26.03-2.

S. Accident Prevention: An Accident Prevention Plan and description of work-phase safety plan shall be developed and written by the CSP. Each phase of the Accident Prevention Plan shall include a description of the work activity, probable hazards related to the work, and positive precautionary measures to be taken to safeguard against and reduce or eliminate each particular hazard. In the event of an accident/injury, the Contractor shall immediately notify the PMJV Site Safety Officer. Within two working days of any accident or incident, the Contractor shall complete and submit to the PMJV Site Safety Officer an Accident (Incident) Report.

PART 3 – EXECUTION

3.1 HAZARDOUS MATERIALS

A. There may be materials present at the project site that may pose chemical hazards to site workers during construction activities.

- B. The Contractor shall be responsible for identifying suspect hazardous materials as they are encountered. Indication of the presence of hazardous materials, including odorous or stained soils and liquids, shall be immediately reported to the Engineer and PMJV Site Safety Officer. If it is determined that the presence of hazardous material is not a threat to the health and safety of Nassau County, Veolia, or to Contractor personnel, the Contractor shall continue planned work activities. Otherwise, the Contractor will be directed to take additional health and safety precautions as appropriate.
- C. All non-disposable equipment that has been in contact with contaminated soils, lead-containing debris, or other hazardous materials, shall be cleaned prior to leaving the site. Equipment decontamination shall be performed in an area to be directed by the Engineer. The Contractor shall be responsible for containing all procedures within the perimeter of the designated decontamination area.
 - 1. The solid materials and rinse water collected as the result of the decontamination procedures shall be stored in appropriate containers on-site prior to disposal. Disposal of the wastes will be based on the results for testing performed by the Contractor and will be classified as non-hazardous or hazardous waste.
 - 2. Rinse water that does not meet the criteria for discharge to a POTW, shall be disposed of at an appropriate treatment and/or disposal facility.

3.2 MEDICAL SURVEILLANCE

- A. Physical examinations for personnel working onsite shall be provided prior to project start-up. The examinations shall address the chemical and physical hazards to which the employees will be exposed. The medical examination results shall be evaluated by a physician practicing occupational medicine to determine that the individual is medically qualified to wear a respirator and is physically fit for the work to be performed. The physician must certify that no physical condition or disease could be aggravated by exposure to the identified hazards. The results of the medical surveillance program shall be provided to the Engineer upon request.

3.3 PERSONNEL TRAINING

- A. Personnel employed to sample tank residuals, perform hazardous materials remediation, and supervisors shall be trained and thoroughly familiar with the safety precautions, procedures, and equipment required for controlling the potential hazards associated with this project. This training shall be documented in detail and recorded in the project's records.

3.4 FIRST AID AND EMERGENCY RESPONSE EQUIPMENT AND PROCEDURES

- A. The Contractor shall provide for appropriate emergency first aid equipment

(including ANSI-approved eye wash stations, a portable stretcher/Stokes basket, and an industrial-type first aid kit) suitable for treatment of exposure to site physical and chemical hazards. Additionally, two ABC-rated fire extinguishers shall be maintained on site as well absorbent material of sufficient quantity to as collect any spill which might occur during this project. A listing of emergency phone numbers and of contact for fire, hospital, police, ambulance, US Coast Guard and other necessary contacts shall be posted at the Contractor's site. A route map detailing the directions to the nearest land hospital also shall be posted onsite and on the vessel (i.e., transport by vessel to the Wantagh Marine launching ramp pier.)

3.5 HEAT AND COLD STRESS

- A. The Contractor shall monitor all personnel for signs of heat or cold stress, as dictated by weather conditions. In addition, all field personnel shall be instructed to observe for symptoms of heat or cold stress in themselves and fellow workers and methods to control them. The Contractor shall adhere to guidelines provided in the Threshold Limit Values and Biological Exposure Indices published by the ACGIH for heat and cold extremes.

3.6 ILLUMINATION

- A. Work areas shall be illuminated to a minimum of 10 foot-candles. Lighting shall be sufficient to determine whether material spills have occurred.

3.7 ELECTRICAL SAFETY

- A. All electrical services must be grounded and cord and plug equipment shall be used with ground fault circuit interrupter (GFCI) protected outlets. Where applicable, portable lights shall be suitable for hazardous locations and shall be connected to extension cords equipped with connectors or switches approved for hazardous locations. Such equipment, when used, shall be inspected to ensure it will not be a source of ignition. All air monitoring instrumentation shall be rated as intrinsically safe for Class I, Division I, Group D atmospheres.

3.8 SITE CONTROL AND WORK ZONES

- A. Personnel not directly involved with this project shall not be permitted to enter the work zone. For purposes of this Contract, the "Work zone" and Contractor's staging areas shall be the areas as shown on the drawings. The initial minimum level of PPE shall be in accordance with these Specifications. The boundary of the work zone shall be demarcated and posted clearly by the Contractor.

3.9 COVID PROTECTION PLAN

- A. The Contractor shall provide a plan to protect employees and visitors from the hazards of COVID-19. The plan shall include daily checklists to confirm employees do not show symptoms of COVID-19, have not been exposed to others who have either tested positive or show symptoms, or have travelled outside of the local areas. The plan shall also address visitors who infrequently visit the Plant and how to track their information as well.

3.10 CONFINED SPACE ENTRY

- A. If any person is required to enter a tank, pipe or vault, or an excavation greater than 4 feet, it is considered a confined space entry. The medical surveillance shall ensure that the worker is capable of entering a confined space. Workers required to enter confined space shall have the specialized training required under 29 CFR 1926 Subpart AA - Confined Spaces in Construction.

3.11 EATING, DRINKING, SMOKING

- A. No eating, drinking, smoking, chewing of tobacco or gum, or other hand-to-mouth activities shall be permitted in any of the work areas during the course of this project.

3.12 IGNITION SOURCES

- A. Ignition sources (e.g., cigarette lighters, matches, or other flame producing items) not required for the completion of the project, shall not be permitted in the work zones. Before any work is done that might release vapors, work areas shall be barricaded and posted, and burning or other work shall be eliminated from the area where flammable vapors may be present or may travel. No work shall be done if the direction of the wind might carry vapors into areas where they might produce a hazardous condition, or when an electrical storm is threatening the site of work. Sparks caused by friction of electrostatic effects also may be a source of ignition in flammable atmospheres, especially at low humidity. Proper grounding of metal objects and/or electrical equipment, together with the use of sparkless tools and localized adjustment of humidity, may reduce this hazard.

3.13 BREAK AREA AND SUPPORT ACTIVITIES

- A. All eating, drinking, smoking, and break facilities, as well as the Contractor's equipment storage, parking, and office shall be located outside the work zones as determined by the Contractor's Site Safety Representative and approved by the PMJV Site Safety Officer.

3.14 SANITATION

- A. The Contractor shall ensure that all onsite personnel have ready access to soap

and clean water for washing and toilet facilities.

3.15 UNFORSEEN HAZARDS

- A. Should any unforeseen or site-specific safety-related threat, hazard, or condition become evident during the performance of work at this site, it shall be the Contractor's responsibility to bring such conditions to the attention of the Engineer both verbally and in writing as quickly as possible, for resolution. In the interim, the Contractor shall take prudent action to establish and maintain working conditions and to safeguard employees, the public, and the environment.

3.16 SILICA

- A. The plan shall address the hazards of silica in accordance with OSHA 29 CFR 1926.1153 - Respirable crystalline silica. Select controls according to a hierarchy that emphasizes engineering solutions (including elimination or substitution) first, followed by safe work practices, administrative controls, and finally personal protective equipment. Avoid selecting controls that may directly or indirectly introduce new hazards.

3.17 TERMINATION

- A. Any disregard for the provisions of these Specifications shall be deemed just and sufficient cause for termination of the Contractor or any Subcontractor without compromise or prejudice to the rights of the Contractor.

+ + END OF SECTION + +

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SECTION 01356

SAFE AND HEALTHFUL WORKING CONDITIONS

PART 1 – GENERAL

1.1 DESCRIPTION

- A. This section describes the requirements for safe and healthful working conditions.

1.2 RELATED SPECIFICATIONS

- A. Section 01355, Hazardous Materials Control

1.3 PAYMENT

- A. No separate payment for the item "Safe and Healthful Working Conditions" will be made. The costs of same will be included in the Base Bid.

1.4 DEFINITIONS

- A. Safety staff shall mean the safety professional and his safety representative(s) or the safety person.

1.5 SPECIAL CONDITIONS

- A. In prosecuting the work of this Contract, the Contractor shall provide working conditions on each operation that shall be as safe and healthful as the nature of that operation permits. The various operations connected with the work shall be so conducted that they will not be unsafe or injurious to health; and the Contractor shall comply with all regulations and published recommendations of the New York State Department of Labor and all provisions, regulations and recommendations issued pursuant to the Federal Occupational Safety and Health Act of 1970 and the Construction Safety Act of 1969, as amended, and with laws, rules, and regulations of other authorities having jurisdiction, with regard to all matters relating to safe and healthful working conditions. Compliance with governmental requirements is mandated by law and considered only a minimum level of safety performance. All work shall also be performed in accordance with safe work practice.
- B. The Contractor shall be responsible for the safety of the Contractor's employees, the public and all other persons at or about the site of the work. The Contractor shall be solely responsible for the adequacy and safety of all construction methods, materials, equipment and the safe prosecution of the work.

- C. The Contractor shall employ a Board of Safety Professionals (BCSP) Certified Safety Professional (CSP) familiar with all work under this contract whose duties shall be to initiate, review and cause implementation of measures for the protection of health and prevention of accidents. The Contractor shall also employ full-time safety representative(s) whose sole duties shall be to work under the direct supervision of the safety professional, to implement the safety program for the work under this Contract.
- D. The safety staff shall be provided with an appropriate office on the job site to maintain and keep available safety records, up-to-date copies of all pertinent safety rules, regulations and governing legislation, material safety data sheets, and the site safety plan including information concerning foreseeable emergency conditions, location of emergency and telephone contacts for supportive actions.
- E. The Contractor shall stop work whenever a work procedure or a condition at a work site is deemed unsafe by the safety staff.
- F. The Contractor and subcontractors shall be required to issue Photo Identification badges for each employee required to be on site. Badge drawings and updated logs showing employee names and badge numbers shall be issued to the Engineer for approval.

1.6 SUBMITTALS

- A. The Contractor shall submit a Health and Safety Plan (HASP) as described in Section 01355, Hazardous Materials Control.
- B. Within 30 days of receiving a Notice to Proceed, the Contractor shall submit the name of a CSP employed by the Contractor, responsible for project safety management, and of the safety representative(s) who will work under his direction.
- C. A resume, along with other qualifications, of the CSP and the safety representative(s), must be submitted to the Engineer for review and approval. The resume shall include such items as: experience, education, special safety courses completed, safety conferences attended and certification and registrations. Documentation and/or personal references confirming the qualifications may also be required. The persons proposed as CSP or safety representative(s) may be rejected by the Engineer for failure to have adequate qualifications or other cause.

1.7 QUALIFICATIONS

- A. CSP: Recognition as a safety professional shall be based on a minimum of: Certification by the Board of Certified Safety Professionals as a Certified

Safety Professional and five years of professional safety management experience in the types of construction and conditions expected to be encountered on the site.

- B. Safety Representative: Qualifications of the safety representative(s) shall include a minimum of: five years of relevant construction experience, three years of which were exclusively in construction safety management, successful completion of a 30 Hour OSHA Construction Safety and Health training course, eight Hour OSHA Hazardous Waste Operations course that addresses 29 CFR 1910.120(q), and Confined Space training.
- C. The safety staff shall be completely experienced with and knowledgeable of all applicable health and safety requirements of all governing laws, rules and regulations as well as of good safety practice. The safety staff shall not include the project manager, engineer, or superintendent, or anyone else working on the project. The safety staff shall have no other duties except those directly related to safety.

PART 2 – PRODUCTS

2.1 HEALTH AND SAFETY PLAN

- A. The Contractor shall commit to writing a specific site health and safety plan before the start of any construction in accordance with Section 01355, Hazardous Materials Control.

2.2 ACCIDENT REPORTS

- A. The Contractor shall promptly report to the Engineer and the PMJV Site Safety Officer all accidents involving injury to personnel or damage to equipment and structures, investigate these accidents and prepare required reports and submit a monthly summary of these accidents. The Contractor must submit a preliminary accident report to the Resident Engineer and the PMJV Site Safety Officer by the following day at the latest.
 - 1. The summary report, due by the 10th day of the following month, shall include descriptions of corrective actions to reduce the probability of similar accidents.
 - 2. In addition, the Contractor shall furnish to the Engineer a copy of all accident and health or safety hazard reports received from OSHA or any other government agency within one day of receipt.
- B. In addition to the reports which the Contractor is required to file under the provision of the Workmen's Compensation Law, he shall submit to the Engineer on or before the tenth day of each month a report giving the total force employed on his Contract in man-days during the previous calendar month, the number and

character of all accidents resulting in loss of time or considered recordable by OSHA, and any other information on classification of employees, injuries received on the work, and disabilities arising therefrom that may be required by the Engineer.

1. The submittal shall also contain an audit report for the prior month, including the safety training conducted, the above equipment logs, records of the condition of the work areas, safety and health records, OSHA and ANSI Z16.1 incidence rates for frequency and severity of recordable accidents, and an evaluation of the effectiveness of the HASP with any changes necessary.
2. The CSP or safety representative and the Contractor shall sign this audit report. The Engineer will review these reports for Contractor's compliance with the safety provisions of the Contract.

2.3 SAFETY AND RESCUE EQUIPMENT

- A. The Contractor shall have proper safety and rescue equipment, adequately maintained and readily available, for any foreseeable contingency. This equipment shall include such applicable items as: proper fire extinguishers, first aid supplies, safety ropes and harnesses, stretchers/ Stokes basket, water safety devices, oxygen breathing apparatus, resuscitators, gas detectors, oxygen deficiency indicators, combustible gas detectors, life/work vests, life rings with at least 90 feet of line, etc.
- B. This equipment should be kept in protected areas and checked at scheduled intervals. A log shall be maintained indicating who checked the equipment, when it was checked, and that it was acceptable. This equipment log shall be updated monthly and be submitted with the monthly report. Equipment that requires calibration shall have copies of dated calibration certificates on site.
- C. Substitute safety and rescue equipment must be provided while primary equipment is being serviced or calibrated.

2.4 PROTECTIVE EQUIPMENT

- A. All personnel employed by the Contractor or his subcontractors or any visitors whenever entering the job site shall be required to wear appropriate personal protection equipment required for that area. The Contractor shall continuously provide all necessary personal protective equipment as requested by the Engineer for his designated representatives.

2.5 IDENTIFICATION BADGES

- A. The Contractor shall submit shop drawings of the Identification Badge to the Engineer for approval.

PART 3 – EXECUTION

3.1 SAFETY STAFF DUTIES

- A. The CSP shall visit and audit all work areas as frequently as necessary (a minimum of once a week) and shall be available for consultation whenever necessary. The safety staff shall have full authority to implement and enforce the health and safety plan to take immediate action to correct unsafe, hazardous or unhealthful conditions.
- B. A member of the safety staff must be at the job site full time (a minimum of 8 hours per working day) whenever work is in progress. When multiple shift work is in progress more than one safety representative may be required.
- C. The safety staff shall as a minimum:
 - 1. Schedule and conduct safety meetings and safety training programs as required by law, the safety plan, and good safety practice. A specific schedule of dates of these meetings and an outline of materials to be covered shall be provided with the safety plan. The Engineer shall be advised in advance of the time and place of such meetings. County personnel shall be invited to attend the meetings. All employees shall be instructed on the recognition of hazards, observance of precautions, of the contents of the safety plan and the use of protective and emergency equipment.
 - 2. Determine that operators of specific equipment are qualified by training and/or experience before they are allowed to operate such equipment.
 - 3. Develop and implement emergency response procedures. Post the name, address and hours of the nearest medical doctor, name and address of nearby clinics and hospitals, and the telephone numbers of the appropriate ambulance service, fire, and the police department.
 - 4. Post all appropriate notices regarding safety and health regulations at locations, which afford maximum exposure to all personnel at the job site.
 - 5. Post appropriate instructions and warning signs in regard to all hazardous areas or conditions, which cannot be eliminated. Identification of these areas shall be based on experience, on site surveillance, and severity of hazard. Such signs shall not be used in place of appropriate workplace controls.
 - 6. Ascertain by personal inspection that all safety rules and regulations are enforced. Make inspections at least once a shift to ensure that all machines, tools and equipment are in a safe operating condition; and that all work areas are free of hazards. Take necessary and timely corrective actions to eliminate all unsafe acts and/or conditions, and submit to the Engineer each day a copy of his findings on the inspection check list report forms established in the safety plan.
 - 7. Submit to the Engineer, copies of all safety inspection reports and citations from regulating agencies and insurance companies within one working day

of receipt of such reports.

8. Provide safety training and orientation to authorized visitors to ensure their safety while occupying the job site.
9. Perform all related tasks necessary to achieve the highest degree of safety that the nature of the work permits.

+ + END OF SECTION + +

Nassau County Sewage Treatment Plant Hot Work Permit

Hot Work Permit Job Information

Contractor Name: _____ Location of Hot Work: _____

Permit Authorizing Individual: _____ Phone: _____

Permit Issued (Date) _____ (Time) _____ AM/PM

Permit Expires (Date) _____ (Time) _____ AM/PM

Type of hot work to be used (Source of ignition): ☐ Grinding ☐ Cutting ☐ Brazing or Soldering
☐ Welding/Burning ☐ Heating ☐ Other _____

PPE to be Used by Person Performing Hot Work: _____

Describe the Hot Work Job and Materials to be Worked on: _____

Any special hazards and/or special precautions to be taken: _____

Fire Watch Required? ☐ Yes ☐ No **Number of Fire Watches Required:** _____

Acknowledgement of Permit Review by Person Performing Work or Crew Supervisor

Acknowledgment: I participated in the work site preparation, coordinated with the PAI, reviewed this Hot Work Permit and I fully understand the work to be performed and my responsibilities. The person(s) performing the hot work understand that this permit is valid only so long as work conditions existing at the time of issuance do not change. They will stop the work and notify the PAI of any change in work area conditions which adversely affects safety. I or the person(s) performing the work are adequately trained in the safe handling and use of their equipment and applicable regulatory requirements.

Worker/Supervisor: _____ **Signature:** _____

Company: _____ **Date:** _____

Permit Authorizing Individual (PAI) Authorization

I completed the site inspection, notified the person performing the work or their crew supervisor about flammable materials or hazardous conditions which may not be obvious, and verified that the person performing (or directly supervising the crew performing) hot work has reviewed the permit and signed the acknowledgment above. (If no, hot work is not permitted)

Signature: _____ **Date:** _____

Notice: Post this permit in Hot Work Permit area until permitted operations are complete. Upon Completion return permit to the PAI.

Final Inspection (Fire Watch, or PAI if No Fire Watch Was Required)

I completed final inspection at the required times after completion of Hot Work and observed no signs of smoldering or combustion.

Signature: _____ **Date:** _____ **Time:** _____ (Day 1)

Day	PAI Signature	Date/Time	Acceptable		Final Insp./ Initials	Comments
			Yes	No		
2						
3						
4						
5						
6						
7						

- Permit Authorizing Individual (PAI) - The individual designated by management to [authorize hot work](#)
- [Conducts inspection](#) to verify that safeguards are in place based on site-specific conditions of flammable/ combustible materials, hazardous processes, or other potential fire hazards in the work location.
- [Ensure](#) fire protection and extinguishing equipment are available and properly located at the site.
- [Verify](#) a fire watch is at the site, if required.
- [Issues](#) a Hot Work Permit (HWP), when required.

Hot Work Required Precautions Checklist

- 1) Inspect work area and confirm that applicable precautions have been taken in accordance with NFPA 51B (by PAI After Coordination With & Setup By Person Performing Hot Work; initially and when revalidating):
- 2) All sprinkler and/or other fire suppression systems in the Hot Work Permit area operational.
- 3) Cutting/welding equipment in good repair, free of damage or defects.
- 4) Persons conducting hot work have been trained.
- 5) All facility employees or other parties that may be potentially affected by the hot work have been notified.

REQUIREMENTS WITHIN 35 FEET OF WORK (HORIZONTAL & VERTICAL)

- 1) Flammable liquids and combustible dust/lint/oil deposits/trash removed or shielded with fire-retardant material.
- 2) Flammable vapor sources removed or flammable vapor properly tested and found to be well below the LEL.
- 3) Combustible flooring properly wetted, wet sanded or shielded.
- 4) Combustible walls, ceilings, partitions or roofing properly shielded.
- 5) Covers under work to keep sparks from lower levels and shielding/partitions to protect passer-by.

WORK ON WALLS OR CEILINGS

- 1) Combustibles have been moved away from opposite side. (If no, hot work is not permitted)
- 2) No combustible covering, interior (for sandwich-type panel) or other combustible content.
- 3) Danger from conduction of heat to adjacent rooms eliminated.

WORK ON ENCLOSED EQUIPMENT (Tanks, Containers, Ducts, Dust Collectors, etc.)

- 1) All duct and conveyor systems properly protected or shut down.
- 2) Equipment is cleaned of all combustibles, flammable vapors, liquids, or dusts. (If a flammable vapor source, conduct vapor monitoring)

FIRE WATCH

- 1) Required for the following: (a) Torch work (b) Combustibles within 35' (c) Combustibles >35', but easily ignited, (d) Wall/floor openings expose adjacent/concealed combustibles, (e) Conduction through metal can ignite other side (f) Potential for more than a minor fire.
- 2) Charged, inspected, operational fire extinguishers of an appropriate type are present.
- 3) Fire Watch trained in extinguisher and emergency alarms (fire alarm, telephone, or radio).

OTHER PRECAUTIONS

- 1) Work in a confined space requires Confined Space Entry Permit prior to hot work permit approval.
- 2) Is continuous atmospheric monitoring, smoke detection or heat detection warranted?
- 3) Ample ventilation exists or provisions made for continuous ventilation to remove smoke/vapor from work area
- 4) Process equipment/piping purged, disconnected and blanked in accordance with Lockout/Tagout procedures.
- 5) Do conditions require Re-Validation more than every 24 hr?

SECTION 01370

SCHEDULE OF VALUES

PART 1 – GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Submit a Schedule of Values allocated to the various portions of the work, within twenty one (21) days after the effective date of the Agreement.
- B. Upon request of the Engineer, support the values with data which will substantiate their correctness.
- C. The accepted Schedule of Values shall be used only as the basis for the Contractor's Applications for Payment.

1.2 RELATED REQUIREMENTS

- A. General Conditions of the Construction Contract

1.3 FORM AND CONTENT OF SCHEDULE OF VALUES

- A. Contractor's standard forms and automated printout will be considered for approval by the Engineer upon Contractor's request. Identify schedule with:
 - 1. Title of Project and location.
 - 2. Engineer and Project number.
 - 3. Name and Address of Contractor.
 - 4. Contract designation.
 - 5. Date of submission.
- B. Schedule shall list the installed value of the component parts of the work in sufficient detail to serve as a basis for computing values for progress payments during construction.
- C. Identify each line item with the number and title of the respective Section.
- D. For each major line item list sub-values of major products or operations under the item.
- E. For the various portions of the work:
 - 1. Each item shall include a directly proportional amount of the Contractor's overhead and profit.
 - 2. For items on which progress payments will be requested for County approved stored materials, break down the value into:

- a. The cost of the materials, delivered and unloaded, with all taxes paid. Paid invoices are required for materials upon request by the Engineer.
- b. The total installed value.

F. The sum of all values listed in the schedule shall equal the total Contract Sum.

1.4 SUBSCHEDULE OF UNIT MATERIAL VALUES

- A. Submit a sub-schedule of unit costs and quantities for:
 - 1. Products on which progress payments will be requested for County approved stored products.
- B. The form of submittal shall parallel that of the Schedule of Values, with each item identified the same as the line item in the Schedule of Values.
- C. The unit quantity for bulk materials shall include an allowance for normal waste.
- D. The unit values for the materials shall be broken down into:
 - 1. Cost of the material, delivered and unloaded at the site with all taxes paid.
 - 2. Copies of invoices for component material shall be included with the payment request in which the material first appears.
 - 3. Paid invoices shall be provided with the second payment request in which the material appears or no payment shall be allowed and/or may be deleted from the request.
- E. The installed unit value multiplied by the quantity listed shall equal the cost of that item in the Schedule of Values.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

+ + END OF SECTION + +

SECTION 01400

PROTECTION OF UTILITIES

PART 1 – GENERAL

1.1 WORK INCLUDES

- A. Work includes all labor, materials, equipment and incidentals required to mark out and protect all public or private utilities, including concrete encased piping, within or adjacent to the Contract area.
- B. The Contractor is specifically directed to become familiar with the existence of aerial, surface or subsurface structures of municipal and other public or private service corporations within the construction site.
- C. A careful search has been made, in good faith, and known public or private utilities within or adjacent to the Contract area are shown in their approximate locations on the Contract Plans. However, there is no guarantee that all existing utilities have been found. All utilities may not be shown on the Contract Drawings.
- D. The Contractor's attention is also directed to the fact that during the life of the plant, the County and operators of utilities may make changes in their facilities.
- E. The Contractor shall determine the exact locations and elevations of all pertinent structures, utilities and facilities before construction work and new installations commence.
- F. Conflicts between existing structures, utilities and facilities and new work shall be ascertained by the Contractor and called to the attention of the Engineer.
- G. The Contractor shall cooperate with the County and public utility corporations whose structures (aerial, surface or subsurface) are within the limits of or along the outside of the construction areas to make it possible for them to maintain uninterrupted service.
- H. The Contractor shall conduct operations in such a way as to delay or interfere as little as practicable with the work of utility corporations.
- I. The Contractor shall give the County and public utility corporations involved reasonable notice, but not less than 48 hours in advance of operations, which may or will affect their structures.
- J. The Contractor shall protect, in a suitable manner, all utilities encountered,

including concrete encased piping, and shall repair any damage to structures, utilities and facilities caused by operations.

1. If the nature of the damage is such as to endanger the satisfactory functioning of the utilities and necessary repairs are not immediately made by the Contractor, the work may be done by the respective owning companies and the cost thereof charged against the Contractor.

K. The Contractor shall take these conditions into consideration in making up the bid.

L. It is understood and agreed that the Contractor has considered in his bid all of the permanent and temporary utility appurtenances and that no additional compensation will be allowed for any delays, inconveniences or damage sustained by him due to any interference from the utility appurtenances.

1.2 PUBLIC AND PRIVATE UTILITY MARKOUTS

- A. The Contractor shall be required to provide utility markouts for all private and public utilities. The limits for these markouts shall be the project limit shown on the Engineering Drawings. The Contractor shall submit the proposed utility subcontractor for approval.

1.3 MEASUREMENT AND PAYMENT

- A. No separate payment for the items "Protection of Utilities" will be made. The costs of same shall be included in the Base Bid.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

+ + END OF SECTION + +

SECTION 01410

UNDERWATER VIDEO

PART 1 – GENERAL

1.1 DESCRIPTION

A. Scope of Work:

1. The Contractor shall engage the services of an experienced underwater video professional approved by the County, to take video as detailed under these specifications.
2. The underwater video professional will be required to take underwater video and record of the site prior to the commencement of work as directed by the Engineer. The underwater video professional shall have a minimum of three (3) years' experience.
3. Prior to shop drawing submittals for riser pipes and associated components, Contractor shall submit to the Engineer for review the pre-construction underwater video recordings and a report summarizing observed condition of all the lower anchor brackets on the existing riser pipes, as indicated on the drawings, and the condition of the concrete at the joint of the existing riser pipe. Submittal shall be an information submittal.
4. Subsequent underwater video inspections (post-construction video) as determined by the Engineer and as required in Section 01650, Starting of Systems and Section 01760, Project Closeout shall be taken as specified and witnessed by the County's designated person.

1.2 MEASUREMENT AND PAYMENT

- A. No separate payment for the item "underwater video professional" will be made. The costs of same shall be included in the Base Bid.

PART 2 – PRODUCTS

2.1 UNDERWATER VIDEO

- A. Pre-construction and Post-construction videos shall be provided and submitted.
B. Refer to General Conditions, Article GC37.

PART 3 – EXECUTION (NOT USED)

+ + END OF SECTION + +

++ NO TEXT ON THIS PAGE ++

SECTION 01495

SPILL PREVENTION AND CONTROL

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Scope:
 - 1. This section covers the Contractor's responsibilities with respect to spill prevention and control.
- B. References: Where conflicts arise between requirements of the above-listed regulatory requirements, the most restrictive of the requirements shall be followed.
 - 1. USEPA Remedial Action at Waste Disposal sites EPA/625/6-B5/006
 - 2. 40 CFR Part 300 national Oil and Hazardous Substances Pollution Contingency Plan
 - 3. 40 CFR Protection of Environment
 - 4. ASTM E119 Fire Resistance Directory

1.2 SUBMITTALS

- A. A Spill Prevention and Control Plan shall be provided to the Engineer.

1.3 GENERAL REQUIREMENTS

- A. The Contractor shall prepare and implement a Spill Prevention and Control Plan and maintain appropriate containment and/or diversionary structures, materials and equipment to prevent and control the maximum spillage of any specific item within the Scope of Work. All materials and equipment used in connection with this project shall be included. The plan shall include inspection and test procedures performed to ensure compliance.
- B. Laws and Regulations: The Contractor shall not pollute any area with any manmade or natural harmful materials. It is the sole responsibility of the Contractor to investigate and comply with all applicable Federal, State, County and municipal laws and regulations concerning the Spill Prevention and Control Plan.
- C. A Project Telephone Directory shall be incorporated into the plan.
- D. Written Discussions: In addition to the minimal prevention standards listed, the Plan shall include a complete discussion of conformance with the following

applicable guidelines, other effective spill prevention and containment procedures, or if more stringent, with the State rules, regulations and guidelines.

1. Facility Drainage
 2. Bulk Storage
 3. Facility Transfer operations, pumping, and conveying materials
 4. Truck and barge loading/unloading
- E. Design and Specifications: The Contractor shall provide a Spill Prevention and Control Plan with the following designs and specifications:
1. Appropriate containment and/or diversionary structures or equipment to prevent discharge of materials to the environment
 2. Dikes sufficiently impervious to contain spill materials
 3. Curbing
 4. Culverts, gutters, or other drainage systems
 5. Weirs, booms, or other barriers
 6. Sorbent materials
 7. Curbing drip pans
 8. Sumps and collection systems
- F. Inspections and Records: Inspections required by this Scope of Work shall be in accordance with written procedures developed for the facility of the Contractor. These written procedures and a record of the inspections, signed by the appropriate supervisor or inspector, shall be part of the Spill Control and Prevention Plan, and shall be maintained during the project and submitted to the Engineer for final closeout.
- G. Facility Lighting: Facility lighting shall be commensurate with the type and location of the facility. Consideration shall be given to the following:
1. Discovery of spills, occurring during hours of darkness, both by operating personnel, if present, and by non-operating personnel (security personnel, the general public, local police, etc.).
 2. Prevention of spills occurring through acts of vandalism.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 GENERAL

- A. If materials are released, the Contractor shall provide a written description of the event, corrective action taken, and plans for preventing a recurrence, as well as a written commitment of manpower, equipment, and materials required to expedite control and removal of any harmful quantity of materials released.

- B. The Contractor shall notify the New York State Department of Environmental Conservation, Nassau County Department of Health, Nassau County Department of Public Works, and the Engineer within two hours of the release or spill.

3.2 TRAINING

- A. Personnel Training and Spill Prevention Procedures: The Contractor shall be responsible for properly instructing his personnel regarding applicable pollution control laws, rules, and regulations; and in the operation and maintenance of equipment to prevent the discharge of materials.
- B. Briefings: The Contractor shall schedule and conduct Spill Prevention Briefings for its operating personnel at intervals frequent enough to assure adequate understanding of the Spill Prevention and Control Plan for this project. Such briefings shall highlight and describe known spill events or failures, malfunctioning components, and recently developed precautionary measures.
- C. Evacuation Routes shall be marked on the project site.

3.3 TESTING

- A. Facility communication or alarm systems and spill control equipment must be tested and maintained by the Contractor as necessary to assure proper operation in time of emergency.

+ + END OF SECTION + +

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SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

PART 1 – GENERAL

1.1 GENERAL REQUIREMENTS

- A. Temporary facilities and controls shall be provided in the manner designated hereinafter. These temporary facilities shall be provided at the Cedar Creek WPCP.
- B. Contractor shall coordinate and install all temporary facilities and controls in accordance with the requirements of the local or utility companies having jurisdiction and in accordance with all state, federal and local codes and regulations.
- C. At the completion of the Work, or when the temporary facilities and controls are no longer required, subject to the approval of the County, the temporary facilities and controls shall be removed, and the facilities restored to their original conditions by the Contractor.
- D. Costs in connection with the temporary electric, lighting, heating and ventilation, and other miscellaneous temporary facilities and controls including but not limited to, installation, maintenance, relocation and removal shall be borne by the Contractor.

1.2 TEMPORARY WATER FACILITIES

- A. The Contractor shall provide and pay all costs for sanitary facilities, fire protection, Contractor's and Engineer's field offices, and for cleaning by all Contractors, Subcontractors and their workmen.
- B. The Contractor is responsible for their own and the Engineer's bottled water needs.

1.3 TEMPORARY SANITARY FACILITIES

- A. The Contractor shall provide and pay all costs for temporary toilet facilities in sufficient numbers, for the Contractor's, Subcontractors', and Engineer's personnel on this Project.
- B. Sanitary facilities shall be properly screened from public observation and shall be provided and maintained at suitable locations by the Contractor including

Contractor's staging area, all as prescribed by state labor regulations and local ordinances.

- C. The Contractor shall rigorously prohibit the committance of nuisances within, on, or about the Work.
- D. County Sanitary Facilities and Locker rooms are prohibited from Contractors' and subcontractors' use.

1.4 TEMPORARY ELECTRICAL FACILITIES

- A. The Contractor shall furnish and install a temporary electrical facilities system which shall consist of a new temporary electric service point, a temporary general lighting system, a security lighting system, a safety lighting system, and service the Contractor's and Engineer's field offices. The Contractor shall inspect the site and assess the existing conditions. The cost for designing and installing a temporary electrical system shall be included in the lump sum price.
- B. The Contractor shall submit a drawing showing the proposed temporary electrical facilities system layout for approval by the Engineer prior to installation.
 - 1. Work Included: Temporary work shall include the following:
 - a. Furnish and pay for all labor, material and equipment for the installation of the temporary electrical facilities system. The installation shall comply with all applicable requirements of the National Electric Code and any other codes or bodies having jurisdiction.
 - b. Furnish and pay for all labor material and equipment for the maintenance of the temporary electrical facilities system.
 - c. Furnish and pay for labor, materials and equipment for removing all temporary facilities.
- C. Requirements:
 - 1. Temporary electrical facilities system shall be as herein specified and required for the contractor's use, and shall be provided no later than thirty days after the date of Notice to Proceed.
- D. Temporary Electric Service Points:
 - 1. The Contractor shall furnish, install and maintain a temporary power distribution point local to the work area.
 - 2. At the temporary power distribution point, the Contractor shall furnish and install an overcurrent protection device. The overcurrent protection device shall be rated for 208V/120V, three-phase, and shall be sized for Contractor's temporary electric requirements and Engineer's field offices.
 - 3. The Contractor shall utilize an existing temporary service point located at the Construction House for serving the temporary electrical requirements.

The Contractor shall modify the identified temporary distribution point as required to provide temporary electric service for the Work shown and specified. The Contractor shall provide a temporary transformer, a 100 Amp circuit breaker and any other equipment necessary and required to provide the temporary electric system with the specified capacity. The Contractor shall provide separate distribution circuit breakers or fused switches for disconnection and overcurrent protection of the temporary electrical facilities fed from the service point which shall include the Contractor's field offices and the security lighting system for the Staging Area.

4. The Contractor shall furnish and install circuit breakers or fused switches, transformers, wiring and conduit as required for the temporary power distribution point.
 5. Distribution circuit breakers or fused switches shall be furnished and installed at each location for disconnection and overcurrent protection of the temporary electrical facilities, including the temporary general lighting system, the security lighting system and the safety lighting system.
 6. At the completion of the project, the Contractor shall remove the temporary electric service point facilities to the condition they were prior to construction.
 7. The Contractor shall furnish and install grounding in accordance with the authority having jurisdiction and NFPA 70 as required.
- E. Temporary General Lighting System:
1. The Contractor shall provide and maintain a temporary lighting system. The system shall conform to the applicable Federal and State codes, shall meet the illumination requirements specified herein, and shall meet the approval of the County.
 2. Temporary general lighting system shall provide 120-volt receptacles and lighting for access to and egress from the work and for safe and expeditious construction within designated enclosed areas of the structure or structures.
 3. Temporary general lighting system shall consist of wiring, switches, necessary insulated supports, poles, fixtures, receptacles, 100 watt lamps, guards, cutouts and fuses as specified shown or required.
 4. The Contractor shall furnish lamps, fuses, receptacles and cords for the temporary general lighting system and shall replace broken and burned out lamps and blown fuses for the system.
 5. Temporary general lighting system shall be installed progressively in the structure as the areas are enclosed or as lighting becomes necessary because of partial enclosure.
 6. Required Illumination for Work Lighting:
 - a. General: Five foot-candles.
 - b. Stairs: Ten foot-candles.
 - c. Construction Plant and Shops: Ten foot-candles.
 - d. For Detail and Finishing Work: Twenty foot-candles.

- e. For Testing and Inspection: Thirty foot-candles.
 - f. At First-aid Stations: Thirty foot-candles.
 - g. Areas of OWNER'S Operations: One 300-watt lamp at intervals of 15 feet on centers.
7. The Contractor shall maintain the temporary general lighting system in safe working order.
 8. The Contractor shall arrange and install the lamps in a manner so as to provide an even distribution of illumination as necessary and required over the work areas.
 9. If necessary and required, the Contractor shall install the receptacles in such a manner as to reach any point in the work areas with an extension cord not to exceed 40 feet in length.
 10. In case of overloading of circuits, the County will restrict the use of tools as required for the correct loading.
 11. The temporary general lighting system shall be used for small power purposes only.
 12. Handtools, such as drills, hammers and grinders, may be connected to the temporary general lighting system provided that they are suitable for 120 volt, single phase, 60 hertz operation and do not have a power requirement exceeding 1,500 volt amperes. Only one unit may be connected to a single receptacle and shall not be connected to lighting outlets. Cords of tools shall not exceed 40 feet in length.
 13. No Contractor will be permitted to proceed with any portion of his work which in the opinion of the Engineer, is not adequately illuminated. If any Work by any other Contractor requires special lighting other than what is provided, the Contractor shall arrange for same.
 14. The Contractor shall keep the temporary general lighting system in service each working day, from Monday through Friday inclusive, by energizing the system at 7:00 A.M. and de energizing the system at 3:30 P.M.
 15. Any Contractor requiring the use of a temporary general lighting system other than during the times set forth in the preceding paragraph from Monday through Friday, or at any time on Saturdays, Sundays or Holidays, shall pay the costs of energizing or de energizing the system and for keeping the system in operation.
 16. Temporary general lighting system shall be removed in its entirety at the completion of the project.

F. Security Lighting System:

1. The Contractor shall furnish, install and maintain a security lighting system to illuminate the Staging Area and the construction site outside the building.
2. Security lighting system shall consist of floodlights equal to Crouse Hinds Cat. No. MVD 4HCW O PC DF AF VS AF 400 watt mercury vapor lamp, Cat. No. ML2590 photocell, Cat No. ML5547 vandal shield and Cat. No. 105 N11 bracket for wood pole mounting. Floodlights shall be mounted approximately 30 feet above the ground.

3. Each floodlight shall be complete with a constant wattage, high power factor ballast in a cast aluminum housing, a flat clear lens of heat and impact resistant glass, photo control, lamp and suitable mounting hardware.
4. Photometric performance shall be equal to that of the above specified unit with a beam spread of approximately 150 degrees horizontal to 80 degrees vertical and with a beam efficiency of not less than 55 percent.
5. Poles shall be 35 foot, class F wood and shall be securely set five feet in the ground.
6. Wiring for the security lighting system may be installed overhead. The security lighting system shall be properly maintained and energized at all times with each floodlight controlled by a photocell installed on the floodlight. The photocells shall be adjusted so that all floodlights are energized at approximately the same time. Broken and burned out lamps shall be replaced.
7. Security lighting system shall be installed and made operative within 30 days after the date of the Notice to Proceed.
8. Security lighting system shall be removed in its entirety at the completion of the project.

G. Safety Lighting:

1. The Contractor shall provide, install and maintain sufficient lighting fixtures to provide adequate light to ensure safe access to, egress from, and passage through the construction areas between the hours of 4:30 P.M. and 7:00 A.M. Monday through Friday and 24 hours per day for Saturdays, Sundays, and Holidays. The lighting system shall be operated by a time clock. Fixtures shall be 100 watt and shall be provided, as a minimum at every landing of every stairway and every 50 feet along passageways. The safety lighting system shall be installed progressively in structures as the designated areas are enclosed or as lighting becomes necessary because of partial enclosure. This lighting is not intended for construction purposes.

H. Contractors' Field Offices:

1. The Contractor shall extend the temporary electric service from the tie-in to the service point specified in Paragraph 1.3.D.3 to the Contractor's field office within the Staging Area.
2. Electric service for connection to construction trailers is available from the Plant. The Contractor shall coordinate with the Plants for the power source (motor control center in local building) and shall install the electrical service as required to each Field Office.

I. Additional Facilities:

1. Should any portion of any Contractor's work require light or power in addition to that supplied by the temporary general lighting system herein described, he shall furnish, install and maintain such additional temporary lighting and power facilities at his own expense. Additional temporary

lighting shall be sufficient for safe access to and egress from such work, and for safe expeditious construction.

2. The installation of additional facilities shall comply with all applicable requirements of the National Electric Code and any other codes of enforcing bodies having jurisdiction, and shall be in-stalled so as not to interfere with the work of other Contractors.
3. Upon completion of the work under his contract, the Contractor responsible shall remove all additional facilities installed by him.

1.5 PROTECTION OF WORK AND MATERIALS

A. Protection Requirements:

1. During the progress of the Work and up to the date of Final Payment, the Contractor shall be solely responsible for the care and protection of all Work and materials covered by the Contract. In order to prevent damage, injury or loss, actions shall include, but not be limited to, the following:
 - a. Store apparatus, materials, supplies, and equipment in an orderly, safe manner that will not unduly interfere with the progress of the Work or the work of any other contractor or utility service company.
 - b. Provide suitable storage facilities for all materials, which are subject to injury by exposure to weather, theft, breakage, or otherwise.
 - c. Place upon the Work or any part thereof only such loads as are consistent with the safety of that portion of the Work.
 - d. Clean up frequently all refuse, rubbish, scrap materials, and debris caused by his operations, to the end that at all times the Site of the Work shall present a safe, orderly and workmanlike appearance.
 - e. Provide barricades and guard rails around openings, for scaffolding, for temporary stairs and ramps, around excavations, elevated walkways and other dangerous areas as deemed necessary by Engineer.
2. The Contractor shall protect the existing Work and material from damage by his workmen and shall be responsible for repairing any such damage at no additional cost to the County.
3. The Contractor shall protect trees, shrubbery and other natural features or structures from being cut, trimmed or injured in his areas of Work. Trees adjacent to the Site of Work shall be protected and temporary supports provided for long branches. Stored materials and equipment shall be in cleared spaces, away from all trees and shrubs, and confined to areas as directed by the Engineer.
 - a. Temporary fences or barricades shall be installed to protect trees and plants in areas subject to traffic.
 - b. No fires will be permitted at the Cedar Creek WPCP.
 - c. Within the limits of the Work, water trees and plants that are to remain, in order to maintain their health during construction operations.

- d. Cover all exposed roots with burlap that shall be kept continuously wet. Cover all exposed roots with earth as soon as possible. Protect root systems from mechanical damage and damage by erosion, flooding, run off or noxious materials in solution.
 - e. If branches or trunks are damaged, prune branches immediately and protect the cut or damaged areas with emulsified asphalt compounded specifically for horticultural use in a manner approved by Engineer.
 - f. All damaged trees and plants that die or suffer permanent injury shall be removed when ordered by the Engineer and replaced by a specimen of equal or better quality.
 - 4. All Work and materials shall be protected in accordance with the requirements of the Agreement, Article VI, "Protection"; General Conditions, Articles GC17, "Materials and Equipment, Approvals Substitutions and Deviations", GC21, "Protection Requirements", and GC 24, "Barricades, Warning Signs and Lights".
- B. Maintenance of Egress:
- 1. During the course of demolition and construction Work of this Project, the Contractor shall maintain and keep free of debris, materials or equipment points of required egress in accordance with the requirements of the Nassau County Fire Commissioner and Fire Safety Regulations.
 - 2. The Contractor in his particular area of Work shall maintain egress as herein specified.
 - 3. In active process areas, the Contractor shall not be permitted to store or stockpile material. Debris or other material shall be removed daily which may obstruct plant personnel from operating or maintaining active equipment and piping.
- C. Temporary Construction Fencing:
- 1. The Staging area of the Project Site shall be enclosed at all times by temporary fencing to ensure security.
 - 2. Temporary fencing shall not be less than six feet in height. Fabric shall be ten-gauge minimum, electrically welded wire, forming a rectangular mesh with opening two by four inches and three rows of double barb ten-gage wire on angle brackets measuring two feet vertically. Fabric shall be mounted on heavy duty steel tee spaced at intervals not exceeding ten feet.
 - 3. The Contractor shall furnish, erect, relocate and maintain all temporary fencing. Upon completion of the Project all temporary fencing shall be removed and disposed of.
 - 4. All Work in connection with the temporary fencing shall be done at no additional cost to the County.
- D. Protection of Existing Structures:
- 1. Underground Structures:

- a. Underground structures are defined to include, but not be limited to, all sewer, water, gas, and other piping, and manholes, chambers, electrical and signal conduits, tunnels and other existing subsurface work located within or adjacent to the limits of the Work.
 - b. All underground structures known to the Engineer, except water, sewer, electric and telephone service are shown on the Drawings. This information is shown for the assistance of the Contractor in accordance with the best information available, but is not guaranteed to be correct or complete.
 - c. The Contractor shall explore ahead of his trenching and excavation Work and shall uncover all obstructing underground structures sufficiently to determine their location, to prevent damage to them and to prevent interruption of the services which such structures provide. If the Contractor damages an underground structure, he shall restore it to original condition at his expense.
 - d. Necessary changes in the location of the Work may be made by the Engineer, to avoid unanticipated underground structures.
 - e. If permanent relocation of an underground structure or other subsurface facility is required and is not otherwise provided for in the Contract Documents, the Engineer will direct the Contractor in writing to perform the Work, which shall be paid for under the provisions of the Agreement.
2. Surface Structures:
- a. Surface structures are defined as all existing buildings, structures and other facilities above the ground surface. Included with such structures are their foundations or any extension below the surface. Surface structures include, but are not limited to, buildings, tanks, walls, bridges, roads, dams, channels, open drainage, piping, piles, wires, posts, signs, markers, curbs, walks and all other facilities that are visible above the ground surface.
3. Protection of Underground and Surface Structures:
- a. The Contractor shall sustain in their places and protect from direct or indirect injury all underground and surface structures located within or adjacent to the limits of the Work. Such sustaining and supporting shall be done by the Contractor in a careful manner and as required by the County. Before proceeding with the Work of sustaining and supporting such structure, the Contractor shall satisfy the Engineer that the methods and procedures to be used have been approved by the County.
 - b. The Contractor shall assume all risks attending the presence or proximity of all underground and surface structures within or adjacent to the limits to the Work. The Contractor shall be responsible for all damage and expense for direct or indirect injury caused by his Work to any structure. The Contractor shall repair immediately all damage

caused by his Work to the satisfaction of the owner of the damaged structure.

4. All other existing surface facilities, including but not limited to guard rails, posts, guard cables, signs, poles, markers, and curbs, which are temporarily removed to facilitate installation of the Work shall be replaced and restored to their original condition at Contractor's expense.

E. Protection of Installed Products and Landscaping:

1. Provide protection of installed products to prevent damage from subsequent operations. Remove protection facilities when no longer needed, prior to completion of Work.
2. Control traffic to prevent damage to equipment, materials and surfaces.
3. Provide covering to protect equipment and materials from damage.
 - a. Cover projections, wall corners, and jambs, sills and soffits of openings, in areas used for traffic and for passage of products in subsequent Work.
4. Prohibit traffic of any kind across planted lawn and landscaped areas.

F. Protection from Flood:

1. The Contractor shall not allow any areas turned over to him for commencement of Work, to flood. The Contractor shall keep all existing and new facilities within his Work area free of any accumulations of water. The Contractor shall provide, install, and operate sufficient pumps for this purpose. Continuous monitoring for floods and protection of structures from damage and flotation shall be provided. The Contractor shall install any combination of suitable dikes, well points, pumps, and the like to protect the Work until it is accepted.

G. Special Protection of Machinery and Equipment:

1. The Contractor shall take all protective measures to the satisfaction of the County necessary to insure that inclement weather or dust and debris from demolition does not enter any of the mechanical or electrical equipment rooms or enclosures. Enclosures shall be provided where necessary to prevent contamination of the air. All protective measures shall be furnished, installed, lighted, ventilated, maintained and removed at the Contractor's own cost.
2. Interior dustproof covers shall be a heavy reinforced polyethylene film curtain, minimum thickness 6 mils, supported by wood framing. All seams and penetration shall be sealed with duct tape on two sides. Junctions with existing walls, floors and ceilings shall be made with a double fold secured with a backing strip anchored to the existing wall, floor and ceiling.
3. The Contractor shall be responsible for all damage to existing structures, equipment, and facilities caused by his construction operations and must repair all such damage when and as ordered at no additional cost to the

County. All work shall be done in accordance with the requirements of Section 02050, Demolition, Removals, and Modifications.

H. Emergency Repair Crews:

1. In case the Contractor's operations disrupt plant operations, the treatment process or the operating facilities herein before described, at any time, he shall at his own cost immediately make all repairs or replacements and do all work necessary to restore the plant to operation to the satisfaction of the County. Such work shall progress continuously to completion on a 24-hour/day, 7-workday/week basis. The Contractor shall provide the services of emergency repair crews, available on call 24 hours per day.

1.6 ACCESS ROADS, PARKING, STAGING, STORAGE AND WORK AREAS

A. Contractor's Staging and Storage Area:

1. The Contractor shall construct a Contractor's Staging Area as shown on the Contract Drawings. The Staging Area shall be restored to pre-existing conditions after completion of the Contract.
2. The Staging Area shall be drained so that no ponding of runoff water shall occur in the Staging Area or adjacent areas.
3. The Contractor shall erect six-foot high galvanized chain link fencing and gates around the Staging Area as specified in Paragraph 1.5.C.
4. The Contractor shall provide pavement and utilities in the Staging Area and shall maintain all sections of the Staging Area in a suitable manner, including the cutting of grass, weeding and preventing the accumulation of debris. The Contractor shall provide electrical utilities in the Staging Area.
5. At the completion of the project, the Contractor shall remove all debris not limited to gravel, grout, wood, etc., from the Staging Area off-site. The Contractor shall also grade the Staging Area level and furnish a minimum of six (6) inches of topsoil, which will be unloaded, graded and hydro-seeded as directed by the Engineer.

B. Access Roads:

1. Access roads will be provided by the Contractor in accordance with the requirements of the General Conditions, Article GC22, "Access Roads and Parking Areas", the Drawings and the applicable Technical Specifications.
2. The Contractor shall take all necessary precautions to protect traffic, including but not limited to, complying with the requirements of the General Conditions, Articles GC23, "Traffic Regulations" and GC24, "Barricades, Warning Signs and Lights".
3. The Contractor shall post speed limit signs to be adhered to at all times in the vicinity of the staging and work areas.

C. Parking, Storage and Work Areas:

1. No on-site parking is permitted.

2. The Contractor shall construct and maintain suitable storage areas for his use within the staging area designated on the Drawings.
3. The Contractor will be required to arrange his Work and dispose of his materials in such manner as to cause the least interference with the Work of other Contractors working within the same area.
4. No Contractor shall claim exclusive occupancy of areas within or adjacent to the limits of his Work under this Contract. The County and its employees and the Contractors for other contracts shall also have access to these areas.
5. The Contractor shall modify any storage areas to cause minimum damage to the landscape and shall comply with the directions of the County. At the completion of the Work the surfaces of the land used for storage areas shall be restored by the Contractor to the satisfaction of the County and the Engineer.

1.7 CONTRACTOR'S FIELD OFFICE

- A. The Contractor shall furnish, equip and maintain a field office for his use at the Site during the period of construction. The Contractor shall provide his own telephone service and shall have readily accessible, at the field office, copies of the Contract Documents, latest approved Shop Drawings and all Project related correspondence, Change Orders, etc.
- B. Contractor's field office shall be located in the Staging Area.
- C. The Contractor shall provide a Contractor's field office with the minimum facilities specified. Provide all required storage and work sheds.
 1. Field Office and Furnishings:
 - a. Acceptable appearance, weatherproof building or trailer with lockable door.
 - b. Six protective helmets for visitor's use.
 - c. Exterior identifying sign.
 - d. Company sign no larger than 4 feet by 8 feet.
 2. Remove office and sheds upon Final Acceptance unless otherwise approved by the Engineer.

1.8 NOISE CONTROL

- A. Wherever possible, Contractor shall locate all equipment as far away from residential areas as possible. The Contractor shall limit noise from his activities so that overall noise leaving the plant, as measured at the plant property line, is 65 dB(A) measured for any one hour from 7 am – 10 pm and to 55 dB(A) measured for any one hour from 10 pm – 7 am.
- B. Contractor shall provide noise suppression enclosures around the equipment. When the noise from equipment is greater than 80 dB at a distance of 5 feet from

the noise source, the enclosures shall be provided with internal acoustic insulation.

1. Enclosures shall be constructed of a minimum of 3/8-inch plywood.
2. The sound panels shall be minimum 4-inch thick, rated at STC-60, as manufactured by Industrial Acoustics Co. or approved equal.
3. The area shall remain operational during construction. Partitions provided by the Contractor to isolate the construction area shall provide internal acoustical isolation as define in the paragraphs above.

1.9 SECURITY

- A. It shall be the responsibility of the Contractor to make whatever provisions he deems necessary to safely guard all Work, materials, equipment and property from loss, theft, damage and vandalism. The Contractor's duty to safely guard property shall include the County's property and other private property from injury or loss in connection with the performance of the Contract.
- B. The Contractor may make no claim against the County for damage resulting from trespassing.
- C. The Contractor shall repair all damage to the property of the County and others arising from failure to provide adequate security.
- D. If existing fencing or barriers are breached or removed for purposes of obstruction, the Contractor shall provide and maintain temporary security fencing equal to the existing one, in a manner satisfactory to the Engineer and the County.
- E. Security measures taken by the Contractor shall be at least equal to those usually provided by the County to protect his existing facilities during normal operation.
- F. Maintain the security program throughout construction until the date of Substantial Completion and occupancy precludes need for Contractor's security program.
- G. The Contractor's employees shall be issued identification badges, which shall be displayed at all times, as per Section 01356, Safe and Healthful Working Conditions, Paragraph 1.5.F.

1.10 ENGINEER'S FIELD OFFICE

- A. The Contractor shall furnish, equip and maintain field offices for the Engineer's use at the Sites during the period of construction. The Contractor shall have readily accessible at the field office, copies of the Contract Documents, latest approved Shop Drawings and all Project related correspondence, Change Orders, etc. No Construction shall commence until the trailer is provided, furnished as

herein specified and made available to the Engineer.

- B. The Engineer's field offices shall be located in the designated staging area as shown on the Contract Drawings. The trailer size shall be at minimum 8 ft x 24 ft or as required to accommodate the furniture and personnel as specified below.
- C. The Contractor shall provide an Engineer's field office with the minimum facilities specified.
 - 1. Field Office and Furnishings:
 - a. Acceptable appearance, weatherproof building or trailer with lockable door.
 - b. Adequate electric lighting and heating and ventilation shall be provided at all times.
 - c. Two desks, a lunch table, six desk chairs and a refrigerator, microwave, and potable water via replaceable water jugs.
 - d. Six protective hard hats for visitors' use.
 - e. Exterior identifying sign.
 - f. One first aid kit (#25 kit as manufactured by Acme Cotton Products or equal).
 - 2. Remove office and sheds upon Final Acceptance unless otherwise approved by the Engineer.

1.11 TRANSPORTATION OF THE PROJECT PERSONNEL

- A. The Contractor shall provide boat transportation to ferry the Owner's Agent(s) and other project personnel to and from the worksite at the outfall twice a month during the construction duration and when requested by the Engineer.
- B. The boat shall be enclosed and accommodate minimum of six (6) people.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

+ + END OF SECTION + +

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SECTION 01560

ENVIRONMENTAL CONTROLS

PART 1 – GENERAL

1.1 GENERAL

- A. Provide and maintain methods, equipment, and temporary construction, as necessary to provide controls over environmental conditions at the construction site and adjacent areas. Remove physical evidence of temporary facilities at completion of Work.

1.2 NOISE CONTROL

- A. Contractor's vehicles and equipment shall be such as to minimize noise to the greatest degree practicable. Noise levels shall conform to the latest OSHA standards and in no case will noise levels be permitted which interfere with the Work of the County or others.

1.3 DUST CONTROL

- A. The Contractor shall be responsible for controlling objectionable dust caused by his operation of vehicles and equipment, clearing or for any reason whatever, in accordance with the General Conditions Article GC25, "Dust Control and Spillage."

1.4 PEST AND RODENT CONTROL

- A. Provide rodent and pest control as necessary to prevent infestation of construction or storage area.
 - 1. Employ methods and use materials, which will not adversely affect conditions at the Site or on adjoining properties.
- B. Provide seals in accordance with the General Conditions, Article GC26, "Vermin Control."

1.5 WATER CONTROL

- A. Provide methods to control surface water and water from structures to prevent damage to the Work, the Site, or adjoining properties.
- B. Provide, operate and maintain equipment and facilities of adequate size to control surface water.

- C. Dispose of drainage water in a manner to prevent flooding, erosion, or other damage to any portion of the Site or to adjoining areas and in conformance with all environmental requirements.

1.6 POLLUTION CONTROL

- A. Provide methods, means and facilities required to prevent contamination of soil, subsurface sediments, water, or atmosphere by the discharge of noxious substances from construction operations.
- B. Provide equipment and personnel, perform emergency measures required to contain any spillages, and to remove contaminated subsurface sediments, soils, or liquids.
 - 1. Dredging and dispose of any contaminated subsurface sediments off-site and replace with suitable sand.
- C. Take special measures to prevent harmful substances from entering public waters.
 - 1. Prevent disposal of wastes, effluents, chemicals, or other such substances adjacent to streams, or in sanitary or storm sewers.
- D. Provide systems for control of atmospheric pollutants.
 - 1. Prevent toxic concentrations of chemicals.
 - 2. Prevent harmful dispersal of pollutants into the atmosphere.
- E. Contractor's equipment used during construction shall conform to all current federal, state and local laws and regulations.

1.7 HAZARDOUS MATERIALS CONTROL

- A. Refer to Section 01355, Hazardous Materials Control.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

+ + END OF SECTION + +

SECTION 01600

MATERIALS AND EQUIPMENT

PART 1 – GENERAL

1.1 GENERAL

A. Furnish and Install:

1. Where the words "furnish", "provide", "supply", "replace" or "install" are used, whether singly or in combination, they shall mean to furnish and install, unless specifically stated otherwise.
2. In the interest of brevity, the explicit direction "to furnish and install" has sometimes been omitted in specifying materials and/or equipment. Unless specifically noted otherwise, it shall be understood that all equipment and/or materials specified or shown on the Drawings shall be furnished and installed under the Contract as designated on the Drawings.

B. Contractor's Title to Materials:

1. No materials or supplies for the Work shall be purchased by the Contractor or by any Subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. The Contractor warrants that he has good title to all materials and supplies used by him in the Work, free from all liens, claims or encumbrances.

C. "Buy American" Requirements of Financing Entity:

1. The Project is financed by the New York State Environmental Facilities Corporation under the New York State Clean Water Revolving Fund. Contractor shall comply with requirements of the financing entity relative to the Project, including submitting all required documentation.
2. Project financing is under the FY 2023 federal appropriations for the Clean Water State Revolving Fund (CWSRF). Comply with applicable requirements of the financing entity, including compliance with the FY 2023 CWSRF's "buy American" provisions.
3. All the iron and steel products incorporated into the Work shall be produced in the United States, in accordance with the FY 2023 CWSRF provisions of H.R. 3547, "Consolidated Appropriations Act, 2014" (Appropriations Act), enacted on January 17, 2014.
4. Under the Appropriations Act:
 - a. "Iron and steel products" are defined as the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.

- b. The word, "steel" means an alloy that includes at least 50 percent iron, between 0.02 and two percent carbon, and may include other elements. Production in the United States of the iron or steel used in the Project requires that all manufacturing processes take place in the United States, except metallurgical processes involving refinement of steel additives. This requirement does not apply to iron or steel used as components or subcomponents of manufactured goods used in the Project.
 - c. The words, "reasonably available quantity" means that the quantity of iron, steel, or the relevant manufactured good is available or will be available at the time required on a schedule consistent with complying with the Contract Times and at the location place required, and in the proper form and quality as shown or indicated in the Contract Documents.
 - d. The words, "satisfactory quality" means the quality of iron, steel, or the relevant manufactured good as shown or indicated in the Contract Documents.
5. Requirements for using United States iron and steel will not apply in any case or category of cases in which the Administrator of the U.S. Environmental Protection Agency (in this section referred to as the "Administrator") finds that:
- a. applying the "buy American" provision for iron and steel would be inconsistent with the public interest
 - b. iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or
 - c. inclusion of iron and steel products produced in the United States will increase the cost of the Project by more than 25 percent.
6. Contractor shall submit information verifying compliance with the buy American requirements, certification of compliance with the buy American requirements, and when required information necessary to support applying for a waiver of the buy American requirements, as required by the Owner or the financing entity, under the provisions of the Appropriations Act and related guidance by authorities having jurisdiction over such funds and use thereof.
7. Contractor shall pay damages incurred by Owner for Contractor's failure to comply with provisions of the financing entity's requirements, including "buy American" provisions. Notwithstanding other provisions of the Contract Documents, failure to comply with the buy American requirements allows Owner to recover as special damages against Contractor, and Contractor shall pay, costs for all claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred by Owner resulting from such failure by Contractor, including without limitation impairment or loss of Project

funding or financing, whether in whole or in part, from the financing entity, and damages incurred by Owner by Owner's obligations to the financing entity regarding Project funding or financing.

1.2 TRANSPORTATION AND HANDLING OF MATERIALS AND EQUIPMENT

- A. The Contractor shall make all arrangements for transportation, delivery and handling of equipment and materials required for prosecution and completion of the Work in accordance with Section 01610, Transportation and Handling of Materials and Equipment.

1.3 STORAGE OF EQUIPMENT AND MATERIALS

- A. The Contractor shall store his equipment and materials at the job Site in accordance with the requirements of the General Conditions, Article GC17, "Materials and Equipment, Approvals Substitutions and Deviations", and as hereinafter specified. All equipment and materials shall be stored in accordance with manufacturer's recommendations and as directed by the Engineer, and in conformity to applicable statutes, ordinances, regulations and rulings of the public authority having jurisdiction.
- B. The Contractor shall enforce the instructions of the County and the Engineer regarding the posting of regulatory signs for loading on structures, fire safety and smoking areas.
- C. The Contractor shall not store materials or encroach upon private property without the written consent of the owners of such private property.

1.4 INSTALLATION OF EQUIPMENT

- A. Equipment and materials shall be installed in accordance with the requirements of the General Conditions, Article GC17, "Materials and Equipment, Approvals, Substitutions and Deviations".
- B. Equipment shall be set, aligned and assembled in conformance with manufacturer's drawings or instructions.
- C. Blocking, wedges, shims, filling pieces, or other materials required by the proper support and leveling of equipment during installation shall be furnished by the Contractor. All temporary supports shall be removed. Any grinding necessary to bring parts to proper bearing after erection shall be done at the expense of the Contractor.
- D. Workmanship:

1. The following erection Specifications are not intended to cover all instructions, but only some of the important practices. In all cases, only the best methods known to the trades are to be employed.
2. Only those skilled in the handling, setting, alignment, leveling and adjustment of the type of equipment materials supplied shall be employed in the Work.
3. Proper tools shall be used in the assembly of equipment and materials to prevent marring the surface of nuts or other parts.
4. Connections requiring gaskets shall be tightened evenly all around to ensure uniform stress over the entire gasket area.
5. No equipment and materials shall be altered or repaired, and no burning or welding will be permitted on any parts having machined surfaces, except by written permission of the Engineer.
6. Only such equipment and materials that will not damage the structure, equipment, or materials, shall be used on the Work.
7. The Contractor shall be responsible for the exact alignment of equipment with associated piping and, under no circumstances.
8. Misaligned holes shall be reamed, as excessive driving of bolts or keys will not be permitted.

E. Painting:

1. All equipment and materials, unless specified otherwise, shall be field painted in accordance with the manufacturer's recommendations.

F. Testing:

1. The Contractor shall carry out all checking and/or testing of installed equipment in accordance with manufacturer's specifications, and as required by the Engineer.

G. Services of Manufacturer's Representatives:

1. Equipment furnished under Divisions 10 and 15 shall include the cost of a representative of the manufacturers of all equipment as specified in the General Conditions, Article GC17, "Materials and Equipment, Approvals, Substitutions and Deviations".
2. Detailed Specifications contain additional requirements for furnishing the services of the manufacturer's representatives.
3. A certificate from the manufacturer stating that the installation of the equipment is satisfactory, that the unit has been satisfactorily tested and is ready for operation, and that the operating personnel have been suitably instructed in the operation, lubrication and care of the unit shall be submitted within thirty days of completion of the performance test.

1.5 CONNECTIONS TO EQUIPMENT

- A. Connections to equipment shall follow manufacturer's recommendations as to size and arrangement of connections and/or as shown in detail on the Drawings or approved Shop Drawings. The Contractor shall be responsible for the exact alignment of equipment with associated piping.

1.6 SUBSTITUTIONS

- A. Requests for substitutions of equipment or materials shall conform to the requirements of the General Conditions, Article GC17, "Materials and Equipment, Approvals, Substitutions and Deviations", and as hereinafter specified.
 - 1. The Contractor shall submit for each proposed substitution sufficient details, complete descriptive literature and performance data together with Samples of the materials, where feasible, to enable the County to determine if the proposed substitution is equal.
 - 2. The Contractor shall submit certified tests, where applicable, by an independent laboratory attesting that the proposed substitution is equal.
 - 3. A list of installations where the proposed substitution is in satisfactory operation.
 - 4. Requests for substitutions shall include full information concerning differences in cost, and any savings in cost resulting from such substitutions shall be passed on to the County.
- B. Where the approval of a substitution requires revision or redesign of any part of the Work, all such revision and redesign, and all new Drawings and details required therefore, shall be provided by the Contractor at his own cost and expense, and shall be subject to the approval of the County.
- C. In the event that the Engineer or his consultants is required to provide additional services, the charges for such additional services shall be charged to the Contractor by the County in accordance with the requirements of the General Conditions, Article GC18, "Contractor Costs for Engineering Services".
- D. Any modifications in Work required under other Contracts, to accommodate the changed design, will be incorporated in the appropriate Contracts and any resulting increases in Contract prices will be deducted by the County from payments otherwise due by the Contractor who initiated the changed design.
- E. In all cases the County shall be the judge as to whether a proposed substitution is to be approved. The Contractor shall abide by their decision when proposed substitute items are judged to be unacceptable and shall in such instances furnish the item specified or indicated. No substitute items shall be used in the Work without written approval of the County.
- F. In making request for substitution, the Contractor represents that:

1. The Contractor has investigated proposed substitution, and determined that it is equal to or superior in all respects to the product, manufacturer or method specified.
 2. The Contractor has verified that proposed substitution will coordinate with existing design.
 3. The Contractor will provide the same or better warranties or bonds for proposed substitution as for product, manufacturer or method specified.
 4. The Contractor waives all claims for additional costs or extension of time related to proposed substitution that subsequently may become apparent.
- G. Proposed substitutions will not be accepted if:
1. Acceptance will require substantial revision of the Contract Documents.
 2. They will change design concepts or Specifications.
 3. They will delay completion of the Work, or the work of other contractors.
 4. They are indicated or implied on a Shop Drawing and are not accompanied by a formal request for substitution from the Contractor.
- H. Approval of a substitution will not relieve the Contractor from the requirement for submission of Shop Drawings as set forth in the Contract Documents.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

+ + END OF SECTION + +

SECTION 01610

TRANSPORTATION AND HANDLING OF MATERIALS AND EQUIPMENT

PART 1 – GENERAL

1.1 GENERAL

- A. The Contractor shall make all arrangements for transportation, delivery and handling of equipment and materials required for prosecution and completion of the Work.
- B. Shipments of materials to the Contractor or Subcontractors shall be delivered to the Staging Area as shown in the Contract Drawings only during regular working hours. Shipments shall be addressed and consigned to the proper party-giving name of the Project, street number and city. Shipments shall not be delivered to the County except where otherwise directed.
- C. If necessary to move stored materials and equipment during construction, the Contractor shall move or cause to be moved materials and equipment without any additional compensation.
- D. Related Sections:
 - 1. Section 01040, Regulatory Requirements.

1.2 DELIVERY

- A. Arrange deliveries of products in accordance with construction schedules and in ample time to facilitate inspection prior to installation.
- B. Coordinate deliveries to avoid conflict with Work and conditions at site and to accommodate the following:
 - 1. Work of other contractors, or the County.
 - 2. Limitations of storage space.
 - 3. Availability of equipment and personnel for handling products.
 - 4. County's use of premises.
- C. Do not have products delivered to the Project Site until related Shop Drawings have been approved by the Engineer.
- D. Do not have products delivered to the Site until required storage facilities have been provided.
- E. Have products delivered to the Site in manufacturer's original, unopened, labeled containers. Keep the Engineer informed of delivery of all equipment to be

incorporated in the Work.

- F. Partial deliveries of component parts of equipment shall be clearly marked to identify the equipment, to permit easy accumulation of parts and to facilitate assembly.
- G. Immediately on delivery, inspect shipment to assure:
 - 1. Product complies with requirements of the Contract Documents and reviewed submittals.
 - 2. Quantities are correct.
 - 3. Containers and packages are intact, labels are legible.
 - 4. Products are properly protected and undamaged.

1.3 PRODUCT HANDLING

- A. Provide equipment and personnel necessary to handle products by methods to prevent soiling or damage to products or packaging.
- B. Provide additional protection during handling as necessary to prevent scraping, marring or otherwise damaging products or surrounding surfaces.
- C. Handle products by methods to prevent bending or overstressing.
- D. Lift heavy components only at designated lifting points.
- E. Materials and equipment shall at all times be handled in a safe manner and as recommended by manufacturer or supplier so that no damage will occur to them. Do not drop, roll or skid products off delivery vehicles. Hand carry or use suitable materials handling equipment.

1.4 REMOVING, HAULING, AND INSTALLING EQUIPMENT AND MATERIALS

- A. The Contractor shall inspect all items including all boxes, crates and packages containing equipment and materials for damage that may have occurred during shipment prior to its removal from the truck or other conveyance. Any damage shall immediately be reported to the Engineer. The Contractor shall then carefully remove the equipment and materials from the truck or trucks on which it is shipped. The equipment and materials shall then be transported to the place of installation at the job Site. The Contractor shall be liable for loss or damage that the equipment and materials may receive while being unloaded, transported, stored or installed. The Contractor shall employ competent mechanics experienced in the installation of the types of equipment and materials to be furnished, and shall ensure that all equipment and materials are installed in accordance with the recommendations of the manufacturer. Bolts, nuts and other

fastenings shall be furnished by the Contractor, and shall comply with the applicable requirements as specified. Equipment that arrives at the job site during normal working hours shall be unloaded as soon as practicable.

1.5 COORDINATE STORAGE AND INSTALLATION

- A. The Contractor shall coordinate storage and installation of new equipment with construction schedule for existing and new structures.

1.6 CONTRACTOR'S USE OF COUNTY LIFTING EQUIPMENT

- A. The Contractor shall not be permitted to use any existing lifting equipment at County facilities unless the following procedure is followed:
 - 1. Contractor shall employ the services of a qualified representative of the lifting equipment manufacturer to inspect all equipment. The manufacturer shall certify that said equipment is in safe operating condition and meets the rated load capacities. The County makes no claim that any existing lifting equipment is in operable condition or meets the requirements of the Contractor. All costs for inspections, certifications and repairs shall be the responsibility of the Contractor.
 - 2. Upon submittal of the required certifications and receipt of written authorization from the County, the Contractor will assume full responsibility for the operation, maintenance and regular inspection of the lifting equipment for the duration of his work.
 - 3. Upon completion of his work, the Contractor shall employ the services of a qualified representative of the lifting equipment manufacturer to re-inspect the equipment. The manufacturer shall recertify that said equipment is in safe operating conditions. All costs for inspections, certifications and repairs shall be the responsibility of the Contractor.
 - 4. Upon submittal of the required certifications and acceptance by the County, the County will resume responsibility for the equipment.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

++ END OF SECTION ++

++ NO TEXT ON THIS PAGE ++

SECTION 01620

IN-WATER WORK

PART 1 - GENERAL

1.1 DESCRIPTION

- A. The project area or work area is defined as within the Limits of Disturbance (LOD), as noted on the Contract Documents and approved plans, including the water area surrounding the diffuser pipe extending from the outfall cleanout chamber located as shown on the contract drawings. In-water work shall be considered work performed in waterways at or below the high tide elevation.
- B. Contractor shall provide and maintain methods, equipment, materials, and temporary construction as required to control environmental conditions at the work area and adjacent areas as described in the Contract Drawings and Specifications. Prevent environmental pollution and reduce environmental impacts during, and because of, construction operations during in-water work. Other Sections may also contain specific requirements for environmental protection and best management practices. Those specific requirements are in addition to the requirements presented in this Section. If a conflict arises between the various requirements of the Specifications, the more stringent requirements shall apply. Environmental protection requires consideration of potential impacts to water, mudflats, land, fish, wildlife, vegetation, and humans.

1.2 RELATED SECTIONS

- A. Section 01050, Field Engineering
- B. Section 01355, Hazardous Materials Control
- C. Section 01356, Safe and Healthful Working Conditions
- D. Section 01495, Spill Prevention and Control
- E. Section 01500, Temporary Facilities and Controls

1.3 REFERENCES

- A. Code of Federal Regulations, Title 40 – Protection of the Environment (40 CFR).
 - Part 110 – Discharge of Oil
 - Part 117 – Determination of Reportable Quantities for Hazardous Substances
 - Part 302 – Designation, Reportable Quantities, and Notification.
 - Title 33 – Navigation and Navigable Waters

- B. New York State Department of Transportation Standard Specifications (2016).

1.4 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with applicable provisions and recommendations of the following permits:
 - 1. United States Army Corps of Engineers (USACE) Permit
 - 2. New York State Department of Environmental Conservation (NYSDEC) Permits, which include the following: Water Quality Certification, and Excavation & Fill in Navigable Waters.
 - 3. National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA NMFS) Consultation.

1.5 SITE CONDITIONS

- A. The in-water work area includes the waters offshore from Jones Beach, Nassau County.

1.6 SUBMITTALS

- A. Access and Site Preparation Plan: At least 60 days prior to scheduled mobilization, the Contractor shall submit an Access and Site Preparation Plan, which may be a standalone submittal or included as a part of the Contractor's Construction Work Plan. The Access and Site Preparation Plan, at a minimum, will include the following:
 - 1. Proposed access strategy, including daily launch and mooring locations on the mainland and barge landing areas. Proposed plan for the pre- and post-construction bathymetric survey of all construction areas within the limits of disturbance. Equipment type, size, dimensions, and materials of construction for all system components.
 - 2. Maintenance Plan to discuss monitoring and maintenance requirements for system components, inspection schedules, including visual inspection of controls, and care and cleaning of surfaces.
 - 3. Winterization plan and cold weather/ winter operation procedures, as necessary.
 - 4. A contingency plan for securing or moving operations and support facilities in the event of an upset event (severe storm, flood, etc) that if not implemented could otherwise result in the uncontrolled discharge of materials to the environment or result in unsafe conditions.
- B. Results of pre- and post-construction bathymetric surveys.

PART 2 - PRODUCTS

2.1 OIL ABSORBENT BOOM

- A. Oil absorbent booms shall be anchored/secured in place around the work area and installed such that there are no gaps to allow the potential migration of oils/sheens beyond the boom. Additionally, absorbent booms shall also be used around all work vessels used for the work.
- B. Oil absorbent booms shall be five (5) to eight (8) inches in diameter.
- C. Contractor shall maintain and replace oil absorbent booms as necessary to prevent migration of oils/sheens beyond the boom.

2.2 POLLUTION CONTROLS

- A. Provide spill kits and oil-absorbent pads, rolls, and booms as required to contain any spills that occur and prevent the potential migration of pollutants in accordance with all applicable Laws and Regulations. Spill kits shall be located within the work area and on all work vessels.
- B. Equipment operating on or near the water shall use vegetable oil in place of typical hydraulic fluid to minimize the environmental impacts of any potential spills.

PART 3 - EXECUTION

3.1 GENERAL

- A. Contractor shall conduct all in-water work in a manner that is protective of the environment and public health and safety.
- B. Contractor shall perform pre- and post-construction bathymetric survey of all areas. Following completion of the work the disturbed areas must be restored to the pre-construction conditions. Refer to Section 01050 – Field Engineering for requirements of the bathymetric surveys and the extents of the area to be surveyed.

3.2 COORDINATION AND NOTIFICATIONS

- A. At the pre-construction meeting, the Resident Engineer and the Contractor shall discuss the Contractor's construction operations to develop mutual understandings relative to the environmental provisions required before, during, and after the work.
- B. During daily meetings, the Resident Engineer and the Contractor shall discuss daily work items related to the administration of the environmental protection controls.

In addition, the weather forecast will be monitored and discussed to identify events that may require implementation of contingency measures.

- C. Contractor shall be responsible for coordination with the United States Coast Guard (USCG), Nassau County, and local officials regarding water vessel traffic and bridge operations. Contractor shall also coordinate and maintain communications with local officials, local marinas, and shipping traffic during construction activities for updates on anticipated activities, vessel traffic, bridge openings, and similar.
- D. Contractor shall manage in-water activities so as not to obstruct navigation of other vessels, except as permitted by the USCG in accordance with any safety zone prepared and published in 33 Code of Federal Regulations (CFR) Part 147 and be able to move operations with little notice while eliminating turbidity and sheens transport outside of the work area. Buoys may be installed through the work area to create temporary transit channels and shall be relocated as construction progresses. Notify Engineer of Record, Construction Manager and Nassau County 4 weeks in advance of any planned activity that would result in a temporary blockage of navigation of other vessels.
- E. Submit Notice to Mariners to USCG at least 14 days prior to start of work that will require in-water work, including the transport of materials, equipment, personnel, etc. Provide a copy of Notice to the Owner and Resident Engineer.

3.3 DELIVERY, STORAGE, AND USE OF EQUIPMENT

- A. The barge, or barges, required for the delivery and storage of equipment and materials must be transported to and from the work area without the need for excavation or dredging within the waterway.
- B. The barges shall be lit during hours of darkness and restricted visibility and otherwise marked in accordance with USCG Sub Part C 33 CFR 83.30 Vessels anchored, aground and moored barges (Rule 30).

3.4 ENVIRONMENTAL MEASURES

- A. The Contractor shall consider protection of the environment to be of prime importance during the work and shall immediately address spills and releases because of the work.
- B. Contractor and Subcontractor employees shall be familiar with and understand the environmental protection program, including the spill prevention and response procedures.
- C. The Contractor shall maintain temporary pollution control features installed as part of the work.

3.5 REFUELING

- A. The Contractor shall review proposed construction areas to plan access routes and fueling areas.
- B. Exercise care in handling fuels to minimize the potential for fuel spills.
- C. Areas of equipment refueling, and maintenance shall have double containment and be equipped with adequate containers for the disposal of wastes produced from upkeep and repair.
- D. All refueling activities shall comply with United States Coast Guard (USCG) regulations for on-water fuel distribution and storage.
- E. Equipment operation shall be suspended during fueling of that piece of equipment. Contractor shall not leave fueling operations unattended.
- F. Inspect vessels, vehicles, and equipment each day for leaks. Complete repairs immediately or remove leaking vessels, vehicles, or equipment from the work area.

3.6 SPILL PREVENTION AND CONTROL

- A. The Contractor shall adhere to controls as outlined in Section 01495 – Spill Prevention and Control to minimize and control spills during the in-water work.
- B. The Contractor shall be always prepared to intercept, clean up, and dispose of any spills that may occur on land or water.
- C. The Contractor shall keep materials required to clean up spills (spill kits) readily accessible onsite. At a minimum, spill kits shall be maintained on each water-based vessel, at the transloading area, and at the material processing area.
- D. The Contractor shall immediately contain and clean up spills of oil, fuel, and other deleterious substances in accordance with local and federal regulations. Materials used to clean up such spills shall be properly disposed of. Project standdown or delays associated with responding to spills and identifying mitigative measures to prevent the recurrence of a spill will not be considered a project delay or force majeure event.
- E. Releases more than reportable quantities established under 40 Code of Federal Regulations 110, 117, and 302 must be reported to the National Response Center (800.424.8802) within 24 hours.
- F. The Contractor shall immediately report any spills to the Owner and Engineer and will support reporting the spill to the NYSDEC spill reporting hotline.

- G. The Contractor is responsible for any cleanup or repair resulting from spills in a timely manner and at no additional cost to the County.

3.7 WASTE MANAGEMENT AND DISPOSAL

- A. The Contractor shall comply with applicable local, state, and federal regulations, standards, and guidelines for handling and disposal of solid and hazardous waste.
- B. The Contractor shall designate one or more construction waste collection areas onsite and shall have an adequate number of containers with lids or covers for waste. Waste shall be collected from the containers before they overflow.
- C. Waste shall be transported and disposed of at an offsite facility approved by the governing authorities in accordance with Section 01610 – Transportation and Handling of Materials and Equipment and 02050 – Demolition, Removals, and Modifications.

3.8 POLLUTION CONTROL

- A. Spills and Containment: Provide equipment and personnel to perform emergency measures required to contain spills and or mitigate (e.g., equipment leaks) and to remove impacted soil, sediments, and water.
- B. Provide means, methods, and facilities required to prevent contamination of soil, sediment, and water caused by potential discharge of noxious substances from construction operations within work area.
- C. No Discharge of Liquids Measures must be put in place to prevent the discharge of any liquid during transportation and temporary storage of the excavated material.
- D. Protection of Wetlands. Implement special measures to prevent harmful substances from entering surface waters. Prevent disposal of wastes, effluents, chemicals, and other such substances in or adjacent to surface waters and open drainage routes.
- E. Sheen Controls. Provide equipment and personnel to contain sheens that occur outside of the Work Area, adjacent to equipment/vessels staged outside the Work Area (e.g., via use of oil absorbent booms/pads).
- F. Precautions Against Contamination of Waters. All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate, or any other environmentally deleterious materials associated with the project.

3.9 MISPLACED MATERIALS AND EQUIPMENT

- A. If during execution of the Work, Contractor loses, dumps, throws overboard, sinks, or misplaces any material or equipment, promptly recover, and remove the same. Contractor shall give immediate verbal notice, followed by written confirmation, of the description, location, and quantity of such materials to the Owner and Engineer, and shall promptly remove such materials or equipment or mark such obstructions until material or equipment can be removed.

+ + END OF SECTION + +

++ NO TEXT ON THIS PAGE ++

SECTION 01650

STARTING OF SYSTEMS

PART 1 – GENERAL

1.1 GENERAL

- A. The Contractor shall initially start up and place all equipment installed by him into successful operation according to manufacturers' written instructions and as instructed by manufacturers' field representatives. Provide all material, labor, tools, equipment, and expendables required.
- B. General Activities Include:
 - 1. Cleaning.
 - 2. Removing temporary protective coatings.
 - 3. All adjustments required.

1.2 MINIMUM START UP PROCEDURES

- A. Tighten all pipe joints after system has been tested.
 - 1. Replace gaskets which show any sign of leakage after tightening.
- B. Inspect all joints for leakage.
 - 1. Promptly remake each joint which appears to be faulty.
- C. After system has been tested, clean strainers, dirt pockets, orifices, valve seats and headers in fluid system, to assure freedom from foreign materials.
- D. Remove rust, scale and foreign materials from equipment and renew defaced surfaces.

1.3 UNDERWATER VISUAL INSPECTION

- A. Prior to the Contractor demobilizing, the Contractor shall have prepared and tested all equipment to check its ability for sustained operation as specified in Section 01660 and this Section. Also, all training by vendors shall have begun and all O&M manual submittals shall be completed prior to start-up.
- B. After the facilities are sufficiently complete, the Contractor shall furnish competent personnel to observe the diffuser facilities in operation. The Contractor will be responsible for observing of all facilities constructed under this Contract. The Contractor shall check and provide for satisfactory operation of the diffuser system by visually inspecting each riser pipe and each duckbill check valve on each riser pipe. Two sets of underwater visual inspections shall be conducted. All

underwater visual inspections shall be video recorded per requirements in Section 01410, Underwater Video. Contractor shall submit to the Engineer for review video recordings and a report summarizing observed operational condition of the first underwater visual inspection and shall also note any operational issues observed. Submittal shall be an information submittal. Contractor shall repair any issues observed or noted by the Engineer prior to conducting a second underwater visual inspection of the diffuser. Second underwater visual inspection scope shall be the same as the first. Contractor shall submit to the Engineer for review video recordings and a report summarizing observed operational condition as an informational submittal.

1. If the first underwater visual inspection reveals no operational deficiencies requiring repair, the first underwater visual inspection shall be suitable for use as the inspection required for substantial completion as outlined in the Agreement, Article XXXVI, "Substantial Completion Payment." All other conditions for substantial completion payment, as described in the Agreement, Article XXXVI, "Substantial Completion Payment," shall be met before the substantial completion payment will be made.
2. If a second underwater visual inspection is warranted as described herein, reveals no operational deficiencies requiring repair, the second underwater visual inspection shall be suitable for use as the inspection required for substantial completion as outlined in the Agreement, Article XXXVI, "Substantial Completion Payment." All other conditions for substantial completion payment, as described in the Agreement, Article XXXVI, "Substantial Completion Payment," shall be met before the substantial completion payment will be made.

- C. When the underwater visual inspection period is completed, the County will assume responsibility for operation of the new facilities, provided that all major items of the Work are operating satisfactorily, and operation and maintenance training has been completed satisfactorily. If any or all of the new facilities are not operating satisfactorily at the end of the underwater visual inspection period, the Contractor shall make any necessary adjustments until diffuser operation is satisfactory and acceptable to the County.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

+ + END OF SECTION + +

SECTION 01660

QUALITY CONTROL

PART 1 – GENERAL

1.1 GENERAL

- A. All materials and equipment shall be tested and inspected to insure full and complete compliance with the Specifications as determined by the County. All testing shall be in accordance with the American Society for Testing Materials and other Specifications as specified herein. Responsibility for performing testing shall be in accordance with the Detailed Specifications.
- B. The Contractor shall perform all leak testing of concrete riser pipe joints as described in Section 15052 – Exposed Piping Installation.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

++ END OF SECTION ++

++ NO TEXT ON THIS PAGE ++

SECTION 01700

MAINTENANCE OF PLANT OPERATIONS

PART 1 – GENERAL

1.1 GENERAL

- A. The intent of this Section is to have the Contractor perform his Work in such a manner that ensures continuous, uninterrupted treatment of the wastewater and all essential Plant services and facilities are maintained operational throughout the construction period.
- B. The existing plant will be maintained in continuous operation by the County during the entire construction period. Work under this Contract shall be so scheduled and conducted by the Contractor such that it will not impede any treatment process, create potential hazards to operating equipment and Plant Personnel, reduce the quality of the plant effluent or cause odor or any other nuisance. In performing the Work shown and specified, the Contractor shall plan and schedule Work to meet both constraints outlined in this Section and plant operating requirements.
- C. The work covered in the following paragraphs may not be all inclusive of all work which may affect plant operations. All operations which involve the demolitions, isolation or tie in to existing plant equipment and/or systems will be submitted for approval.
- D. Contractor has the option of providing additional temporary facilities that can eliminate a constraint, provided it is done without additional cost to the County, and provided that it does not require any other Contractor to perform additional work, and provided that all requirements of these Specifications are fulfilled.
- E. The Contractor shall not shut off or disconnect any operating system of the Plant. All Plant equipment operation and equipment shutdowns shall be executed by the County. The Contractor shall put in place a Lock Out Tag Out (LOTO) system for the safety of their workers in conjunction with Plant's LOTO.
- F. This Section of the Specifications contains several references to equipment, piping, material and appurtenances to be removed or reinstalled. The Contractor shall also refer to the Drawings and other applicable Sections for definition of the equipment, piping, material and appurtenances to be removed and turned over to the County and stored on site, or to become the property of the Contractor and removed from the site.
- G. Related Sections:

1. Section 01031, Additions, Modifications and Alterations to Existing Structures
2. Section 01355, Hazardous Materials Control
3. Section 01356, Safe and Healthful Working Conditions
4. Section 01500, Temporary Facilities and Controls

1.2 GENERAL CONSTRAINTS

- A. The following constraints shall be applied to all equipment and appurtenant utility systems on the Plant site.
 1. Load limits on Access Roads: Existing and new underground facilities such as electrical duct banks, pipelines, etc., in, under and crossing plant roads have been designed for a maximum wheel load of AASHTO H-20. The Contractor shall not exceed this weight limit.
 2. Access to Plant Site: An unobstructed traffic route through all Plant gates must be maintained at all times.
 3. Internal Roads Access: Vehicular access to all treatment units and buildings must be maintained at all times.
 4. Personnel Access: Treatment Plant Personnel must have access to all areas that remain in operation throughout the construction period.
 5. Power, Light and Communication Systems: Electric power, lighting service and communication systems shall be maintained in uninterrupted operation in all areas.
- B. The following constraints shall be applied to the outfall and diffuser piping.
 1. A complete shutdown of the diffuser pipe shall not be permitted. The diffuser pipe shall remain operational at all times during the Work.
 2. Each individual riser pipe can be isolated from the main diffuser pipe to facilitate the work. Limit the number of riser pipes to be isolated to five (5) at any given time.

1.3 SHUTDOWNS

- A. General:
 1. Shutdown shall be defined to indicate that a portion of the normal operation of a Plant unit has to be suspended or taken out of service in order to perform the specified work. For each shutdown, the Contractor shall compile an inventory of its labor and materials required to perform the tasks, an estimate of the time required and a written description of steps required to complete the tasks. Contingency time shall be provided where existing shut-off devices do not close tight and supplemental pumping and/or other devices are required to maintain dry conditions. The inventory, the estimate and written procedure shall be submitted to the County for review 60 calendar days prior to the proposed start date of the shutdown. The Contractor shall also request in writing, from the County, approval for each

shutdown a minimum of fourteen calendar days prior to the proposed date. No shutdown shall be initiated until the list of materials and labor is verified on site at least one week prior to the proposed start date.

2. Work required which will interrupt the normal Plant operations shall be accomplished at such times that will be convenient to the County.
 3. The Contractor shall provide 7-day advance notice of needed shutdowns to all Plant and Operations staff.
 4. The Contractor shall also have on hand, located in close proximity to the Work area, all tools, equipment and materials, both temporary and permanent, necessary to complete each work category, without interruption. Adequate numbers of personnel shall be scheduled for each shutdown, so that the work may be accomplished within the specified time frame. Prefabrication of all piping, ductwork and other assemblies shall be completed to greatest degree possible, prior to any shutdowns. The County shall be satisfied that the Contractor has complied with these requirements, to the fullest extent possible, before shutdowns will be authorized.
- B. Shutdowns of Electrical Systems: The Contractor and the County shall each lock out and tag circuit breakers and switches operated by the County, and shall check cables and wires to be sure that they are de-energized to ground potential before Work begins. Upon completion of the Work, the Contractor shall remove the locks and tags and advise the County that the facilities are available for use. The County will then remove their locks and place facilities back into use.

1.4 OVERTIME

- A. Overtime Work by the Contractor necessary to conform to the requirements of this Section and related Sections shall be performed by the Contractor and the Contractor shall make no claims for extra compensation as a result thereof.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

3.1 SEQUENCE OF CONSTRUCTION

- A. Conduct pre-construction bathymetric survey as described in Section 01620 – In-Water Work.
- B. Remove sea life growth as described in Section 01010 – Summary of Work.
- C. Conduct underwater visual inspection as described in Section 01410 – Underwater Video.

- D. Install riser pipes and all associated appurtenances. The following sequence shall be followed for installation of the riser pipes and associated duckbill check valves.
 - 1. Deliver riser pipes and duckbill check valves to staging area at Cedar Creek WRF for inspection by Engineer.
 - 2. Fasten duckbill valves to riser pipe sections at staging area at Cedar Creek WRF.
 - 3. Transport assembled riser pipe and all other necessary components to site.
 - 4. Remove one existing riser pipe section at a time and inspect the joint portion remaining underwater for damage as described in the Contract Documents.
 - a. Disposal of riser pipe sections shall be permitted after results of hazardous materials sampling and testing per Section 02050 – Demolition, Removals, and Modifications are provided.
 - 5. Make any necessary repairs to joint portion remaining underwater.
 - 6. Install new riser pipe section.
- E. Remove and dispose of all accumulated sediment from within the interior of the existing diffuser header system and diffuser riser pipes.
 - a. Disposal of sediment shall be permitted after results of hazardous materials sampling and testing per Section 02050 – Demolition, Removals, and Modifications are provided.
- F. Conduct underwater visual inspection as required in Section 01650 – Starting of Systems.
- G. Conduct post-construction bathymetric survey.
- H. Conduct underwater visual inspection as required in Section 01760 – Project Closeout.
- I. Install three buoys as specified in the Contract Documents.

+ + END OF SECTION + +

SECTION 01710

CLEANING

PART 1 – GENERAL

1.1 GENERAL

- A. Execute cleaning, during progress of the Work, at completion of the Work, and as required by the General Conditions, Article GC33, "Cleaning".
- B. Requirements of Regulatory Agencies:
 - 1. In addition to the requirements herein, maintain the cleanliness of the Work and surrounding premises within the Work limits so as to comply with federal, state, and local fire and safety laws, ordinances, codes and regulations.
 - 2. Comply with all federal, state and local anti-pollution laws, ordinances, codes and regulations when disposing of waste materials, debris and rubbish.
- C. Scheduling of Cleaning and Disposal Operations:
 - 1. So that dust, wash water or other contaminants generated during such operations do not damage or mar painted or finished surfaces.
 - 2. To prevent accumulation of dust, dirt, debris, rubbish and waste materials on or within the Work or on the premises surrounding the Work.
- D. Waste Disposal:
 - 1. Dispose of all waste materials, surplus materials, debris and rubbish off the plant and marine work Site.
 - 2. Do not burn or bury rubbish and waste materials on the plant and marine work Site.
 - 3. Do not dispose of volatile or hazardous wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
 - 4. Do not discharge wastes into streams or waterways.
- E. Cleaning Materials:
 - 1. Use only cleaning materials recommended by manufacturer of surface to be cleaned.
 - 2. Use each type of cleaning material on only those surfaces recommended by the cleaning material manufacturer.
 - 3. Use only materials which will not create hazards to health or property.
- F. During Construction:

1. Keep the Work and surrounding premises within work limits free of accumulations of dirt, dust, waste materials, debris and rubbish, in accordance with the General Conditions, Article GC33, "Cleaning."
2. Keep dust generating areas wetted down.
3. Provide suitable containers for storage of waste materials, debris and rubbish until time of disposal.
4. Dispose of waste, debris and rubbish off Site at legal disposal areas.

G. When Project is Completed:

1. The Contractor shall clean and maintain the Site in accordance with Division 1, Section 01760, Project Closeout.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

++ END OF SECTION ++

SECTION 01720

PROJECT RECORD DOCUMENTS

PART 1 – GENERAL

1.1 GENERAL

- A. The Contractor shall maintain and provide the Engineer with Project record documents as specified below except where otherwise specified or modified in the Specifications or in the General Conditions, Article GC5, "Drawings and Specifications" and Article GC36, "Record Drawings."

1.2 MAINTENANCE OF DOCUMENTS

- A. Maintain the Contractor's field office in clean, dry, legible condition, complete sets of the following: Contract Drawings, Specifications, Addenda, approved Shop Drawings, Samples, photographs, Change Orders, other Modifications of Contract, test records, survey data, Field Orders, and all other documents pertinent to Contractor's Work.
- B. Provide files and racks for proper storage and easy access. File in accordance with the filing format of the Construction Specification Institute (CSI) unless otherwise approved by the Engineer.
 - 1. Make documents available at all times for inspection by the Engineer and the County representative.
 - 2. Record documents shall not be used for any other purpose and shall not be removed from the office without the Engineer's approval.

1.3 RECORDING UPDATED INFORMATION

- A. General:
 - 1. Label each document "PROJECT RECORD" in 2-inch high printed letters.
 - 2. Keep record documents current, and updated at least monthly.
 - 3. Do not permanently conceal any Work until required information has been recorded.
- B. Contract Drawings: Legibly mark to record actual construction including:
 - 1. Depths of various elements of foundation in relation to datum.
 - 2. Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements.
 - 3. Location of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of structure.
 - 4. Field changes of dimensions and details.
 - 5. Changes made by Change Order or Field Order.
 - 6. Details, not on original Contract Drawings.

- C. Specifications and Addenda: Legibly mark up each Section to record:
 - 1. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
 - 2. Changes made by Change Order or Field Order.
 - 3. Other matters, not originally specified.
- D. Shop Drawings: Maintain as record documents and legibly annotate Drawings to record changes made after review.

1.4 FINAL SUBMISSION OF RECORD DOCUMENTS

- A. Record Drawings:
 - 1. At the completion of the Work, Contractor shall furnish to the Engineer record drawings two (2) full size paper and on USB one (1) electronic bound AutoCAD drawing set in Release 2018 or later and one (1) compiled PDF set showing the actual in-place installation of these items installed under this Contract. The AutoCAD drawings shall conform to the Bay Park Program and specific contract CAD Plans. The Contract Drawings shall be used as a starting point in developing these Drawings. Drawings shall show the Work in plan and sections as required for clarity with reference dimensions and elevations for complete Record Drawings. All Drawings must be submitted for approval of the Engineer. Documentation shall be furnished not later than 30 days after completion of the Work and prior to Final Payment.
 - 2. Within sixty (60) days of projected substantial completion, the Contractor shall provide a list of as built shop drawings that will be provided as record drawings that show details not provided on the updated Contract Drawings. The list is subject to the approval of the Engineer. The as built shop drawings shall at a minimum cover:
 - a. Schematic (Elementary) Diagrams: This shall include, but not be limited to, complete schematics.
 - b. Interconnection diagrams: These shall include all interconnections to be furnished under this Contract.
 - c. Dimension of outline drawings: These shall include all equipment furnished under this Contract.
 - 3. As built shop drawings shall be submitted in the same manner as described in Specification Section 01300 Submittals with the following variations:
 - a. Submittal number shall have the prefix AB and revision suffix shall restart at A, eg AB-15111-001-A.
 - b. As built submittals shall be returned only Approved or Not Approved.
- B. Submittal:
 - 1. At completion of Project, deliver record documents to the Engineer.
 - 2. Accompany submittal with transmittal letter containing:
 - a. Date
 - b. Project title and number

- c. Contractor's name and address
- d. Title and number of each record document
- e. Certification that each document as submitted is complete and accurate.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

+ + END OF SECTION + +

++ NO TEXT ON THIS PAGE ++

SECTION 01730

OPERATION AND MAINTENANCE DATA

PART 1 – GENERAL

1.1 GENERAL

- A. Provide operation and maintenance data in the form of instructional manuals for use by the County's personnel for:
 - 1. All equipment and systems.
 - 2. All valves and related accessories.

1.2 SPARE PARTS AND SPECIAL TOOLS

- A. Spare Parts:
 - 1. As soon as practicable after approval of the list of equipment, the Contractor shall furnish spare parts data for each different item of equipment listed. The data shall include a complete list of parts and supplies, with current unit prices and source or sources of supply. This information shall also be included in the Operations and Maintenance Manuals.
 - 2. The Contractor shall also furnish a list of parts, and supplies that are either normally furnished at no extra cost with the purchase of the equipment, or specified to be furnished as part of the Contract and a list of additional items recommended by the manufacturer to assure efficient operation for the particular installation for a period of one year or the guarantee period, whichever is greater.
 - 3. All parts shall be securely boxed and tagged, and clearly marked on the box and individually for identification as to the name of manufacturer or supplier, applicable equipment, part number, description and location in the equipment. All parts shall be protected and packaged for a shelf life of at least ten years.
- B. Special Tools:
 - 1. The Contractor shall furnish at no additional cost to the County with each piece of equipment as a minimum, two complete sets, or the number of sets called for in the Technical Specifications, of suitably marked special tools and appliances which may be needed to adjust, operate, maintain, or repair the equipment.
 - 2. The Contractor shall submit, for approval by the Engineer, a complete list of the special tools and appliances to be furnished. Such tools and appliances shall be furnished in approved painted steel cases properly labeled and equipped with good grade cylinder locks and duplicate keys.

1.3 OPERATION AND MAINTENANCE MANUALS

A. Final Operations and Maintenance Manuals:

1. As a prerequisite to obtaining payments for equipment furnished under this Contract in excess of fifty percent of the Contract amount, the Contractor shall prepare, submit and obtain the Engineer's approval of an operation and maintenance manual for each item of equipment supplied under this Contract. Each item of equipment shall be identified with the equipment identification number given in the Contract Documents or as furnished by the Engineer. Each manual shall be prepared specially for this installation and shall include all approved Shop Drawings, all pertinent and legible instructions, technical bulletins and other printed matter required to provide fully accurate and comprehensive information for the safe and proper operation, maintenance and repair of the equipment item. It shall include, but not be limited to the following:
 - a. Catalogs, diagrams, schematics, drawings, instructional bulletins and manuals marked by underlining, checking, the use of arrows or the obliteration or removal of extraneous data, so as to pertain only to the specific equipment item for which the manual is supplied. Original reprints of manufacturers' catalog information and maintenance data shall be furnished; photocopies or facsimile (FAX) copies will not be acceptable.
 - b. Complete electrical schematics and wiring diagrams. Complete wiring between terminal points must be shown. Computerized diagrams are not acceptable.
 - c. Drawings, diagrams and illustrations shall be original quality and clearly legible. Facsimile copies are not acceptable. Reduced drawings shall not be reduced to less than one-half of the original size. All lines, dimensions, lettering and text must be clearly legible.
 - d. Reference to features and elements of equipment, such as operational limits of time, speed, pressure, temperature, etc., shall be clear, complete and compatible with authoritative published engineering reference documents. Torque ratings shall be given for all bolted connections. All functional components, electrical systems, equipment, etc., shall be shown on diagrams and discussed in the text so as to identify their proper system relationship. Operation, service, trouble-shooting, checkout and in-line and bench repair procedures, identifying specific system characteristics of the equipment, shall be provided. Detailed start-up and shutdown procedures shall be included as a separate section for each piece of equipment or system.
 - e. Recommended procedures and frequencies for preventive maintenance such as inspection, adjustment, lubrication, calibration and cleaning shall be provided including pre-startup checklists for each piece of equipment and long-term shutdown maintenance.
 - f. Equipment parts shall be identified by manufacturer's part number and located with relation to other components of the equipment utilizing

"exploded" type drawings for clarity. Complete parts lists shall be included, which indicate the part number, the part description, applicable serial and model numbers, current unit prices and the name, address and telephone number of the nearest equipment manufacturer's representative and nearest service and spare parts warehouse. Complete instructions for the ordering of all replaceable parts shall be noted in this section of the Manual. Recommendations as to spare parts and spares inventory levels shall be made. Lead time and shelf life values and preservation, packaging and labeling methods shall be recommended.

- g. All copyrighted material used in the manual or in any operation required in the performance of the Contract will be preceded by the Contractor obtaining the copyright holder's written permission to use such material. The Contractor shall hold the County and the Engineer free of any legal responsibility for its use.
- 2. Each operation and maintenance manual shall be bound in a durable, permanent, stiff cover binder of one (more if required) volume with a complete index of the manual's contents arranged by subject matter and in order of presentation in each volume. Applicable equipment item numbers, as shown in the Contract Documents, shall be prominently included at their appropriate location in the index. The title of the manual shall be securely affixed to the binder in two places: the front cover and the binder back edge. The title shall identify the Project by number and name, state the volume is an O&M manual, generally classify the equipment and state the manufacturer's name, equipment model number and equipment identification number.
 - a. Covers shall permit easy removal of pages and shall be of the three-post, metal-hinged, self-expanding type and shall not be overfilled. Covers shall be oil, moisture and wear resistant and approximately 9 by 12 inches in size.
 - b. Page size shall be 8-1/2 by 11 inches; paper shall be 60 pound and holes reinforced with plastic cloth or metal.
 - c. Drawings, diagrams and illustrations shall be attached foldouts up to 11 by 17 inches in size; larger sizes shall be inserted in the attached clear plastic envelopes marked as to contents.
- 3. Contractor's submittal to the Engineer for approval shall consist of three complete sets of each operation and maintenance manual and two copies of an itemized listing providing cross-reference identification between the Specification Sections of the Contract Documents, the approved Shop Drawings, and the operations and maintenance manual submittal. One copy of the manual and itemized listing will be returned to the Contractor stamped either "Approved" or "Disapproved", the latter when the Manual submittal is considered inadequate, inaccurate or lacking essential information. Discrepancies will be noted on the return itemized listing of a "Disapproved" submittal. The Contractor shall rectify all unapproved

submittals by replacing submitted portions or adding additional data, as required, to the manual. The manual's index of contents and the itemized, cross-referenced listing shall be revised to reflect all revisions or additions made. Then two copies of the entire package shall be resubmitted to the Engineer for approval.

4. Upon approval of the operation and maintenance manuals, the Contractor shall submit ten copies of the manual and the itemized listing to the County.

1.4 EQUIPMENT START-UP SERVICES

- A. Equipment start-up period, shall begin after satisfactory completion and acceptance of the field tests described in Section 01660 and shall end before the certified date of substantial completion for the part of the Work for which the equipment is included. If the equipment is not covered by a certificate of substantial completion for a part of the Work, the period shall begin upon substantial completion of the Project.
- B. During the equipment start-up period the Contractor shall furnish, at no additional cost to the County, the services of factory-trained representatives of the equipment manufacturers for the equipment designated in the Specifications to:
 1. Assist in the operations of the equipment.
 2. Conduct training of plant personnel in the proper operation and maintenance of the equipment.
- C. The County shall:
 1. Provide the necessary plant personnel for training in the operation and maintenance of the equipment during their regularly assigned work shifts.
- D. The Contractor shall pay for all chemicals consumed up to the date of "certified substantial completion", and in addition shall provide the quantities of fuel and chemicals specified in Section 01660, Quality Control.
- E. The Contractor shall be available to promptly repair all Work during the start-up period so as to cause minimum disruption to the total plant operation.
- F. Upon completion of a minimum of ten consecutive twenty-four hour days of satisfactory operation, or the number of days called for in the Technical Specifications, the County will assume operation and operating cost of the equipment. If the equipment malfunctions during this start-up period, the start-up period will be repeated until satisfactory operation is achieved.
- G. In the event a system, equipment or component proves defective or is unable to meet specified performance criteria, the Contractor shall replace the defective item, and the minimum two years guarantee period, or the guarantee period called for in the Technical Specifications for the item, shall start after satisfactory

replacement and testing of the item.

1.5 TRAINING

- A. As part of these services, the Owner will provide the necessary plant personnel for training in the operation and maintenance of the equipment. Training shall be provided as required in the Specifications. The Owner's personnel shall operate all equipment. The number of personnel to be trained, the class size and number of days the training shall be given shall be as indicated in the respective equipment specifications. Where the number of personnel and/or class size is not indicated in the respective equipment specifications, the Contractor shall assume a class size of 20 personnel.
- B. The training shall consist of both classroom and field instruction. The purpose of field instruction shall be to reinforce topics covered in the classroom and to identify the location of any valves, pushbuttons, control panels switches, and other equipment required for operation; and to identify the location of any maintenance equipment such as grease fittings, oilers, isolation valves, safety lockout switches, and other equipment.
- C. All training, unless otherwise specified, shall take place at the work site at a place specified by the Owner and shall be conducted by qualified training specialists.
- D. Separate training sessions shall be conducted for the Owner's mechanical operations and maintenance personnel and for the Owner's electronic and electrical maintenance personnel.
- E. The Contractor shall coordinate the manufacturers training services with the Owner and the Engineer, providing a minimum of fourteen (14) days prior notice of training, subject to the approval of the Engineer and the Owner.
- F. In order to provide training for an adequate number of the Owner's operation and maintenance personnel, all training sessions shall be provided twice and shall be scheduled by the Owner to accommodate their shift schedule. All training shall be conducted during the hours of 8:00 AM to 12 AM until conclusion of the training course.
- G. The Contractor shall deliver all training material to the Engineer and the Owner a minimum of fourteen (14) days prior to the scheduled training.

1.6 POWER POINT PRESENTATION

- A. The Contractor shall provide a Power Point Presentation for each plant training session.
- B. The manufacturer shall have the right of ownership of one copy of the power point presentation utilized for training.
- C. The contractor must submit, for approval by the Engineer and the Owner, a power point presentation (s) covering the equipment supplied. Include the presentation in CD disk form for content review as part of the submittal package. Approval of such power point(s) shall be contingent upon their content meeting the lesson plan requirement of this Section. When the power point presentation (s) are approved by the Engineer and the Owner, the Owner shall have the right to permanent ownership and use of at least one complete copy.
- D. The power point presentation must include a section identifying the Complete System Overview including all related and associated equipment specific to that particular system and how the specific piece of equipment operates within that system.
- E. The Power Point Presentation must be Site Specific covering all related system items being presented in the training session. Handouts should mirror this presentation to include and be specific to the entire presentation.

1.7 LESSON PLANS

- A. The Contractor shall submit the equipment manufacturer's lesson plans which shall include specific information about each item of equipment or equipment system, including controls. Lesson plans shall include but not be limited to the following information and meet the following requirements.
 - 1. The Contractor shall submit the equipment manufacturer's lesson plans for approval by the Engineer no less than sixty (60) days prior to the date that the training is to take place.
 - 2. Lesson plans shall indicate the estimated duration of each segment of the training and the training audience that the instruction is to address. The training audience refers to the Owner's mechanical operation and maintenance personnel and the Owner's electronic/electrical maintenance personnel, as appropriate.
 - 3. The lesson plan shall indicate when training aids are used or referred to during the course of instruction.
 - 4. An outline of required lesson plan contents is included below:
- B. Equipment Description:
 - 1. Purpose and function of equipment and auxiliary equipment and systems.

2. Physical arrangement of equipment components and electrical supply.
 3. General function of controls, including automatic and manual operation, interlocks, and shutdowns.
- C. Equipment Operation:
1. Operating requirement for equipment to perform satisfactorily.
 2. Typical operating characteristics.
 3. Start-up and shutdown procedures.
 4. Use of controls.
- D. Equipment Monitoring:
1. Recommended routine instrument readings and operational checking.
 2. Early warning signs of developing operational or equipment problems.
 3. Procedures for handling non-routine problems such as alarms, power failures, component failures, etc.
- E. Equipment operational troubleshooting procedures.
- F. Safety and Housekeeping:
1. Safety features of the equipment.
 2. Safe practices.
 3. Housekeeping practices.
- G. Description of the use of the equipment manufacturer's O&M Manual as regards operation.
- H. Preventive Maintenance Requirements:
1. Maintenance needs for equipment.
 2. Identification of procedure to satisfy maintenance need (relate to equipment manufacturer's O&M Manual, which should have detailed descriptions of maintenance procedures).
 3. Outline or summarize procedures.
 4. Recommended schedule for performing preventive maintenance.
 5. Provide preventive maintenance record forms (if available).
- I. Maintenance Inspection Program:
1. Parts, components and areas of equipment to inspect for routine preventive maintenance.
 2. Recommended frequency of inspection.
 3. Inspection procedures.
 4. Problem identification.
- J. Maintenance Troubleshooting:
1. Sections in O&M Manual detailing troubleshooting procedures.
 2. Summarize troubleshooting procedures.

3. Testing equipment used in troubleshooting.
 - a. Demonstration of use of specialized testing equipment if supplied with equipment.
 - b. Other testing equipment.
 4. Tests used to verify troubleshooting findings.
- K. Disassembly and Assembly:
1. Summarize disassembly and assembly procedures.
 2. O&M Manual coverage of subject.
 3. Testing to verify success of corrective maintenance.
- L. Equipment Calibration:
1. Calibration needs and tolerances.
 2. Calibration equipment.
 3. O&M Manual listing of calibration ranges, tolerances and settings.
- 1.8 TRAINING AIDS
- A. Training aids shall be used as an integral part of the training program. Training aids shall include PowerPoint presentations, as per section 1.6, and pictorial handouts specific to the equipment supplied. Handouts shall be legible and printed on good quality stock. Handouts shall be submitted when lesson plans are submitted.
- B. Additional training aids shall be used for maximum training effectiveness and shall include the following as appropriate:
1. Audio visual aids, for example, PowerPoint presentations, films, videotapes, slides, overhead transparencies, posters, blueprints, diagrams, and catalogue cuts.
 2. Models and samples, for example, cutaways, spare parts, tools, miniature models, equipment assemblies, and damaged parts.
- C. The use of additional training aids shall be identified in the lesson plan, and a description of the additional training aids shall be given.

1.9 QUALIFICATIONS OF TRAINING SPECIALISTS

- A. The Contractor shall submit the equipment manufacturer's documentation of the qualifications of their proposed training specialists for approval by the Engineer sixty (60) days prior to the date of proposed training. The documentation shall include the experience of the training specialists in operation and maintenance of the equipment and a summary of training experience. The documentation shall be submitted for approval with the lesson plan submittal. Lesson plans that do not include such documentation will be considered incomplete.

- B. Only those training specialties whose qualifications have been approved by the Engineer shall conduct training.

+ + END OF SECTION + +

++ NO TEXT ON THIS PAGE ++

SECTION 01760

PROJECT CLOSEOUT

PART 1 – GENERAL

1.1 FINAL CLEANING

- A. At the completion of the Work, the Contractor shall remove temporary structures, construction signs, tools, scaffolding, materials, supplies and equipment which he or any of his Subcontractors may have used in the performance of the Work.
- B. The Contractor shall broom clean paved surfaces and rake clean other surfaces of grounds.
- C. The Contractor shall thoroughly clean all materials, equipment and structures; all marred surfaces shall be touched up to match adjacent surfaces; dirty filters and burned-out lights replaced as required. The Contractor shall clean and polish all interior and exterior glass surfaces so as to leave glass surfaces in a clean and new appearing condition.
- D. The Contractor shall remove spatter, grease, stains, fingerprints, dirt, dust, labels, tags, packing materials, rubbish, and other foreign items or substances from interior and exterior surfaces, equipment, signs and lettering.
- E. Remove paint, clean and restore all equipment and material nameplates, labels and other identification markings.
- F. The Contractor shall maintain cleaning until Project, or portion thereof, is occupied by the County.

1.2 INSPECTIONS

- A. At the time of substantial completion an inspection shall be held in accordance with the requirements of the Agreement, Article XXXVI, "Substantial Completion Payment". At this time the Contractor shall also provide all necessary documentation as required by the above referenced Article. All required inspections shall be in accordance with Section 01650, Starting of Systems and all underwater video shall be in accordance with Section 01410, Underwater Video.
- B. At the time of completion of all the Work a final inspection is not required as indicated in the requirements of the Agreement, Article XXXVII, "Final Payment". The Contractor shall provide all necessary documentation as required

by the above referenced Article and comply with all the requirements of the General Conditions, Article GC38, "Project Closeout".

C. Follow-up Inspection:

1. Prior to the time of the completion of the guarantee period as specified in the Agreement, Article XX, "Maintenance and Guarantee," the Engineer will make arrangements with the County and the Contractor for a follow-up inspection and will send a written notice to said parties to inform them of the date and time of the inspection. Inspection shall occur one month prior to the completion of the guarantee period.
2. Inspection shall be done by divers and a video recording of the inspection shall be provided to the Engineer. All underwater video shall be in accordance with Section 01410, Underwater Video
3. After the inspection, the Engineer will inform the Contractor of any corrections required.
4. When the corrections have been satisfactorily completed, the Engineer will forward a certificate for the release of Bonds.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

+ + END OF SECTION + +

SECTION 02050

DEMOLITION, REMOVALS, AND MODIFICATIONS

PART 1 – GENERAL

1.1 DESCRIPTION

A. Scope:

1. The Contractor shall provide all labor, materials, equipment and incidentals as shown, specified, and required to complete the Work of demolition, removal, and disposal. Included are all modifications to existing facilities as shown and required to complete the Work.
2. Included, but not limited to, are the demolition, removal, and disposal of existing structures, removal and disposal portions of any existing equipment including piping not required for the operation of the plant as indicated on the Drawings and as specified hereinafter, and all sediment accumulated in the diffuser pipe.
3. The Contractor shall furnish all labor, materials and equipment to demolish portions of structures and to remove anchors, supports, piping, equipment and accessories designated to be removed on the Drawings.
4. The removal of all equipment, piping, and all other materials from the demolition of structures shall, when released by the Engineer, be done by the Contractor for the materials removed by him and shall become Contractor's property, unless otherwise noted. The debris shall be disposed of off site in a manner not contrary to the Contract requirements.
5. Contractor shall test the sediment removed from the diffuser pipe and the riser pipe sections for hazardous materials prior to disposal.

B. Related Sections:

1. Section 01620, In-Water Work.

1.2 SUBMITTALS

A. Schedule: Submit for approval the following:

1. The Contractor shall submit a detailed description of methods and equipment and sequence for demolition and removal for the Engineer's review.

B. Material Test Results: Submit for information only the following:

1. The Contractor shall submit to the Engineer, CM and Nassau County, a report summarizing the results of sample testing indicating the presence or absence of hazardous materials in the sediment within the diffuser pipe and in the riser pipe sections.

1.3 PROTECTION

A. General:

1. Demolition and removal Work shall be performed by competent workmen experienced in the various types of demolition and removal Work required, and shall be carried through to completion with due regard to the safety of the Owner's employees, workmen on the Site and the public. The Work shall be performed with as little nuisance as possible.
2. The Work shall comply with the applicable provisions and recommendation of ANSI A10.2, Safety Code for Building Construction, and all governing codes and as hereinafter specified.
3. The Contractor shall make such investigations, explorations and probes as are necessary to ascertain any required protective measures before proceeding with demolition and removal.
4. The Contractor shall provide interior and exterior shoring, bracing and support to prevent movement, settlement, or collapse of existing structures or facilities. The Owner assumes no responsibility for the actual condition of the structures or facilities adjacent to the Work or the structures or facilities designated for removal or modification.
5. Do not bring explosives on site. No explosives will be permitted for this Project.

B. Execution:

1. The Contractor shall provide, erect and maintain catch platforms, barriers, weather protection, warning signs and other items as required for proper protection of the public, and workmen engaged in demolition operations.
2. The Contractor shall provide and maintain weather protection at exterior openings so as to fully protect the interior premises against damage from the elements until such openings are closed by new construction.
3. The Contractor shall provide and maintain temporary protection of the existing structure designated to remain where demolition, removal and new Work is being done, connections made, materials handled or equipment moved.
4. The Contractor shall take necessary precautions to prevent dust from rising by wetting demolished masonry, concrete, plaster and similar debris. Unaltered portions of the existing buildings affected by the operations under this Section shall be protected by dustproof partitions and other adequate means.
5. The Contractor shall provide adequate fire protection in accordance with local Fire Department requirements.
6. The Contractor shall not close or obstruct walkways, passageways, or stairways and shall not store or place materials in passageways, stairs or other means of egress. The Contractor shall conduct operations with minimum traffic interference.

7. The Contractor shall be responsible for any damage to the existing structure or contents by reason of the insufficiency of protection provided.
8. The Contractor shall carry out all operations to avoid interference with operations and work in the existing facilities and the work under other contracts.
9. The Contractor shall be solely responsible for making all necessary arrangements and for performing all necessary work involving the discontinuance or interruption of all utilities or services.
10. Any equipment, piping and appurtenances removed without proper authorization, which are necessary for the operation of the existing plant or of the plant expansion, shall immediately be replaced to the satisfaction of the Engineer at no cost to the Owner.

C. Notification:

1. At least 48 hours prior to commencement of demolition or removal, the Contractor shall notify the Engineer in writing of his proposed schedule therefor. The Owner shall inspect the existing equipment and (review with the Contractor) those items that are to remain the property of the Owner. No removals shall be started without the permission of the Engineer.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 GENERAL

- A. The Work required shall be done with care, and shall include all required shoring, bracing, as applicable. The Contractor shall be responsible for any damage which may be caused by demolition and removal Work to any part or parts of existing structures or items designated for reuse or to remain. The Contractor shall perform patching, restoration and new Work in accordance with applicable technical sections of the Specifications and in accordance with the details shown on the Drawings.
- B. Surfaces of walls, or other areas which are exposed by any of the removals specified herein, and which will remain as architecturally finished surfaces, which have holes, scars, chipped or other damaged surfaces revealed by the removal shall be repaired by the Contractor with the same or matching materials as the existing surface or as may be otherwise approved by the Engineer.
- C. Pollution Controls: Use water sprinkling, temporary enclosures, and other suitable methods to limit the amount of dust and dirt rising and scattering in the air to the lowest practical level. Comply with governing regulations pertaining to environmental protection.

1. Do not use water when it may create hazardous or objectionable conditions such as ice, flooding, and pollution.
 2. Clean adjacent structures, facilities, and improvements of dust, dirt, and debris caused by demolition operations. Return adjacent areas to conditions existing prior to the start of the Work.
- D. All supports, pedestals and anchors shall be removed with the equipment and piping unless otherwise specified or required. The concrete bases, anchor bolts and other supports shall be removed to approximately one inch below the surrounding finished area and the recesses shall be patched to match the adjacent areas. The superstructure wall and roof openings shall be closed, and damaged surfaces shall be patched to match the adjacent areas, as specified under applicable sections of the Specifications, as shown on the Drawings, or as directed by the Engineer. Wall sleeves and castings shall be plugged or blanked off, all openings in concrete shall be closed in a manner meeting the requirements of the appropriate sections of the Specifications, as shown on the Drawings and as directed and approved by the Engineer.
- E. Deposition of Materials and Equipment:
1. The Contractor shall deposit all demolition materials, equipment, debris, and all other items not marked by the Owner to remain as property of the Owner, off the site and in conformance with all existing applicable laws and regulations.
- F. Where alterations occur, or new and old Work join in, the Contractor shall cut, remove, patch, repair or refinish the adjacent surfaces to the extent required by the construction conditions, to leave the altered Work in as good a condition as existed prior to the start of the Work. The materials and workmanship employed in the alterations, unless otherwise shown on the Drawings or specified, shall comply with that of the various respective trades, which normally perform the particular items of work.
- G. The Contractor shall remove temporary work, such as enclosures, signs, guards, and the like when such temporary work is no longer required or when directed at the completion of the Work.

3.2 STRUCTURAL REMOVALS

- A. The Contractor shall remove concrete and structures to the lines shown unless otherwise directed by the Engineer. Where no limits are shown, the limits shall be 4 inches outside the item to be installed.
- B. Determine the thickness of existing concrete to be removed and the extent to which it is reinforced. No additional compensation will be made because of variations from the thickness shown or for variations in the amount of reinforcement.

- C. All concrete, concrete block, reinforcement, structural or miscellaneous metals, plaster, wire mesh and other items contained in or upon the structure shall be removed and taken from the site, unless otherwise approved by the Engineer. Demolished items shall not be used in backfill.
- D. After removal of parts or all of slabs and like work which tie into new Work or existing work, the point of junction shall be neatly repaired so as to leave only finished edges and finished surfaces exposed.
- E. Where new anchoring materials including bolts, nuts, hangers, welds and reinforcing steel are required to attached new Work to the existing work, they shall be included under this Section, except where specified elsewhere.

3.3 PAVEMENT, CURB AND SIDEWALK REMOVALS

- A. Remove existing pavement, including bases and surface courses, stabilized sub-bases, curbs, and gutters as required to construct new facilities or as shown. Before removing, saw a straight joint at least 1-1/2-inches deep between sidewalk and pavement designated for removal and that left in place. Curbs and gutters shall be removed to the nearest construction joint beyond the end of demolition symbol shown on the Drawings.
- B. Determine the thickness of existing pavement, base, sub-base, curb, gutter, driveway pavement, and sidewalk to be removed, and the extent to which they are reinforced. No additional compensation will be made because of variations from the assumed thickness or from the thickness shown or for variations in the amount of reinforcement.
- C. Provide for satisfactory transition between replaced pavement and sidewalks and the portions remaining in place.

3.4 MECHANICAL REMOVALS

- A. Equipment removals shall consist of dismantling and removing of existing piping and other appurtenances as specified, shown, or required for the completion of the Work. It shall include cutting, capping, draining, and plugging as required, except that the cutting of existing piping for the purpose of making connections thereto will be included under Division 15.
- B. When underground piping is to be altered or removed, the remaining piping shall be properly capped. Abandoned underground piping may be left in place unless it interferes with new Work or is shown or specified to be removed.

- C. Any demolition or changes to potable water piping and other plumbing and heating system work shall be made in conformance with all applicable codes. Portions of the potable water system that may have been altered or opened shall be pressure tested and disinfected in accordance with Division 15 and local codes. Other plumbing piping and heating piping shall be pressure tested only.
- D. Provide all caps, plugs, blind flanges, shut-off valves and other work and materials required to remove from service existing piping and necessary to keep existing piping in service where required.
- E. Riser pipe sections:
 - 1. Contractor shall test samples from the riser pipe sections, and associated caps, and have an independent laboratory test the samples for hazardous materials prior to disposal of each. The number of samples is to be determined using Balduck's Method based on the number of riser pipe segments that will be removed.
 - 2. The Contractor shall submit the results of testing in a report summarizing the findings.
 - 3. If the riser pipe sampling determines the presence of hazardous materials, all removed riser pipe sections shall be considered hazardous. Contractor shall adhere to all requirements indicated in Section 01355, Hazardous Materials Control for removal, remediation and disposal of all riser pipe sections within the diffuser pipe.
 - 4. If the riser pipe sampling determines that the riser pipe sections are non-hazardous, all removed riser pipe sections shall be considered non-hazardous.
 - 5. Contractor shall remove and dispose of riser pipe sections on land in accordance with all pertinent federal, state and local laws and regulations.

3.5 MISCELLANEOUS REMOVALS

- A. The Contractor shall remove miscellaneous concrete walls, slabs, pipe supports, and curbs where shown on the Drawings or where necessary for the construction of new structures or modification of existing structures.
- B. Sediment within diffuser pipe:
 - 1. Contractor shall take samples from the sediment inside the diffuser pipe and have an independent laboratory test the samples for hazardous materials prior to disposal. The number of samples is to be determined using Balduck's Method based on the volume of sediment that will be removed from the diffuser.
 - 2. The Contractor shall submit the results of testing in a report summarizing the findings.

3. If the sediment sampling determines the presence of hazardous materials, all sediment shall be considered hazardous. Contractor shall adhere to all requirements indicated in Section 01355, Hazardous Materials Control for removal, remediation, and disposal of sediment within the diffuser pipe.
4. If the sediment sampling determines that the sediment is non-hazardous, remove and dispose of sediment on land in accordance with all pertinent federal, state and local laws and regulations.

3.6 MODIFICATIONS AND CLOSURES

- A. Modifications shall conform to all applicable Specifications, the Drawings, and the directions and approvals of the Engineer.
- B. Where alterations require cutting or drilling into existing floors and walls the holes shall be repaired in an approved manner. The Contractor shall repair such openings with the same or matching materials as the existing floor, wall, or roof or as otherwise approved by the Engineer. All repairs shall be smoothly finished unless otherwise approved by the Engineer.
- C. Where parts of existing structures are to remain in service, demolish the portions to be removed, repair damage, and leave the structure in proper condition for the intended use. Remove concrete and masonry to the lines designated by drilling, chipping, and other suitable methods. Leave the resulting surfaces true and even, with sharp straight corners that will result in neat joints with new construction or be satisfactory for the purpose intended. Where existing reinforcing rods are to extend into new construction, remove the concrete so that the reinforcing is clean and undamaged. Cut off other reinforcing flush with the surface.
- D. New Work shall be keyed into the existing in an acceptable manner. New reinforcing steel shall be welded to the existing reinforcing. Welding shall conform to AWS D12.1, Reinforcing Steel Welding Code. In general, the same or matching materials as the existing adjacent surface shall be used. The finished closure shall be a smooth, tight, sealed, permanent closure with all exposed surfaces smooth finished and acceptable to the Engineer.

3.7 TITLE TO EQUIPMENT AND MATERIALS

- A. The Contractor shall have no right or title to any of the equipment, materials or other items to be removed from the existing buildings or structures unless and until said equipment, materials and other items have been removed from the premises. The Contractor shall not sell or assign, or attempt to sell or assign any interest in the said equipment, materials or other items until the said equipment, materials or other items have been removed.

- B. The Contractor shall have no claim against the Owner because of the absence of such fixtures and materials.

3.8 CONDITION OF STRUCTURES AND EQUIPMENT

- A. The Owner does not assume responsibility for the actual condition of structures and equipment to be demolished and removed.
- B. Conditions existing at the time of inspection for bidding purposes will be maintained by the Owner so far as practicable.
- C. The information regarding the existing structures and equipment shown on the Drawings is based on visual inspection and a walk-through survey only. Neither the Engineer nor the Owner will be responsible for interpretations or conclusions drawn therefrom by the Contractor.

3.9 MAINTENANCE AND CLEAN UP

- A. The Contractor shall maintain the buildings, structures and public properties free from accumulations of waste, debris and rubbish, caused by the demolition and removal operations.
- B. The Contractor shall provide on-site dump containers for collection of waste materials, debris and rubbish, and he shall wet down dry materials to lay down and prevent blowing dust.
- C. At least once a week during the progress of the demolition and removal Work or as directed by the Engineer, the Contractor shall clean the Site and properties (including sweeping roadways with a mechanical sweeper), and dispose of waste materials, debris and rubbish.

+ + END OF SECTION + +

SECTION 03600

GROUTING

PART 1 – GENERAL

1.1 DESCRIPTION

A. Scope:

1. Contractor shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install grout and perform grouting Work.

B. Coordination:

1. Review installation procedures under this and other Sections and coordinate installation of items to be installed with or before grouting Work.

1.2 SUBMITTALS

A. Action Submittals: Submit the following:

1. Shop Drawings:
 - a. Schedule of Project-specific grout applications, installation locations, and the grout type proposed for each.
2. Product Data:
 - a. Data sheets, certifications, and manufacturer's specifications for all materials proposed for use.

B. Informational Submittals: Submit the following:

1. Manufacturer's Instructions:
 - a. Special instructions for shipping, storing, protecting, and handling.
 - b. Installation instructions for the materials.
2. Supplier Reports:
 - a. Submit written report of results of each visit to Site by Supplier's field service technician, including purpose and time of visit, tasks performed, and results obtained. Submit within two days of completion of visit to the Site.
3. Qualifications Statements:
 - a. Manufacturer, when submittal of qualifications is required by the Engineer.
 - b. Manufacturer's field service technician, when submittal of qualifications is required by the Engineer.

1.3 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Storage of Materials: Store grout materials in a dry location, protected from weather and protected from moisture.

PART 2 – PRODUCTS

2.1 GROUT MATERIALS FOR UNDERWATER APPLICATION

- A. General: Grout for underwater application shall be a prepackaged, cementitious or epoxy-based, grout suitable for placement in an underwater environment in sea water. Manufacturer's instructions shall be printed on each bag or container in which the materials are packaged. Specific formulation for each type or class of non-shrink grout specified in this Section shall be that recommended by the grout manufacturer for the particular application.
- B. Cementitious Non-Shrink Grout for underwater applications
 - 1. Shall be high performance positive expansion grout having a minimum 28-day compressive strength of 7,000 psi.
 - 2. Products and Manufacturer: Provide one of the following:
 - a. SikaGrout -500 Aqua, by Sika.
 - b. Or equal.
- C. Epoxy Grout for Underwater Application:
 - 1. Epoxy grout shall be a paste consistency non-shrink, 100-percent solids system.
 - 2. Products and Manufacturer: Provide one of the following:
 - a. Crete Repair UWP, by Superior Industries, Inc.
 - b. Or equal.
 - 3. Epoxy grout system shall have two components all pre-measured and prepackaged. Variation of component ratios is not allowed without specific recommendation by manufacturer. Manufacturer's instructions shall be printed on each container in which products are packaged.
 - 4. The following properties shall be attained:
 - a. Elongation change at all times before hardening shall be between zero percent shrinkage and 2.3 percent expansion.
 - b. Minimum seven-day compressive strength shall be 9,400 psi when tested in accordance with ASTM D695.

PART 3 – EXECUTION

3.1 INSPECTION

- A. Divers must examine substrate and conditions under which grouting will be performed and notify Engineer in writing of unsatisfactory conditions. Do not proceed with the Work until unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. General:

1. Place grout as shown and indicated, and in accordance with grout manufacturer's instructions. If manufacturer's instructions conflict with the Contract Documents, obtain clarification or interpretation from Engineer before proceeding.
2. Consistency of non-shrink grouts shall be as required to completely fill the repair areas for the particular application.
3. Grouting shall comply with temperature and sea water current speed limitations as recommended by the manufacturer.

B. Concrete Pipe Joint Repair:

1. Remove all dirt, foreign contaminants, oil contamination and laitance prior to placing epoxy grout.

3.3 FIELD QUALITY CONTROL

A. Manufacturer's Services:

1. Manufacturers of proprietary materials shall make available upon 72 hours notification the services of qualified, full time employee, experienced in serving as a field service technician for the products required, to aid in assuring proper use of products under the actual conditions at the Site.

+ + END OF SECTION + +

++ NO TEXT ON THIS PAGE ++

SECTION 10400

IDENTIFICATION DEVICES

PART 1 – GENERAL

1.1 DESCRIPTION

A. Scope:

1. Contractor shall provide all labor, materials, tools, equipment and incidentals as shown, specified and required to furnish and install identification devices.
 - a. The Contractor shall be responsible for all identification devices throughout the Project as shown and as specified herein.
2. Extent of identification devices is shown and, where indicated, as specified.
3. Types of products required include the following:
 - a. Pipeline identification tags.
 - b. Stainless steel fasteners and other accessories.

B. Coordination:

1. Review installation procedures under other Sections and coordinate the installation of items that must be installed with, or before, the identification devices.

1.2 REFERENCES

A. Standards referenced in this Section or referenced in Product Performance Standards are listed below:

1. ANSI A13.1 Scheme for the Identification of Piping Systems.pro

1.3 QUALITY ASSURANCE

A. Identification Devices Manufacturers:

1. Engage firms specializing in the production of the types of products specified, in compliance with specified standards, with a documented record of successful in-service performance, and who can provide sufficient production capacity to avoid delaying the Work.
2. Submit name and experience record of manufacturers to Engineer.

B. Component Supply and Compatibility:

1. Obtain each separate type of identification device from a single supplier and from a single manufacturer.

1.4 SUBMITTALS

- A. Samples: Submit the following:
 - 1. Each color and finish of exposed materials and accessories required for identification devices.
 - 2. Actual full-size sample of each type of pipeline identification tag and mounting accessories.
 - 3. Engineer's review of samples will be for color and texture only. Compliance with all other requirements is the responsibility of Contractor.
- B. Shop Drawings: Submit the following:
 - 1. Copies of manufacturer's technical data for each product specified including fabrication and erection information for all identification devices. Show anchorages and accessory items. Furnish location template drawings for items supported or anchored to permanent construction.
 - 2. Complete selection of each specified manufacturer's standard and custom colors, alphabetic styles, graphic layouts and pictograms.
 - 3. Coordinate mounting position, method, and proposed mounting accessories and fasteners with actual Project conditions.

1.5 PROJECT CONDITIONS

- A. Field Measurements:
 - 1. Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating units without field measurements. Coordinate supports and adjacent construction to ensure actual dimensions correspond to dimensions established for identification devices Work.
- B. Scheduling:
 - 1. Coordinate the delivery of templates, instructions and directions for installation of anchorage devices with other Work to avoid delay.

PART 2 – PRODUCTS

2.1 SYSTEM PERFORMANCE

- A. Performance Criteria:
 - 1. Details for identification devices shown, such as alphabet representation, letter spacing, borders designs, and other graphic features, are generic and intended to establish text, general positions and symbols only.
 - 2. Contractor shall submit for approval complete, camera-ready, color graphic layouts based on specified requirements and recommendations from manufacturer.

2.2 PIPELINE TAGS

- A. Metal Tags:
 - 1. Provide permanently legible metal tags, 5-inches by 3-inches, 0.022-inches thick, Type 316 stainless steel tags with engraved lettering filled with black enamel. Provide all tags with two 3/16-inch diameter holes for securing tag with stainless steel wire, located so as not to interfere with legend.
 - 2. Miscellaneous Tag Accessories:
 - a. Stainless Steel Wire: Nylon coated; outside diameter 0.048-inches; type 316.
 - 3. Tag Labels:
 - a. Each tag shall have letters indicating the riser designator as shown.
 - b. Text height shall be 2-inches.
- B. Products and Manufacturers: Provide one of the following:
 - 1. Custom Stainless Steel Tags by NapTags, 800-451-3330 Grand Rapids, MI.
 - 2. Custom Stainless Steel Tags by Brady USA, Incorporated, Signmark Division.
 - 3. Or equal.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. General:
 - 1. Obtain Engineer's approval of all locations before mounting. Repair or replace damaged units as directed by Engineer.
- B. Pipe Identification Tags:
 - 1. Attach tags on the top of each riser pipe section using nylon coated stainless steel wire secured to each lifting eye. Tag shall be centered between the lifting eyes.
 - 2. Tags shall identify the riser number as shown on the Contract Drawings. Tag shall include the text "EX" or "WX," where X denotes the diffuser number.

3.2 PROTECTION AND CLEANING

- A. Protect units from damage until Final Completion.

+ + END OF SECTION + +

++ NO TEXT ON THIS PAGE ++

SECTION 15052

EXPOSED PIPING INSTALLATION

PART 1 – GENERAL

1.1 DESCRIPTION

A. Scope:

1. Contractor shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to install and test all exposed piping, fittings, and specials. The Work includes the following:
 - a. All types and sizes of exposed piping, except where exposed piping installations are specified under other Sections or other contracts.
 - b. Unless otherwise shown or specified, this Section includes all piping that is permanently submerged and installed in sub-aqueous environments.
 - c. Work on or affecting existing exposed piping.
 - d. Installation of all jointing and gasket materials, specials, tie rods, and all Work required for a complete exposed piping installation.
 - e. Supports, restraints, and other anchors.
 - f. Field quality control, including testing.
 - g. Incorporation of valves and special items shown or specified into the piping systems per the Contract Documents and as required.

B. Coordination:

1. Review installation procedures under this and other Sections and coordinate installation of items that must be installed with or before exposed piping Work.
2. Coordinate with appropriate piping Sections of Division 15, Mechanical.

C. Related Sections:

1. Section 10400, Identification Devices.
2. Section 15065, Concrete Pipe.

1.2 REFERENCES

A. Standards referenced in this Section are:

1. ASME B31.3, Process Piping.
2. American Society for Non-Destructive Testing (ASNT), ASNT-TC-1A, Recommended Practice, Personnel Qualification, and Certification in Non-destructive Testing.
3. ASTM A380, Standard Practice for Cleaning, Descaling, and Passivation of Stainless Steel Parts, Equipment, and Systems.
4. AWS D1.1/D1.1M, Structural Welding Code-Steel.

5. ANSI/AWWA C301, Prestressed Concrete Pressure Pipe, Steel-Cylinder Type.
6. AWWA M9, Concrete Pressure Pipe.

1.3 QUALITY ASSURANCE

- A. Regulatory Requirements:
 1. Comply with requirements and recommendations of authorities having jurisdiction over the Work.

1.4 SUBMITTALS

- A. Action Submittals: Submit the following:
 1. Shop Drawings:
 - a. Detailed drawings in plan and, as applicable, section.
 - b. Details of piping, accessories, specials, joints, harnessing, and connections to existing piping, equipment, and appurtenances.
 - c. Laying schedules for concrete pipe and piping with restrained joints.
 2. Testing Plans, Procedures, and Testing Limitations:
 - a. Submit description of proposed testing methods, procedures, and apparatus, and obtain Engineer's approval prior to testing.
- B. Informational Submittals: Submit the following:
 1. Certificates:
 - a. Submit a certificate signed by manufacturer of each product certifying product conforms to applicable referenced standards.
 - b. Welder's Certificate to comply with Paragraph 3.1.E.7.c.
 2. Source Quality Control Submittals:
 - a. Submit copies of testing report for each test.
 3. Site Quality Control Reports:
 - a. Submit copies of testing report for each test.
- C. Closeout Submittals: Submit the following:
 1. Record Documentation:
 - a. Maintain accurate and up-to-date record documents showing field and Shop Drawing modifications. Record documents for exposed piping Work shall show actual location of all piping and appurtenances on a copy of the Drawings, unless otherwise approved by Engineer.
 - b. Record documents shall show piping with elevations referenced to the project datum and dimensions from permanent structures. For straight runs of pipe, provide offset dimensions as required to document pipe location.
 - c. Include section Drawings with exposed piping record documents when the Contract Documents include section Drawings.
 - d. Conform to Section 01720, Project Record Documents.

1.5 DELIVERY, STORAGE AND HANDLING

A. Delivery:

1. Deliver products to Site to ensure uninterrupted progress of the Work.
2. Upon delivery, inspect pipe and appurtenances for cracked, gouged, chipped, dented, and other damage and immediately remove damaged products from Site.

B. Storage:

1. Store products for convenient access for inspection and identification. Store products off the ground using pallets, platforms, or other supports. Protect packaged products from corrosion and deterioration.
2. Pipe and fittings may be stored outdoors without cover.

C. Handling:

1. Handle pipe, fittings, specials, and accessories carefully with approved handling devices. Do not drop or roll material of delivery vehicles. Do not otherwise drop, roll, or skid piping.
2. Avoid unnecessary handling of pipe.
3. Keep pipe interiors free of dirt and foreign matter.
4. Protect interior linings and exterior coatings of pipe and fittings from damage. Replace pipe and fittings with damaged lining regardless of cause of damage. Repair damaged coatings.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Piping materials are specified in the Exposed Piping Schedule at the end of this Section. Piping materials shall conform to Specification for each type of pipe and piping appurtenances in applicable sections of Division 15, Mechanical.

B. Markings and Identification:

1. Pipe Markings:
 - a. Clearly mark each piece of pipe or fitting with a designation conforming to that shown on the approved Shop Drawings.
 - b. Manufacturer shall cast on each length of pipe and each fitting the pipe material, diameter, and pressure or thickness class.
2. Pipe Identification Markers: Refer to Section 10400, Identification Devices.

PART 3 – EXECUTION

3.1 INSPECTION

- A. Examine conditions under which the Work is to be installed and notify Engineer in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General:

- 1. Install piping as shown, specified and as recommended by the pipe and fittings manufacturer.
- 2. If there is a conflict between manufacturer's recommendations and the Contract Documents, request in writing instructions from Engineer before proceeding.
- 3. Provide pipe manufacturer's installation specialist at Site as specified on this Section.

- B. Temporary Blind Flanges, Plugs, Caps, and Bulkheads:

- 1. Temporarily plug installed pipe at the end of each day of work or other interruption of pipe installation to prevent entrance or insertion of deleterious materials into pipe.
- 2. Install standard plugs in all bells at dead ends, tees, and crosses.
- 3. Fully secure and block blind flanges, plugs, caps, and bulkheads installed for testing, designed to withstand specified test pressure.
- 4. Where plugging is required for phasing of Work or subsequent connection of piping, install watertight, permanent type blind flanges, plugs, caps, or bulkhead acceptable to Engineer.

- C. Piping Installation:

- 1. Conform to manufacturer's instructions and requirements of standards and manuals listed in this Section, as applicable:
 - a. Concrete Pipe: ANSI/AWWA C301, AWWA M9.
- 2. Install vertical pipe truly plumb in all directions.
- 3. Deflections at joints shall not exceed 75 percent of amount allowed by pipe manufacturer, unless otherwise approved by the Engineer.

- D. Jointing Pipe:

- 1. General:
 - a. Make joints in accordance with pipe manufacturer's recommendations and Contract Documents.
 - b. Thoroughly clean all pipe, fittings, and accessories before installing.
- 2. Steel Flanged Joints on Concrete Pipe Riser Pipes:
 - a. Assemble flanged joints for rubber (duckbill) check valves using ring-type gaskets, with thickness as recommended by pipe manufacturer but not less than 1/8-inch thick, for raised-face flanges. Use full-face gaskets for flat-face flanges, unless otherwise approved by Engineer or

recommended by pipe manufacturer. Gaskets shall be suitable for the service intended in accordance with the manufacturer's ratings and instructions. Gaskets shall be properly centered.

- b. Tighten bolts in a sequence that provides equal distribution of bolt loads.
- c. Length of bolts shall be uniform. Bolts shall not project beyond the nut more than 1/4-inch or fall short of the nut when fully taken up. Machine-cut ends of bolts to be neatly rounded. Do not use washers.
- d. Prior to assembly of flanged joints, lubricate bolt threads and gasket faces.
- e. Alternately tighten bolts 180 degrees apart to compress the gasket evenly.

E. Closures:

- 1. Provide closure pieces, such as blind flanges and caps, shown or required to complete the Work.

3.3 THRUST RESTRAINT

- A. Provide thrust restraint on all pressure piping systems and where otherwise shown or specified.
- B. Thrust restraints shall be designed for axial thrust exerted by test pressure specified in the Exposed Piping Schedule at end of this Section.
- C. Restrained Pipe Joints:
 - 1. Pipe joints shall be restrained by means suitable for the type of pipe being installed.
 - a. Concrete, Push-on Joints: Restrain with a proprietary restrained joint system as specified in Section 15065. Provide draw bolts as recommended by the pipe and fittings manufacturer.
 - b. Steel Pipe Joints for Flanged Connection to Rubber (duckbill) Check Valves: Provide flanged joints as shown and specified in Exposed Piping Schedule.

3.4 WORK AFFECTING EXISTING PIPING

- A. Location of Existing Piping:
 - 1. Locations and elevations of existing piping shown on Drawings is approximate.
 - 2. Determine the true location and elevation of existing piping to which connections are to be made and that could be disturbed, and determine location of other facilities that could be affected by the Work.
- B. Work on Existing Pipelines:

1. Install temporary plugs to prevent entry of sand, sea water, and debris into pipe.
2. Provide necessary adapters, sleeves, fittings, pipe, and appurtenances required to complete the Work.
3. Conform to applicable requirements of Section 01700, Maintenance of Plant Operations.

3.5 PAINTING (NOT USED)

3.6 FIELD QUALITY CONTROL

A. Manufacturer's Installation Specialist:

1. Provide services of a competent installation specialist of the pipe manufacturer when pipe installation commences for:
 - a. Concrete pipe.
2. Retain installation specialist at Site for a minimum of two days (eight hours per day at the Site) or until competency of the pipe installation crew has been satisfactorily demonstrated to Engineer.

B. Testing, General:

1. Test all piping, except as exempted in the Exposed Piping Schedule.
2. Notification:
 - a. Notify Engineer at least 48 hours prior to testing.
 - b. When authorities having jurisdiction are to witness tests, notify Engineer and authorities having jurisdiction in writing at least 48 hours in advance of testing.
3. Conduct all tests in presence of Engineer.
4. Remove or protect pipeline-mounted devices that could be damaged by testing.
5. Provide all apparatus and services required for testing, including:
 - a. Test pumps, compressors, hoses, calibrated gages, meters, test containers, valves, fittings, and temporary pumping systems required to maintain Owner's operations.
 - b. Temporary bulkheads, bracing, blocking, and thrust restraints.
6. Provide air if an air test is required, power if pumping is required, and gases if gases are required.
7. Unless otherwise specified, Owner will provide fluid required for hydrostatic testing. Contractor shall provide means to convey fluid for hydrostatic testing into the pipe being tested. Contractor shall provide fluid for other types of testing required.
8. Repair observed leaks and repair pipe that fails to meet acceptance criteria. Retest after repair.
9. Unless otherwise specified, testing shall include existing piping systems that connect with new piping system. Test existing pipe to nearest joint between new and existing piping. Piping not installed by Contractor and that fails

the test shall be repaired upon authorization of Engineer or Owner. Repair of existing piping will be paid as extra work unless otherwise specified.

C. Test Schedule:

1. Refer to the Exposed Piping Schedule for type of test required and required test pressure.
2. Unless otherwise specified, the required test pressures are at lowest elevation of pipeline segment being tested.
3. For piping not listed in Exposed Piping Schedule:
 - a. Hydrostatically test pipe that will convey liquid at a pressure greater than five psig. Provide process air pipe test for pipe that will convey air or gas under pressure or vacuum, except chlorine gas, which requires a separate test.
 - b. Disinfect for bacteriological testing piping that conveys potable water.
4. Test Pressure:
 - a. Use test pressures listed in Exposed Piping Schedule.
 - b. If test pressure is not listed in Exposed Piping Schedule, or if a test is required for piping not listed in the Exposed Piping Schedule, test pressure will be determined by the Engineer based on the maximum anticipated sustained operating pressure and the methods described in the applicable ANSI/AWWA manual or standard that applies to the piping system.

D. Hydrostatic Testing:

1. Preparation for Testing:
 - a. For concrete pipe, follow procedures described in AWWA Manual M9. A wetting period is not required for pipe that is not cement mortar-lined.
 - b. Prior to testing, ensure that adequate thrust protection is in place and all joints are properly installed.
2. Test Procedure:
 - a. For concrete pipe, installed sub-aqueously, follow procedures described in AWWA Manual M9.

3.7 CLEANING AND DISINFECTION

A. Cleaning, General: Clean pipe systems as follows:

1. Thoroughly clean all piping, including flushing with water, dry air, or inert gas as required, in a manner approved by Engineer, prior to placing in service.
2. Piping 24-inch diameter and larger shall be inspected from inside and debris, dirt and foreign matter removed.

3.8 EXPOSED PIPING SCHEDULE

- A. The schedules listed below, following the “End of Section” designation, are a part of this Specification section.
1. Table 15052-A, Exposed Piping Schedule.

+ + END OF SECTION + +

TABLE 15052-A, EXPOSED PIPING SCHEDULE

[illegible]

Cedar Creek Ocean Outfall Diffuser Modifications

15052-9

The following abbreviations are used in the Exposed Piping Schedule:

A. Service Abbreviations:

Service	Abbrev.		Service	Abbrev.
Effluent Water	EFF			

B. Material Abbreviations:

Material	Abbrev.		Material	Abbrev.
Pre-stressed Concrete Cylinder Pipe	PCCP			

C. Lining/Coating Abbreviations (NOT USED).

D. Joint Abbreviations:

Joint Type	Abbrev.		Joint Type	Abbrev.
Restrained Push-on Joint	RPOJ			
Flanged	Flg			

E. Test Abbreviations:

Test	Abbrev.		Test	Abbrev.
Hydrostatic Test (test pressure in psig)	HYD ()			
Testable Joint Gasket Test (test pressure in psig)	JT ()			

SECTION 15065

CONCRETE PIPE

PART 1 – GENERAL

1.1 DESCRIPTION

A. Scope:

1. Contractor shall provide all labor, materials, equipment, and incidentals shown, specified, and required to furnish and install pre-stressed concrete cylinder pressure pipe and fittings.
2. Extent of concrete pipe to be provided is shown and specified in piping schedules included in Section 15052, Exposed Piping Installation.

B. Coordination:

1. Review installation procedures under this and other Sections and coordinate installation of items to be installed with or before concrete pipe work.

C. Related Sections:

1. Section 10400, Identification Devices.
2. Section 15052, Exposed Piping Installation.

1.2 REFERENCES

A. Standards referenced in this Section are:

1. AASHTO, Policy on Geometric Design of Highways and Streets.
2. ANSI/ASME B16.1, Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250.
3. ANSI/ASTM A82, Specification for Steel Wire, Plain for Concrete Reinforcement.
4. ANSI/ASTM A185, Specification for Steel Welded Wire Reinforcement, Plain for Concrete.
5. ANSI/ASTM A283/A283M, Specification for Low and Intermediate Tensile Strength Carbon Steel Plates.
6. ANSI/ASTM A496, Specification for Steel Wire, Deformed, for Concrete Reinforcement.
7. ANSI/ASTM A497/A497M, Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete.
8. ANSI/ASTM A615/A615M, Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
9. ANSI/ASTM A663/A663M, Specification for Steel Bars, Carbon, Merchant Quality Mechanical Properties.

10. ANSI/ASTM A1011/1011M, Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.
11. ANSI/ASTM A1018/1018M, Standard Specification for Steel, Sheet and Strip, Heavy-Thickness Coils, Hot-Rolled, Carbon, Commercial, Drawing, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.
12. ANSI/ASTM C33, Specification for Concrete Aggregates.
13. ANSI/ASTM C150, Specification for Portland Cement.
14. ANSI/ASTM C595, Specification for Blended Hydraulic Cements.
15. ANSI/AWWA C207, Steel Pipe Flanges for Waterworks Service-Sizes 4-inch through 144-inches.
16. ANSI/AWWA C210, Liquid-Epoxy Coatings and Linings for Steel Water Pipe and Fittings.
17. ANSI/AWWA C228, Stainless-Steel Pipe Flange Joints for Water Service-Sizes 2 In. Through 72 In.
18. ANSI/AWWA C301, Prestressed Concrete Pressure Pipe, Steel Cylinder Type.
19. ASTM F593, Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.

1.3 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer:

- a. Manufacturer shall have a minimum of five years of experience producing concrete pipe and fittings, and shall be able to document satisfactory service in at least five installations.

B. Component Supply and Compatibility:

1. Each type of concrete pipe and associated fittings shall be products of one manufacturer.
2. Concrete pipe Supplier shall review, approve, and prepare all Shop Drawings and submittals for all components furnished under this Section.
3. Components shall be suitable for specified service conditions.

C. Quality of materials, process of manufacture, and finished pipe shall be subject to inspection by Engineer.

1.4 SUBMITTALS

A. Action Submittals: Submit the following:

1. Shop Drawings:

- a. Detailed drawings and data on piping and fittings, where applicable, and appurtenances. Submit with Shop Drawings required under Section 15052, Exposed Piping Installation.
 - 2. Product Data:
 - a. Detailed product data on pipe, fittings, gaskets, fastening hardware where applicable, and appurtenances. Submit with Shop Drawings required under Section 15052, Exposed Piping Installation.
 - B. Informational Submittals: Submit the following:
 - 1. Certifications:
 - a. Submit certificate signed by manufacturer of each product certifying that products conform to applicable referenced standards.
 - 2. Supplier Instructions:
 - a. Pipe manufacturer instructions for handling, storing, and installing products.
- 1.5 DELIVERY, STORAGE AND HANDLING
- A. Refer to Section 15052, Exposed Piping Installation.

PART 2 – PRODUCTS

2.1 SYSTEM PERFORMANCE

- A. General:
 - 1. Pipe shall be designed for an external live loading, including impact, equal to 60 feet of submergence in sea water.
- B. Service Conditions:
 - 1. Internal Working Pressure: 28 psig
 - 2. Internal Transient Pressure: 28 psig
 - 3. Internal Field Test Pressure: Refer to Section 15052, Table 15052-A, Exposed Piping Schedule.
 - 4. External Field Pressure: 22 – 35 psig
 - 5. pH Range of Pipe Contents: 5.0 to 9.0
 - 6. External Liquid Surrounding Pipe: Sea water

2.2 MATERIALS, CONCRETE PRESSURE PIPE

- A. Pipe and fittings shall conform to requirements of ANSI/AWWA C301. Pipe shall have the following features: welded steel cylinder with steel joint rings welded to its ends; steel cylinder encased in concrete, reinforcement consisting of high-tensile wire wound around outside of the core in one or more layers at a predetermined stress and securely fastened at its ends; coating of dense mortar or concrete covering the core and wire, except surfaces of joint rings; self-centering

joint with watertight preformed rubber gasket. For embedded cylinder pipe at least one-third of total core thickness shall be outside of cylinder. Embedded cylinder pipe shall be used in sizes 54-inches and larger. For pipe 16-inch to 48-inch diameter, lined cylinder pipe shall be used, with a core of concrete lining inside of steel cylinder. Fittings shall be fabricated from welded steel sheet or plate, and be lined and coated with cement mortar.

B. Pipe Materials:

1. Cement for concrete work in accordance with ANSI/ASTM C150, Type I or ASTM C595, Type IL (10).
2. Aggregates for concrete work in accordance with ANSI/ASTM C33.
3. Steel for cylinders, joint and fittings in accordance with ANSI/ASTM A1011/1011M, ANSI/ASTM A1018/1018M or ANSI/ASTM A283/A283M.
4. Steel for reinforcing in accordance with ANSI/ASTM A36 and ANSI/ASTM A497/A497M.
5. Rubber for gaskets shall contain not less than 50 percent by volume of first-grade natural crude or first-grade synthetic rubber. Remainder of compound shall consist of pulverized fillers, free of rubber substitutes, reclaimed rubber, and other deleterious substances.
6. Stainless steel for draw bolts, nuts and washers in accordance with ASTM F593, AISI Type 316 and with nitride stainless nuts

C. Coatings:

1. All exposed steel of flanged spigots and pipe joints shall be coated with liquid epoxy paint compliant with AWWA C210.
 - a. Liquid epoxy paint shall meet the following requirements:
 - 1) Minimum 86 percent solids, high solids polyamine-epoxy, 62 grams per liter VOC, maximum.
 - 2) Products and Manufacturers: Carboguard 891 VOC by The Carboline Company, or equal.
 - 3) Minimum dry film thickness: 16 mils.
2. Apply butyl rubber mastic in both the interior and exterior joint recesses as the riser pipe fittings are being installed.

D. Pipe Tag Materials:

1. Refer to Section 10400, Identification Devices.

E. Blind Flanges:

1. Blind Flange: Provide Type 316L stainless steel blind flanges where shown. Conform to AWWA C228 Class SD (150 psi) for flange thickness and drilling, unless shown otherwise.
2. Flanges shall be free of nicks and gouges.
3. Gaskets for Blind Flanges: Comply with pipe manufacturer's recommendations for service conditions shown and as specified.

4. Bolts and Nuts: Provide stainless steel bolts complete with washers complying with ASTM F593, AISI Type 316 and with nitrided stainless nuts.

2.3 GROUT FOR PCCP JOINT REPAIR

- A. Use grout suitable for underwater application.
- B. Refer to Section 03600, Grouting for specific requirements of the grout to be used.

2.4 MARKING FOR IDENTIFICATION

- A. All pipeline materials shall be stamped, marked, or identified with the following information:
 1. Name or trademark of manufacturer.
 2. Pipe class and specification designation.
 3. Size and length dimensions.
 4. Date and place of manufacture.
 5. Pipe 24-inches and larger shall also be marked on pipe interior as above.
 6. Name of Owner.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. For exposed piping installation, refer to Section 15052, Exposed Piping Installation.

+ + END OF SECTION + +

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SECTION 15100

PROCESS AND CIVIL VALVES

PART 1 – GENERAL

1.1 DESCRIPTION

A. Scope:

1. Contractor shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish and install valves and appurtenances, complete and operational.
2. Valves specifically excluded from this Section include valves for plumbing work, heating and ventilation work, those for fuel oil piping, chlorine gas valves, and any and all valves specifically included with equipment.

B. Coordination:

1. Review installation procedures under this and other Sections and coordinate installation of items that must be installed with or before process valves work.

C. Related Sections:

1. Section 15052, Exposed Piping Installation.
2. Section 15065, Concrete Pipe.

1.2 REFERENCES

A. Standards referenced in this Section are listed below:

1. ASME B16.5, Pipe Flanges and Flanged Fittings.
2. ANSI/NSF 61, Drinking Water Components – Health Effects.
3. ASTM A380, Practice for Cleaning, Descaling and Passivation of Stainless Steel Parts, Equipment and Systems.
4. AWWA C111, Rubber-Gasket Joints for Ductile-Iron and Pressure Pipe and Fittings.
5. ASTM D429, Test Methods for Rubber Property – Adhesion to Rigid Substrates.

1.3 QUALITY ASSURANCE

A. Manufacturer's Qualifications:

1. Manufacturer shall have minimum of five years of experience producing substantially similar materials and equipment to that required and be able to provide evidence of at least five installations in satisfactory operation for at least five years.

- B. Component Supply and Compatibility:
1. Obtain each type of equipment and appurtenances included in this Section, regardless of the component manufacturer, from a single manufacturer of the type of process valve. For each type of valve, do not furnish valves of more than one manufacturer.
 2. Supplier of each type of equipment specified shall review and approve or prepare all Shop Drawings and other submittals for all components associated with the type of process valve Supplier is furnishing.
 3. Components shall be suitable for use in the specified service conditions. Components shall be integrated into the overall assembly by the manufacturer.
- C. Design Criteria:
1. All valves and appurtenances shall be new and in perfect working condition. Valves shall be designed for continuous use with a minimum of maintenance and service required and shall perform the required function without exceeding the safe limits for stress, strain or vibration. In no case will used or damaged valves be acceptable.

1.4 SUBMITTALS

- A. Action Submittals: Submit the following:
1. Shop Drawings: Submit the following for Valves Four Inches and Larger:
 - a. Installation drawings showing orientation of valve in both plan and elevation view. Drawings shall clearly identify valve and its appurtenances. Drawings shall be to scale and shall show dimensions of actual valves supplied.
 2. Product Data:
 - a. Product data sheets.
 - b. Complete catalog information, including dimensions, weight, specifications, and identification of materials of construction of all parts.
 - c. Corrosion resistance information to confirm suitability of valve materials for the application. Furnish information on chemical resistance and on resistance to sea life growth of elastomers from elastomer manufacturer.
 - d. Hydraulic curves for each valve showing headloss, jet velocity, and effective open area all versus flow rate. The hydraulic curves must accurately reflect the variable orifice characteristics inherent to duckbill valves. The backpressure rating of diffuser shall be indicated.
- B. Informational Submittals: Submit the following for Valves Four Inches and Larger:
1. Certificates:
 - a. Certificates of compliance with referenced standards, where applicable, including those of AWWA, NSF, and others required by Engineer. For

each valve specified to be manufactured and/or installed in accordance with AWWA and other standards, submit an affidavit of compliance with the appropriate standards, including certified results of required tests and certification of proper installation.

2. Manufacturer Instructions: Submit manufacturer's instructions for handling, storing, and installing valves and appurtenances. Provide templates and setting drawings for valves and appurtenances that require anchor bolts or similar anchorages.
 3. Source Quality Control Submittals:
 - a. Submit shop test results and inspection data, certified by manufacturer.
 - b. Documentation indicating verification of independent hydraulic testing on valves of the same size as required for the Work to verify headloss, and jet velocity characteristics meet project specific requirements specified herein.
 - c. Submit test results showing valves meet the backpressure requirements specified herein, certified by manufacturer.
 4. Field Quality Control Submittals: Refer to Section 01650, Starting of Systems for underwater visual inspection requirements. Underwater visual inspections called for in Section 01650, Starting of Systems shall suffice for the Field Quality Control Submittal.
 5. Supplier's Reports: When requested by Engineer, submit written report of results of each visit to Site by Supplier's serviceman, including purpose and time of visit, tasks performed and results obtained.
 6. Qualifications Statements: When requested by Engineer, submit manufacturer's qualifications demonstrating compliance with the Specifications, including list of existing installations with contact names and telephone number(s) for each.
- C. Closeout Submittals: Submit the following for Valves Four Inches and Larger:
1. Operations and Maintenance Data:
 - a. Furnish operation and maintenance manuals in accordance with Section 01730, Operation and Maintenance Data.
 - b. Furnish complete nameplate data for each valve in operations and maintenance manuals.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Packing, Shipping, Handling, and Unloading:
1. Deliver materials and equipment to Site to ensure uninterrupted progress of the Work. Deliver anchorage products that are to be embedded in concrete in ample time to prevent delaying the Work.
 2. Inspect boxes, crates, and packages upon delivery to Site and notify Engineer in writing of loss or damage to materials and equipment. Promptly remedy loss and damage to new condition in accordance with manufacturer's instructions.

- B. Furnish covers for all openings.
 - 1. All valves 3-in and larger shall be shipped and stored on site until time of use with wood or plywood covers on each valve end.
- C. Storage and Protection:
 - 1. Keep products off ground using pallets, platforms, or other supports. Store equipment in covered storage and prevent condensation and damage by extreme temperatures.
 - 2. Store in accordance with manufacturer's recommendations. Protect steel, packaged materials, and electronics from corrosion and deterioration.
 - 3. Store equipment to permit easy access for inspection and identification.
 - 4. Any corrosion in evidence at the time of Owner acceptance shall be removed, or the valve shall be removed from the job.

PART 2 – PRODUCTS

2.1 GENERAL

- A. Valves, General:
 - 1. Manufacturer's name, valve size and serial number shall be bonded to outside of the check valve.
- B. Valve Materials:
 - 1. Valve materials shall be suitable for the associated valve's service or application, as shown.
 - 2. Protect wetted parts from galvanic corrosion caused by contact of different metals.
 - 3. Clean and descale fabricated stainless steel items in accordance with ASTM A380 and the following:
 - a. Passivate all stainless steel welded fabricated items after manufacture by immersing in pickling solution of six percent nitric acid and three percent hydrofluoric acid. Temperature and detention time shall be sufficient for removing oxidation and ferrous contamination without etching surface. Perform complete neutralizing operation by immersing in trisodium phosphate rinse followed by clean water wash.
 - b. Scrub welds with same pickling solution or pickling paste and clean with stainless steel wire brushes or by grinding with non-metallic abrasive tools to remove weld discoloration, and then neutralize and wash clean.
- C. Valve Joints:
 - 1. Exposed Valves: Unless otherwise specified, provide with flanged ends conforming to ASME B16.5. Pressure class of flanges shall be equal to or greater than specified pressure rating of the associated valve.

2. For stainless steel bolting, except where nitride nuts are required, use graphite-free anti-seize compound to prevent galling. Strength of joint shall not be affected by using anti-seize compound.

2.2 RUBBER (DUCKBILL) CHECK VALVES

- A. Manufacturers: Provide products of one of the following:
 1. Red Valve, Tideflex, Series 35W, hydraulic code 309.
 2. Cla-Val, Style 710.
 3. Onyx Valve Co., Series DBF
 4. Or equal.
- B. General:
 1. Construction:
 - a. One piece rubber construction with body of neoprene and nylon reinforcement. The valve body shall contour down to a duckbill shape, which shall allow flow in one direction while preventing reverse flow under all static head conditions.
 - b. Linear bill slit dimensions to nominal valve size ratio shall be greater than 2.0.
 2. Back-up Ring: Provide 316 stainless steel back-up ring for each valve.
 3. Sizes: Six-inch.
 4. End Connections: Standard flange size drilling conforming to ANSI B16.5, Class 150 standards.
- C. Design Criteria:
 1. Minimum Static Head: 49 ft.
 2. Maximum Static Head: 80 ft.
 3. Maximum Back Pressure: 30 psi.
 4. Flow Rates per valve:
 - a. Minimum Flow: 193.9 gpm.
 - b. Average Flow: 329.9 gpm.
 - c. Peak Flow: 434.0 gpm.
 5. Exit Velocities shall meet or exceed the following:
 - a. 6.4 feet per second at minimum flow.
 - b. 8.3 feet per second at average flow.
 - c. 9.6 feet per second at peak flow.
 6. Headloss through each valve shall not exceed the following:
 - a. 0.6 feet at minimum flow.
 - b. 1.1 feet at average flow.
 - c. 1.4 feet at peak flow.
 7. Effective Diameter:
 - a. 3.5 inches at minimum flow.
 - b. 4.0 inches at average flow.
 - c. 4.3 inches at peak flow.

2.3 ANCHORAGES AND MOUNTING HARDWARE

A. General:

1. Materials: Provide bolts and washers of Type 316 stainless steel and nitrided nuts. Bolts shall have rolled threads. Bolts and nuts shall be electropolished to remove burrs.

PART 3 – EXECUTION

3.1 INSPECTION

- A. Examine conditions under which materials and equipment are to be installed and notify Engineer in writing of conditions detrimental to proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected.
- B. During installation of all valves and appurtenances, verify that all items are clean, free of defects in material and workmanship and function properly.

3.2 INSTALLATION

A. General:

1. Install valves and appurtenances in accordance with:
 - a. Supplier's instructions and the Contract Documents.
 - b. Applicable requirements of Section 15052, Exposed Piping Installation.
2. Install valves plumb and level. Install all valves to be free from distortion and strain caused by misaligned piping and other causes.

3.3 FIELD QUALITY CONTROL

A. Field Tests:

1. Adjust all parts and components as required to provide correct operation of valves.
2. Operation of valves shall be observed in the installed location in accordance with the requirements in Section 01650, Starting of Systems.

3.4 MANUFACTURER'S SERVICES

- A. Provide services of qualified factory-trained service technicians to check and approve installation of valves:
 1. Supplier's serviceman shall perform the following:
 - a. Supervise unloading of the equipment.
 - b. Instruct Contractor in installing equipment.
 - c. Supervise installation of equipment.

- d. Inspect and adjust equipment after installation and ensure proper operation.
- 2. Manufacturer's representative shall make a minimum of 3 visits, with a minimum of 4 hours onsite for each visit. First visit shall be for unloading supervision (if specified) and instruction of Contractor in installing equipment; second visit shall be for assistance in installing equipment; third visit shall be for checking completed installation by viewing recorded underwater video of valves after installation. Representative shall revisit the Site as often as necessary until installation is acceptable.
- 3. Training: Furnish services of Supplier's qualified factory trained specialists to instruct Owner's operations and maintenance personnel in recommended operation and maintenance of equipment.
- 4. All costs, including expenses for travel, lodging, meals and incidentals, and cost of travel time, for visits to the Site shall be included in the Contract Price.

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SUPPLEMENTAL INFORMATION

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**Bay Park Bay Park Conveyance Design-Build – Underwater Inspection Services, DEC
Contract No. D-011883, Cedar Creek Wastewater Treatment Plant Ocean Outfall,
Underwater Inspection of Diffuser Field – Summary of Findings**

(Marine Solutions, October 3, 2022)

++ NO TEXT ON THIS PAGE ++



03 October 2022

03-22-015

Christina Marino
Assistant Project Controls/Project Engineer
Western Bays Constructors
31 Garden Ln
Lawrence, NY 11559

Via email: ChristinaMarino@johnpicone.com

Re: Bay Park Conveyance Design-Build – Underwater Inspection Services
DEC Contract No. D-011883
Cedar Creek Wastewater Treatment Plant Ocean Outfall
Underwater Inspection of Diffuser Field – Summary of Findings

Dear Christina,

Marine Infrastructure Engineering Solutions P.C. (Marine Solutions) is pleased to provide Western Bays Constructors (WBC) with a summary of our findings from the Underwater Inspection performed on the Ocean Outfall Structures of the Cedar Creek Wastewater Treatment Plant Ocean Outfall located between Jones Beach Inlet and Fire Island Inlet of the south shore of Long Island, New York.

Project Background

Marine Solutions, as a subconsultant to WBC working under contract with Nassau County, acting for and on behalf of the Department of Public Works, was contracted to conduct Level I (Visual) Underwater Inspection services at the Bay Park Sewage Treatment Plant Ocean Outfall – Effluent Diversion Project. Underwater inspections were limited to exposed portions of the outfall system, which includes the diffuser outlets.

The 84-inch diameter ocean outfall structure is constructed from precast concrete elements including piping, a central junction box or "Cleanout Chamber" and Diffuser Risers. Per the 2019 Hydrographic survey it is understood that all ocean outfall piping is buried beneath the seafloor. The Cleanout Chamber was also recently repaired and was excluded from the inspection scope. As such, only exposed portions of the Diffuser Risers were inspected under this task. The concrete riser diffuser structures include two outlet ports, two steel padeye lift points, four steel anchor bolt/bracket connections and a concrete diffuser cap. The intent of the underwater inspection was to provide a condition assessment of the exterior surfaces the diffuser risers to identify existing defects, assess flow, measure depth, and record exposed height at each riser. Still photographs were taken to capture typical and atypical conditions. Additionally, the full extent of the inspection was recorded using underwater video to further document findings.

Under this task, a Level I visual inspection was conducted on exposed diffuser risers on the ocean outfall structure to determine the location and condition of any items that may require repair. Elements inspected include the exterior surfaces of the diffuser riser structures, diffuser outlet ports, steel padeye lift points, and steel anchor bolts/brackets.

Inspection Procedure

The underwater inspection of the Cedar Creek Ocean Outfall was conducted from July 11, 2022 through July 15, 2022 and on August 1, 2022. Marine Solutions mobilized commercial diving operations from a fully outfitted commercial dive boat. The dive operation consisted of a five-person team comprised of Engineer Divers, Inspector Divers, and Tenders under the direction and/or supervision of a NY-licensed P.E. Diver/Team Leader. The Diver conducted the inspection using both surface-supplied-air and continuous two-way hardwire communication in conformance with recognized standards as set forth by OSHA, the USCG, the Association of Diving Contractors Consensus of Standards, and the Marine Solutions *Safe Practices Manual for Diving Operations*. In addition, all inspections were recorded utilizing underwater videography.

All inspections were performed in accordance with the standards set forth in the American Society of Civil Engineers (ASCE) Manuals and Reports on Engineering Practice No. 130, 2015 - *Waterfront Facilities Inspection and Assessment*, (MOP 130). Per MOP 130, the Routine (Condition Assessment) Inspection consisted of Level I general examination of all structural elements with limited Level II detailed inspection of steel hardware including padeyes, anchor bolts, and anchor brackets. Level I inspection is considered an overview, detecting obvious structural defects based on visual and tactile observation. The purpose of the Level II inspection is to detect and identify damaged or deteriorated structural elements in greater detail. Detailed inspection involves localized cleaning, closely documenting surface conditions and measuring defects for assignment of damage grades.

Condition Assessment

The inspection condition and assessment criteria utilize a six-point standardized approach provided in MOP 130, Section 2.6 – Overall System Ratings. This standardized approach can be recreated during all facilities inspections and allows for simplified comparison between facilities and future inspections of the same site.

The Condition Assessment can be interpreted as the “health” of the overall structure or portions of a facility. The Condition Assessment of the facility is determined based from the findings during the Routine Inspection. A variety of factors including severity, quantity, and frequency impact the overall Condition Assessment rating. These ratings are required to categorize the results of the inspection and to provide a basis for comparison of new deficiencies in future inspections or other facilities.

The Condition Assessment Ratings for the inspected structures are as follows:

“Good”	No visible damage or only minor damage noted. Structural elements may show very minor deterioration, but no overstressing observed. No repairs are required.
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“Satisfactory”	Limited minor to moderate defects or deterioration observed but no overstressing observed. No repairs are required.
“Fair”	All primary structural elements are sound but minor to moderate defects or deterioration observed. Localized areas of moderate to advanced deterioration may be present but do not significantly reduce the load-bearing capacity of the structure. Repairs are recommended, but the priority of the recommended repairs is low.
“Poor”	Advanced deterioration or overstressing observed on widespread portions of the structure but does not significantly reduce the load carrying capacity of the structure. Repairs may need to be carried out with moderate urgency.
“Serious”	Advanced deterioration, overstressing, or breakage may have significantly affected the load bearing capacity of primary structural components. Local failures are possible and loading restrictions may be necessary. Repairs may need to be carried out on a high-priority basis with urgency.
“Critical”	Very advanced deterioration, overstressing, or breakage has resulted in localized failure(s) of primary structural components. More widespread failures are possible or likely to occur, and load restrictions should be implemented as necessary. Repairs may need to be carried out on a high priority bases with strong urgency.

Damage Ratings

Damage ratings are established based on a six-point standardized approach provided in MOP 130, Section 2.5 – Element-level damage rating. During the inspection, Damage Ratings were assigned to each structural element based on material type and nature of the defect.

Reinforced Concrete Elements

Deterioration of reinforced concrete elements in the marine environment can occur through a variety of chemical or mechanical means. Common defects observed on concrete elements include cracking, leaching, efflorescence, scaling, delamination, chemical deterioration, or otherwise “soft” concrete, spalling and honeycombing.

The general condition ratings for reinforced concrete elements are based on the assessment scale below:

NI	“Not Inspected”	Not inspected, inaccessible or passed by.
ND	“No Defects”	Good original hard surface, hard material, sound.
MN	“Minor”	No significant deterioration. Mechanical abrasion or impact damage up to 1-in. deep. General cracks up to 1/16-in. wide. Isolated corrosion stains and/or shallow corrosion spalls.
MD	“Moderate”	Structural cracks up to 1/16-in. wide. Corrosion cracks up to 1/4-in.

wide. Chemical degradation resulting in random cracks up to 1/16-inch wide; “soft” concrete and/or rounding of corners, up to 1-inch deep. Mechanical abrasion or impact spalls greater than 1-inch deep.

MJ	“Major”	Structural cracks up to 1/4-in. wide, possibly with partial breakage (through section cracking with structural spalls). Corrosion cracks wider than 1/4-inch and open or closed corrosion spalls (excluding pop-outs). Multiple cracks and disintegration of surface layer due to chemical deterioration. Large areas of map cracking or soft concrete caused by chemical degradation. Overall loss of reinforcing steel cross-section up to 30-percent.
SV	“Severe”	Structural cracks up cracks wider than 1/4-inch or complete breakage. Complete loss of concrete cover over reinforcing steel and/or more than 30-percent section loss of bar diameter. Loss of member bearing or displacement at connections. Loss of concrete cover exposing reinforcing steel due to chemical deterioration. Greater than 30-percent loss of cross-section, due to any cause.

Steel Elements

Deterioration of steel components can occur from corrosion, fatigue, overload, or impact damage. Often multiples of these agents occur simultaneously. Corrosion is the thinning of metal due to a reaction between the non-coated material and its environment when the metal oxidizes. Corrosion is most common around the splash and tidal zones but can also be found in other areas of a structure. Pitting is localized corrosion that causes deep circular patterns in the steel to form and is caused by chemical variations in the steel or imperfections in the steel.

The general condition ratings for steel elements are based on the assessment scale below:

NI	“Not Inspected”	Not inspected, inaccessible or passed by.
ND	“No Defects”	Good original hard surface, hard material, sound.
MN	“Minor”	No significant deterioration. Less than 50-percent of perimeter or circumference affected by corrosion at any elevation or cross section. Loss of thickness up to 15-percent of nominal at any location.
MD	“Moderate”	Greater than 50-percent of perimeter or circumference affected by corrosion at any elevation or cross section. Loss of thickness up to 30-percent of nominal at any location.
MJ	“Major”	Visible reduction of steel element thickness. Loss of thickness up to 50-percent of nominal at any location.
SV	“Severe”	Structural bends or buckling, breakage and displacement at supports, loose or lost connections. Visible perforations or loss of wall thickness exceeding 50-percent of nominal at any location.

Description of Site

The Cedar Creek Ocean Outfall system is comprised of an 84-inch diameter precast outfall pipe that extends approximately two-miles offshore into the Atlantic Ocean midway between Jones Beach Inlet and Fire Island Inlet of the south shore of Long Island, New York. The main outfall sewer line ends at a “T” junction and splits off to diffuser piping extending to the east and west. The diffuser piping tapers in diameter from 84-inch at the “T” to 48-inch at the ends of the diffuser field. In total, there are 120 diffuser outlets that extend vertically from the diffuser line penetrating the seafloor releasing effluent. For reporting purposes, the diffuser lines are numbered in ascending order from the “T” junction out with the West Diffuser Line numbered from east to west (W1 to W60) and the East Diffuser Line numbered from west to east (E1 to E60). This number convention was confirmed onsite by the presence of identification tags that were affixed to the padeyes on several of the diffuser outlets (see Photo 1). A Vicinity Map, Location Map, and Facility Plan are included as Figures 1, 2, and 3, respectively, in Appendix A.

Each diffuser outlet structure consists of a 36-inch (I.D.) concrete riser that connects to a buried diffuser line of varied diameter. The riser piping is topped with a concrete cap segment that consists of two outlet ports and two padeye lift points. The concrete caps are fastened to the riser sections at four points per diffuser consisting of steel anchor bolts, brackets, and washers (see Figure 4 and Photos 2–5). The diffuser ports are generally oriented from north to south and the port openings vary from 3 to 5-inches in diameter. The padeyes are generally oriented north to south, corresponding with the port openings. The anchor bolts and anchor brackets are generally oriented at quadrants on the northwest, northeast, southwest, and southeast faces.

Summary of Findings

Overall, the exposed portions of the East and West Diffuser Lines are in **Fair** condition governed by the condition of the anchor hardware which displays moderate to severe corrosion. All outlet ports have moderate to strong effluent flow with periods where the flow was observed to be partially interrupted or where flow periodically was drawn into the pipe (most commonly observed at the end of the diffuser line). The steel padeyes and anchor bolt connections exhibit varying degrees of deterioration and section loss ranging from minor to severe condition. There are several missing padeyes and anchor bolts, as well as isolated locations of up to 100-percent section loss on the hardware. Diffuser W46 is pitched at a 45-degree angle to the north. Diffuser E3 appears to have experienced a slight rotation of the concrete cap, possibly from a fouled vessel anchor or other unknown external force.

Text summarizing the conditions present at each structural element are provided below and are further illustrated in Appendix A. Captioned photographs of typical conditions are presented in Appendix B. Lastly, detailed inspection findings are presented within the field notes, provided in Appendix C.

Diffuser Outlet Structures

Overall Condition: FAIR

The concrete diffuser riser structures are in overall **Satisfactory** condition with hard barnacle growth up to 1/2-inch thick on 100-percent of the exterior surfaces and mussel growth up to 10-

inches thick on approximately 75 to 100-percent of the exterior surfaces (see Photo 5). Typically, the concrete is hard with minor rounding of the edges. At the top of the riser structure, along the joint with the cap, there are isolated areas of moderate deterioration with soft concrete ranging from 1/2 to 3/4-inch deep. The bottom composition of the seafloor surrounding the riser structures consists of hard sand.

The diffuser outlet ports are in overall **Satisfactory** condition. Rounding was noted on the outlet port edges and it is unclear if this is representative of the condition as constructed or indicative of minor to moderate erosion over time. The flow was generally found to be strong (see Photo 6) with exception to two individual diffuser lines, W8 and E51, where the flow was observed to be moderately or partially interrupted. Flow at the end of the east diffuser line was observed to enter the pipe from diffusers E52 to E60. It is unclear what could be causing this condition, but it could be the weakened flow within the pipe and particularly strong ocean surge witnessed on that day contribute to this observation.

The diffuser padeye lift points are in overall **Poor** condition with typical minor to moderate corrosion and section loss ranging from 5 to 30-percent (see Photo 7). In total, 24-percent of the padeyes exhibit major to severe corrosion and section loss ranging from 50 to 100-percent (see Photo 8), with some of these padeyes missing entirely.

The diffuser anchorage hardware is in overall **Fair** condition with “older” and “newer” (replaced) anchor bolts present. The old anchor bolts consist of 1 1/2-inch diameter square-headed bolts with the head at the bottom anchor bracket and the shaft extending approximately 6-inches above the top anchor bracket (see Photo 9). The new (replaced) anchor bolts consist of 3/4 to 7/8-inch diameter hot-dip galvanized (HDG) threaded rods or are 1 to 1 1/4-inch stainless steel threaded rods that extend 1 to 3-inches above and below the anchor brackets (see Photo 10). The old bolts typically exhibit moderate corrosion with up to 25-percent section loss with isolated instances of major to severe corrosion and up to 100-percent section loss (see Photo 11). The new (replaced) HDG bolts typically exhibit minor corrosion with 10 to 20-percent section loss on the threaded rods; however, the washers typically exhibit moderate to advanced corrosion with up to 30 to 40-percent section loss. The smaller sizing of the new bolts coupled with the deterioration of the washers has resulted in loose connections, observed by diver when bolts were struck with hammer. The new (replaced) stainless-steel bolts exhibit no deterioration and are soundly in place. The diffuser brackets typically exhibit moderate section loss and pitting up to 1/8-inch deep (see Photo 12). In one location (Diffuser E27, southeast anchor) a bolt and bracket was found to be missing; however, the concrete cap appeared to be unaffected (see Photo 13).

Detailed findings for each diffuser with corresponding underwater video time stamps are provided in Appendix C.

Summary of Recommendations

Recommendations as presented herein are categorized by priority. “Emergency/Immediate” actions require a prompt response to prevent or repair unsafe conditions at the structure. “Priority” level actions are recommendations for which no immediate measures are required, but for which further investigations, design, and implementation of interim or long-term rehabilitation should be undertaken. “Routine” level actions should be undertaken as part of a scheduled maintenance

program, other scheduled project, or routine facility maintenance depending upon the action required. During the next Routine Level inspection, the routine level recommended actions should be reevaluated to determine if their status has changed. The next Routine Level Inspection should be performed on-site within the next four (4) years in accordance with the ASCE recommendations as outlined in MOP 130, Table 2-2.

Priority Actions

Priority repair recommendations call for the replacement of all severely deteriorated steel diffuser hardware (i.e. anchor bolts, nuts, and washers). In consideration of the observed conditions, it is recommended that all hardware be 1-inch to 1 1/4-inch diameter stainless steel bolts with appropriately sized nuts and washers of same material. Additionally, it is recommended that any remaining travel lines from prior construction be removed to prevent potential damage from vessel anchor fouling. Priority Repairs should be conducted within the next two to four years.

Routine Actions

Routine repair recommendations call for the routine inspection of all moderately deteriorated steel hardware to identify potential for replacement. Routine Actions should be conducted within the next four years.

Marine Solutions appreciates the opportunity to provide these services. If you have any questions, or need further assistance, please contact our office.

Sincerely,

Marine Solutions

A handwritten signature in blue ink, appearing to read "Matthew J. Daniels".

Matthew J. Daniels, P.E.

Senior Project Manager

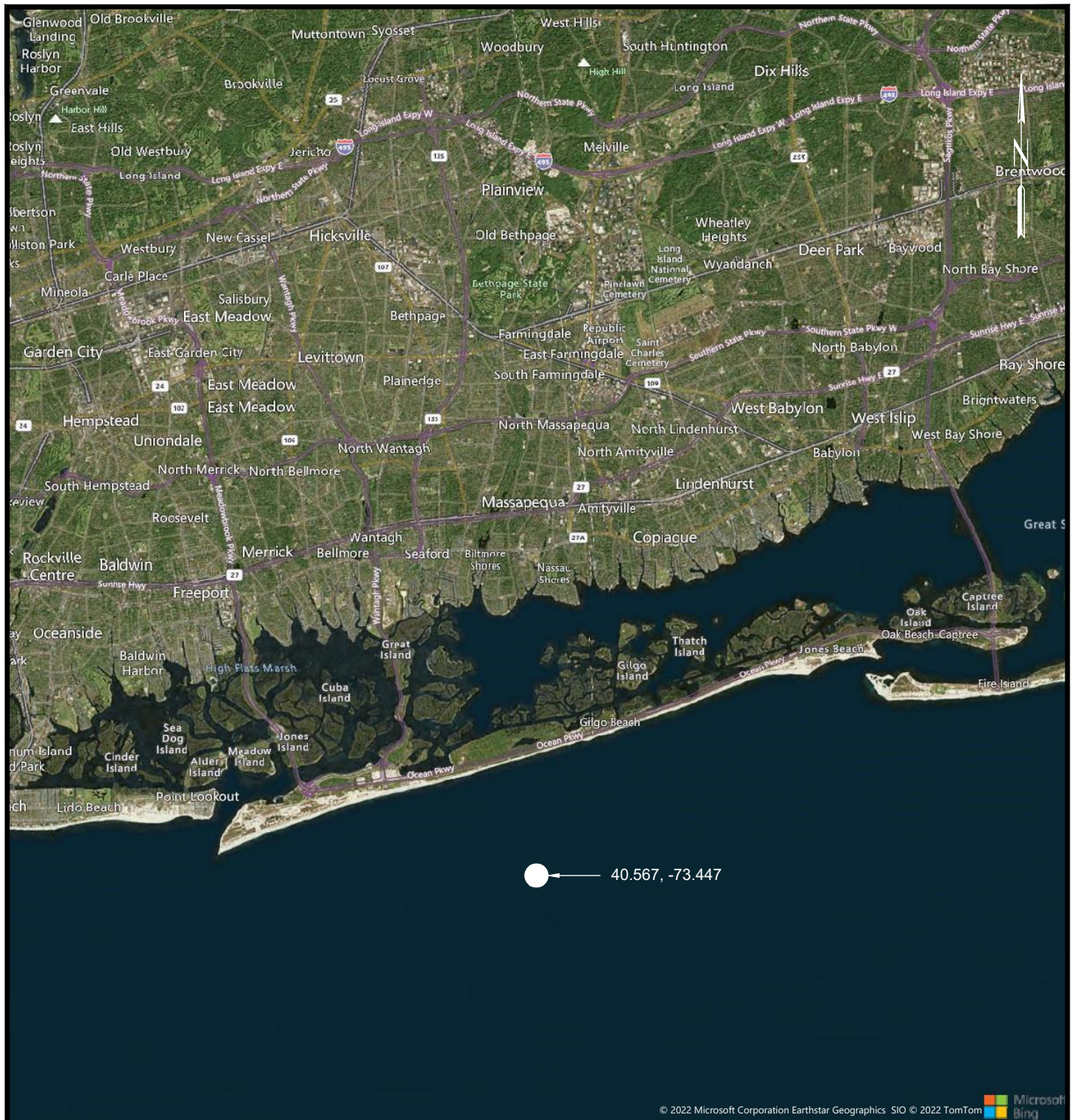
Appendix A – Outfall Structure Drawings

Appendix B – Captioned Photos


Appendix C – Field Notes

Appendix A

Outfall Structure Drawings




LOCATION MAP

	GRAPHIC SCALE:		PROJECT:	
	N.T.S.		CEDAR CREEK OCEAN OUTFALL INSPECTION	
	INSPECTION DATE: AUGUST 1, 2022		SHEET:	FIG NO.
	DRAWN BY: RLV	CKD BY: MJD		
	MSI PROJECT NO.: 03-22-015			
	FILENAME: 03-22-015_CO.DWG			
LOCATION MAP			1	



VICINITY MAP

	GRAPHIC SCALE: N.T.S.		PROJECT: CEDAR CREEK OCEAN OUTFALL INSPECTION	
	INSPECTION DATE: AUGUST 1, 2022		SHEET: VICINITY MAP	FIG NO. 2
	DRAWN BY: RLV	CKD BY:MJD		
	MSI PROJECT NO.: 03-22-015			
	FILENAME: 03-22-015_CO.DWG			



FACILITY PLAN

MARINE
SOLUTIONS

GRAPHIC SCALE:

N.T.S.

INSPECTION DATE: AUGUST 1, 2022

DRAWN BY: RLV

CKD BY: MJD

MSI PROJECT NO.: 03-22-015

FILENAME: 03-22-015_CO.DWG

PROJECT:

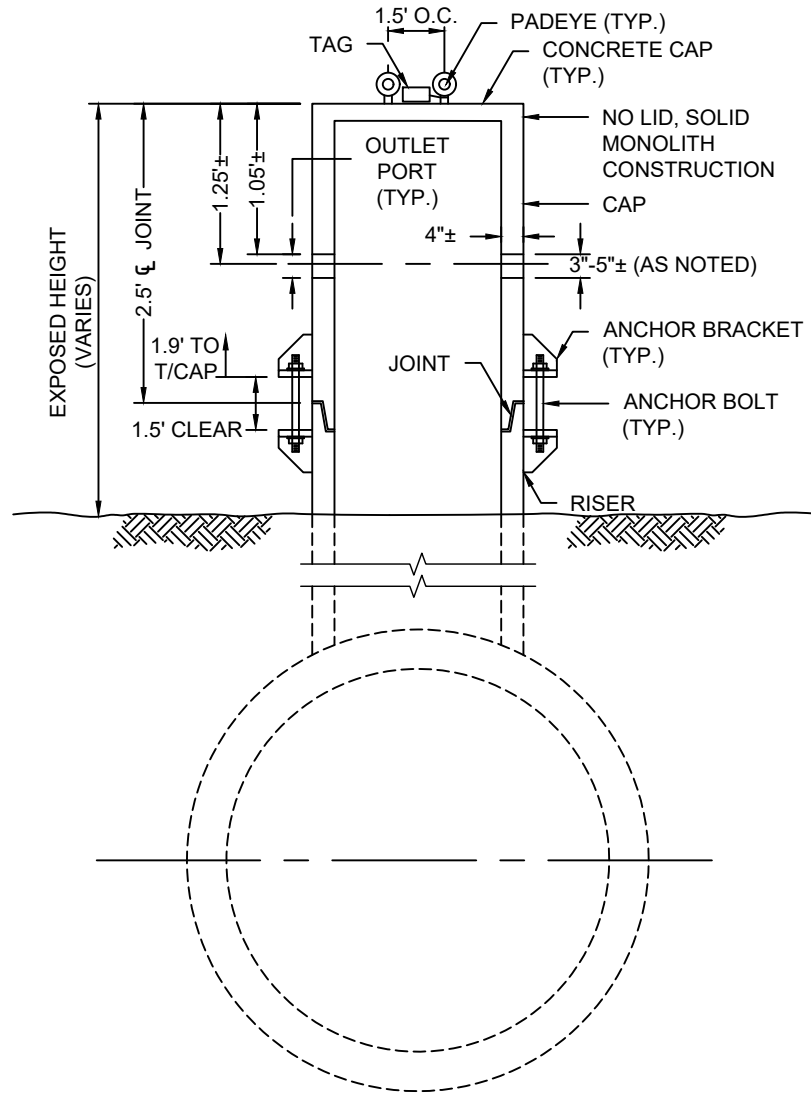
CEDAR CREEK OCEAN OUTFALL INSPECTION

SHEET:

FACILITY PLAN

FIG NO.

3



MARINE
SOLUTIONS

GRAPHIC SCALE:

N.T.S.

PROJECT:

CEDAR CREEK OCEAN OUTFALL INSPECTION

INSPECTION DATE: AUGUST 1, 2022

SHEET:

FIG NO.

DRAWN BY: RLV

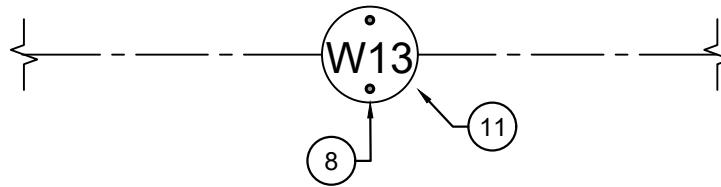
CKD BY: MJD

TYPICAL OUTLET SECTION

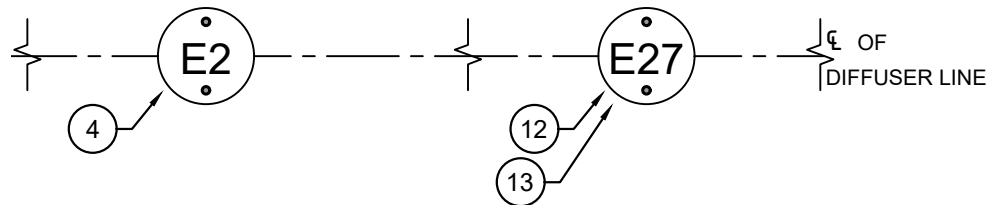
4

MSI PROJECT NO.: 03-22-015

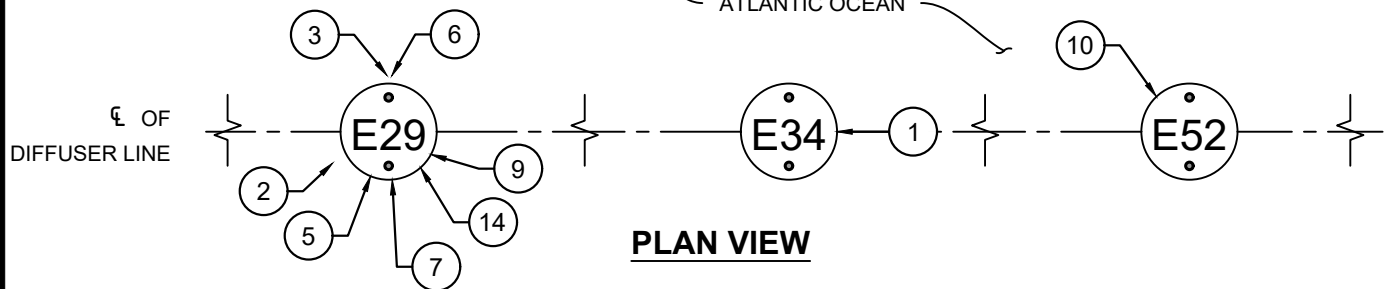
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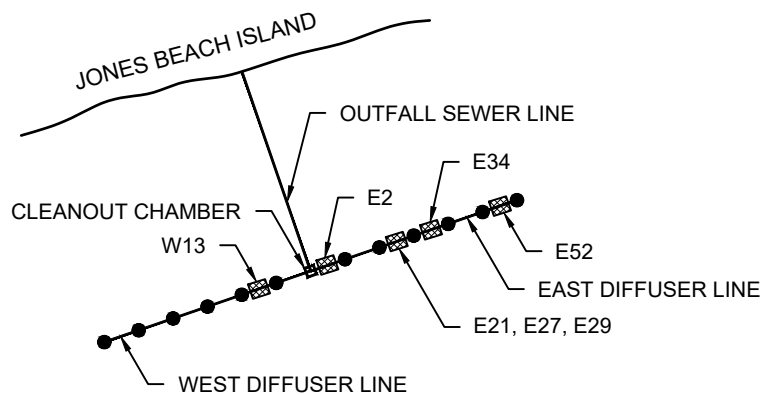
PLAN VIEW



PLAN VIEW



PLAN VIEW



KEY PLAN

**MARINE
SOLUTIONS**

GRAPHIC SCALE:

N.T.S.

INSPECTION DATE: AUGUST 1, 2022

DRAWN BY: RLV

CKD BY: MJD

MSI PROJECT NO.: 03-22-015

FILENAME: 03-22-015_CO.DWG

PROJECT:

CEDAR CREEK OCEAN OUTFALL INSPECTION

SHEET:

DIFFUSER LINE
PHOTO LOCATION PLAN

FIG NO.

5

Appendix B

Captioned Photos



PHOTO 1. Typical I.D. tag on top of diffuser cap, taken at Diffuser E34.



PHOTO 2. General view of diffuser outlet structure, taken at Diffuser E29.

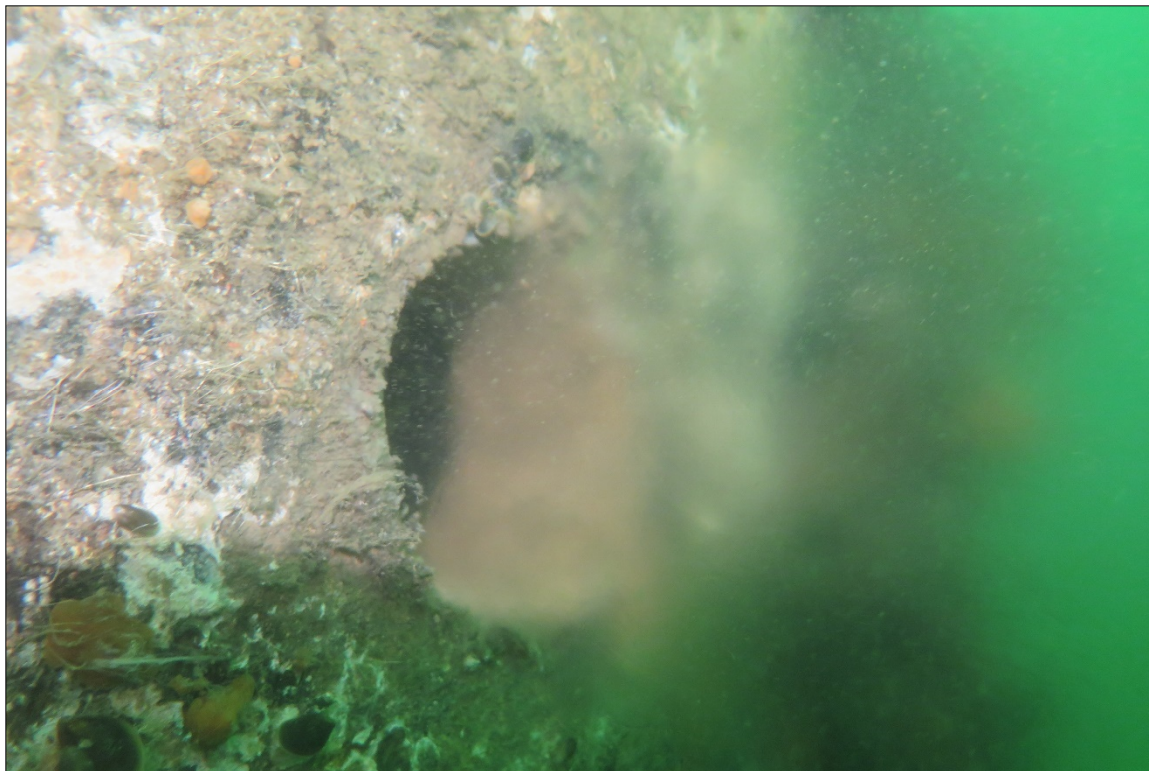


PHOTO 3. General view of diffuser port, taken at Diffuser E29.



PHOTO 4. Diffuser cap/riser interface and steel hardware, missing the southwest anchor bolt, taken at Diffuser E2.



PHOTO 5. Typical outlet structure with marine growth, taken at Diffuser E29.

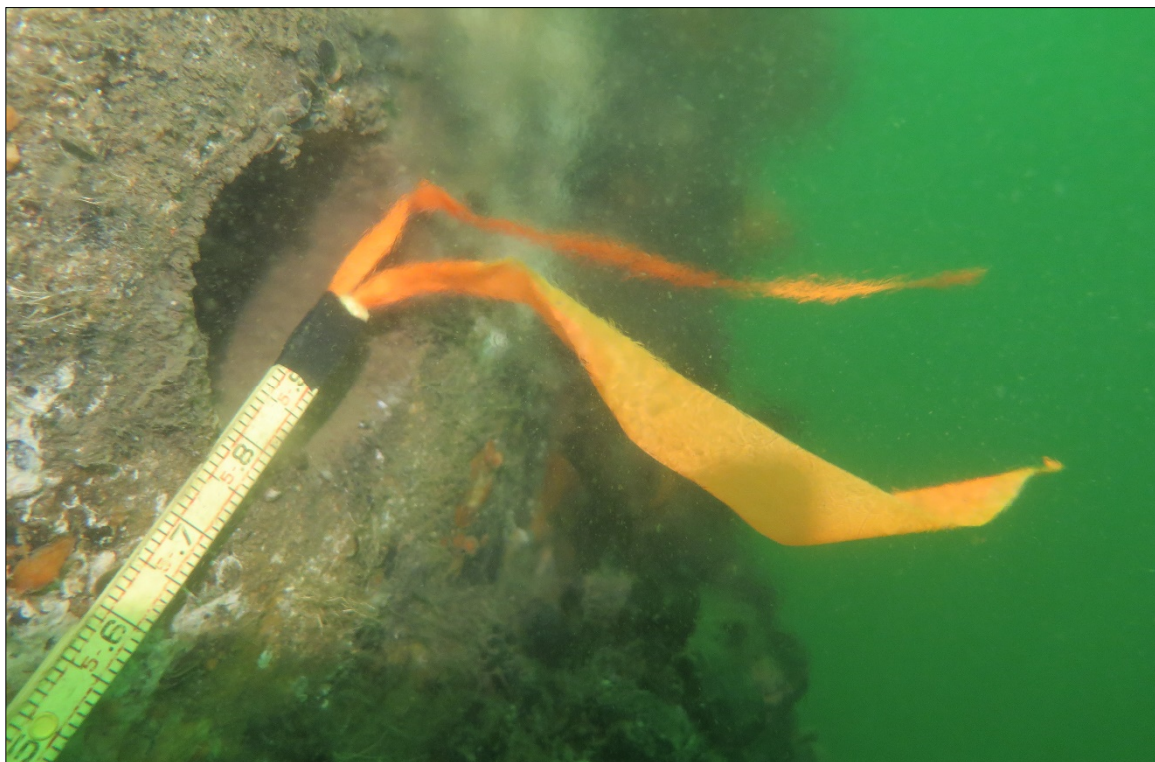


PHOTO 6. Typical flow at outlet port with telltale flagging, taken at Diffuser E29 north outlet port.



PHOTO 7. Typical minor section loss on padeye, Diffuser E29 south padeye.



PHOTO 8. Typical severe section loss on padeye, Diffuser W13 south padeye.



PHOTO 9. Typical moderate section loss on anchor bracket and anchor bolt, taken at Diffuser E29 southeast bolt.

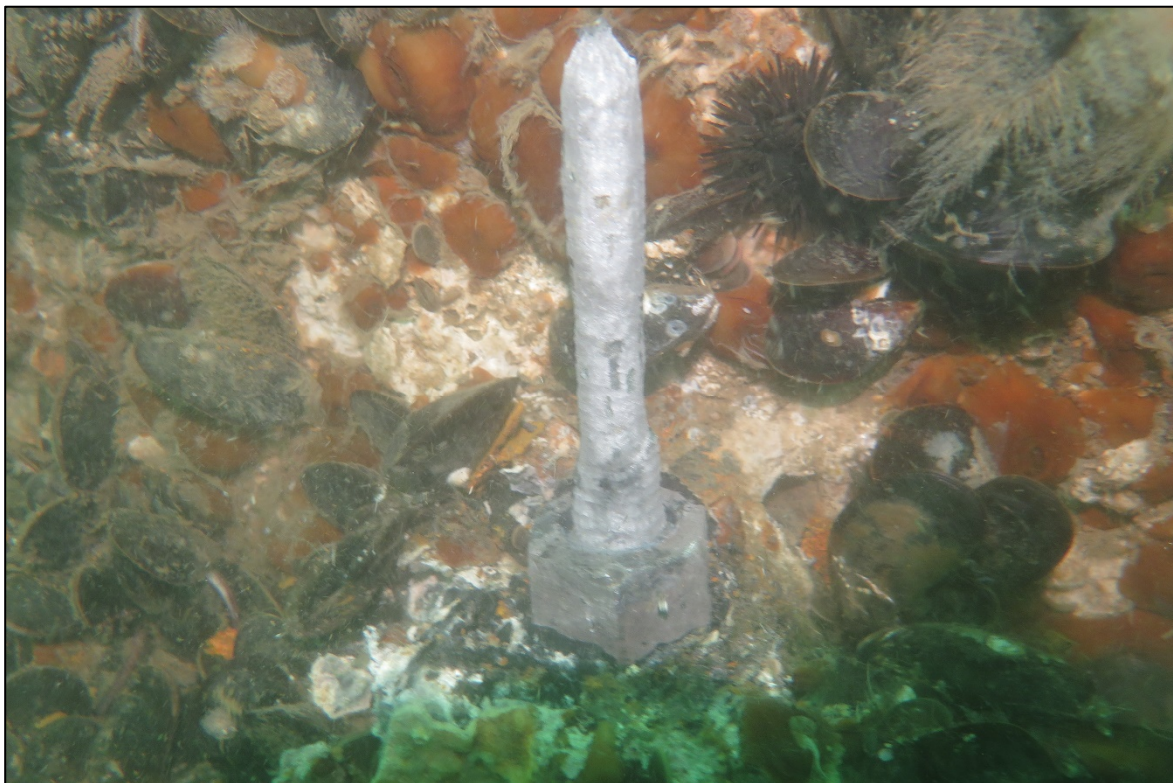


PHOTO 10. Typical condition of soft anchor bolt and nut located on northwest anchor bolt on the Diffuser E52.



PHOTO 11. Typical severe corrosion with up to 100-percent section loss taken at Diffuser W13 southeast bolt at top bracket.



PHOTO 12. Typical Moderate Section Loss and Pitting up to 1/8 in. deep on the Diffuser Bracket, taken at Diffuser E27 southwest anchor.

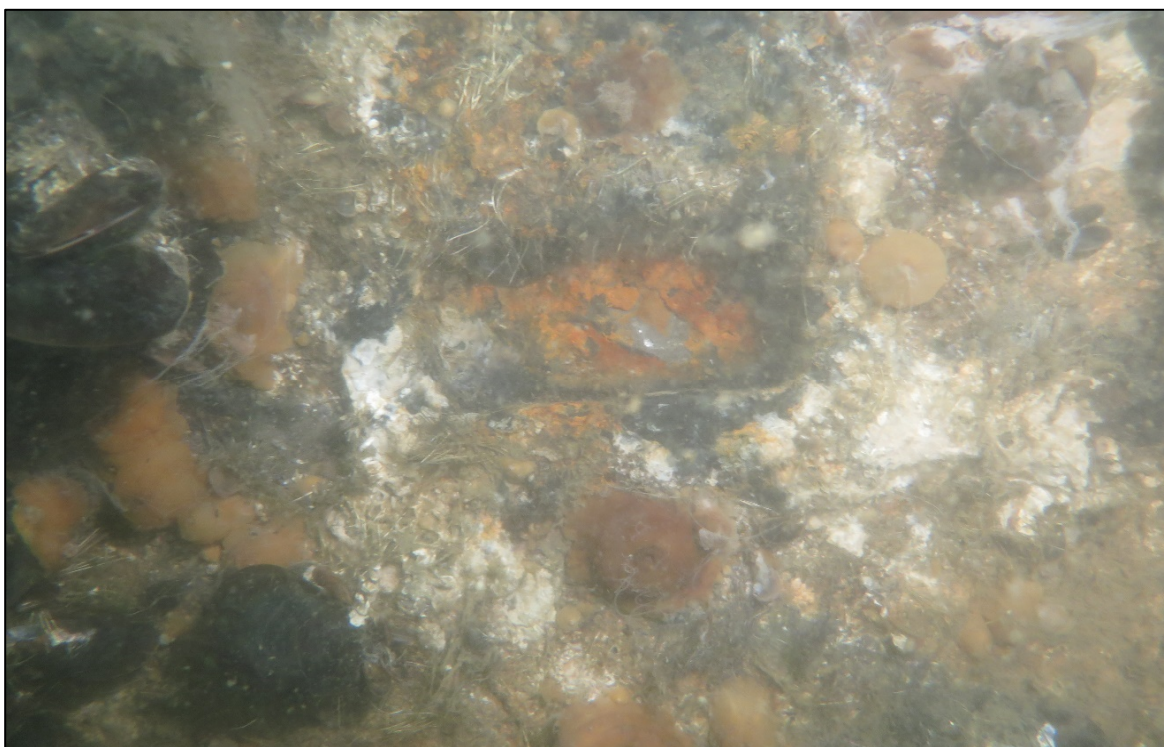


PHOTO 13. Anchor bolt and bottom bracket are missing exposing recess in the concrete, Diffuser E27 southwest bolt.



PHOTO 14. Typical condition of concrete on vertical face of cap on southeast side of Diffuser E29.

Appendix C

Field Notes



CEDAR CREEK OCEAN OUTFALL
UNDERWATER INSPECTION OF DIFFUSER FIELD

DIFFUSER OUTLET #	# OF PORTS	PORT ORIENTATION	PORT DIA. (in.)	% OBSTR.	CONCRETE CONDITION	FLOW (Y/N)	FLOW (IN/OUT)	PADEYE CONDITIONS* (N/S)				ANCHOR BOLT CONDITIONS*				Water Depth to top of Dif.	Avg. Exposed HT (ft)	# OF PADEYES AND CONDITION	# OF BOLTS AND CONDITION	COMMENTS (Bolt - Damage Grade/Section Loss)	DATE	VIDEO START	VIDEO STOP	STILL PHOTO IMG NUMBER
								MN	MD	MJ	SV	MN	MD	MJ	SV									
W60	2	E-W	5.0	0	Good	Y - Strong	Out	--	1	--	1	4	--	--	--	41.5	9.0	Two: Moderate to Severe	Four, SS with <10% SL	Thick carpet of marine growth, mussels and vegetation 6-12" thick covering >50% of surface with hard barnacle growth underneath covering 100% of surface (Typical of all diffuser risers). Newer hardware is visibly smaller in length and diameter than older hardware.	7/11/2022	11:24 AM	11:27 AM	
W59	2	N-S	5.0	0	Good	Y - Strong	Out	--	--	--	2	4	--	--	--	41.0	8.0	One: Severe	Four, HDG with 10-15% SL	NPE SV, SPE SV MISSING	7/11/2022	11:27 AM	11:34 AM	
W58	2	N-S	5.0	0	Good	Y - Strong	Out	--	2	--	--	2	2	--	--	42.0	7.7	Two: Up to 25% SL with moderate pitting.	Four, HDG with 10-20% SL	SE bolt is loose and nut can be moved by hand.	7/11/2022	11:34 AM	11:37 AM	
W57	2	N-S	5.0	0	Good	Y - Strong	Out	2	--	--	--	--	4	--	--	43.0	7.5	Two: Minor	Four, HDG with 10-20% SL		7/11/2022	11:37 AM	11:42 AM	
W56	2	N-S	5.0	0	Good	Y - Strong	Out	1	--	--	1	2	2	--	--	42	7.1	Two: Minor	Four, HDG with 10-20% SL	SE bolt 10% SL, NE loose - severe deterioration of washer, SW 15% SL, NW loose 10% SL on bolt with severe deterioration of washer. Tag present confirming location. NPE severe SL at top.	7/11/2022	11:43 AM	11:47 AM	
W55	2	N-S	5.0	0	Good	Y - Strong	Out	1	1	--	--	--	4	--	--	43	6.9	Two: Minor to Moderate	Four, HDG with 15-20% SL	SE 15-20% SL, NE 15-20% SL, SW 15-20% SL, NW newer <10% SL with severe SL of washer. SPE is MN, NPE is MD up to 25% SL	7/11/2022	11:50 AM	11:55 AM	
W54	2	N-S	5.0	0	Good	Y - Strong	Out	--	1	--	1	--	4	--	--	43	7.5	Two: Minor to Moderate	Four, HDG with 10-20% SL	NE 15% SL, NW 10% SL, SPE 30% SL, North 60% on shaft.	7/11/2022	11:56 AM	12:00 PM	
W53	2	N-S	5.0	0	Good	Y - Strong	Out	2	--	--	--	3	1	--	--	42	7.3	Two: Minor to Moderate	Four, HDG with 10-20% SL	SE 10-15% SL, NE new loose nut 5-10% SL, SW 10-15% SL, NW 15-20% SL, SPE 10-15% SL, NPE 15% SL	7/11/2022	12:01 PM	12:05 PM	
W52	2	N-S	5.0	0	Good	Y - Strong	Out	1	1	--	--	2	2	--	--	43	7.2	Two: Minor to Moderate	Four, HDG with 10-20% SL	SE new HW and loose 5-10% SL with severe deterioration of washer (nut removed and washer displayed on video). SW new and loose 10% SL, NPE 25% SL, SPE 10% SL	7/11/2022	12:05 PM	12:12 PM	
W51	2	N-S	5.0	0	Good	Y - Strong	Out	2	--	--	--	1	3	--	--	44	7.1	Two: Minor	Four, HDG with 10-20% SL	SE, newer and loose with minor SL, NE 10-20% SL Removable but not reusable. SW 10-20% SL Removable but not reusable.	7/11/2022	12:34 PM	12:39 PM	
W50	2	N-S	5.0	0	Good	Y - Strong	Out	--	1	--	1	2	2	--	--	44	7.4	Two: Minor to Severe	Four, HDG with 10-20% SL	SE <15% SL, NE 15-20% SL, SW 15-20%, SW <15% SL, SPE 20% SL, NPE >50% SL (Photo)	7/11/2022	12:39 PM	12:47 PM	0345-0350
W49	2	N-S	5.0	0	Good	Y - Strong	Out	1	1	--	--	3	1	--	--	44	7.0	Two: Minor to Moderate	Four, HDG with 10-20% SL	SE 15-20% SL, NE >30% SL, SW 15-20% SL, NW 15-20% SL, SPE 10% SL, NPE 15% SL	7/11/2022	12:47 PM	12:53 PM	
W48	2	N-S	5.0	0	Good	Y - Strong	Out	1	--	--	1	4	--	--	--	44	7.0	Two: Minor to Severe	Four, SS with <10% SL	SE Minor SS, NE Minor SS, SW Minor SS, NW Minor SS, SPE <10% SL, NPE Missing	7/11/2022	12:53 PM	1:01 PM	
W47	2	N-S	5.0	0	Good	Y - Strong	Out	--	1	1	--	3	--	--	1	45	7.3	Two: Moderate to Major	Four, HDG with 10-20% SL	SE >50% SL, NE <15% SL, SW <15% SL, NW <15%SL, SPE 15-20% SL, NPE 35% SL	7/11/2022	1:01 PM	1:07 PM	
W46	2	N-S	5.0	0	Good	Y - Strong	Out	--	1	--	1	3	--	--	1	45	6.2	Two: Moderate to Severe	Four, SS with <10% SL	SE Minor SS, NE Minor SS, SW Minor SS, NW top bracket and bolt are missing, SPE 15-20% SL, NPE Missing. Diffuser riser is at a 45-deg angle to the north.	7/11/2022	1:07 PM	1:13 PM	
W45	2	N-S	5.0	0	Good	Y - Strong	Out	--	1	--	1	--	4	--	--	45.5	7.5	Two: Moderate to Severe	Four, HDG with 15-20% SL	SE 15-20% SL, NE 15-20% SL, SW 15-20% SL, NW 15-20% SL, SPE 80% SL, NPE <30% SL	7/11/2022	1:14 PM	1:20 PM	
W44	2	N-S	5.0	0	Good	Y - Strong	Out	--	--	--	2	--	4	--	--	45	7.0	Two: Severe	Four, HDG with 15-20% SL	SE 15-20% SL, NE 15-20% SL, SW 15-20% SL, NW 15-20% SL and bent at the top with 1" clear distance to riser exterior, SPE >50% SL, NPE missing	7/11/2022	1:20 PM	1:26 PM	
W43	2	N-S	5.0	0	Good	Y - Strong	Out	--	1	--	1	1	3	--	--	46	6.9	Two: Moderate to Severe	Four, HDG with 10-20% SL	SE <15%SL, NE 15-20% SL, SW 10-20% SL, NW 10-20% SL, SPE 15-20% SL, NPE 70% SL	7/11/2022	1:26 PM	1:30 PM	
W42	2	N-S	5.0	0	Good	Y - Strong	Out	--	--	--	2	--	4	--	--	45.5	7.0	Two: Severe	Four, HDG with 10-30% SL	SE 15-20%SL, NE 30% SL, SW 10-20% SL, NW 10-20% SL, SPE >50% SL, NPE >50% SL	7/11/2022	1:30 PM	1:34 PM	
W41	2	N-S	5.0	0	Good	Y - Strong	Out	--	--	1	1	2	1	1	--	46	7.1	Two: Major to Severe	Four, HDG with 10-20% SL	SE 15-20% SL, SW <15% SL, NE 15-20% SL, NW 40% SL, NPE 40-50% SL, SPE 50-60% SL	7/11/2022	2:53 PM	3:10 PM	
W40	2	N-S	5.0	0	Good	Y - Strong	Out	-	1	-	1	1	2	1	-	46	6.7	Two: Moderate to Severe	Four, HDG with 10-60% SL	NW MD, SW - MJ, NE - MD, SE - MN, SPE - SV, NPE - MD	7/13/2022	9:54 AM	9:59 AM	
W39	2	N-S	5.0	0	Good	Y - Strong	Out	-	1	-	1	2	2	-	-	46	6.4	One: Moderate	Four, HDG with 10-25% SL	NW- MN, SW - MD, NE - MN, SE - MD, EPE - MD, WPE - SV MISSING; Port and eyebolt orientation is East/West	7/13/2022	10:25 AM	10:29 AM	

Abbreviations:

NE - Northeast Bolt, SE - Southeast Bolt, SW - Southwest Bolt, NW - Northwest Bolt, SPE - South Padeye, NPE - North Padeye, MN - Minor, MD - Moderate, MJ - Major, SV - Severe, SL - Section Loss, SS - Stainless Steel, HDG - Hot Dipped Galvanized



CEDAR CREEK OCEAN OUTFALL
UNDERWATER INSPECTION OF DIFFUSER FIELD

DIFFUSER OUTLET #	# OF PORTS	PORT ORIENTATION	PORT DIA. (in.)	% OBSTR.	CONCRETE CONDITION	FLOW (Y/N)	FLOW (IN/OUT)	PADEYE CONDITIONS* (N/S)				ANCHOR BOLT CONDITIONS*				Water Depth to top of Diff.	Avg. Exposed HT (ft)	# OF PADEYES AND CONDITION	# OF BOLTS AND CONDITION	COMMENTS (Bolt - Damage Grade/Section Loss)	DATE	VIDEO START	VIDEO STOP	STILL PHOTO IMG NUMBER
								MN	MD	MJ	SV	MN	MD	MJ	SV									
W38	2	N-S	5.0	0	Good	Y - Strong	Out	-	-	-	2	2	2	-	-	45.5	6.5	One: Severe	Four, HDG with 10-25% SL	NW - MD, SW - MN, NE - MD, SE - MD, NPE SV 100% SL, SPE - SV MISSING	7/13/2022	10:30 AM	10:32 AM	
W37	2	N-S	5.0	0	Good	Y - Strong	Out	-	2	-	-	1	3	-	-	45.5	6.1	Two: Moderate	Four, HDG with 10-20% SL	NW - MN, SW - MD, NE - MD, SE - MD, NPE - MD, SPE - MD	7/13/2022	10:33 AM	10:36 AM	
W36	2	N-S	5.0	0	Good	Y - Strong	Out	-	2	-	-	-	4	-	-	46	6.1	Two: Moderate	Three, HDG with 10-25% SL, One SS 15%	NW - MD, SW - MD, NE - MD, SE - MD, NPE - MD, SPE - MD; NW is newer GSS 70% SL on washer	7/13/2022	10:36 AM	10:40 AM	
W35	2	N-S	5.0	0	Good	Y - Strong	Out	-	1	-	1	-	4	-	-	46	6.0	Two: Moderate to Severe	Four, HDG with 10-20% SL	NW - MD, SW - MD, NE - MD, SE - MD, NPE - MD, SPE - SV	7/13/2022	10:41 AM	10:44 AM	
W34	2	N-S	5.0	0	Good	Y - Strong	Out	-	-	1	1	1	3	-	-	45.5	6.2	Two: Major to Severe	Four, HDG with 10-25% SL	NW - MD, SW - MN, NE - MD, SE - MD, NPE - , SPE - SV (photo)	7/13/2022	10:44 AM	10:50 AM	0352-0355
W33	2	N-S	5.0	0	Good	Y - Strong	Out	-	2	-	-	-	4	-	-	45.5	5.6	Two: Moderate	Four, HDG with 15-20% SL	NW - MD, SW - MD, NE - MD, SE - MD, NPE - MD, SPE - MD	7/13/2022	10:50 AM	10:52 AM	
W32	2	N-S	5.0	0	Good	Y - Strong	Out	-	2	-	-	-	4	-	-	45.5	6.0	Two: Moderate	Four, HDG with 10-20% SL	NW - MD, SW - MD, NE - MN, SE - MD, NPE - MD, SPE - MD	7/13/2022	10:53 AM	10:56 AM	
W31	2	N-S	5.0	0	Good	Y - Strong	Out	-	-	-	2	-	4	-	-	45.5	6.0	Two: Severe	Four, HDG with 10-25% SL	NW - MD, SW - MD, NE - MD, SE - MD, NPE - SV, SPE - SV; NE Bolt bent away - would need to be cut to be repaired; Necks of eye bolt SV	7/13/2022	10:56 AM	11:00 AM	
W30	2	N-S	5.0	0	Good	Y - Strong	Out	-	1	1	-	4	-	-	-	45	6.0	Two: Major to Severe	Four, SS WITH 5-10% SL	NW - , SW - MN, NE - MN, SE - MN, EPE - MJ, WPE - MD; Nuts are loose; Port and eyebolt orientation is East/West	7/13/2022	11:01 AM	11:04 AM	
W29	2	N-S	5.0	0	Good	Y - Strong	Out	-	-	1	1	4	-	-	-	45	5.9	Two: Major to Severe	Four, SS WITH 5-10% SL	NW - MN, SW - MN, NE - MN, SE - MN, NPE - SV, SPE - MJ; Nuts are loose	7/13/2022	11:04 AM	11:07 AM	
W28	2	N-S	5.0	0	Good	Y - Strong	Out	-	-	1	1	4	-	-	-	44.5	6.2	Two: Moderate to Major	Four, SS WITH 5-10% SL	NW - MN, SW - MN, NE - MN, SE - MN, NPE - MD, SPE - MJ	7/13/2022	11:07 AM	11:10 AM	
W27	2	N-S	5.0	0	Good	Y - Strong	Out	-	2	-	-	-	4	-	-	44.5	6.0	Two: Moderate	Four, HDG with 10-25% SL	NW - MD, SW - MD Bent into the diffuser, NE - MD loose, SE - MD, NPE - MD, SPE - MD	7/13/2022	11:11 AM	11:14 AM	
W26	2	N-S	5.0	0	Good	Y - Strong	Out	-	-	-	2	1	3	-	-	44	6.7	Zero: Missing	Four, HDG with 5-25% SL	NW - MN loose, SW - MD, NE - MD, SE - MD loose, NPE - SV, SPE - SV - Both Padeye missing	7/13/2022	11:14 AM	11:16 AM	
W25	2	N-S	5.0	0	Good	Y - Strong	Out	-	1	-	1	1	3	-	-	43	7.0	One: Moderate	Four, HDG with 5-20% SL	NW - MD, SW - MD, NE - MD, SE - MN, NPE - MD, SPE - SV Missing	7/13/2022	12:01 PM	12:05 PM	
W24	2	N-S	5.0	0	Good	Y - Strong	Out	-	-	-	2	3	1	-	-	42	7.0	Zero: Missing	Four, HDG with 5-15% SL	NW - MD, SW - MN, NE - MN, SE - MN, NPE - SV, SPE - SV	7/13/2022	12:05 PM	12:09 PM	
W23	2	N-S	5.0	0	Good	Y - Strong	Out	2	-	-	-	2	2	-	-	43	7.1	Two: Minor	Four, HDG with 5-20% SL	NW - MN, SW - MD, NE - MD, SE - MN, NPE - MN, SPE - MN	7/13/2022	12:09 PM	12:12 PM	
W22	2	N-S	5.0	0	Good	Y - Strong	Out	2	-	-	-	-	4	-	-	42.5	6.3	Two: Minor	Four, HDG with 10-20% SL	NW - MD, SW - MD, NE - MD, SE - MD, NPE - MN, SPE - MN	7/13/2022	12:13 PM	12:15 PM	
W21	2	N-S	5.0	0	Good	Y - Strong	Out	-	1	-	1	2	2	-	-	42	6.7	Two: Moderate to Severe	Four, HDG with 5-25% SL	NW - MD, SW - MN, NE - MN, SE - MD, NPE - MD, SPE - SV	7/13/2022	12:16 PM	12:19 PM	
W20	2	N-S	5.0	0	Good	Y - Strong	Out	2	-	-	-	1	3	-	-	41	7.3	Two: Minor	Four, HDG with 10-20% SL	NW - MD, SW - MD, NE - MN, SE - MN, NPE - MN, SPE - MN	7/13/2022	12:19 PM	12:21 PM	
W19	2	N-S	5.0	0	Good	Y - Strong	Out	-	1	-	1	2	2	-	-	42	9.0	Two: Moderate to Severe	Four, HDG with 5-20% SL	NW - MN, SW - MD, NE - MN, SE - MD, NPE - MD, SPE - SV	7/13/2022	12:21 PM	12:24 PM	
W18	2	N-S	5.0	0	Good	Y - Strong	Out	1	1	-	-	2	2	-	-	41	8.1	Two: Minor to Moderate	Four, HDG with 5-15% SL	NW - MN, SW - MN, NE - MD, SE - MD, NPE - MN, SPE - MD	7/13/2022	12:25 PM	12:28 PM	
W17	2	N-S	5.0	0	Good	Y - Strong	Out	1	1	-	-	1	3	-	-	40.5	7.3	Two: Minor to Moderate	Four, HDG with 10-20% SL	NW - MD, SW - MD, NE - MD, SE - MN, NPE - MN, SPE - MD	7/13/2022	12:29 PM	12:30 PM	
W16	2	N-S	5.0	0	Good	Y - Strong	Out	1	1	-	-	2	2	-	-	40.5	9.0	Two: Moderate	Four, HDG with 5-20% SL	NW - MN, SW - MN, NE - MD, SE - MD, NPE - MD, SPE - MD	7/13/2022	12:31 PM	12:34 PM	

Abbreviations:

NE - Northeast Bolt, SE - Southeast Bolt, SW - Southwest Bolt, NW - Northwest Bolt, SPE - South Padeye, NPE - North Padeye, MN - Minor, MD - Moderate, MJ - Major, SV - Severe, SL - Section Loss, SS - Stainless Steel, HDG - Hot Dipped Galvanized



CEDAR CREEK OCEAN OUTFALL
UNDERWATER INSPECTION OF DIFFUSER FIELD

DIFFUSER OUTLET #	# OF PORTS	PORT ORIENTATION	PORT DIA. (in.)	% OBSTR.	CONCRETE CONDITION	FLOW (Y/N)	FLOW (IN/OUT)	PADEYE CONDITIONS* (N/S)				ANCHOR BOLT CONDITIONS*				Water Depth to top of Dif.	Avg- Exposed HT (ft)	# OF PADEYES AND CONDITION	# OF BOLTS AND CONDITION	COMMENTS (Bolt - Damage Grade/Section Loss)	DATE	VIDEO START	VIDEO STOP	STILL PHOTO IMG NUMBER
								MN	MD	MJ	SV	MN	MD	MJ	SV									
W15	2	N-S	3.0	0	Good	Y - Strong	Out	-	2	-	-	2	2	-	-	42.5	9.4	Two: Moderate	Four, SS WITH -20% SL	NW - MD, SW - MD, NE - MN, SE - MN, NPE - MD, SPE - MD; Loose nuts, SS but NOT galvanized	7/13/2022	12:35 PM	12:37 PM	
W14	2	N-S	3.0	0	Good	Y - Strong	Out	2	-	-	-	2	2	-	-	41	7.1	Two: Minor	Four, HDG with 10- 20% SL	NW - MD, SW - MN, NE - MD, SE - MN, NPE - MN, SPE - MN	7/13/2022	12:38 PM	12:40 PM	
W13	2	N-S	3.0	0	Good	Y - Strong	Out	-	-	-	2	1	2	-	1	42	8.3	One: Severe	Four, HDG with 10- 25% SL	NW - MD, SW - MD, NE - MN, SE - SV, NPE - MISSING, SPE - SV; SE Bolt 100% SL Broken	7/13/2022	12:41 PM	12:44 PM	0357-0361
W12	2	N-S	3.0	0	Good	Y - Strong	Out	2	-	-	-	2	2	-	-	43	7.3	Two: Minor	Four, HDG with 5- 20% SL	NW - MD, SW - MN, NE - MD, SE - MN, NPE - MN, SPE - MN; SE is loose	7/13/2022	12:44 PM	12:47 PM	
W11	2	N-S	3.0	0	Good	Y - Strong	Out	-	-	1	1	1	3	-	-	45	6.3	One: Major	Four, HDG with 5- 25% SL	NW - MN, SW - MD, NE - MD, SE - MD, NPE - SV MISSING, SPE - MJ	7/13/2022	12:48 PM	12:50 PM	
W10	2	N-S	3.0	0	Good	Y - Strong	Out	-	1	1	-	3	1	-	-	44.5	6.0	Two: Moderate to Major	Four, HDG with 5- 10% SL	NW - MN, SW - MN, NE - MD, SE - MN, NPE - MD, SPE - MJ; SE is loose	7/13/2022	12:51 PM	12:54 PM	
W9	2	N-S	3.0	0	Good	Y - Strong	Out	-	-	2	-	1	3	-	-	44	6.3	Two: Major	Four, HDG with 5- 25% SL	NW - MD, SW - MN, NE - MD, SE - MD, NPE - MJ, SPE - MJ; Bolt on SW loose; NE BOLT LINE TIGHT	7/13/2022	1:09 PM	1:14 PM	
W8	2	N-S	3.0	0	Good	Y - Moderate partially interrupted	Out	-	-	-	2	-	2	-	2	44	5.0	Two: Severe	Four, HDG with 5- 20% SL	NW - MD, SW - MD, NE - SV, SE - SV, NPE - SV, SPE - SV; Flow weak out of north - pulsed irregular, Strong out of south; NE BROKEN; SPE BROKEN	7/13/2022	1:21 PM	1:26 PM	
W7	2	N-S	3.0	0	Good	Y - Strong	Out	-	-	-	2	2	2	-	-	45	5.8	Zero: Missing	Four, HDG with 5- 20% SL	NW - MN, SW - MD, NE - MD, SE - MN, NPE - SV, SPE - SV; BOTH PADEYES MISSING	7/13/2022	1:28 PM	1:33 PM	
W6	2	N-S	3.0	0	Good	Y - Strong	Out	-	-	-	2	-	2	1	1	44	5.5	One: Severe	Three, HDG with 5- 25% SL	NW - MD, SW - MJ, NE - MD, SE - SV, NPE - SV, SPE - SV; SE BOLT MISSING; SPE MISSING	7/13/2022	1:34 PM	1:38 PM	
W5	2	N-S	3.0	0	Good	Y - Strong	Out	-	-	-	2	-	-	-	1	45	5.8	Two: Severe	Four, HDG with 25- 80% SL	NW - MD, SW - MD, NE - MD, SE - SV, NPE - SV, SPE - SV; 100% SL SPE;	7/13/2022	1:39 PM	1:42 PM	
W4	2	N-S	3.0	0	Good	Y - Strong	Out	-	-	-	2	1	3	-	-	45	5.7	Two: Severe	Four, HDG with 5- 25% SL	NW - MD, SW - MD, NE - MN, SE - MD, NPE - SV, SPE - SV	7/13/2022	1:44 PM	1:48 PM	
W3	2	N-S	3.0	0	Good	Y - Strong	Out	-	-	-	2	-	4	-	-	45	6.0	Zero: Missing	Four, HDG with 10- 20% SL	NW - MD, SW - MD, NE - MD, SE - MD, NPE - SV, SPE - SV; BOTH PADEYES MISSING	7/13/2022	1:49 PM	1:52 PM	
W2	2	N-S	3.0	0	Good	Y - Strong	Out	-	-	-	2	1	3	-	-	45	6.6	One: Major	Four, HDG with 5- 20% SL	NW - MN, SW - MD, NE - MD, SE - MD, NPE - MJ, SPE - SV; MISSING SPE; LINE ON NORTHWEST	7/13/2022	1:53 PM	1:59 PM	
W1	2	N-S	3.0	0	Good	Y - Strong	Out	-	-	1	1	-	4	-	-	46	7.3	One: Major	Four, HDG with 15- 20% SL	NW - 15, SW - 15, NE - MD, SE - MD, NPE - Missing, SPE - MJ	7/14/2022	11:01 AM	11:08 AM	
E1	2	N-S	3.0	0	Good	Y - Strong	Out	-	2	-	-	-	4	-	-	45	7.3	Two: Moderate	Four, HDG with 20% SL	NW - MD, SW - MD, NE - MD, SE - MD, NPE - 30% SL, SPE - 20% SL	7/14/2022	11:10 AM	11:19 AM	
E2	2	N-S	3.0	0	Good	Y - Strong	Out	-	-	1	1	-	3	-	1	45	7.0	Two: Major to Severe	Three, HDG with 15- 20% SL, One Missing	NW - 20% SL, SW - MISSING (Photo), NE - 20% SL, SE - 30% SL and loose, NPE - 60% SL, SPE - 40% SL	7/14/2022	11:20 AM	11:32 AM	0363-0374
E3	2	N-S	3.0	0	Good	Y - Strong	Out	-	-	1	1	1	3	-	-	45	8.3	Two: Major to Severe	Three, HDG with 10% SL, One, SS with <10% SL	NW - MD, SW - MD, NE - MD, SE - SS bolt that is bent, Top cap appears twisted clockwise. NPE - 50%SL, SPE - 30% SL	7/14/2022	11:33 AM	11:42 AM	
E4	2	N-S	3.0	0	Good	Y - Strong	Out	-	-	1	1	-	2	2	-	45	8.4	Two: Major to Severe	Four, HDG with 20% to 35% SL	Tag present. SE - MJ loose, SW - MD, NW - MD, NE - MJ, NPE - MJ 40% SL, SPE - SV 80% SL	7/14/2022	11:43 AM	11:50 AM	
E5	2	N-S	3.0	0	Good	Y - Strong	Out	1	-	-	1	3	-	-	1	43	9.6	Two: Major to Severe	Four, HDG with 10 to 90% SL	NW - 90%, SW - MN, NE - MN loose, SE - MN loose, NPE - MN, SPE - 95%	7/14/2022	12:48 PM	12:52 PM	
E6	2	N-S	3.0	0	Good	Y - Strong	Out	-	2	-	-	2	2	-	-	44	9.6	Two: Moderate	Four, HDG with 5 to 20% SL	NW - MN, SW - MD, NE - MN, SE - MD, NPE - MD, SPE - MD; Tag present but broken	7/14/2022	12:52 PM	12:55 PM	
E7	2	N-S	3.0	0	Good	Y - Strong	Out	-	2	-	-	2	2	-	-	43	9.2	Two: Moderate	Four, HDG with 5 to 20% SL	NW - MD, SW - MN, NE - MD, SE - MN, NPE - MD, SPE - MD	7/14/2022	12:56 PM	12:59 PM	

Abbreviations:

NE - Northeast Bolt, SE - Southeast Bolt, SW - Southwest Bolt, NW - Northwest Bolt, SPE - South
Padeye, NPE - North Padeye, MN - Minor, MD - Moderate, MJ - Major, SV - Severe, SL - Section
Loss, SS - Stainless Steel, HDG - Hot Dipped Galvanized



CEDAR CREEK OCEAN OUTFALL
UNDERWATER INSPECTION OF DIFFUSER FIELD

DIFFUSER OUTLET #	# OF PORTS	PORT ORIENTATION	PORT DIA. (in.)	% OBSTR.	CONCRETE CONDITION	FLOW (Y/N)	FLOW (IN/OUT)	PADEYE CONDITIONS* (N/S)				ANCHOR BOLT CONDITIONS*				Water Depth to top of Dif.	Avg. Exposed HT (ft)	# OF PADEYES AND CONDITION	# OF BOLTS AND CONDITION	COMMENTS (Bolt - Damage Grade/Section Loss)	DATE	VIDEO START	VIDEO STOP	STILL PHOTO IMG NUMBER
								MN	MD	MJ	SV	MN	MD	MJ	SV									
E8	2	N-S	3.0	0	Good	Y - Strong	Out	-	1	-	1	2	2	-	-	43	8.9	One: Moderate	Four, HDG with 5 to 20% SL	NW - MN loose, SW - 20, NE - MD, SE - MN, NPE - SV MISSING, SPE - MD	7/14/2022	1:00 PM	1:03 PM	
E9	2	N-S	3.0	0	Good	Y - Strong	Out	-	2	-	-	1	1	-	2	44	8.6	Two: Moderate	Three, HDG with 15 to 95% SL	NW - MD, SW - SV, NE - SV BROKEN, SE - MN, NPE - MD, SPE - MD	7/14/2022	1:04 PM	1:07 PM	
E10	2	N-S	3.0	0	Good	Y - Strong	Out	-	-	-	2	1	3	-	-	44	8.1	Two: Severe	Four, HDG with 5 to 25% SL	NW - MD, SW - MD, NE - MD loose, SE - MN, NPE - 90%, SPE - 60%	7/14/2022	1:08 PM	1:11 PM	
E11	2	N-S	3.0	0	Good	Y - Strong	Out	-	2	-	-	1	3	-	-	43	8.4	Two: Moderate	Three, HDG with 15 to 95% SL	NW - MD, SW - MD, NE - MD, SE - MN loose, NPE - MD, SPE - MD	7/14/2022	1:11 PM	1:14 PM	
E12	2	N-S	3.0	0	Good	Y - Strong	Out	-	2	-	-	1	2	-	1	44	8.0	Two: Moderate	Four, HDG with 5 to 50% SL	NW - SV, SW - MN, NE - MD, SE - MD, NPE - MD, SPE - MD	7/14/2022	1:15 PM	1:18 PM	
E13	2	N-S	3.0	0	Good	Y - Strong	Out	-	1	1	-	-	4	-	-	44	7.2	Two: Moderate to Major	Four, HDG with 10 to 30% SL	NW - MD, SW - MD, NE - MD, SE - MD, NPE - 35% MJ, SPE - MD	7/14/2022	1:18 PM	1:21 PM	
E14	2	N-S	5.0	0	Good	Y - Strong	Out	-	2	-	-	-	3	-	1	44	9.2	Two: Moderate	Four, HDG with 20 to 100% SL	NW - 100% SV, SW - MD, NE - MD loose, SE - MD loose, NPE - MD, SPE - MD	7/14/2022	1:22 PM	1:25 PM	
E15	2	N-S	5.0	0	Good	Y - Strong	Out	-	1	-	1	-	3	-	1	44	7.5	Two: Moderate to Severe	Three, HDG with 10 to 100% SL. One missing	SE - MD, NE - MD loose, NW - MD loose, SW Missing. Tag present confirming location. SPE - MD, NPE - SV 100% SL.	7/14/2022	1:27 PM	1:32 PM	
E16	2	N-S	5.0	0	Good	Y - Strong	Out	1	-	-	1	-	3	-	1	44	6.4	Two: Minor to Severe	Four, HDG with 5 to 30% SL. One missing	SE - MD, NE - MD Loose, NW - SV Missing, SW - MD, SPE - MN, NPE - SV 50% SL	7/14/2022	1:32 PM	1:36 PM	
E17	2	N-S	5.0	0	Good	Y - Strong	Out	-	2	-	-	-	3	-	1	45	6.3	Two: Moderate	Four, HDG with 5 to 50% SL	SE - MD, NE - SV 50% SL, NW - MD, SW - MD loose. SPE MD, NPE - MD	7/14/2022	1:36 PM	1:39 PM	
E18	2	N-S	5.0	0	Good	Y - Strong	Out	-	2	-	-	-	4	-	-	45	6.0	Two: Moderate	Four, HDG with 15 to 30% SL	SE - MD, NE - MD, NW - MD, SW - MD, SPE - MD, NPE - MD, Tag present lettering missing.	7/14/2022	1:39 PM	1:44 PM	
E19	2	N-S	5.0	0	Good	Y - Strong	Out	-	1	-	1	-	4	-	-	45	6.1	Two: Moderate to Severe	Four, HDG with 15 to 30% SL	NW - MD, SW - MN, NE - MN loose, SE - MD, NPE - 100% SV, SPE - MD	7/14/2022	1:44 PM	1:48 PM	
E20	2	N-S	5.0	0	Good	Y - Strong	Out	-	2	-	-	1	3	-	-	44	6.3	Two: Moderate	Four, HDG with 5 to 25% SL	NW - MN, SW - MD, NE - MD, SE - MD, NPE - MD, SPE - MD	7/14/2022	1:48 PM	1:53 PM	
E21	2	N-S	5.0	0	Good	Y - Strong	Out	-	2	-	-	2	2	-	-	48	6.3	Two: Moderate	Four, HDG with 10-25% SL	Brackets typical 20% SL with 1/8" pitting (Typical of all), NE - MD, SE - MD, SW - MN, NW - MN Loose, NPE - MD, SPE - MD.	7/15/2022	8:22 AM	8:31 AM	
E22	2	N-S	5.0	0	Good	Y - Strong	Out	-	1	1	-	3	1	-	-	48	6.9	Two: Major to Moderate	Four, HDG with 10-25% SL	SW - MN, NW - MN Loose, NE - MN, SE - MD, NPE - MJ 50% SL, SPE - MD	7/15/2022	8:32 AM	8:36 AM	
E23	2	N-S	5.0	0	Good	Y - Strong	Out	-	2	-	-	-	4	-	-	48	6.0	Two: Moderate	Four, HDG with 10-25% SL	SW - MD, NW - MD, NE - MD, SE - MD, NPE - MD, SPE - MD	7/15/2022	8:36 AM	8:41 AM	
E24	2	N-S	5.0	0	Good	Y - Strong	Out	-	1	1	-	3	1	-	-	48	6.2	Two: One Major, One Moderate	Four, HDG with 10-20% SL	SW - MN, NW - MN, NE - MN, SE - MD, NPE - MJ, SPE - MD	7/15/2022	8:41 AM	8:49 AM	
E25	2	N-S	5.0	0	Good	Y - Strong	Out	-	2	-	-	1	2	-	1	48	5.8	Two: Moderate	Four, HDG with 10-20% SL	SW - MD, NW - MN, NE - MD, SE - SV 100% SL, NPE - MD, SPE - MD	7/15/2022	8:49 AM	8:54 AM	
E26	2	N-S	5.0	0	Good	Y - Strong	Out	1	1	-	-	-	3	1	-	48	5.6	Two: Minor to Moderate	Four, HDG with 15-30% SL	SW - MD, NW - MD, NE - MD, SE - MJ, NPE - MN, SPE - MD.	7/15/2022	8:54 AM	9:00 AM	
E27	2	N-S	5.0	0	Good	Y - Strong	Out	-	2	-	-	2	-	1	1	48	5.1	Two: Moderate	Four, HDG with 15-50% SL	SW - Bolt Missing (Photo) Top bracket has widened hole, bottom bracket is missing exposing recess in the concrete. NW - MN, NE - MJ 50% SL, SE - MN, NPE - MD, SPE - MD	7/15/2022	9:00 AM	9:10 AM	0377 - 0387
E28	2	N-S	5.0	0	Good	Y - Strong	Out	-	1	1	-	-	4	-	-	48	5.2	Two: Moderate to Major	Four, HDG with 20-25% SL	SW - MD, NW - MD, NE - MD, NPE - MD, SPE - MJ 50% SL	7/15/2022	9:10 AM	9:18 AM	

Abbreviations:

NE - Northeast Bolt, SE - Southeast Bolt, SW - Southwest Bolt, NW - Northwest Bolt, SPE - South Padeye, NPE - North Padeye, MN - Minor, MD - Moderate, MJ - Major, SV - Severe, SL - Section Loss, SS - Stainless Steel, HDG - Hot Dipped Galvanized



CEDAR CREEK OCEAN OUTFALL
UNDERWATER INSPECTION OF DIFFUSER FIELD

DIFFUSER OUTLET #	# OF PORTS	PORT ORIENTATION	PORT DIA. (in.)	% OBSTR.	CONCRETE CONDITION	FLOW (Y/N)	FLOW (IN/OUT)	PADEYE CONDITIONS* (N/S)				ANCHOR BOLT CONDITIONS*				Water Depth to top of Dif.	Avg. Exposed HT (ft)	# OF PADEYES AND CONDITION	# OF BOLTS AND CONDITION	COMMENTS (Bolt - Damage Grade/Section Loss)	DATE	VIDEO START	VIDEO STOP	STILL PHOTO IMG NUMBER
								MN	MD	MJ	SV	MN	MD	MJ	SV									
E29	2	N-S	5.0	0	Good	Y - Strong	Out	2	-	-	-	-	4	-	-	48	4.7	Two: Minor	Four, HDG with 15-30% SL	Block at South Port, line tied off to SPE, SE - MD, NE - MD, NW - MD, SW - MD, NPE - MN, SPE - MN. Photo 2: SPE Typical MN condition (0391-0395) Photo 3: Typical condition of concrete, top of cap, adjacent to SPE. (0397-0403) Photo 4: Typical condition of concrete, vertical face of cap, SE side. (0404-0408) Photo 5: SE bolt, typ MD condition.(0410-0418) Photo 6: Typical flow at diffuser port with telltale, North Port. (0421-0432) Photo 7: Overall shots with typical marine growth 0433-0439	7/15/2022	9:57 AM	10:22 AM	0391-0439 (See comments)
E30	2	N-S	5.0	0	Good	Y - Strong	Out	1	1	-	-	3	1	-	-	47	4.6	Two: Minor to Moderate	Four, HDG with 15-30% SL	NE - MN, NW - MN, SW - MN, SE - MD, NPE - MN, SPE - MD	7/15/2022	10:22 AM	10:26 AM	
E31	2	N-S	5.0	0	Good	Y - Strong	Out	-	2	-	-	-	4	-	-	48	4.8	Two: Moderate	Four, HDG with 15-30% SL	NE - MD, SE - MD, SW - MD, NW - MD, SPE - MD, NPE - MD	7/15/2022	10:29 AM	10:38 AM	
E32	2	N-S	5.0	0	Good	Y - Strong	Out	1	1	-	-	-	3	1	-	47	4.7	Two: Minor to Moderate	Four, HDG with 15-40% SL	SE - MN, SW - MD, NW - MD, NE - MJ 40% SL, SPE - MN, NPE - MD	7/15/2022	10:38 AM	10:44 AM	
E33	2	N-S	5.0	0	Good	Y - Strong	Out	-	2	-	-	-	4	-	-	48	5.2	Two: Moderate	Four, HDG with 15-30% SL	NE - MD, SE - MD, SW - MD Line attached to HW, NW - MD, NPE - MD 30% SL, SPE - MD	7/15/2022	10:44 AM	10:50 AM	
E34	2	N-S	5.0	0	Good	Y - Strong	Out	-	2	-	-	-	4	-	-	45	4.5	Two: Moderate	Four, HDG with 15-30% SL	Tag in place confirming location (Photo). SW - MD, NW - MD, NE - MN, SE - MD, NPE - MD, SPE - MD.	7/15/2022	11:40 AM	11:47 AM	0441-0448
E35	2	N-S	5.0	0	Good	Y - Strong	Out	-	2	-	-	3	1	-	-	45	4.3	Two: Moderate	Four, HDG with 15-25% SL	SW - MN, NW - MD, NE - MN, SE - MN, NPE - MD, SPE - MD	7/15/2022	11:47 AM	11:53 AM	
E36	2	N-S	5.0	0	Good	Y - Strong	Out	-	1	-	1	1	3	-	-	45	4.7	One: Moderate	Four, HDG with 5-25% SL	SW - MD, NW - MD, NE - MD, SE - MN, SPE - SV MISSING NPE - MD	7/15/2022	11:53 AM	11:58 AM	
E37	2	N-S	5.0	0	Good	Y - Strong	Out	-	1	-	1	-	4	-	-	45	4.2	One: Moderate	Four, HDG with 10-20% SL	NE - MD, NW - MD, SW - MD, SE - MD, SPE - SV MISSING, NPE - MD	7/15/2022	11:58 AM	12:03 PM	
E38	2	N-S	5.0	0	Good	Y - Strong	Out	-	1	-	1	-	4	-	-	44	5.0	Two: Moderate to Severe	Four, HDG with 10-20% SL	NE - MD, NW - MD, SW - MD, SE - MD, SPE - SV, NPE - MD	7/15/2022	12:03 PM	12:09 PM	
E39	2	N-S	5.0	0	Good	Y - Strong	Out	-	2	-	-	3	1	-	-	44	5.2	Two: Moderate	Four, HDG with 10-20% SL	NE - MN, NW - MN, SW - MD, SE - MN, SPE - MD, NPE - MD	7/15/2022	12:09 PM	12:13 PM	
E40	2	N-S	5.0	0	Good	Y - Strong	Out	-	1	-	1	1	3	-	-	44	5.1	Two: Moderate to Severe	Four, HDG with 10-30% SL	NE - MN, NW - MD, SW - MD, SE - MD, SPE - MD, NPE - SV 55%	7/15/2022	12:13 PM	12:19 PM	
E41	2	N-S	5.0	0	Good	Y - Strong	Out	-	-	-	2	2	2	-	-	44	4.8	One: Severe	Four, HDG with 10-20% SL	NE - MD, NW - MD, SW - MN, SE - MN, SPE - SV 50%, NPE - MISSING	7/15/2022	12:19 PM	12:23 PM	
E42	2	N-S	5.0	0	Good	Y - Strong	Out	-	-	2	-	1	3	-	-	43	5.2	Two: Major	Four, HDG with 10-25% SL	NE - MN, NW - MD, SW - MD, SE - MD, SPE - MJ 40%, NPE - MJ 35%; Tag present, text gone	7/15/2022	12:24 PM	12:30 PM	
E43	2	N-S	5.0	0	Good	Y	Out					1	3	-	-	46	4.8	Two:	Four, HDG/SS,	NE - MJ, NW - MD, SW - MD Bent, SE - New loose MN, SPE -, NPE - MD	8/1/2022	12:13 PM	12:17 PM	
E44	2	N-S	5.0	0	Good	Y	Out	-	2	-	-		4			46	4.4	Two: Moderate	Four, HDG 10-20% SL	NE - MD, NW - MD, SW - MD, SE - MD, SPE - MD, NPE - MD	8/1/2022	12:12 PM	12:13 PM	
E45	2	N-S	5.0	0	Good	Y	Out	-	-	-	2	-	4	-	-	46	4.1	One: Severe	Four, HDG, 15-20% SL	NE - MD, NW - MD, SW - MD, SE - MD, SPE - SV 50% SL, NPE - SV MISSING	8/1/2022	12:09 PM	12:11 PM	
E46	2	N-S	5.0	0	Good	Y	Out	-	2	-	-	-	4	-	-	46	4.0	Two: Moderate	Four, HDG, 10-15% SL	NE - MD, NW - MD, SW - MD, SE - MD, SPE - MD, NPE - MD	8/1/2022	12:06 PM	12:09 PM	
E47	2	N-S	5.0	0	Good	Y	Out	-	1	-	1	1	3	-	-	46	4.0	Two: Moderate to Severe	Four, HDG/SS, 5 to 20% SL	NE - HDG MD, NW - MD, SW - HDG MD, SE - MN New loose, SPE - SV 75%, NPE - MD	8/1/2022	12:03 PM	12:06 PM	

Abbreviations:

NE - Northeast Bolt, SE - Southeast Bolt, SW - Southwest Bolt, NW - Northwest Bolt, SPE - South Padeye, NPE - North Padeye, MN - Minor, MD - Moderate, MJ - Major, SV - Severe, SL - Section Loss, SS - Stainless Steel, HDG - Hot Dipped Galvanized



CEDAR CREEK OCEAN OUTFALL
UNDERWATER INSPECTION OF DIFFUSER FIELD

DIFFUSER OUTLET #	# OF PORTS	PORT ORIENTATION	PORT DIA. (in.)	% OBSTR.	CONCRETE CONDITION	FLOW (Y/N)	FLOW (IN/OUT)	PADEYE CONDITIONS* (N/S)				ANCHOR BOLT CONDITIONS*				Water Depth to top of Dif.	Avg. Exposed HT (ft)	# OF PADEYES AND CONDITION	# OF BOLTS AND CONDITION	COMMENTS (Bolt - Damage Grade/Section Loss)	DATE	VIDEO START	VIDEO STOP	STILL PHOTO IMG NUMBER
								MN	MD	MJ	SV	MN	MD	MJ	SV									
E48	2	N-S	5.0	0	Good	Y	Out	2	-	-	-	-	3	-	1	46	4.4	Two: Minor	Four, HDG/SS, 15-50% SL	NE - MD, NW - SV, SW - MD, SE - MD, SPE - MN, NPE - MN	8/1/2022	12:01 PM	12:03 PM	
E49	2	N-S	5.0	0	Good	Y	Out	-	-	1	1	2	2	-	-	46	4.4	Two: Major to Severe	Four, HDG/SS, 10-25% SL	NE - SS Loose MN, NW - MD, SW - MD, SE - SS Loose MN, SPE - MJ 40%, NPE - SV 60%	8/1/2022	11:58 AM	12:00 PM	
E50	2	N-S	5.0	0	Good	Y	Out	-	1	-	1	1	3	-	-	46	4.1	Two: Moderate to Severe	Four, HDG	NE - MD, NW - MD, SW - MN, SE - MD, SPE - MD, NPE - SV 50%	8/1/2022	11:55 AM	11:58 AM	
E51	2	N-S	5.0	0	Good	Y - Partially interrupted	Out	-	2	-	-	-	4	-	-	46	3.7	Two: Moderate	Four, HDG/SS, 10-25% SL	NE - MD, NW - NEW MD loose, SW - MD partially bent, SE - MD, SPE - MD, NPE - MD; discharge increases East to west from diffuser to diffuser	8/1/2022	11:52 AM	11:55 AM	
E52	2	N-S	5.0	0	Good	Y	In	-	1	-	1	-	2	1	1	46	3.4	Two: Moderate to Severe	Four, 15-100% SL	NE - MD, NW - Bolt is soft MJ, SW - Bolt disintegrated SV, SE - MD, SPE - MD, NPE - SV 50%;	8/1/2022	11:48 AM	11:51 AM	0529-0535
E53	2	N-S	5.0	0	Good	Y	In	2	-	-	-	-	4	-	-	47	3.2	Two: Minor	Four, HDG, 10-15% SL	NE - MD, NW - MD, SW - MD, SE - MD, SPE - MN, NPE - MN	8/1/2022	11:45 AM	11:47 AM	
E54	2	N-S	5.0	0	Good	Y	In	2	-	-	-	-	4	-	-	46	3.1	Two: Minor	Four, HDG, 10 to 25% SL	NE - MD, NW - MD, SW - MD, SE - MD, SPE - MN, NPE - MD	8/1/2022	11:42 AM	11:45 AM	
E55	2	N-S	5.0	0	Good	Y	In	1	1	-	-	-	4	-	-	46	3.4	Two: Minor to Moderate	Four, HDG, 15-20% SL	NE - MD, NW - MD, SW - MD, SE - MD, SPE - MN, NPE - MD	8/1/2022	11:38 AM	11:41 AM	0523-0528
E56	2	N-S	5.0	0	Good	Y	In	-	1	-	1	-	4	-	-	46	3.4	One: Moderate	Four, HDG, 10-20% SL	NE - MD, NW - MD New & loose, SW - MD, SE - MD, SPE - SV MISSING, NPE - MD	8/1/2022	11:35 AM	11:38 AM	0502-0522
E57	2	N-S	5.0	0	Good	Y	In	2	-	-	-	-	4	-	-	46	3.7	Two: Minor	Four, HDG, 10-20% SL	NE - MD, NW - MD, SW - MD, SE - MD Old , SPE - MN, NPE - MN	8/1/2022	11:32 AM	11:35 AM	
E58	2	N-S	5.0	0	Good	Y	In	1	1	-	-	-	4	-	-	46	3.2	Two: Minor to Moderate	Four, HDG/SS, 10-25% SL	NE - Old, Bent, 20%, NW - 15% Old, SW - Old 15% Bent, SE - New, loose, 10% , SPE - MD, NPE - MN.	8/1/2022	11:30 AM	11:32 AM	
E59	2	N-S	5.0	0	Good	Y	In	1	1	-	-	-	4	-	-	46	4.1	Two: Minor to Moderate	Four, HDG, SS 10-20% SL	NE - -15-20% HDG Old, NW - SS New 10%, SW - , SE -15-20% HDG Old , SPE - MD, NPE - MN.	8/1/2022	11:27 AM	11:30 AM	
E60	2	E-W	5.0	0	Good	Y	In	-	-	-	2	4	-	-	-	45	4.7	Two: Severe	Four, SS, 0-10% SL	NE - MN, NW - MN, SW - MN, SE - MN, WPE - , EPE - ; Flow is in on the E port	8/1/2022	11:24 AM	11:27 AM	

Abbreviations:

NE - Northeast Bolt, SE - Southeast Bolt, SW - Southwest Bolt, NW - Northwest Bolt, SPE - South Padeye, NPE - North Padeye, MN - Minor, MD - Moderate, MJ - Major, SV - Severe, SL - Section Loss, SS - Stainless Steel, HDG - Hot Dipped Galvanized

**Bay Park Sewage Treatment Plant Ocean Outfall – Effluent Diversion Project, WSP
#187917, Cedar Creek Water Pollution Control Plant Ocean Outfall, Underwater
Inspection and Bathymetric Survey, Summary of Findings**

(Marine Solutions, September 20, 2019)

++ NO TEXT ON THIS PAGE ++



September 20, 2019

03-19-033

David Smith, P.E., PMP
Assistant Vice President
WSP USA Inc.
One Penn Plaza
New York, NY 10119

Via email: David.I.Smith@wsp.com

Re: Bay Park Sewage Treatment Plant Ocean Outfall – Effluent Diversion Project
WSP #187917
Cedar Creek Water Pollution Control Plant Ocean Outfall
Underwater Inspection and Bathymetric Survey
Summary of Findings

Dear David,

Marine Infrastructure Engineering Solutions P.C. (Marine Solutions) is pleased to provide WSP USA Inc. (WSP) with a summary of our findings from the Underwater and Multibeam Bathymetric Survey Inspections performed on the Ocean Outfall Structures of the Cedar Creek Water Pollution Control Plant (WPCP) Ocean Outfall located between Jones Beach Inlet and Fire Island Inlet of the south shore of Long Island, New York.

Project Background

Marine Solutions, as a subconsultant to WSP working under contract with Nassau County, acting for and on behalf of the Department of Public Works, was contracted to conduct Level I (Visual) Underwater Inspection and Multibeam Bathymetric Survey services at the Bay Park Sewage Treatment Plant Ocean Outfall – Effluent Diversion Project. The portion of the outfall surveyed under this task includes the Atlantic Ocean seafloor located outshore of the surf zone off Jones Beach to the diffuser field two-miles offshore, approximately midway between Jones Beach Inlet and Fire Island Inlet of the south shore of Long Island, New York. Underwater inspections were limited to exposed portions of the outfall system as identified by the initial multibeam survey, which includes diffuser outlet and cleanout chamber structures.

The 84-inch diameter ocean outfall structure is constructed from precast concrete elements. The concrete riser diffuser structures include two outlet ports, two steel padeye lift points, four steel anchor bolt/bracket connections and a concrete diffuser cap. The Central Junction Box (referred to as the Cleanout Chamber) includes a base structure, chamber cover, and anchor bolt/bracket connections. The intent of the underwater inspection was to provide a condition assessment of the exterior surfaces of exposed portions of the ocean outfall structure, to locate, number, and visually examine all 120 diffuser outlets, to determine if the outlet ports are discharging/operating

as expected, to provide photographs and diagrams identifying locations and dimensions of defects or damages, and to record an underwater video to capture defects at key locations. The intent of the multi-beam bathymetric survey was to confirm the location (coordinates) of the 84 inch outfall system, map the seafloor bathymetry above and around the outfall structures and provide measured depths from the water surface to the top of each diffuser outlet along with GPS coordinates of each diffuser outlet.

Under this task, a Level I visual inspection was conducted on all submerged elements of the ocean outfall structure to determine the location and condition any items that may require repair. Elements inspected include the exterior surfaces of the diffuser riser structures, diffuser outlet ports, steel padeye lift points, steel anchor bolts/brackets, and cleanout chamber base and cover.

Inspection Procedure

The underwater inspection of the Bay Park ocean outfall was conducted from August 12, 2019 through August 22, 2019. Marine Solutions mobilized commercial diving operations from a fully outfitted commercial dive boat. The dive operation consisted of a four-person team comprised of Engineer Divers, Inspector Divers, and Tenders under the direction and/or supervision of a NY-licensed P.E. Diver/Team Leader. The Diver conducted the inspection using both surface-supplied-air and continuous two-way hardwire communication in conformance with recognized standards as set forth by OSHA, the USCG, the Association of Diving Contractors Consensus of Standards, and the Marine Solutions *Safe Practices Manual for Diving Operations*. In addition, all inspections were recorded utilizing underwater videography.

All inspections were performed in accordance with the standards set forth in the American Society of Civil Engineers (ASCE) Manuals and Reports on Engineering Practice No. 130, 2015 - *Waterfront Facilities Inspection and Assessment*, (MOP 130). Per MOP 130, the Routine (Condition Assessment) Inspection consisted of Level I general examination of all structural elements with limited Level II detailed inspection of steel hardware including padeyes, anchor bolts, and anchor brackets. Level I inspection is considered an overview, detecting obvious structural defects based on visual and tactile observation. The purpose of the Level II inspection is to detect and identify damaged or deteriorated structural elements in greater detail. Level II involves localized cleaning, closely documenting surface conditions and measuring defects for assignment of damage grades.

Condition Assessment

The inspection condition and assessment criteria utilizes a six-point standardized approach provided in MOP 130, Section 2.6 – Overall System Ratings. This standardized approach can be recreated during all facilities inspections and allows for simplified comparison between facilities and future inspections of the same site.

The Condition Assessment can be interpreted as the “health” of the overall structure or portions of a facility. The Condition Assessment of the facility is determined based from the findings during the Routine Inspection. A variety of factors including severity, quantity and frequency impact the overall Condition Assessment rating. These ratings are required in order to categorize the results of the inspection and to provide a basis for comparison of new deficiencies in future inspections or other facilities.

The Condition Assessment Ratings for the inspected structures are as follows:

“Good”	No visible damage or only minor damage noted. Structural elements may show very minor deterioration, but no overstressing observed. No repairs are required.
“Satisfactory”	Limited minor to moderate defects or deterioration observed but no overstressing observed. No repairs are required.
“Fair”	All primary structural elements are sound but minor to moderate defects or deterioration observed. Localized areas of moderate to advanced deterioration may be present but do not significantly reduce the load-bearing capacity of the structure. Repairs are recommended, but the priority of the recommended repairs is low.
“Poor”	Advanced deterioration or overstressing observed on widespread portions of the structure but does not significantly reduce the load carrying capacity of the structure. Repairs may need to be carried out with moderate urgency.
“Serious”	Advanced deterioration, overstressing, or breakage may have significantly affected the load bearing capacity of primary structural components. Local failures are possible and loading restrictions may be necessary. Repairs may need to be carried out on a high-priority basis with urgency.
“Critical”	Very advanced deterioration, overstressing, or breakage has resulted in localized failure(s) of primary structural components. More widespread failures are possible or likely to occur, and load restrictions should be implemented as necessary. Repairs may need to be carried out on a high priority bases with strong urgency.

Damage Ratings

Damage ratings are established based on a six-point standardized approach provided in MOP 130, Section 2.5 – Element-level damage rating. During the inspection, Damage Ratings were assigned to each structural element based on material type and nature of the defect.

Reinforced Concrete Elements

Deterioration of reinforced concrete elements in the marine environment can occur through a variety of chemical or mechanical means. Common defects observed on concrete elements include cracking, leaching, efflorescence, scaling, delamination, chemical deterioration or otherwise “soft” concrete, spalling and honeycombing.

The general condition ratings for reinforced concrete elements are based on the assessment scale below:

NI	“Not Inspected”	Not inspected, inaccessible or passed by.
ND	“No Defects”	Good original hard surface, hard material, sound.
MN	“Minor”	No significant deterioration. Mechanical abrasion or impact damage

up to 1-in. deep. General cracks up to 1/16-in. wide. Isolated corrosion stains and/or shallow corrosion spalls.

MD	“Moderate”	Structural cracks up to 1/16-in. wide. Corrosion cracks up to 1/4-in. wide. Chemical degradation resulting in soft concrete and rounding of corners, up to 1-in. deep.
MJ	“Major”	Structural cracks up to 1/4-in. wide, possibly with spalling. Corrosion spalls and/or cracks wider than 1/4-in. large areas of map cracking or soft concrete caused by chemical degradation. Overall loss of cross-section up to 30-percent.
SV	“Severe”	Greater than 30-percent loss of cross-section, due to any cause. Loss of member bearing or displacement at connections. Structural cracks up to cracks wider than 1/4-in. Loss of concrete cover over reinforcing steel and/or 30-percent section loss of bar diameter.

Steel Elements

Deterioration of steel components can occur from corrosion, fatigue, overload or impact damage. Often multiples of these agents occur simultaneously. Corrosion is the thinning of metal due to a reaction between the non-coated material and its environment when the metal oxidizes. Corrosion is most common around the splash and tidal zones but can also be found in other areas of a structure. Pitting is localized corrosion that causes deep circular patterns in the steel to form and is caused by chemical variations in the steel or imperfections in the steel.

The general condition ratings for steel elements are based on the assessment scale below:

NI	“Not Inspected”	Not inspected, inaccessible or passed by.
ND	“No Defects”	Good original hard surface, hard material, sound.
MN	“Minor”	No significant deterioration. Less than 50-percent of perimeter or circumference affected by corrosion at any elevation or cross section. Loss of thickness up to 15-percent of nominal at any location.
MD	“Moderate”	Greater than 50-percent of perimeter or circumference affected by corrosion at any elevation or cross section. Loss of thickness up to 30-percent of nominal at any location.
MJ	“Major”	Visible reduction of steel element thickness. Loss of thickness up to 50-percent of nominal at any location.
SV	“Severe”	Structural bends or buckling, breakage and displacement at supports, loose or lost connections. Visible perforations or loss of wall thickness exceeding 50-percent of nominal at any location.

Survey Procedure

The Bathymetric Survey Team consisted of a Party Chief (Bathymetric Surveyor), a boat pilot, and a technical assistant. The limits of the survey extend outshore of the surf zone extending

200-feet on each side of the exposed outfall piping (or identified centerline) and a minimum of 100-feet beyond the extents of the diffuser field.

The survey took place within the Atlantic Ocean from the surf zone off Jones Beach to the diffuser field approximately two-miles offshore, roughly midway between Jones Beach Inlet and Fire Island Inlet of the south shore of Long Island, New York. The Atlantic Ocean is influenced by tidal changes and locally by ocean surge; therefore, the water surface elevation varied during the taking of measurements. These variations were compensated for using PPK solution provided by corrections from the CORS network.

Horizontal positioning was recorded in New York State Plane Long Island (NAD 83) coordinates using an array of Trimble GPS receivers controlled by POSpac. Sounding data was collected from a boat mounted Echosounder R2Sonic 2024 Multibeam operating at 400 kHz, with positioning and motion data being recorded by Applanix POS MV Wavemaster with IARTK positioning. Variations in sound velocity were monitored and adjusted using an AML micro sound velocity probe attached to the sonar bracket and an AML sound velocity profiler. Elevations were recorded in North American Vertical Datum of 1988 (NAVD 88). Autodesk Civil 3D 2018 and QPS software were used to generate this survey. During a separate survey intended to focus in on only the exposed diffuser structure, the Multibeam frequency was increased to 450 kHz in conjunction with a narrower beam swath to provide a higher resolution image.

Description of Site

The Cedar Creek WPCP Ocean Outfall system is comprised of a 84-inch diameter precast outfall pipe that extends approximately two-miles offshore into the Atlantic Ocean midway between Jones Beach Inlet and Fire Island Inlet of the south shore of Long Island, New York. The main outfall sewer line ends at a “T” junction and splits off to diffuser piping extending to the east and west. The diffuser piping tapers in diameter from 84-inch at the “T” to 48-inch at the ends of the diffuser field. In total, there are 120 diffuser outlets that extend vertically from the diffuser line penetrating the seafloor releasing effluent. For reporting purposes, the diffuser lines are numbered in ascending order from the “T” junction out with the West Diffuser Line numbered from east to west (W1 to W60) and the East Diffuser Line numbered from west to east (E1 to E60). This number convention was confirmed onsite by the presence of identification tags that were affixed to the padeyes on a number of the diffuser outlets (see Photo 1). A Vicinity Map, Location Map, and Facility Plan are included as Figures 1, 2, and 3, respectively, in Appendix A.

Each diffuser outlet structure consists of a 36-inch (I.D.) concrete riser that connects to a buried diffuser line of varied diameter. Riser piping is topped with a concrete cap segment that consists of two outlet ports and two padeye lift points. The concrete caps are fastened to the riser sections at four points per diffuser consisting of steel anchor bolts, brackets, and washers (see Figure 1 and Photos 2–5). The diffuser ports are generally oriented from north to south and the port openings vary from 3 to 5-inches in diameter. The padeyes are generally oriented north to south, corresponding with the port openings. The anchor bolts and anchor brackets are generally oriented at quadrants on the northwest, northeast, southwest, and southeast faces.

The Cleanout Chamber is located just north of the “T” junction between the East and West Diffuser Lines and consists of a base structure, a chamber cover, and associated connection hardware.

The chamber measures 12-feet long (north-to-south) x 9-feet wide (east-to-west). The vertical walls are 12-inch thick and are exposed from 7.5 to 8.2-feet high above the mudline (see Photos 6 and 7).

Summary of Findings

Overall, the exposed portions of the East and West Diffuser Lines are in **Fair** condition governed by the condition of the anchor hardware which displays moderate to severe corrosion. All outlet ports have Moderate to Strong effluent flow with periods where the flow is partially interrupted. The steel padeyes and anchor bolt connections exhibit varying degrees of deterioration and section loss ranging from Minor to Severe condition. There are several missing padeyes and anchor bolts, and there are isolated locations of up to 100-percent section loss on the hardware. Diffuser W46 is angled at a 45-degree angle to the north. Diffuser E3 appears to have experienced a slight rotation of the concrete cap, possibly from a fouled vessel anchor or other unknown external force. No vessel anchors or line were discovered within the immediate vicinity of the cleanout chamber.

In general, the Cleanout Chamber is in **Serious** condition due to failed anchor hardware and rotation of the cap resulting in the discharge of effluent. The cap is no longer connected to the base at any of the 10 anchor points and may become further dislodged and/or damaged.

Text summarizing the conditions present at each structural element are provided below and are further illustrated in Figures 4 through 7 in Appendix A. A multi-beam bathymetric survey was conducted, and the results are presented in Figures 1 through 12 in Appendix B. Captioned photographs of typical conditions are presented in Appendix C with photo locations plans contained within Appendix A. Tabulated summaries of the underwater inspection and Multibeam Survey results are provided in Tables 1 and 2, respectively, within Appendix D. Lastly, detailed inspection findings are presented within the field notes, provided in Appendix E.

Diffuser Outlet Structures

Overall Condition: FAIR

The concrete diffuser riser structures are in overall **Satisfactory** condition with hard barnacle growth up to 1/2-inch thick on 100-percent of the exterior surfaces and mussel growth up to 10-inches thick on approximately 50-percent of the exterior surfaces (see Photo 8). Typically, the concrete is hard with minor rounding of the edges. At the top of the riser structure, along the joint with the cap, there are isolated areas of moderate deterioration with soft concrete ranging from 1/2 to 3/4-inch deep. The bottom composition of the seafloor surrounding the riser structures consists of hard sand.

The diffuser outlet ports are in overall **Satisfactory** condition. Rounding was noted on the outlet port edges and it is unclear if this is representative of the condition as constructed or indicative of minor to moderate erosion over time. The flow was generally found to be moderate and partially interrupted (see Photo 9) with exception to portions of the West Diffuser Line from W37 to W-60 where the flow was observed to be strong and uninterrupted.

The diffuser padeye lift points are in overall **Poor** condition with typical minor to moderate corrosion and section loss ranging from 5 to 25-percent (see Photo 10). Twenty-eight (28%) of

the padeyes exhibit Major to Severe corrosion and section loss ranging from 50 to 100% (see Photo 11), with some of these padeyes missing entirely.

The diffuser anchorage hardware is in overall **Fair** condition with “older” and “newer” (replaced) anchor bolts present. The old anchor bolts are 1 1/2-inch diameter square-headed bolts with the head at the bottom anchor bracket and the shaft extending approximately 6-inches above the top anchor bracket (see Photo 12). The new (replaced) anchor bolts are 3/4 to 7/8-inch diameter hot-dip galvanized (HDG) threaded rods or are 1 to 1 1/4-inch stainless steel threaded rods that extend 1 to 3-inches above and below the anchor brackets (see Photo 13). The old bolts typically exhibit moderate corrosion with up to 25-percent section loss with isolated instances of major to severe corrosion and up to 100-percent section loss (see Photo 14). The new (replaced) HDG bolts typically exhibit minor corrosion with 5 to 10-percent section loss on the threaded rods, and the washers typically exhibit moderate to advanced corrosion with up to 30 to 40-percent section loss. The smaller-sizing of the new bolts coupled with the deterioration of the washers has resulted in loose connections, observed by diver when bolts were struck with hammer. The new (replaced) stainless-steel bolts exhibit no deterioration and are soundly in place. At Diffuser E3, the stainless-steel anchor bolts are bent, and it appears the diffuser cap is twisted/rotated relative to the riser base in the counter-clockwise direction (see Photos 15 and 16). The diffuser brackets typically exhibit moderate section loss and pitting up to 1/8-inch deep (see Photo 17).

A summary of findings for each diffuser is provided within Table 1 within Appendix D. Detailed findings for each diffuser with corresponding underwater video time stamps are provided in Appendix E.

Cleanout Chamber:

Overall Condition: SERIOUS

The concrete base structure is in **Satisfactory** Condition. The concrete is intact with minor spalls noted along the top and bottom of the walls (see Photo 18). The Southeast Corner at the mudline has a 1.5-foot high x 2-foot long x 8-inch deep corner spall (see Photo 19). Five tie-down anchor brackets each are secured to the east and west faces with brackets centered approximately 14 1/2-inches below the top of the concrete base.

The concrete cover is in **Fair** condition. The cover has a 2 to 3-inch high recess at the bottom that conforms to the measured dimensions of the chamber base. The concrete cover was rotated approximately 30-degrees clockwise on its' bearing, resulting in an insufficient seal and direct release of effluent (see Photos 20 and 21). The primary source of release was at the northwest corner of the chamber where the opening measured approximately 4.5-foot long x 3-foot wide, resulting in a triangular opening approximately 7-square-feet in size (see Photo 22). A second significantly smaller source point was detected at the southwest corner of the chamber where the opening measured 6-inches long x 6-inches wide, resulting in a triangular opening (see Photo 23). All ten anchor points securing the concrete cover to the base have failed; however, it is unclear if external forces contributed to the failure of the cover. No vessel anchors or line were discovered within the immediate vicinity of the cleanout chamber.

The hardware and connections are in **Critical** condition. The concrete cover was originally secured to the base utilizing ten pairs of steel anchor brackets (five on the west and five on the

east). Each bracket was designed with a slotted opening to accommodate tie-down bolts, similar in construction to those present on the diffuser caps. As-built plans of the cleanout chamber were not available for reference; therefore, original construction configuration was determined through examination of the small percentage of brackets that remain partially intact (see Photos 24 and 25). All such connections have failed from severe corrosion (see Photos 26, through 29). In general, these brackets exhibit moderate to severe deterioration, and many of the brackets showed indications of repair by use of 1/2-inch thick steel plates to span the deteriorated, slotted bearing plates of the brackets. All such repairs have failed to varied degrees, and it is likely that the base steel is too heavily pitted to adequately accept new welds. Please refer to the attached sketch and representative photos of the conditions described above. The anchor brackets are numbered in ascending order from west to east and south to north. The padeyes on the chamber cover exhibit minor to moderate corrosion with up to 10-percent section loss (see Photo 30).

Bathymetric Survey

Beginning just outside of the surf zone, the ocean bottom begins at an Elevation of -22 ft and over the course of approximately two (2) miles, gradually slopes to an average Elevation of -52 ft immediately north of the Cleanout Chamber. Divers noted a slight depression in the vicinity of the chamber base where contours slope from -52 ft to -54 ft. Overall, the ocean bottom is relatively flat across the diffuser outlet area with elevations dipping slightly from the west to east from -50 ft at diffuser W60 to -52 ft at diffuser W1 before gradually sloping up in elevation from -52 ft at diffuser E1 to -46 ft at diffuser E60. Small variations in bathymetry are visible around the exposed diffuser structures where the multibeam is reading the diffuser outlet structures and the thick mussel growth that covers them.

Bathymetry of the overall site is provided in Appendix B, Figures 1 through 12. A summary of coordinates, top of cap elevation, depth to top of structure and average exposed heights for the diffusers and cleanout chamber are provided within Table 2 of Appendix D.

Summary of Recommendations

Recommendations as presented herein are categorized by priority. “Emergency/Immediate” actions require a prompt response to prevent or repair unsafe conditions at the structure. “Priority” level actions are recommendations for which no immediate measures are required, but for which further investigations, design, and implementation of interim or long-term rehabilitation should be undertaken. “Routine” level actions should be undertaken as part of a scheduled maintenance program, other scheduled project, or routine facility maintenance depending upon the action required. During the next Routine Level inspection, the routine level recommended actions should be reevaluated to determine if their status has changed. The next Routine Level Inspection should be performed on-site within the next four (4) years in accordance with the ASCE recommendations as outlined in MOP 130, Table 2-2.

Emergency/Immediate Actions

Immediate repair recommendations call for reseating the displaced/rotated concrete Cleanout Chamber cover and replacing all severely deteriorated steel hardware (i.e. anchor bolts, brackets and tie-down hardware). Such repairs may require designing suitable replacement anchor

brackets constructed of stainless steel due to the severely deteriorated condition of the existing brackets, the majority of which may not be suitable for reuse. Immediate Repairs should be conducted within the next year.

Priority Actions

Priority repair recommendations call for the replacement of all severely deteriorated steel diffuser hardware (i.e. anchor bolts, nuts and washers). In consideration of the observed conditions, it is recommended that all hardware be 1-inch to 1 1/4-inch diameter stainless steel bolts with appropriately sized nuts and washers of same material. Additionally, it is recommended that any remaining travel lines from prior construction be removed to prevent potential damage from vessel anchor fouling. Priority Repairs should be conducted within the next two to four years.

Routine Actions

Routine repair recommendations call for the routine inspection of all moderately deteriorated steel hardware to identify potential for replacement. Routine Actions should be conducted within the next four years.

Marine Solutions appreciates the opportunity to provide these services. If you have any questions, or need further assistance, please contact our office.

Sincerely,

Marine Solutions

A handwritten signature in blue ink, appearing to read "Matthew J. Daniels". The signature is fluid and cursive, with a large loop at the end.

Matthew J. Daniels, P.E.

Senior Project Manager

Appendix A – Outfall Structure Drawings

Appendix B – Multi-Beam Survey Drawing

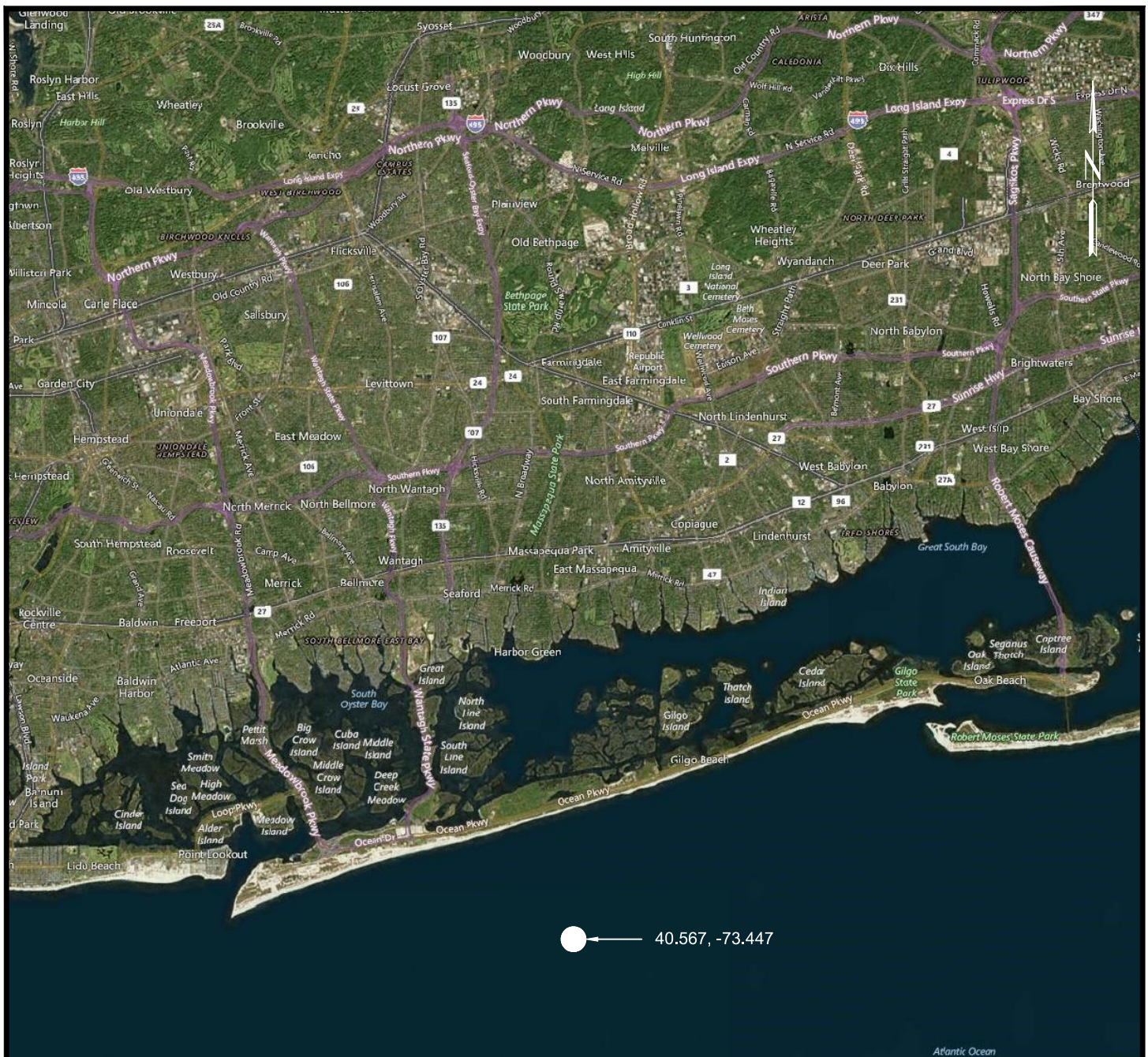
Appendix C – Captioned Photos

Appendix D – Field Inspection Summary Tables

Appendix E – Field Notes


Appendix A

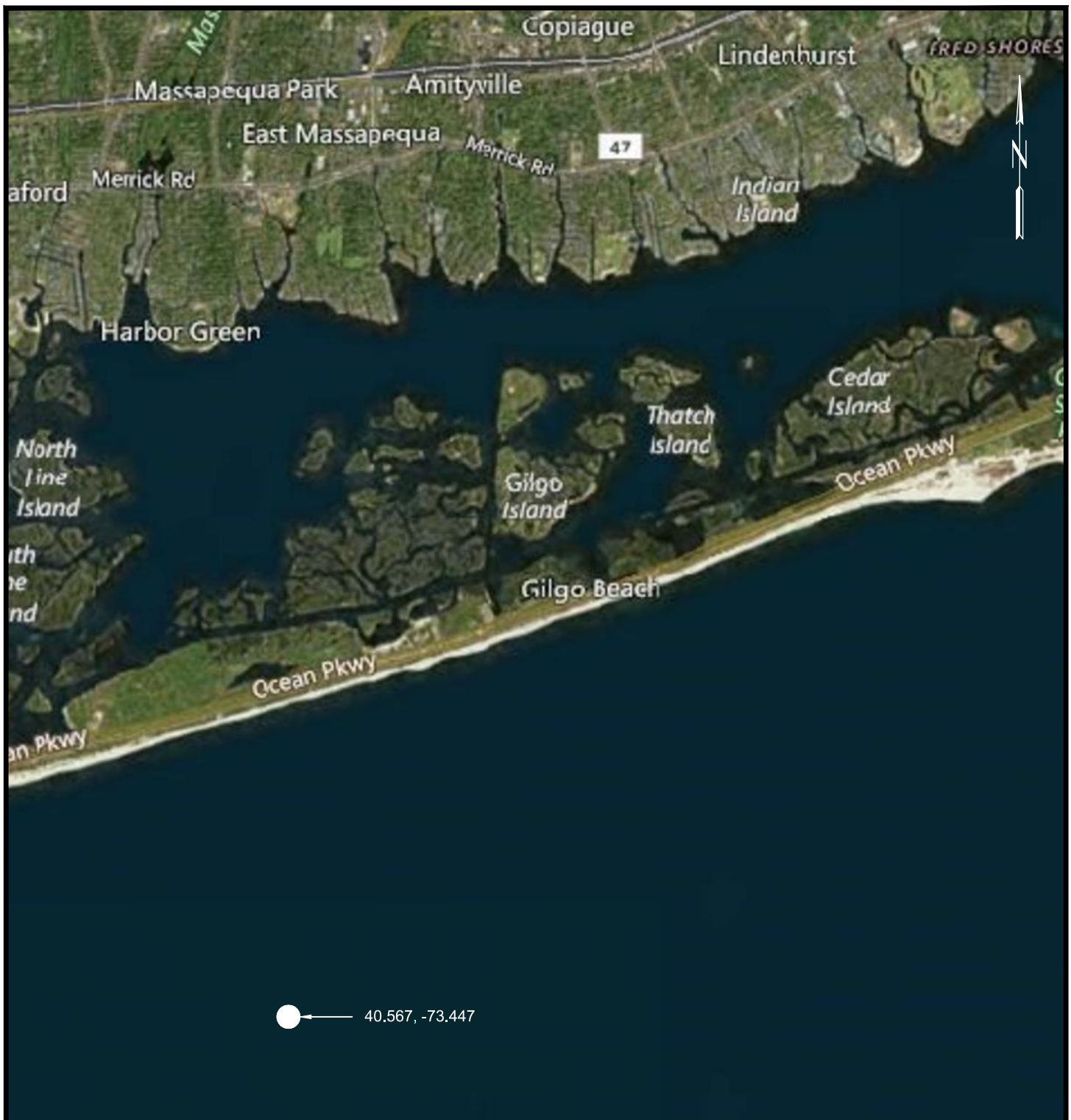
Outfall Structure Drawings



© 2019 Microsoft Corporation Earthstar Geographics SIO © 2019 HERE 

LOCATION MAP

	GRAPHIC SCALE: N.T.S.		PROJECT: BAY PARK STP OUTFALL INSPECTION	
	INSPECTION DATE: AUGUST 22, 2019		SHEET: LOCATION MAP	FIG NO. 1 OF 7
	DRAWN BY: RLV	CKD BY: MJD		
	MSI PROJECT NO.: 03-19-033			
	FILENAME: 03-19-033_CO.DWG			



VICINITY MAP

MARINE
SOLUTIONS

GRAPHIC SCALE:

N.T.S.

PROJECT:

BAY PARK STP OUTFALL INSPECTION

INSPECTION DATE: AUGUST 22, 2019

SHEET:

FIG NO.

DRAWN BY: RLV

CKD BY: MJD

VICINITY MAP


2 OF 7

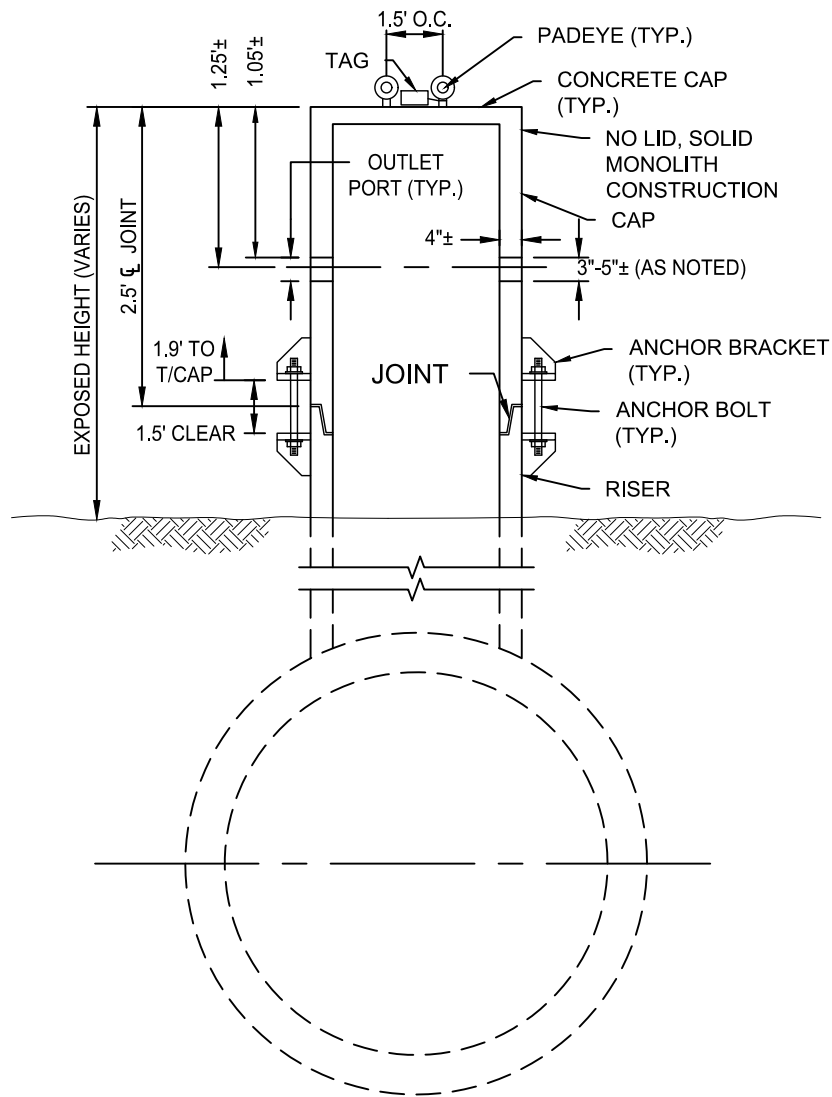
MSI PROJECT NO.: 03-19-033

FILENAME: 03-19-033_CO.DWG



FACILITY PLAN

	GRAPHIC SCALE: N.T.S.		PROJECT: BAY PARK STP OUTFALL INSPECTION	
	INSPECTION DATE: AUGUST 22, 2019		SHEET: FACILITY PLAN	FIG NO. 3 OF 7
	DRAWN BY: RLV	CKD BY:MJD		
	MSI PROJECT NO.: 03-19-033			
	FILENAME: 03-19-033_CO.DWG			



MARINE
SOLUTIONS

GRAPHIC SCALE:

N.T.S.

PROJECT:

BAY PARK STP OUTFALL INSPECTION

INSPECTION DATE: AUGUST 22, 2019

SHEET:

FIG NO.

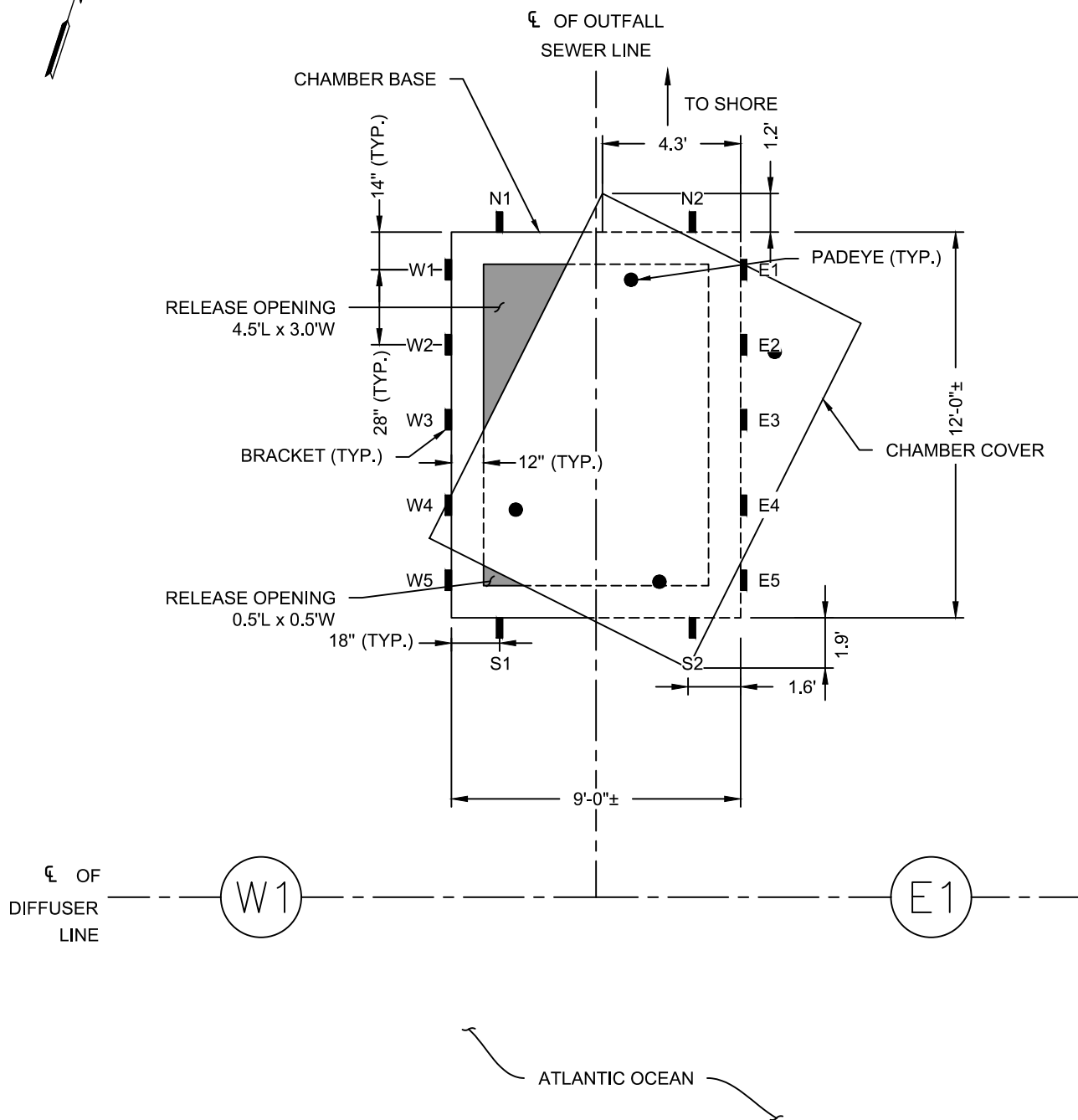
DRAWN BY: RLV

CKD BY: MJD

MSI PROJECT NO.: 03-19-033

TYPICAL OUTLET SECTION 4 OF 7

FILENAME: 03-19-033_CO.DWG



GRAPHIC SCALE:

N.T.S.

INSPECTION DATE: AUGUST 22, 2019

DRAWN BY: RLV

CKD BY: MJD

MSI PROJECT NO.: 03-19-033

FILENAME: 03-19-033_CO.DWG

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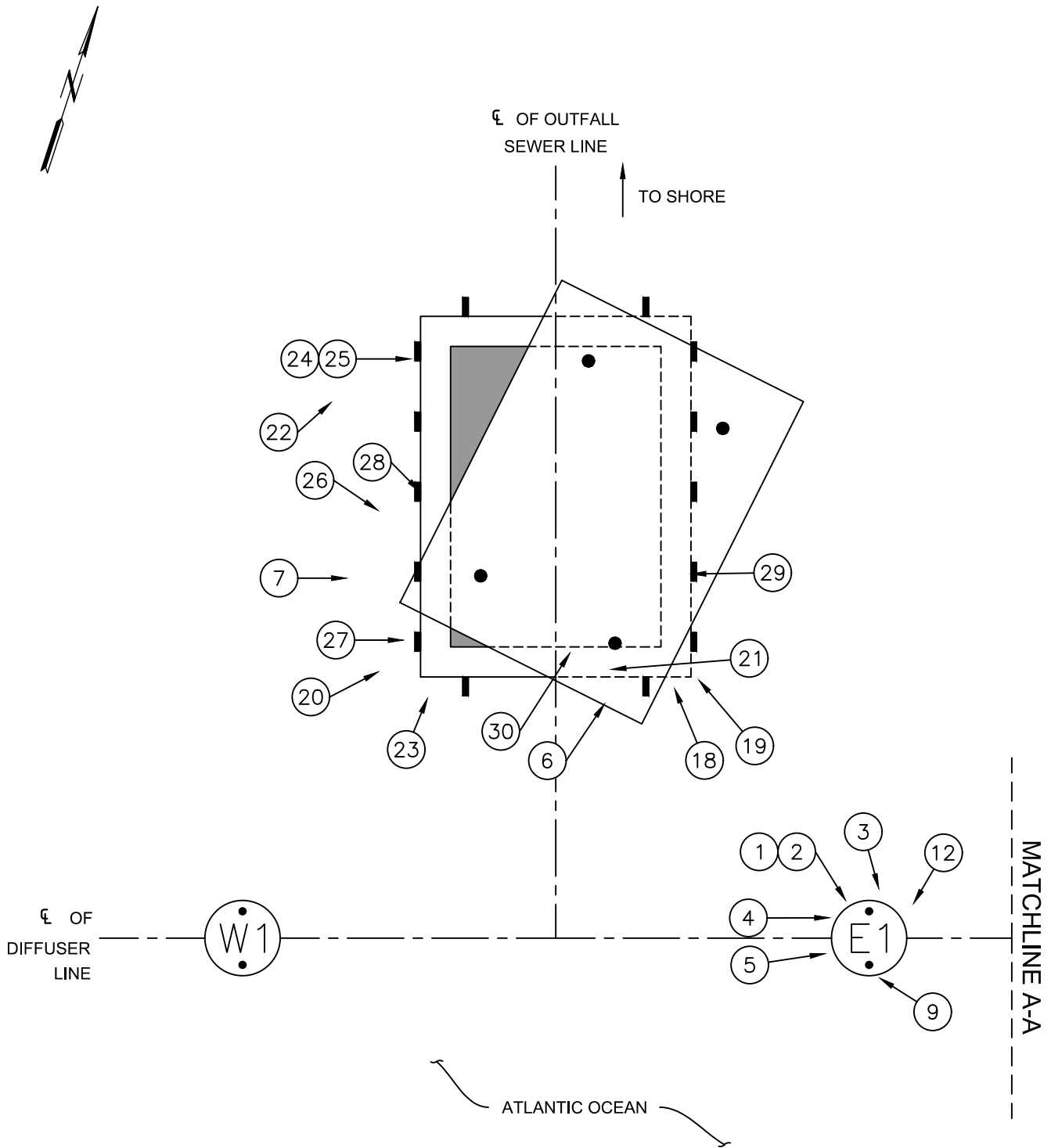
BAY PARK STP OUTFALL INSPECTION

SHEET:

CLEANOUT CHAMBER

FIG NO.

5 OF 7



MARINE
SOLUTIONS

GRAPHIC SCALE:

N.T.S.

INSPECTION DATE: AUGUST 22, 2019

DRAWN BY: RLV

CKD BY: MJD

MSI PROJECT NO.: 03-19-033

FILENAME: 03-19-033_CO.DWG

PROJECT:

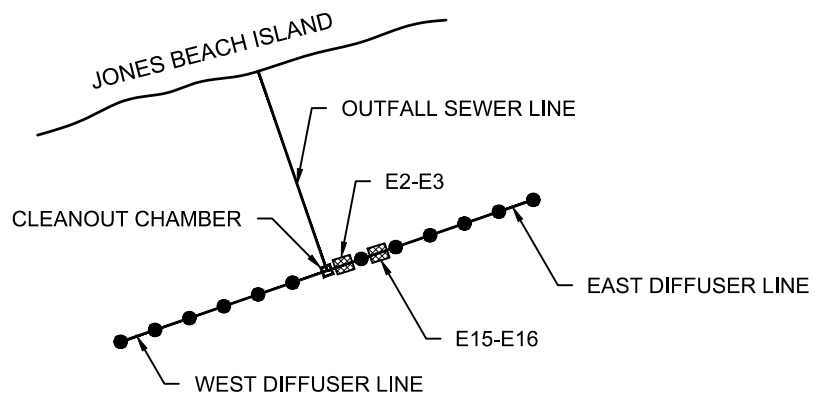
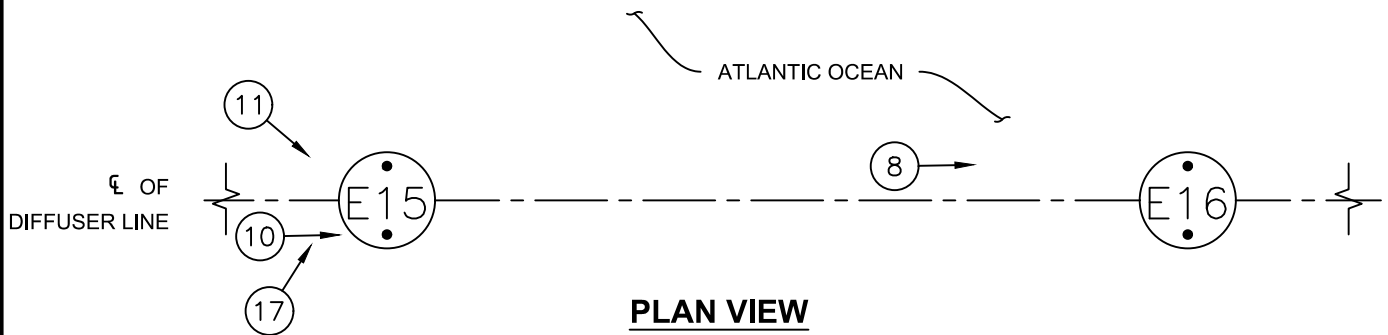
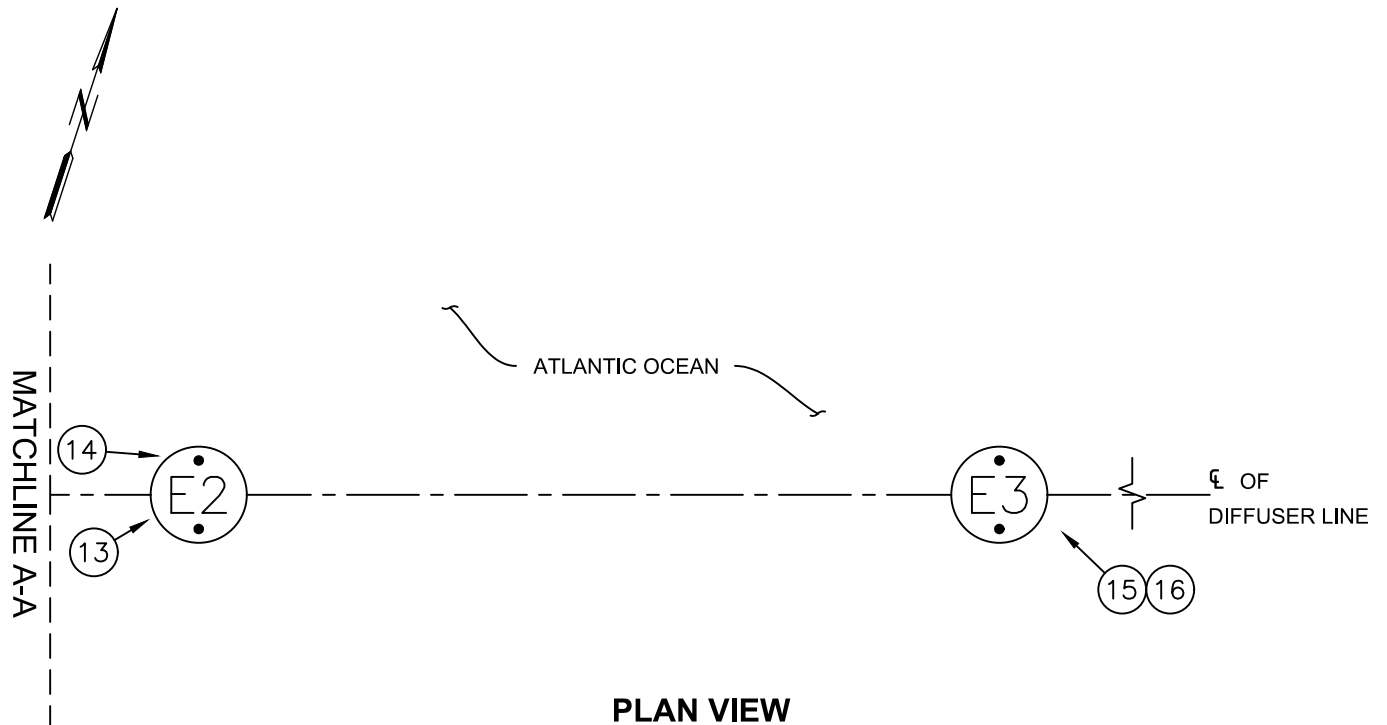
BAY PARK STP OUTFALL INSPECTION

SHEET:

CLEANOUT CHAMBER
PHOTO LOCATION PLAN

FIG NO.

6 OF 7



**MARINE
SOLUTIONS**

GRAPHIC SCALE:

N.T.S.

INSPECTION DATE: AUGUST 22, 2019

DRAWN BY: RLV

CKD BY: MJD

MSI PROJECT NO.: 03-19-033

FILENAME: 03-19-033_CO.DWG

PROJECT:

BAY PARK STP OUTFALL INSPECTION

SHEET:

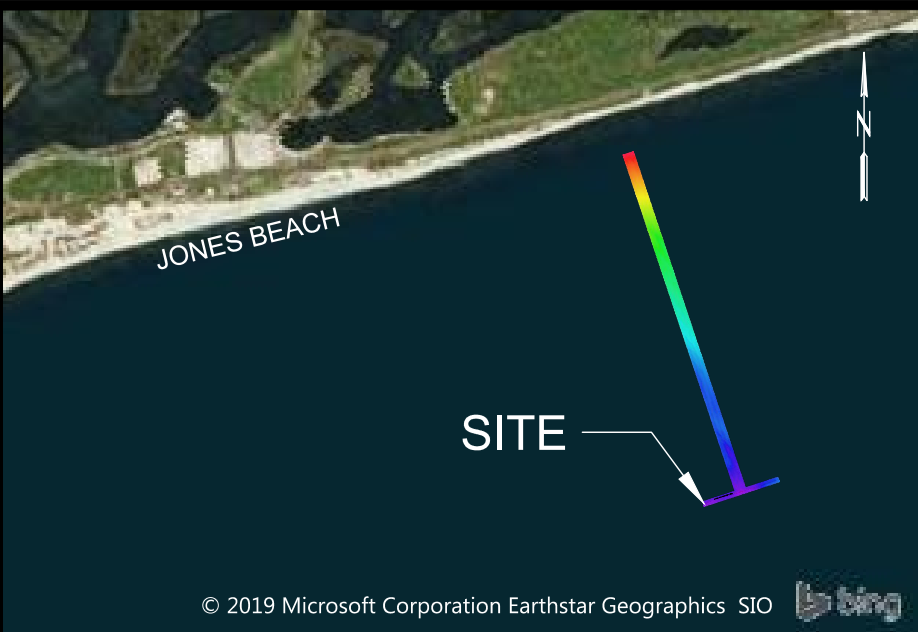
**DIFFUSER LINE
PHOTO LOCATION PLAN**

FIG NO.

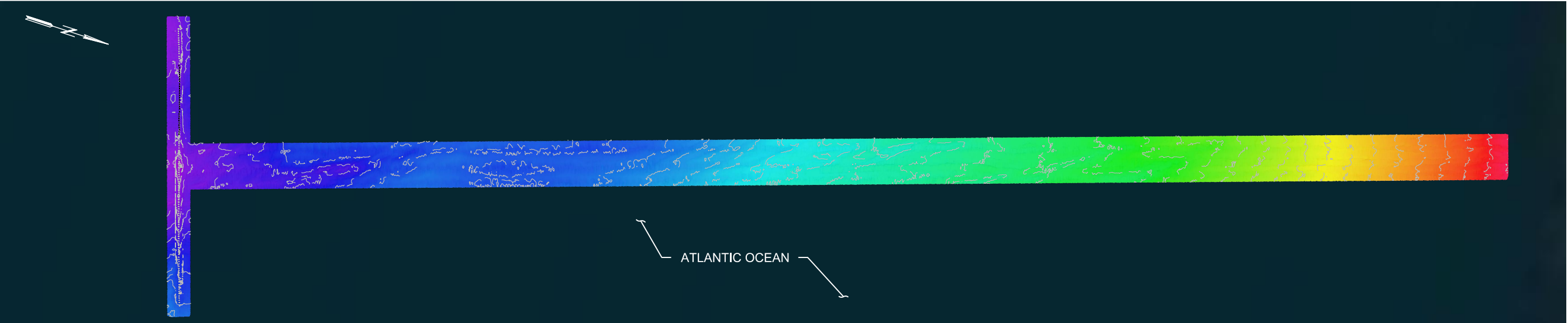
7 OF 7

Appendix B

Multi-Beam Survey Drawings



VICINITY MAP
SCALE: N.T.S.

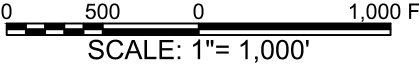
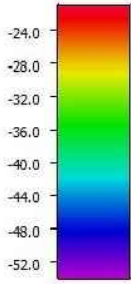


SURVEY OVERVIEW
SCALE: 1"=1000'

GENERAL NOTES

- 1. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE MEASUREMENTS AND SOUNDINGS TAKEN BY MARINE SOLUTIONS, INC. ON JULY 18, 2019.
- 2. ECHOSOUNDER - R2SONIC 2024 MULTIBEAM OPERATING AT 400KHZ.
- 3. POSITIONING AND MOTION - APPLANIX POS MV WAVEMASTER WITH IARTK POSITIONING.
- 4. SOUND VELOCITY SENSORS - AML MICRO SOUND VELOCITY PROBE ATTACHED TO THE SONAR BRACKET AND AN AML SOUND VELOCITY PROFILER.
- 5. VERTICAL COMPENSATION FOR CHANGING WATER LEVELS IS PROVIDED USING PPK SOLUTION PROVIDED BY CORRECTIONS FROM THE CORS NETWORK.
- 6. HORIZONTAL DATUM: STATE PLANE NEW YORK LONG ISLAND NAD83 2011 U.S. SURVEY FEET.
- 7. VERTICAL DATUM: NAVD88 U.S. SURVEY FEET
- 8. SURVEY PERFORMED IN ACCORDANCE WITH INTERNATIONAL HYDROGRAPHIC ORGANIZATION (IHO) ORDER 1A.
- 9. AERIAL PHOTO: BING.

ELEVATION
LEGEND
(NAVD88 FEET)

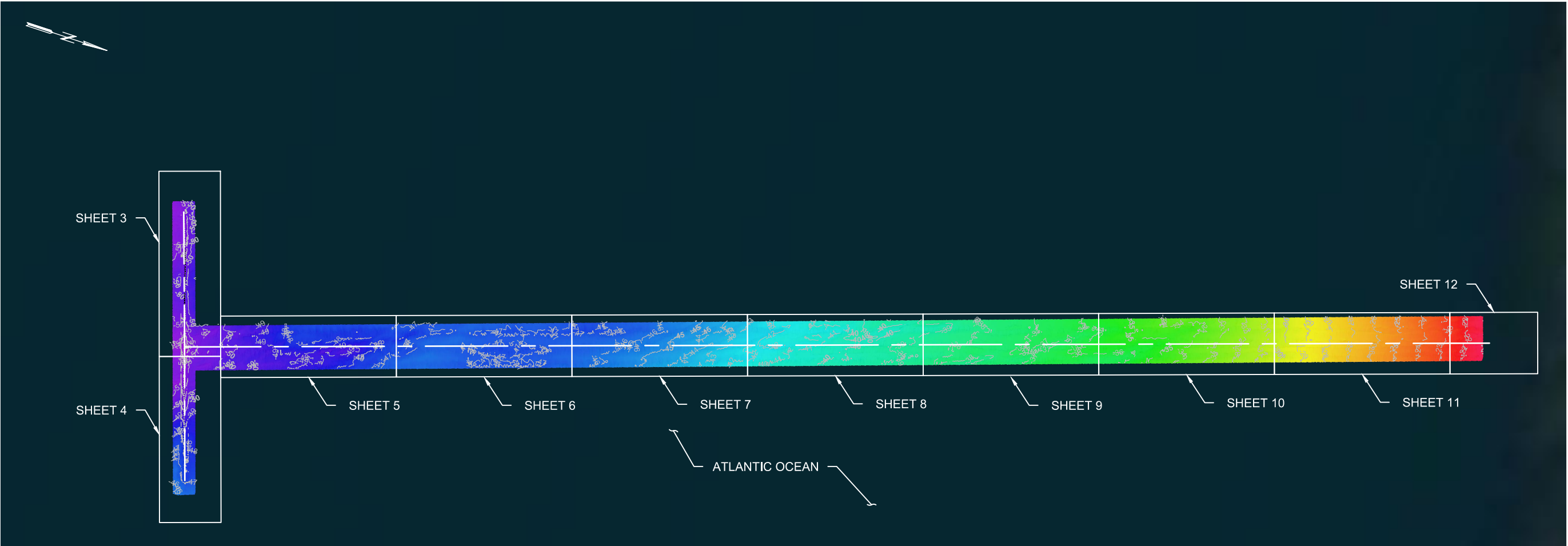


DATE: JULY 18, 2019	DRN BY: RLV
MSI JOB: 03-19-033	CKD BY: MJD
FILENAME: 01-19-033-HSURV.DWG	

CEDAR CREEK WPCP
OCEAN OUTFALL
HYDROGRAPHIC SURVEY

SURVEY OVERVIEW

FIG. NO.
1 of 12

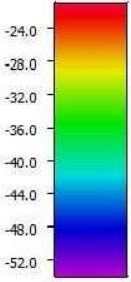


OVERALL SITE PLAN
SCALE: 1"=1000'

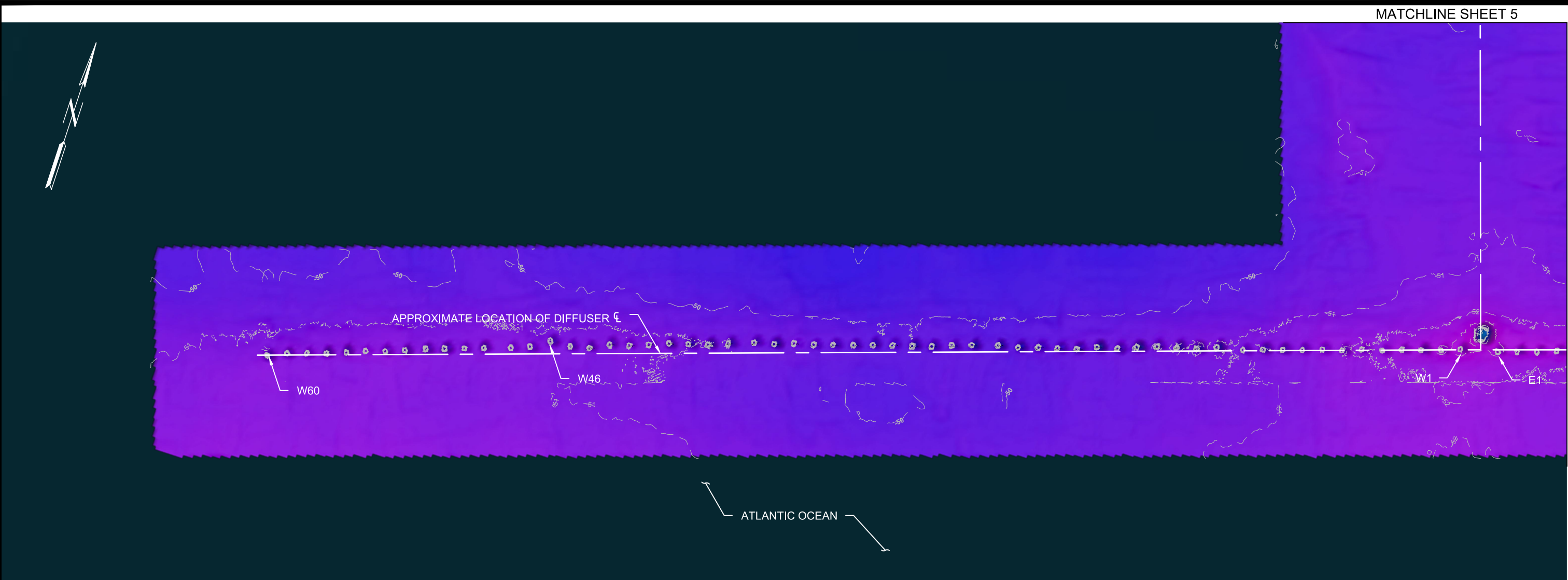
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7. VERTICAL DATUM: NAVD88 U.S. SURVEY FEET
8. SURVEY PERFORMED IN ACCORDANCE WITH INTERNATIONAL HYDROGRAPHIC ORGANIZATION (IHO) ORDER 1A.
9. AERIAL PHOTO: BING.

ELEVATION
LEGEND
(NAVD88 FEET)



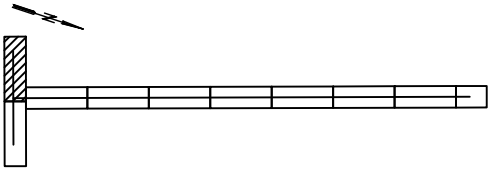
 0 500 0 1,000 FT SCALE: 1"= 1,000'		CEDAR CREEK WPCP OCEAN OUTFALL HYDROGRAPHIC SURVEY		FIG. NO. 2 of 12
		KEY SHEET		
		DATE: JULY 18, 2019	DRN BY: RLV	
MSI JOB: 03-19-033		CKD BY: MJD		
FILENAME: 01-19-033-HSURV.DWG				



PLAN VIEW
SCALE: 1"=100'

GENERAL NOTES

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7. VERTICAL DATUM: NAVD88 U.S. SURVEY FEET
8. SURVEY PERFORMED IN ACCORDANCE WITH INTERNATIONAL HYDROGRAPHIC ORGANIZATION (IHO) ORDER 1A.
9. AERIAL PHOTO: BING.

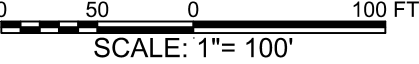
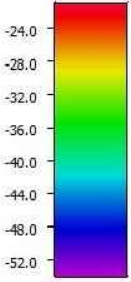


KEY PLAN

LEGEND

-- -50 -- ELEVATION CONTOUR AT 1 FOOT INTERVALS (NAVD88)

ELEVATION
LEGEND
(NAVD88 FEET)



SCALE: 1"= 100'

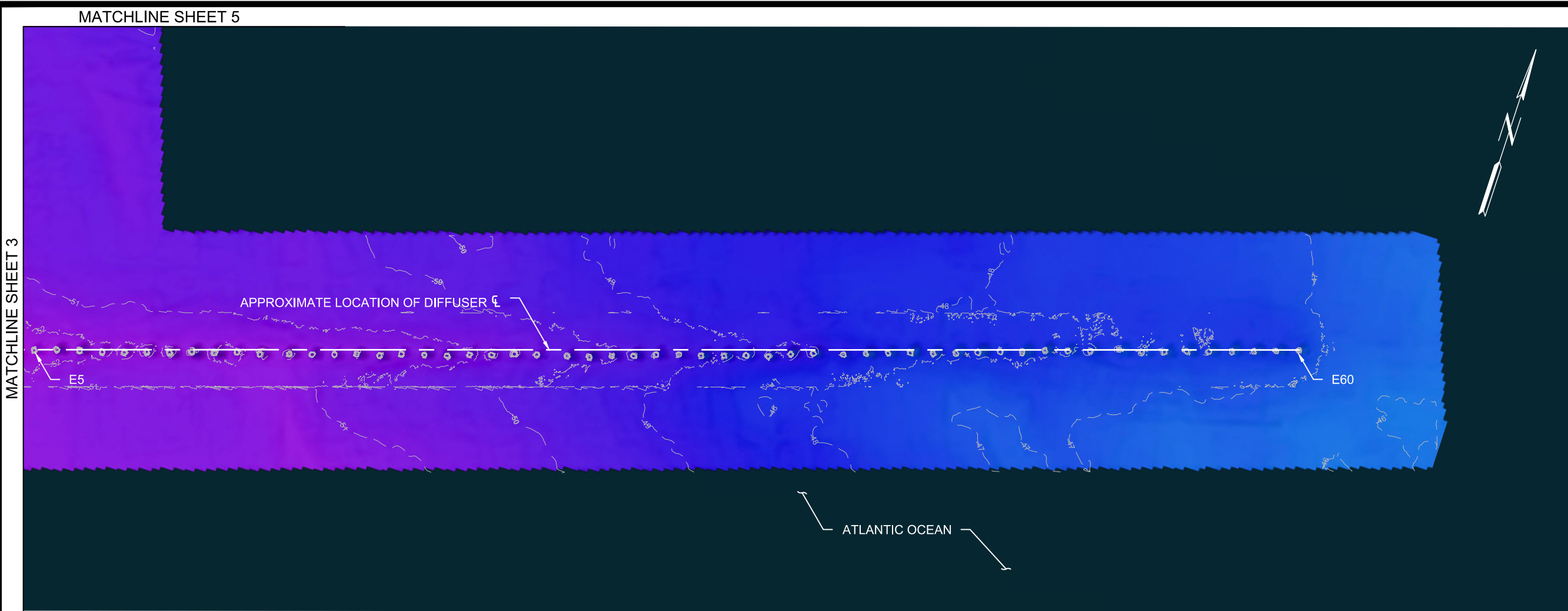


DATE: JULY 18, 2019	DRN BY: RLV
MSI JOB: 03-19-033	CKD BY: MJD
FILENAME: 01-19-033-HSURV.DWG	

CEDAR CREEK WPCP
OCEAN OUTFALL
HYDROGRAPHIC SURVEY

PLAN VIEW

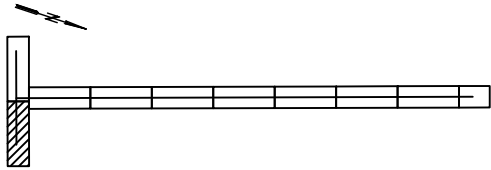
FIG. NO.
3 of 12



PLAN VIEW
SCALE: 1"=100'

GENERAL NOTES

1. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE MEASUREMENTS AND SOUNDINGS TAKEN BY MARINE SOLUTIONS, INC. ON JULY 18, 2019.
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7. VERTICAL DATUM: NAVD88 U.S. SURVEY FEET
8. SURVEY PERFORMED IN ACCORDANCE WITH INTERNATIONAL HYDROGRAPHIC ORGANIZATION (IHO) ORDER 1A.
9. AERIAL PHOTO: BING.

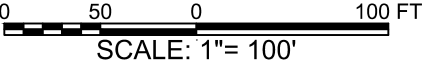
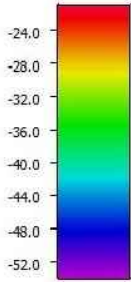


KEY PLAN

LEGEND

-- -50 -- ELEVATION CONTOUR AT 1 FOOT INTERVALS (NAVD88)

ELEVATION
LEGEND
(NAVD88 FEET)



SCALE: 1"= 100'



DATE: JULY 18, 2019 DRN BY: RLV
MSI JOB: 03-19-033 CKD BY: MJD
FILENAME: 01-19-033-HSURV.DWG

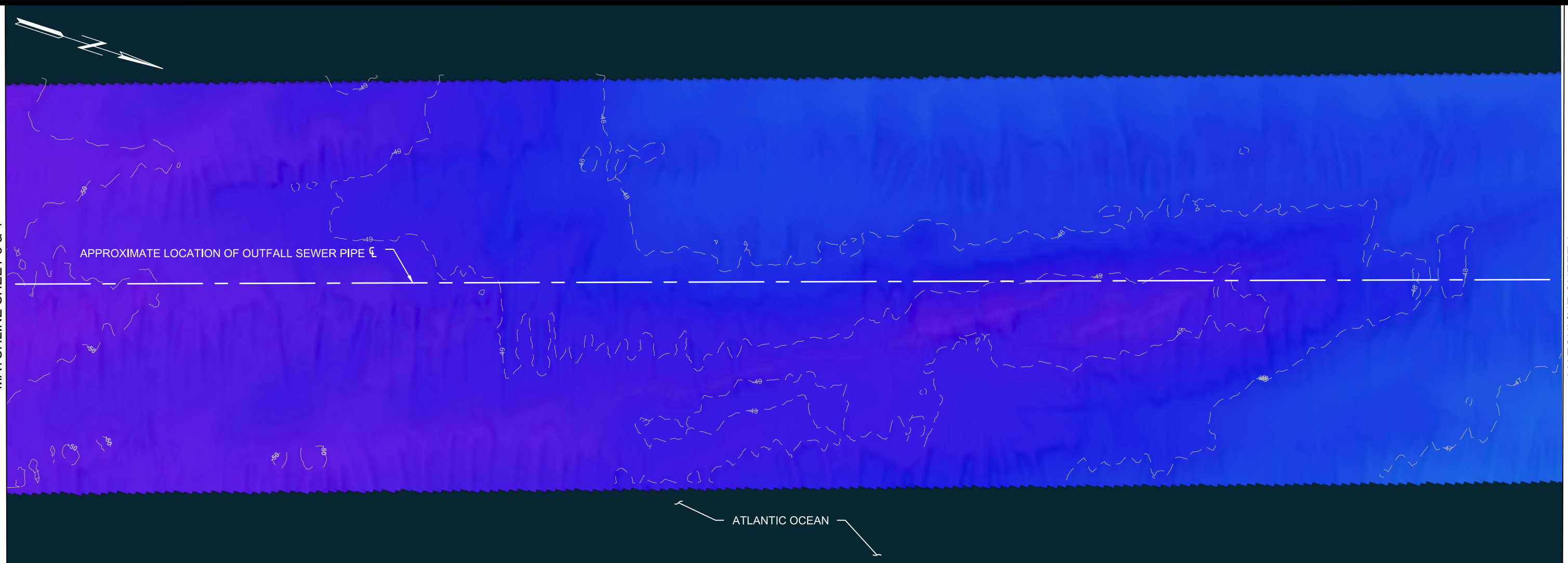
CEDAR CREEK WPCP
OCEAN OUTFALL
HYDROGRAPHIC SURVEY

PLAN VIEW

FIG. NO.
4 of 12

MATCHLINE SHEET 3 & 4

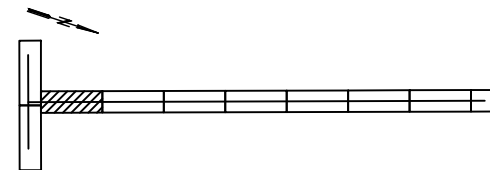
MATCHLINE SHEET 6



PLAN VIEW
SCALE: 1"=100'

GENERAL NOTES

1. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE MEASUREMENTS AND SOUNDINGS TAKEN BY MARINE SOLUTIONS, INC. ON JULY 18, 2019.
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7. VERTICAL DATUM: NAVD88 U.S. SURVEY FEET
8. SURVEY PERFORMED IN ACCORDANCE WITH INTERNATIONAL HYDROGRAPHIC ORGANIZATION (IHO) ORDER 1A.
9. AERIAL PHOTO: BING.

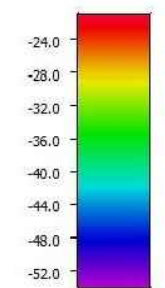


KEY PLAN

LEGEND

-- -50 -- ELEVATION CONTOUR AT 1 FOOT INTERVALS (NAVD88)

ELEVATION
LEGEND
(NAVD88 FEET)



**MARINE
SOLUTIONS**

0 50 0 100 FT
SCALE: 1"= 100'

WSP

DATE: JULY 18, 2019 DRN BY: RLV
MSI JOB: 03-19-033 CKD BY: MJD
FILENAME: 01-19-033-HSURV.DWG

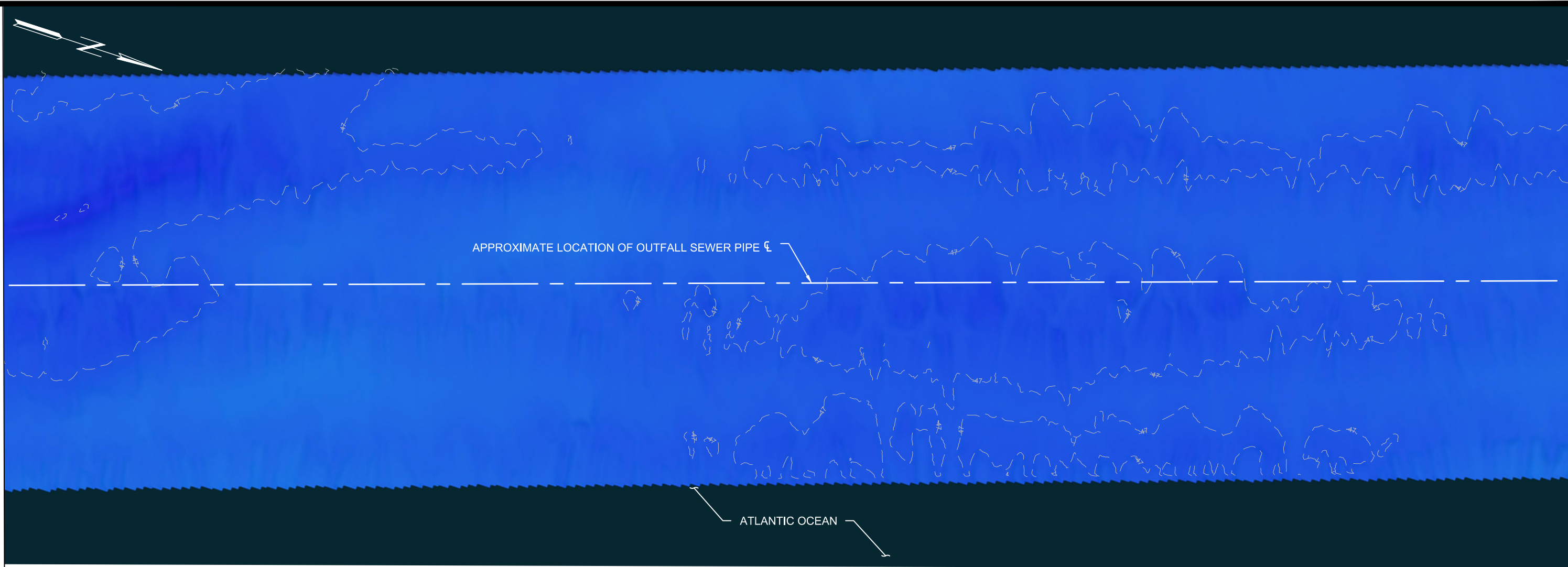
CEDAR CREEK WPCP
OCEAN OUTFALL
HYDROGRAPHIC SURVEY

PLAN VIEW

FIG. NO.
5 of 12

MATCHLINE SHEET 5

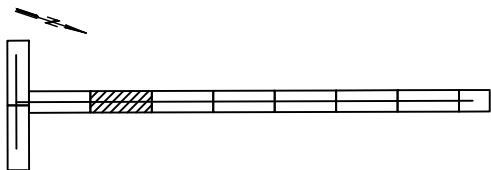
MATCHLINE SHEET 7



PLAN VIEW
SCALE: 1"=100'

GENERAL NOTES

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8. SURVEY PERFORMED IN ACCORDANCE WITH INTERNATIONAL HYDROGRAPHIC ORGANIZATION (IHO) ORDER 1A.
9. AERIAL PHOTO: BING.

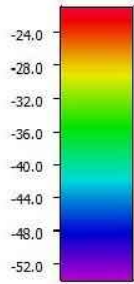


KEY PLAN

LEGEND

-- -50 -- ELEVATION CONTOUR AT 1 FOOT INTERVALS (NAVD88)

ELEVATION
LEGEND
(NAVD88 FEET)



**MARINE
SOLUTIONS**

0 50 0 100 FT

SCALE: 1"= 100'



DATE: JULY 18, 2019 DRN BY: RLV
MSI JOB: 03-19-033 CKD BY: MJD
FILENAME: 01-19-033-HSURV.DWG

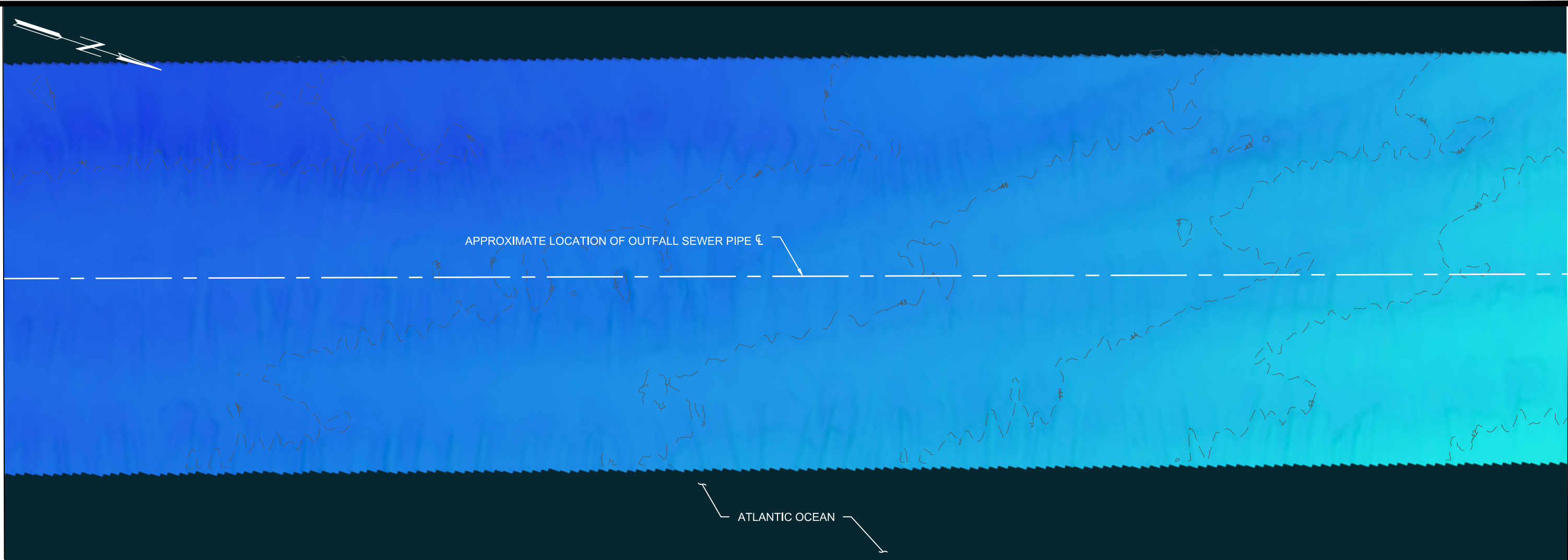
CEDAR CREEK WPCP
OCEAN OUTFALL
HYDROGRAPHIC SURVEY

PLAN VIEW

FIG. NO.
6 of 12

MATCHLINE SHEET 6

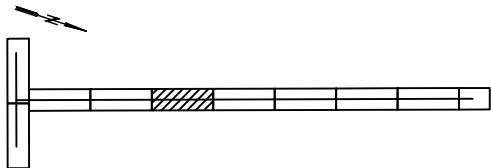
MATCHLINE SHEET 8



PLAN VIEW
SCALE: 1"=100'

GENERAL NOTES

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7. VERTICAL DATUM: NAVD88 U.S. SURVEY FEET
8. SURVEY PERFORMED IN ACCORDANCE WITH INTERNATIONAL HYDROGRAPHIC ORGANIZATION (IHO) ORDER 1A.
9. AERIAL PHOTO: BING.

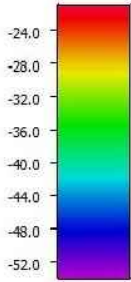


KEY PLAN

LEGEND

-- -50 -- ELEVATION CONTOUR AT 1 FOOT INTERVALS (NAVD88)

**ELEVATION
LEGEND
(NAVD88 FEET)**



0 50 0 100 FT
SCALE: 1"= 100'



DATE: JULY 18, 2019 DRN BY: RLV
MSI JOB: 03-19-033 CKD BY: MJD
FILENAME: 01-19-033-HSURV.DWG

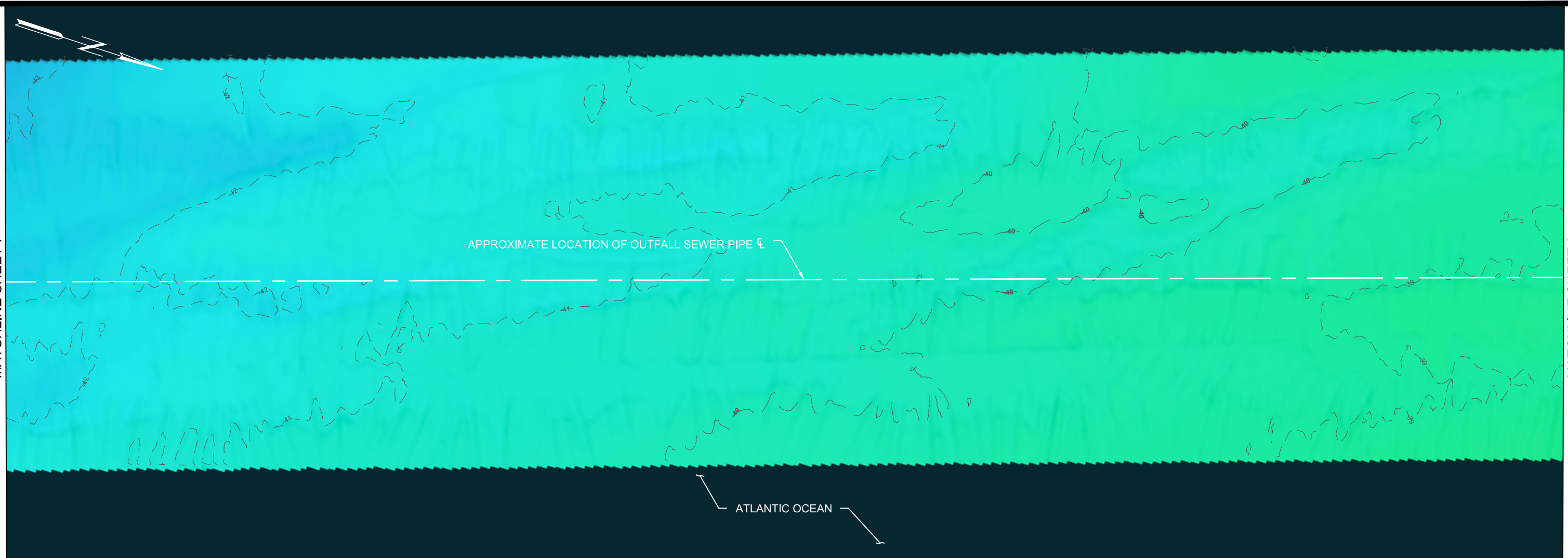
CEDAR CREEK WPCP
OCEAN OUTFALL
HYDROGRAPHIC SURVEY

PLAN VIEW

FIG. NO.
7 of 12

MATCHLINE SHEET 7

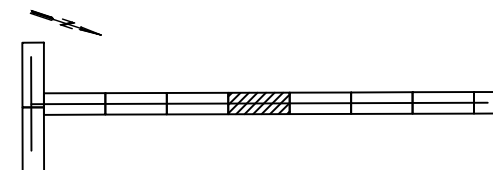
MATCHLINE SHEET 9



PLAN VIEW
SCALE: 1"=100'

GENERAL NOTES

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8. SURVEY PERFORMED IN ACCORDANCE WITH INTERNATIONAL HYDROGRAPHIC ORGANIZATION (IHO) ORDER 1A.
9. AERIAL PHOTO: BING.



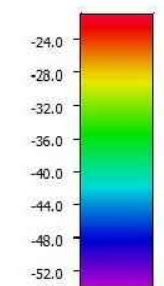
KEY PLAN

LEGEND

-- -50 --

ELEVATION CONTOUR AT 1 FOOT INTERVALS (NAVD88)

ELEVATION
LEGEND
(NAVD88 FEET)



**MARINE
SOLUTIONS**

0 50 0 100 FT

SCALE: 1"= 100'

WSP

DATE: JULY 18, 2019

DRN BY: RLV

MSI JOB: 03-19-033

CKD BY: MJD

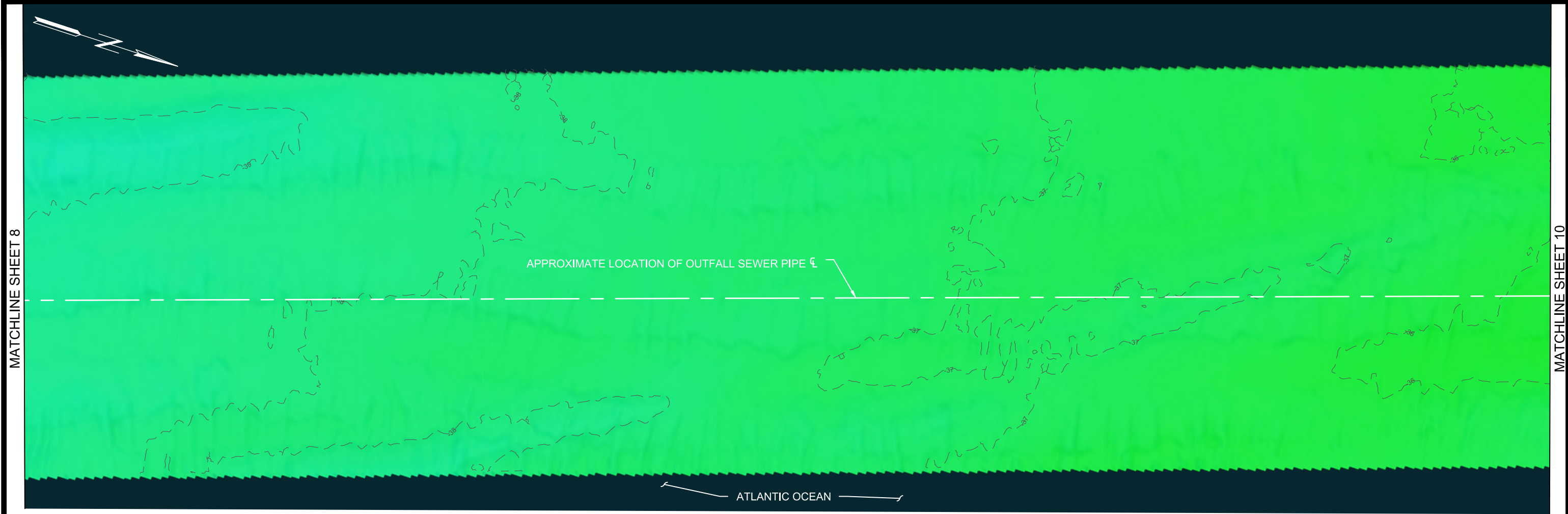
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**CEDAR CREEK WPCP
OCEAN OUTFALL
HYDROGRAPHIC SURVEY**

PLAN VIEW

FIG. NO.

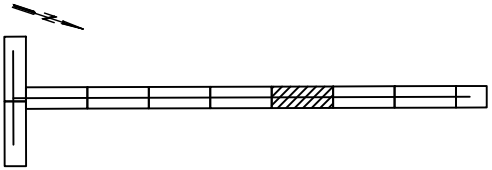
8 of 12



PLAN VIEW
SCALE: 1"=100'

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8. SURVEY PERFORMED IN ACCORDANCE WITH INTERNATIONAL HYDROGRAPHIC ORGANIZATION (IHO) ORDER 1A.
9. AERIAL PHOTO: BING.

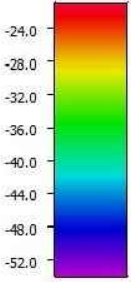


KEY PLAN

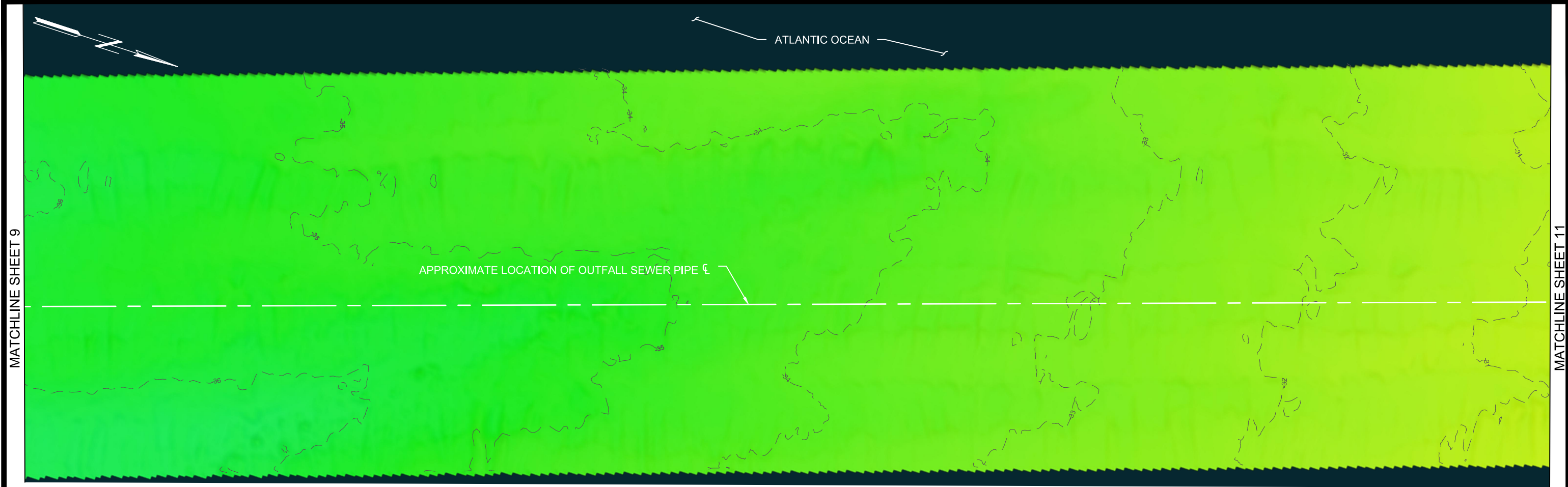
LEGEND

-- -50 -- ELEVATION CONTOUR AT 1 FOOT INTERVALS (NAVD88)

**ELEVATION
LEGEND
(NAVD88 FEET)**



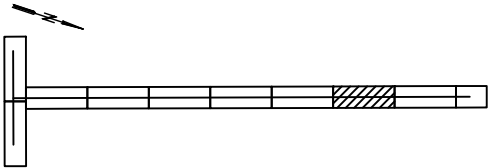
<div><div>MARINE SOLUTIONS</div><div><div>0500100</div><div>FT</div></div><div>SCALE: 1"= 100'</div></div>	<div>WSP</div>		<div>CEDAR CREEK WPCP OCEAN OUTFALL HYDROGRAPHIC SURVEY</div>	
	DATE: JULY 18, 2019	DRN BY: RLV	<div>PLAN VIEW</div>	FIG. NO.
	MSI JOB: 03-19-033	CKD BY: MJD		9 of 12
	FILENAME: 01-19-033-HSURV.DWG			



PLAN VIEW
SCALE: 1"=100'

GENERAL NOTES

- 1. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE MEASUREMENTS AND SOUNDINGS TAKEN BY MARINE SOLUTIONS, INC. ON JULY 18, 2019.
- 2. ECHOSOUNDER - R2SONIC 2024 MULTIBEAM OPERATING AT 400KHZ.
- 3. POSITIONING AND MOTION - APPLANIX POS MV WAVEMASTER WITH IARTK POSITIONING.
- 4. SOUND VELOCITY SENSORS - AML MICRO SOUND VELOCITY PROBE ATTACHED TO THE SONAR BRACKET AND AN AML SOUND VELOCITY PROFILER.
- 5. VERTICAL COMPENSATION FOR CHANGING WATER LEVELS IS PROVIDED USING PPK SOLUTION PROVIDED BY CORRECTIONS FROM THE CORS NETWORK.
- 6. HORIZONTAL DATUM: STATE PLANE NEW YORK LONG ISLAND NAD83 2011 U.S. SURVEY FEET.
- 7. VERTICAL DATUM: NAVD88 U.S. SURVEY FEET
- 8. SURVEY PERFORMED IN ACCORDANCE WITH INTERNATIONAL HYDROGRAPHIC ORGANIZATION (IHO) ORDER 1A.
- 9. AERIAL PHOTO: BING.

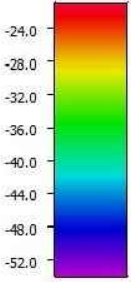


KEY PLAN

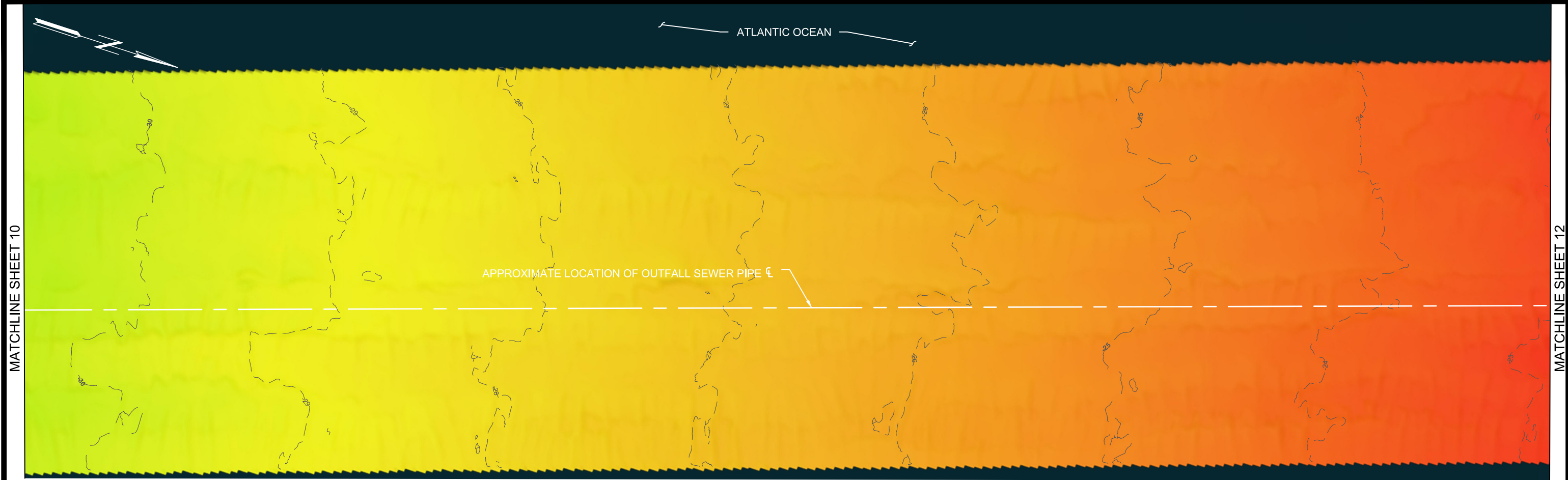
LEGEND

-- -50 -- ELEVATION CONTOUR AT 1 FOOT INTERVALS (NAVD88)

ELEVATION
LEGEND
(NAVD88 FEET)



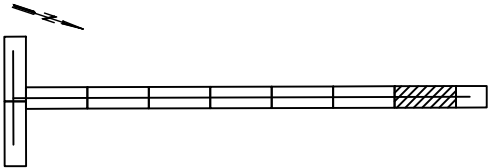
 0 50 0 100 FT SCALE: 1"= 100'		CEDAR CREEK WPCP OCEAN OUTFALL HYDROGRAPHIC SURVEY	
		PLAN VIEW	FIG. NO. 10 of 12
		DATE: JULY 18, 2019 DRN BY: RLV MSI JOB: 03-19-033 CKD BY: MJD FILENAME: 01-19-033-HSURV.DWG	



PLAN VIEW
SCALE: 1"=100'

GENERAL NOTES

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5. VERTICAL COMPENSATION FOR CHANGING WATER LEVELS IS PROVIDED USING PPK SOLUTION PROVIDED BY CORRECTIONS FROM THE CORS NETWORK.
6. HORIZONTAL DATUM: STATE PLANE NEW YORK LONG ISLAND NAD83 2011 U.S. SURVEY FEET.
7. VERTICAL DATUM: NAVD88 U.S. SURVEY FEET
8. SURVEY PERFORMED IN ACCORDANCE WITH INTERNATIONAL HYDROGRAPHIC ORGANIZATION (IHO) ORDER 1A.
9. AERIAL PHOTO: BING.

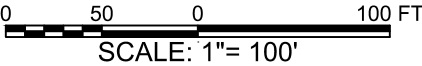
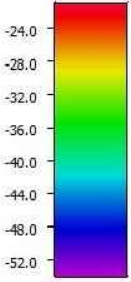


KEY PLAN

LEGEND

-- -50 -- ELEVATION CONTOUR AT 1 FOOT INTERVALS (NAVD88)

ELEVATION
LEGEND
(NAVD88 FEET)



SCALE: 1"= 100'

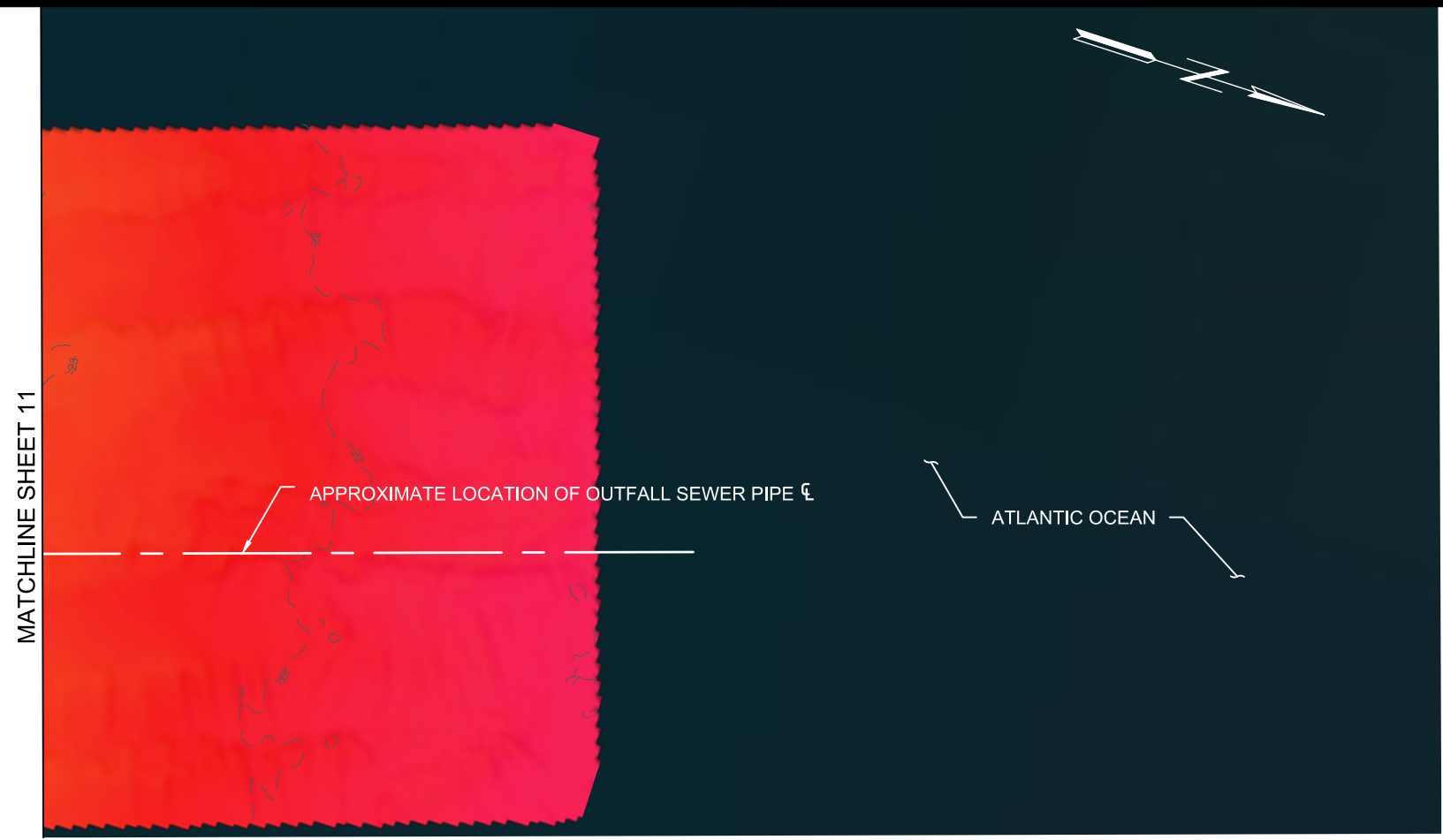


DATE: JULY 18, 2019	DRN BY: RLV
MSI JOB: 03-19-033	CKD BY: MJD
FILENAME: 01-19-033-HSURV.DWG	

CEDAR CREEK WPCP
OCEAN OUTFALL
HYDROGRAPHIC SURVEY

PLAN VIEW

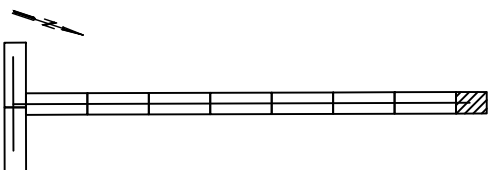
FIG. NO.
11 of 12



PLAN VIEW
SCALE: 1"=100'

GENERAL NOTES

- 1. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE MEASUREMENTS AND SOUNDINGS TAKEN BY MARINE SOLUTIONS, INC. ON JULY 18, 2019.
- 2. ECHOSOUNDER - R2SONIC 2024 MULTIBEAM OPERATING AT 400KHZ.
- 3. POSITIONING AND MOTION - APPLANIX POS MV WAVEMASTER WITH IARTK POSITIONING.
- 4. SOUND VELOCITY SENSORS - AML MICRO SOUND VELOCITY PROBE ATTACHED TO THE SONAR BRACKET AND AN AML SOUND VELOCITY PROFILER.
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- 6. HORIZONTAL DATUM: STATE PLANE NEW YORK LONG ISLAND NAD83 2011 U.S. SURVEY FEET.
- 7. VERTICAL DATUM: NAVD88 U.S. SURVEY FEET
- 8. SURVEY PERFORMED IN ACCORDANCE WITH INTERNATIONAL HYDROGRAPHIC ORGANIZATION (IHO) ORDER 1A.
- 9. AERIAL PHOTO: BING.

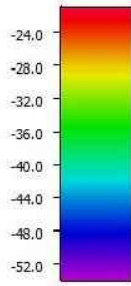


KEY PLAN

LEGEND

-- -50 -- ELEVATION CONTOUR AT 1 FOOT INTERVALS (NAVD88)

ELEVATION
LEGEND
(NAVD88 FEET)



 0 50 0 100 FT SCALE: 1"= 100'		CEDAR CREEK WPCP OCEAN OUTFALL HYDROGRAPHIC SURVEY	
		PLAN VIEW	FIG. NO. 12 of 12
		DATE: JULY 18, 2019 DRN BY: RLV MSI JOB: 03-19-033 CKD BY: MJD FILENAME: 01-19-033-HSURV.DWG	

Appendix C

Captioned Photos

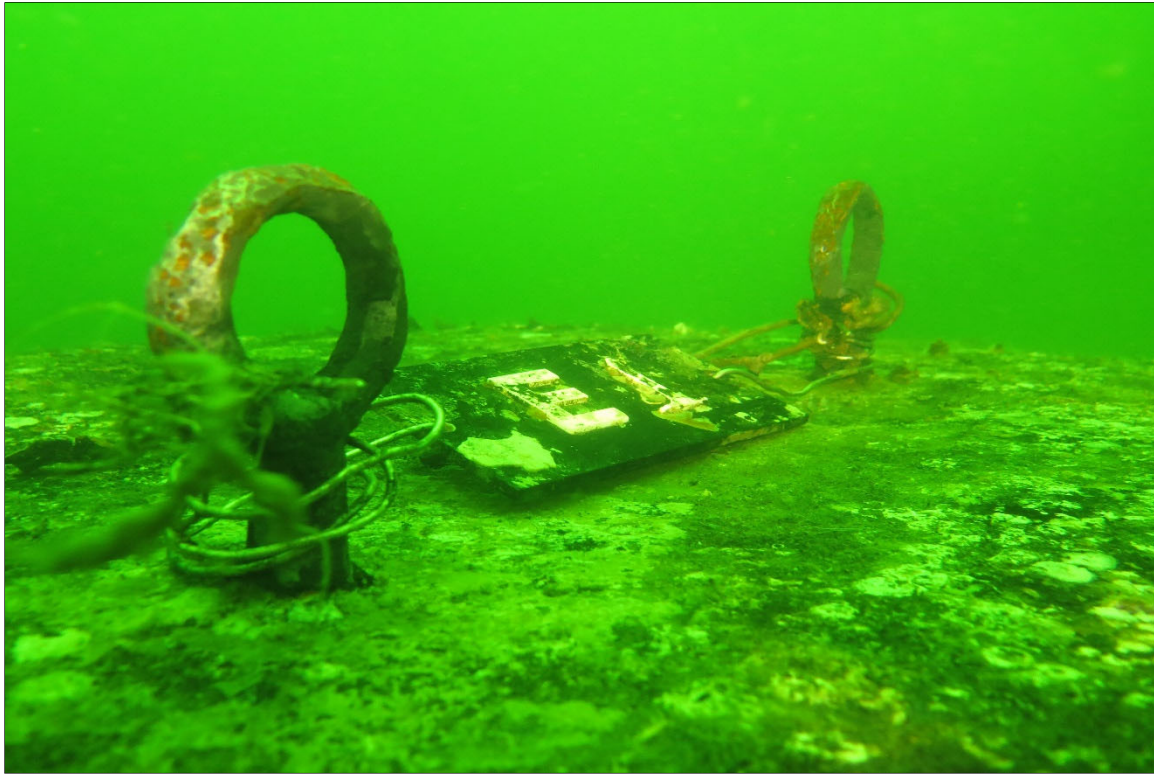


PHOTO 1. Typical I.D. Tag on Top of Diffuser Cap, taken at Diffuser E1.

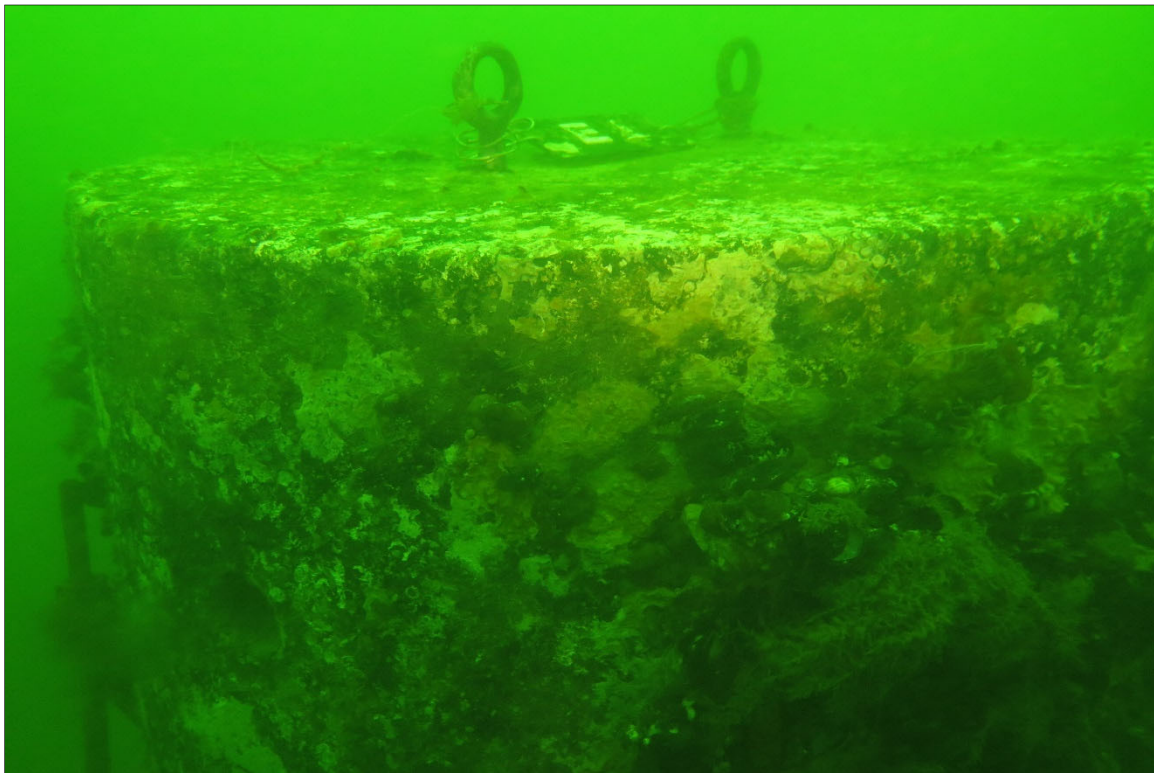


PHOTO 2. General View of Diffuser Outlet Structure, taken at Diffuser E1.

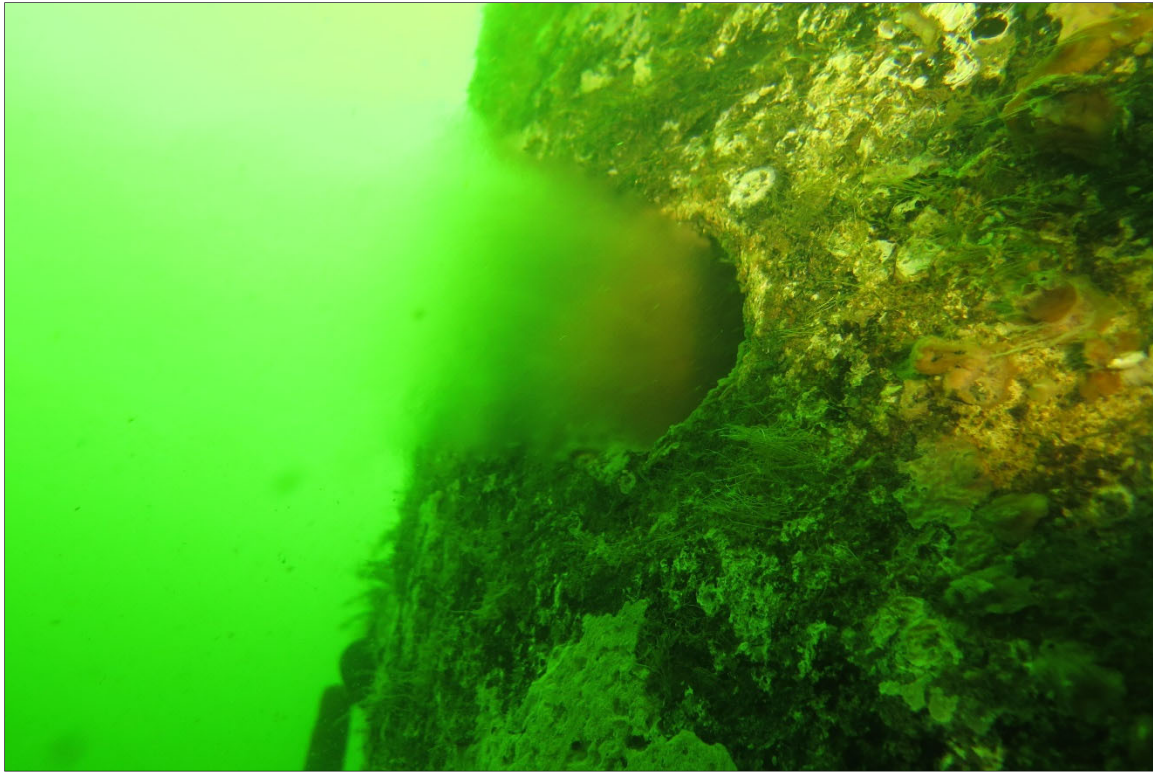


PHOTO 3. General View of Diffuser Port, taken at Diffuser E1.



PHOTO 4. General View of Steel Hardware, taken at Diffuser E1.

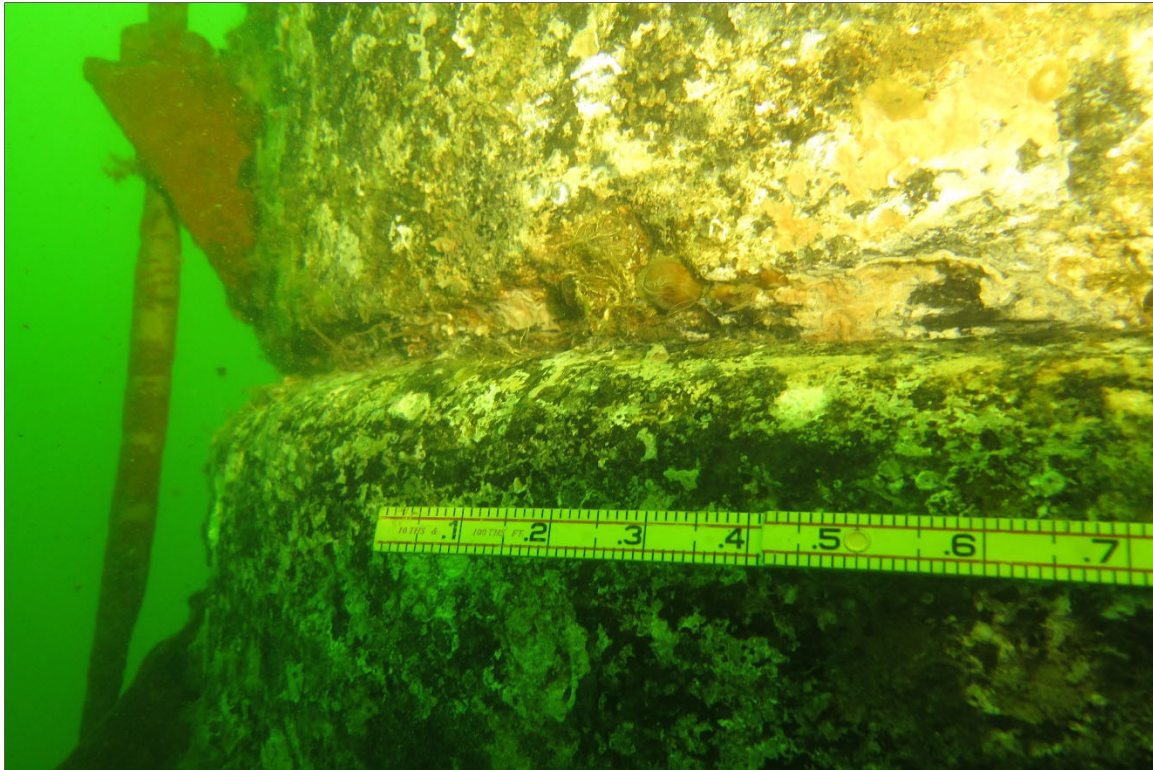


PHOTO 5. General View of Diffuser Cap/Riser interface and Steel Hardware, taken at Diffuser E1.



PHOTO 6. General View of Cleanout Chamber, South Face at SE Corner.

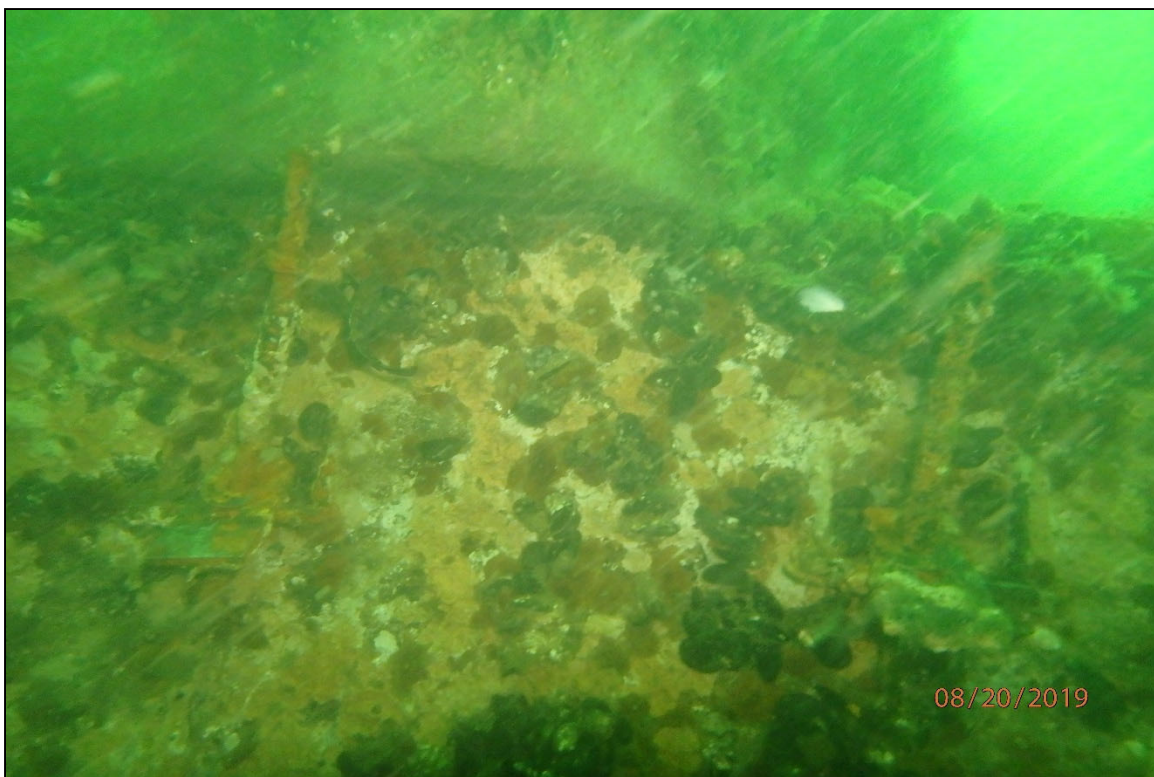


PHOTO 7. General View of Cleanout Structure Hardware.



PHOTO 8. Typical Outlet Structure with Marine Growth, Taken at Diffuser E16.

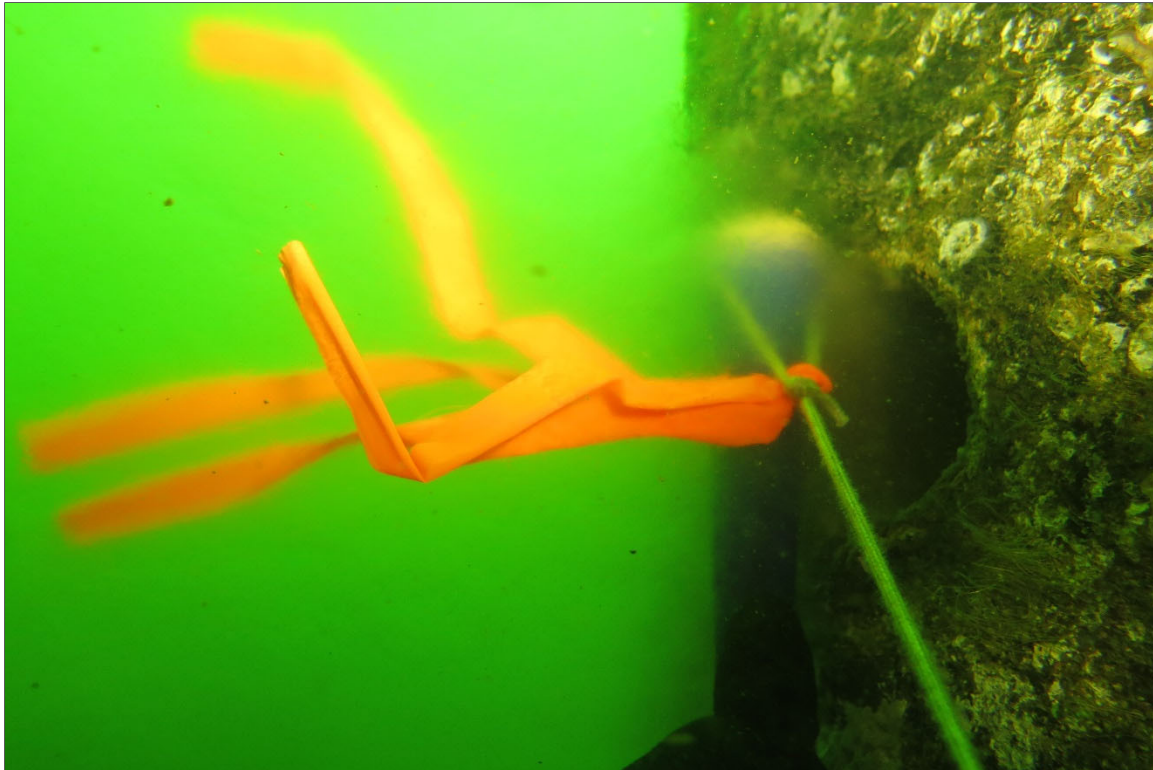


PHOTO 9. Typical Flow at Outlet Port, taken at Diffuser E1 South Port.



PHOTO 10. Typical Minor Section Loss on Padeye, Diffuser E15 South Padeye.



PHOTO 11. Typical Severe Section Loss on Padeye, Diffuser E15 North Padeye.



PHOTO 12. Typical Old Anchor Bolt, Taken at Diffuser E1 Northeast Bolt.



PHOTO 13. Typical Newer HDG Anchor Bolt, Taken at Diffuser E2 Southwest Bolt.



PHOTO 14. Typical Severe Corrosion with up to 100-Percent Section Loss, Diffuser E2 Northwest Bolt at Bottom Bracket.

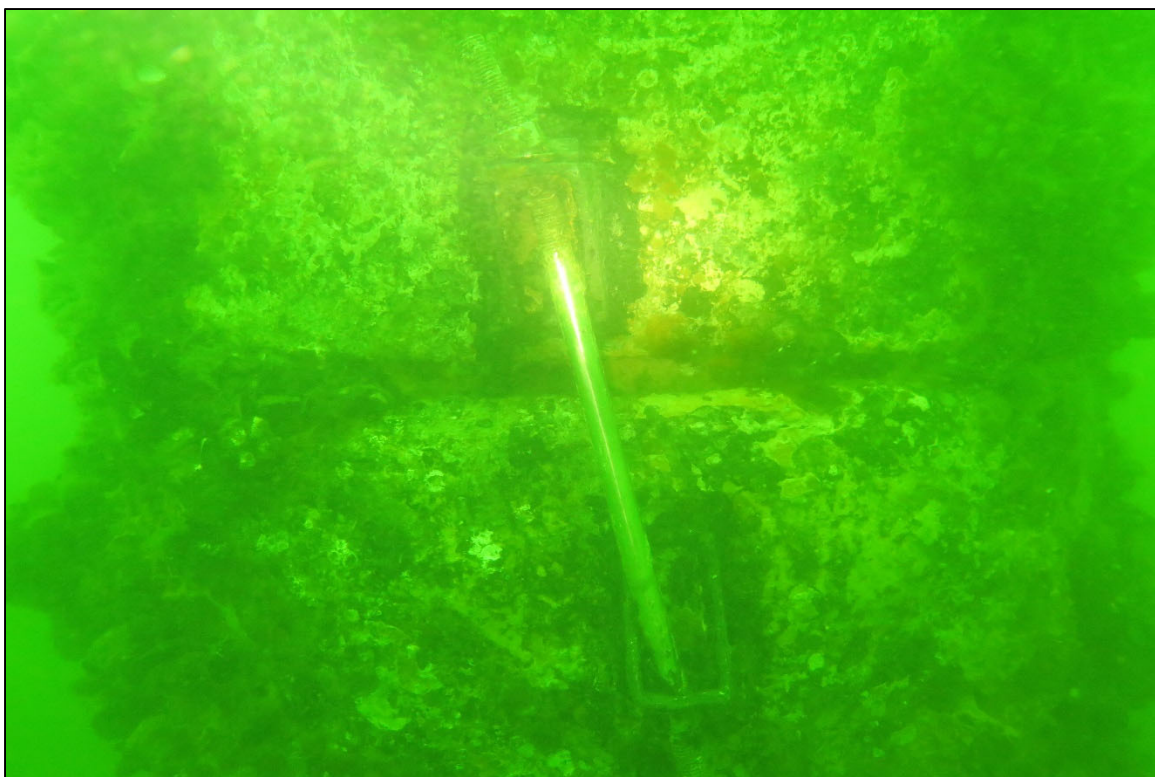


PHOTO 15. Stainless-Steel Anchor Bolts Bent (Cap Appears Twisted/Rotated Counter-Clockwise), Diffuser E3 Southeast Bolt.



PHOTO 16. Stainless-Steel Anchor Bolt Bent with No Deterioration, Diffuser E3 Southeast Bolt at Top.



PHOTO 17. Typical Moderate Section Loss and Pitting on Diffuser Bracket, Taken at Diffuser E15 Southwest Anchor (Note Missing Bolt).

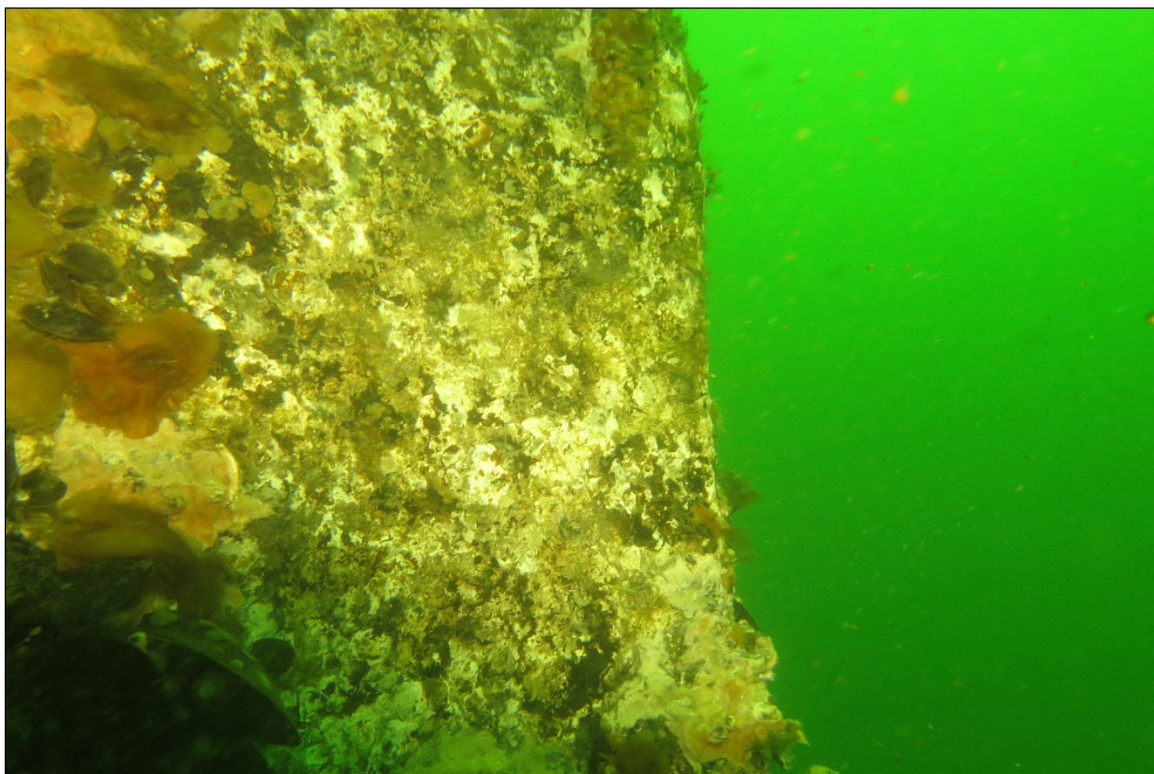


PHOTO 18. Typical Condition of Concrete on Cleanout Chamber Base Structure.

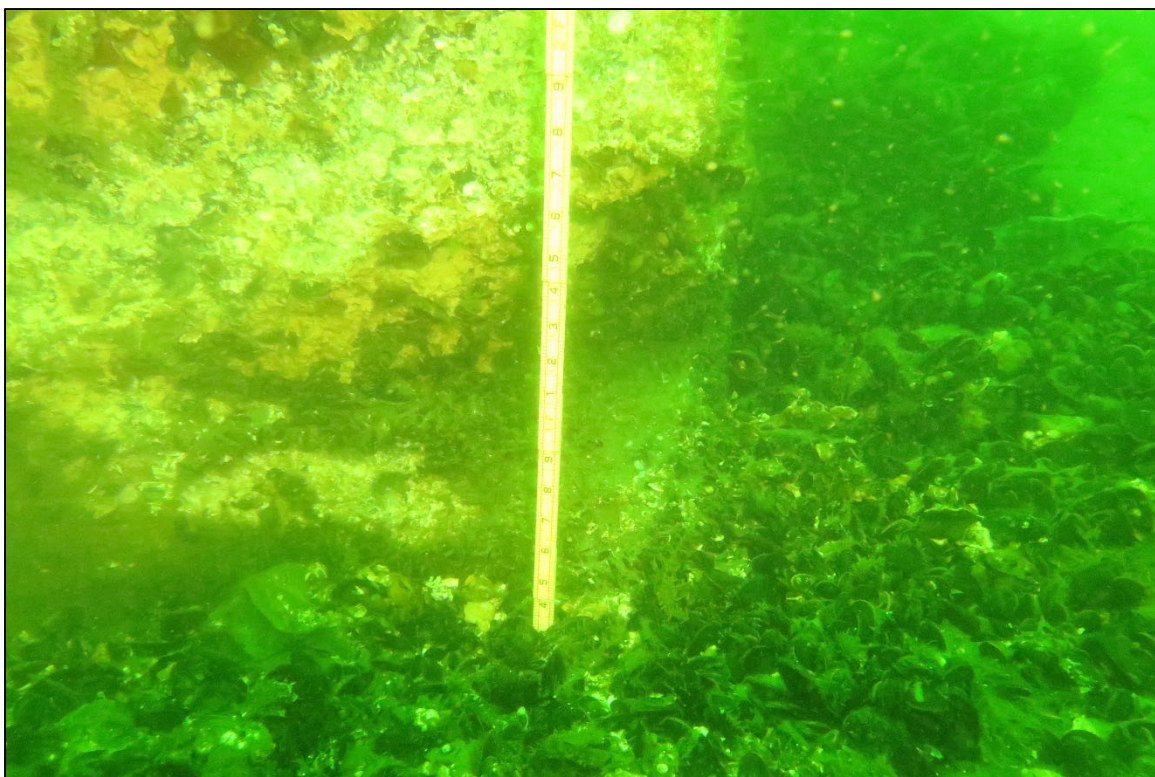


PHOTO 19. Spall at Bottom of Cleanout Chamber at the Southeast Corner.



PHOTO 20. General View of Cleanout Chamber and Rotation of Chamber Cover.



PHOTO 21. Typical Condition of Concrete and Rotation on Cleanout Chamber Cover, Taken at the Southeast Corner (Looking West).

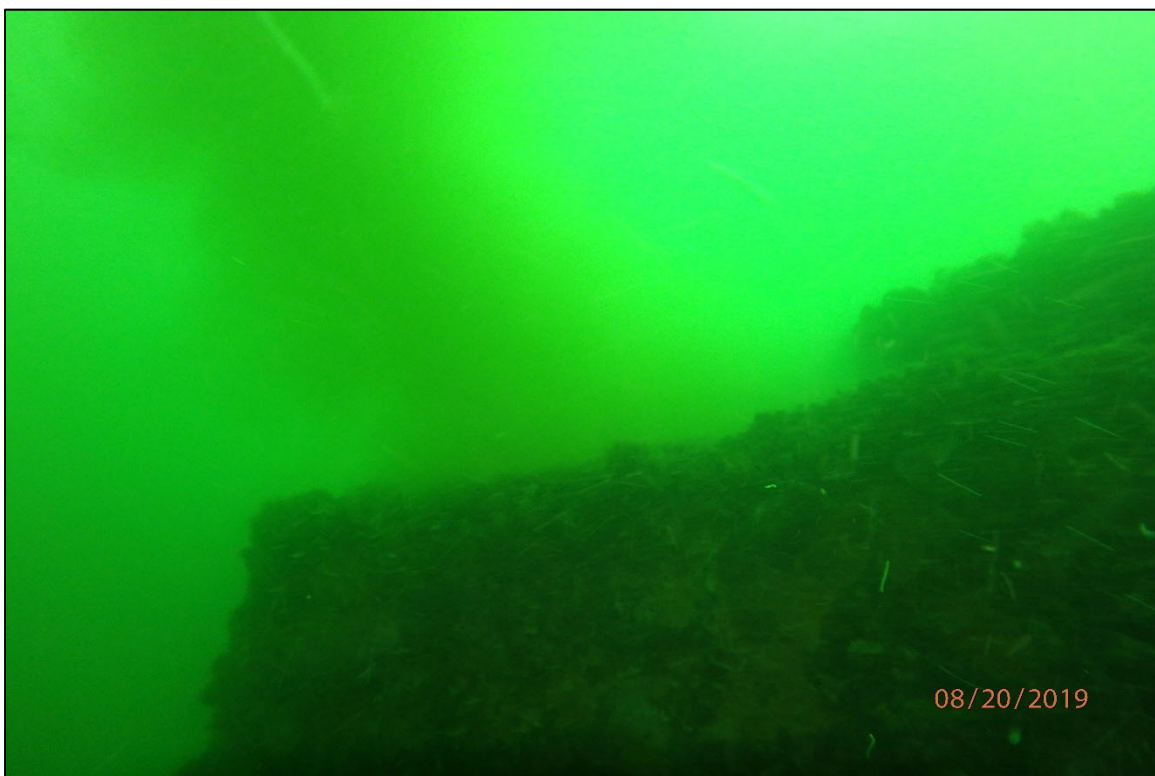


PHOTO 22. Effluent Escaping Northwest Corner of Cleanout Chamber Cap (Looking Northeast).

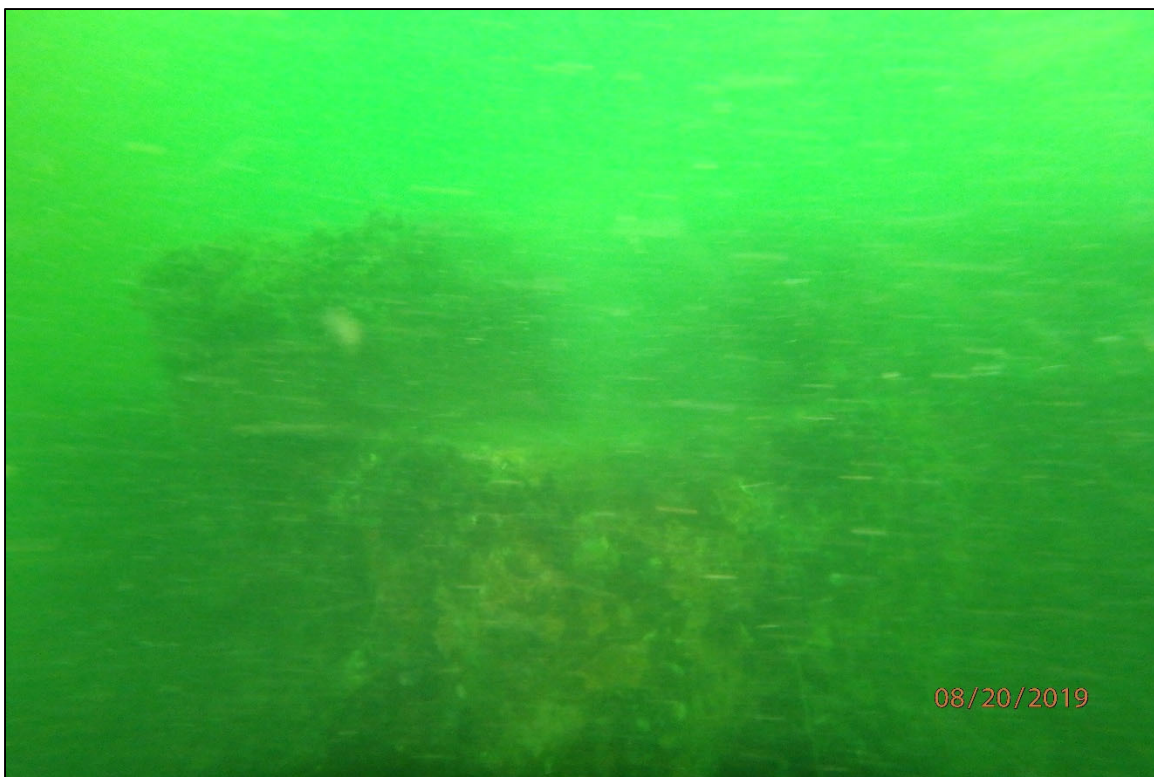


PHOTO 23. Effluent Escaping Southwest Corner of Cleanout Chamber Cap (Looking Northeast).

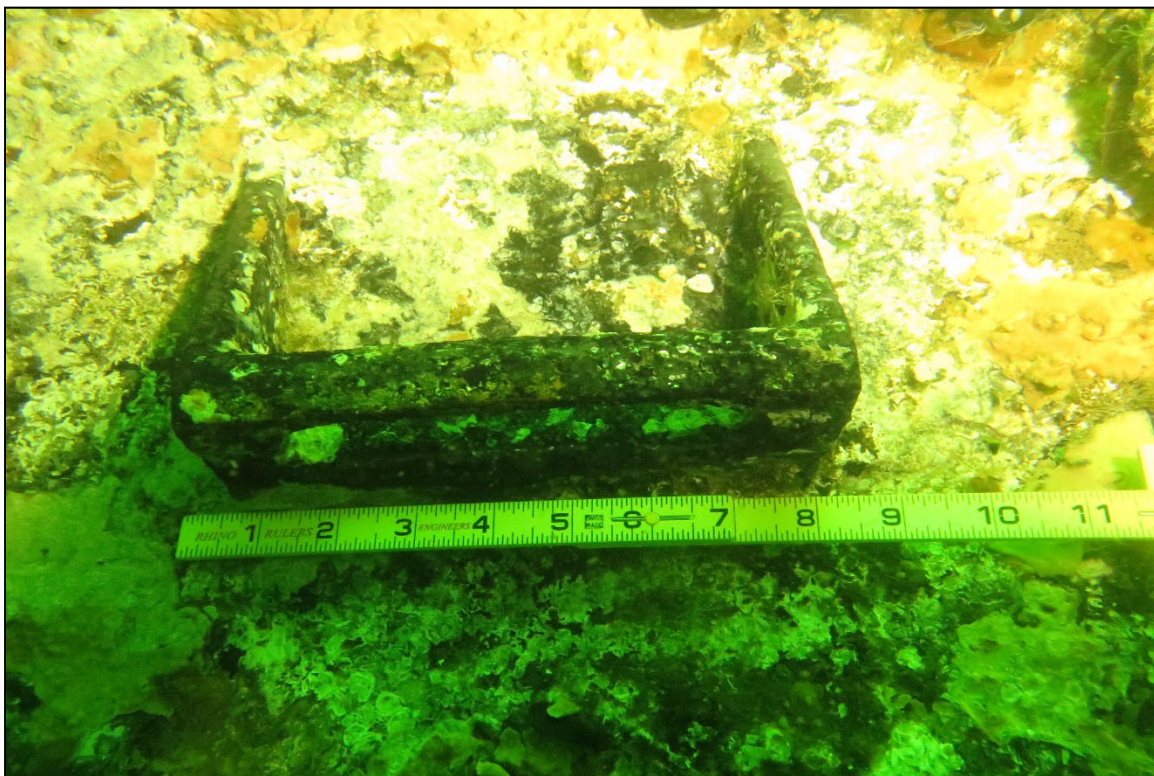


PHOTO 24. General View of Cleanout Structure Bracket W5 on Chamber Base. Bracket is Largely Intact with Moderate to Advanced Section Loss.

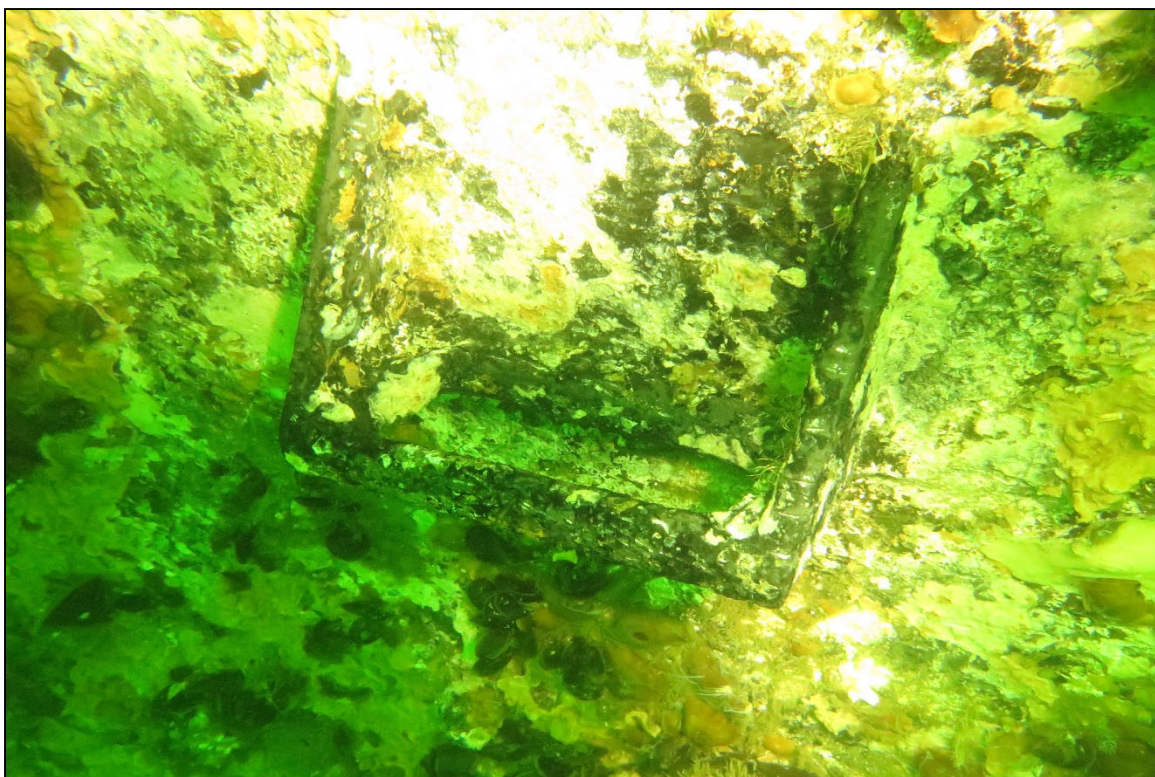


PHOTO 25. View from Above of Cleanout Structure Bracket W5 at Chamber Base with Slotted Opening for Anchor Bolt.

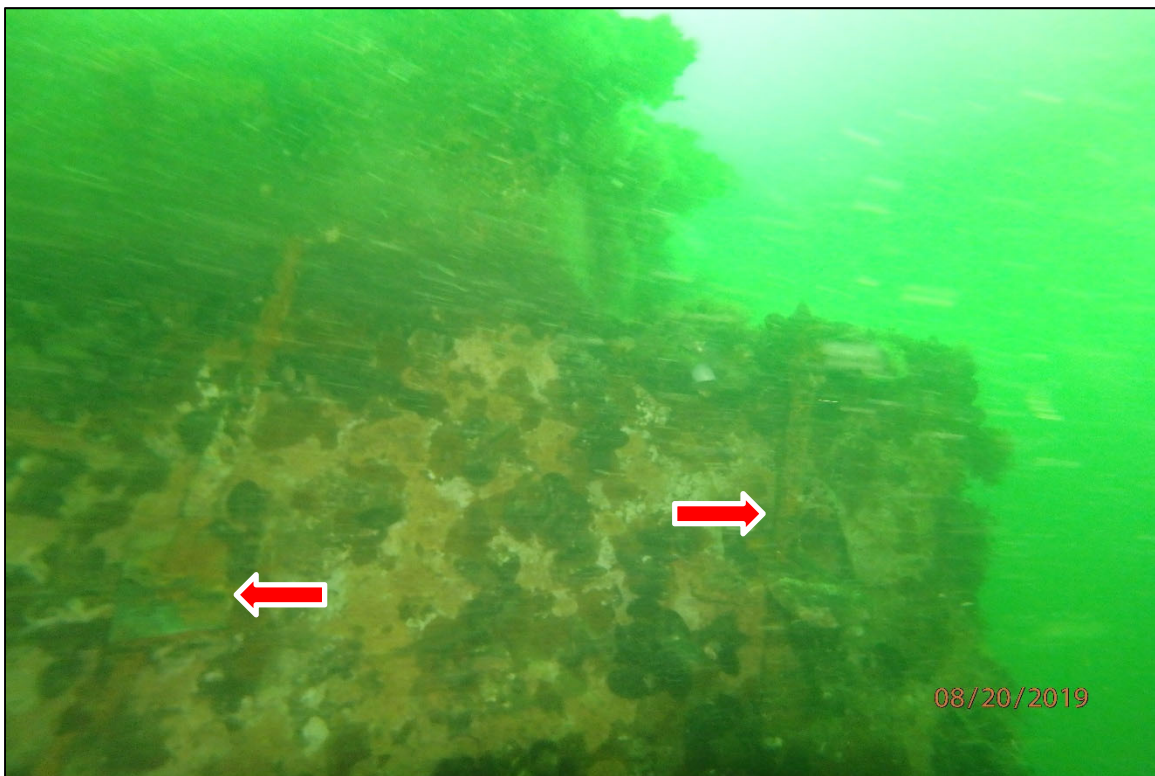


PHOTO 26. Typical Failed Anchor Bolts and Brackets W1 and W2 on Cleanout Chamber at the Southwest Corner (Looking Southeast).



PHOTO 27. Typical Failed Anchor Bolt/Bracket W1 on the West Face of the Cleanout Chamber.

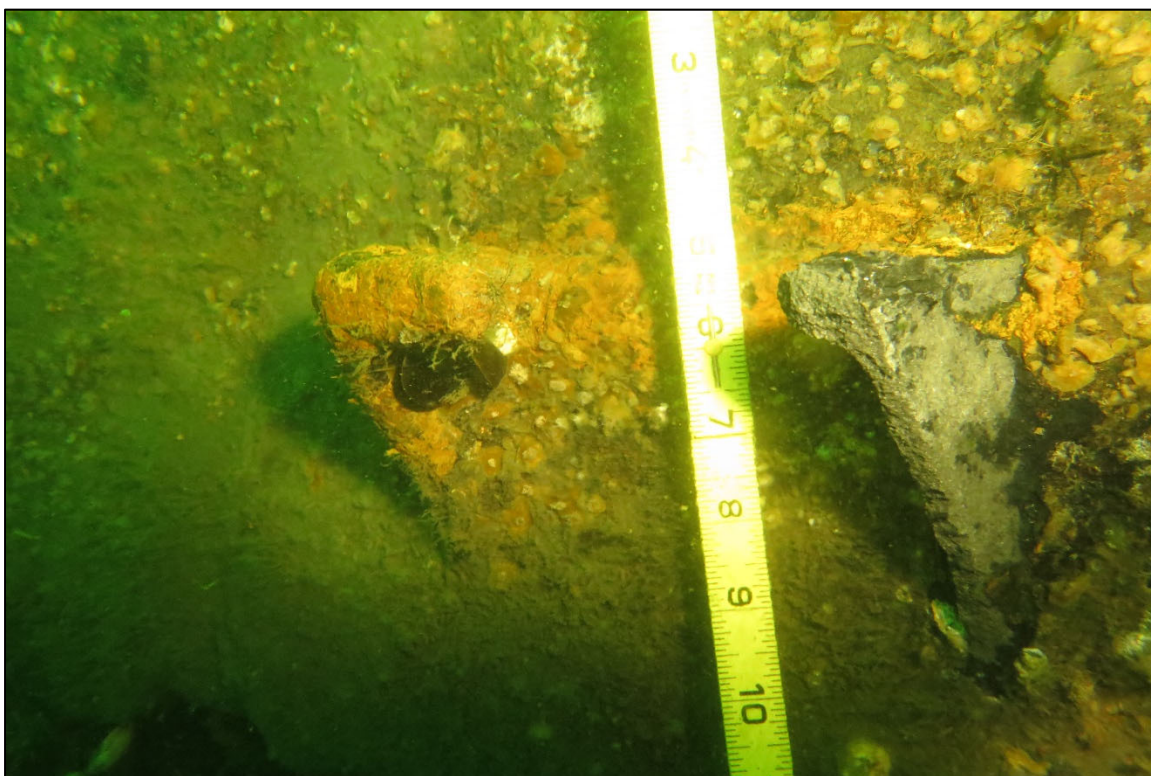


PHOTO 28. Typical Severe Corrosion at Failed Anchor Bracket W1 on Cleanout Chamber Cover.

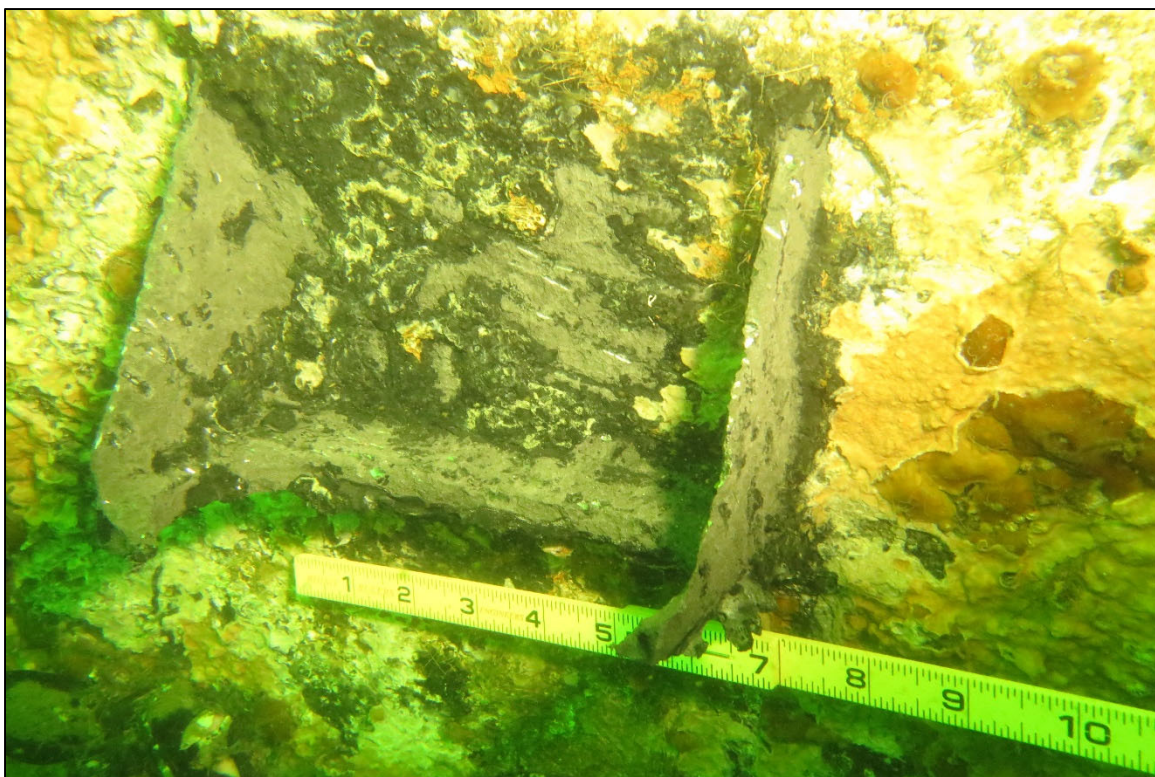


PHOTO 29. Typical Severely Corroded Bracket E1 on Chamber Base.

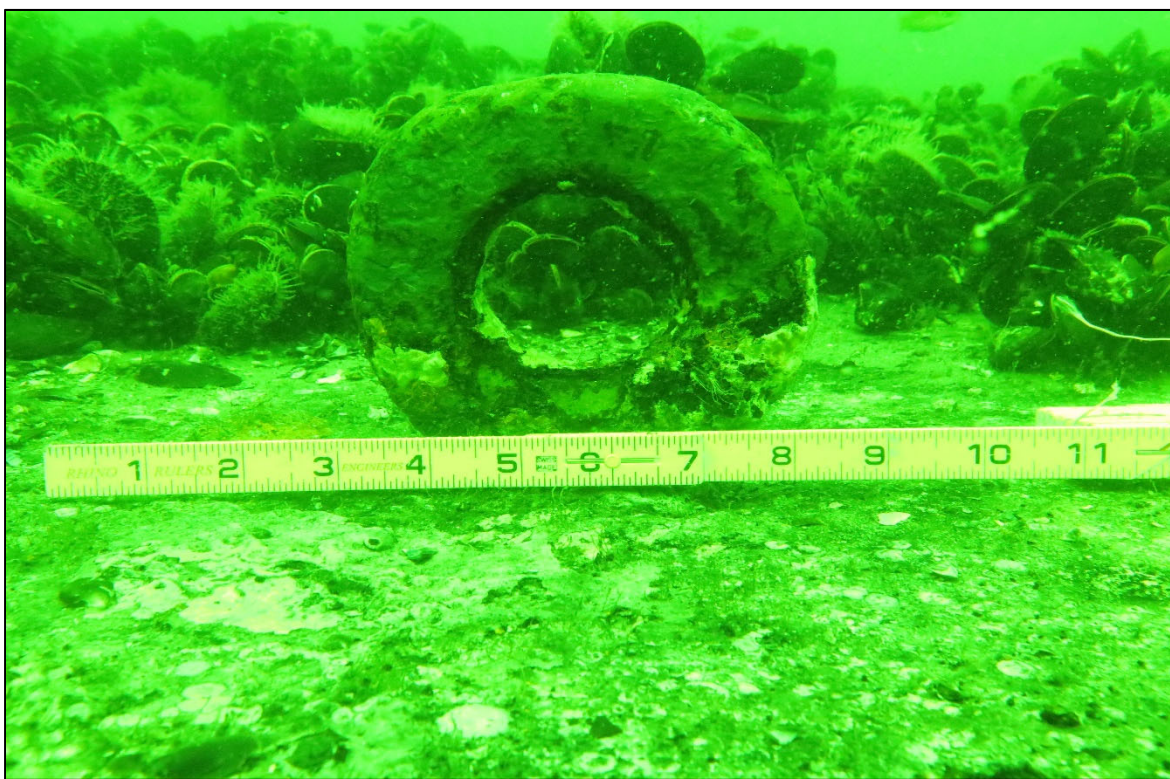


PHOTO 30. Typical Padeye on Cleanout Chamber Cap Southeast Padeye.

Appendix D

Field Inspection Summary Tables



BAY PARK SEWAGE TREATMENT PLANT
CEDAR CREEK OCEAN OUTFALL INSPECTION
TABLE 1
UNDERWATER INSPECTION SUMMARY

DIFFUSER OUTLET #	PORT ORIENTATION	PORT DIA. (in.)	% OBSTR- UCTED	CONCRETE CONDITION	FLOW		PADEYE CONDITIONS*				ANCHOR BOLT CONDITIONS*				MUDLINE COMPOSITION	DATE OF OBSERVATION
					DEGREE	TYPE	MN	MD	MJ	SV	MN	MD	MJ	SV		
W60	E-W	5.000000	0.0	Good	Strong	-	-	1	-	1	4	-	-	-	Hard Sand	8/12/2019
W59	N-S	5.000000	0.0	Good	Strong	-	-	-	1	1	4	-	-	-	Hard Sand	8/12/2019
W58	N-S	5.000000	0.0	Good	Strong	-	-	2	-	-	-	4	-	-	Hard Sand	8/12/2019
W57	N-S	5.000000	0.0	Good	Strong	-	-	2	-	-	-	4	-	-	Hard Sand	8/12/2019
W56	N-S	5.000000	0.0	Good	Strong	-	-	2	-	-	2	2	-	-	Hard Sand	8/12/2019
W55	N-S	5.000000	0.0	MD	Strong	-	-	2	-	-	4	-	-	-	Hard Sand	8/12/2019
W54	N-S	5.000000	0.0	Good	Strong	-	-	2	-	-	-	4	-	-	Hard Sand	8/12/2019
W53	N-S	5.000000	0.0	Good	Strong	-	-	2	-	-	1	3	-	-	Hard Sand	8/12/2019
W52	N-S	5.000000	0.0	Good	Strong	-	-	2	-	-	2	2	-	-	Hard Sand	8/12/2019
W51	N-S	5.000000	0.0	Good	Strong	-	-	2	-	-	1	3	-	-	Hard Sand	8/12/2019
W50	N-S	5.000000	0.0	Good	Strong	-	-	-	-	2	2	2	-	-	Hard Sand	8/12/2019
W49	N-S	5.000000	0.0	Good	Strong	-	-	2	-	-	-	4	-	-	Hard Sand	8/12/2019
W48	N-S	5.000000	0.0	Good	Strong	-	-	1	-	1	4	-	-	-	Hard Sand	8/12/2019
W47	N-S	5.000000	0.0	Good	Strong	-	-	1	1	-	1	-	3	-	Hard Sand	8/12/2019
W46	N-S	5.000000	0.0	Good	Strong	-	-	1	-	1	3	-	-	1	Hard Sand	8/12/2019
W45	N-S	5.000000	0.0	Good	Strong	-	1	-	-	1	4	-	-	-	Hard Sand	8/12/2019
W44	N-S	5.000000	0.0	Good	Strong	-	-	1	-	1	3	1	-	-	Hard Sand	8/12/2019
W43	N-S	5.000000	0.0	Good	Strong	-	1	-	-	1	4	-	-	-	Hard Sand	8/12/2019
W42	N-S	5.000000	0.0	Good	Strong	-	-	2	-	-	3	1	-	-	Hard Sand	8/12/2019
W41	N-S	5.000000	0.0	Good	Strong	-	-	1	-	1	4	-	-	-	Hard Sand	8/12/2019
W40	N-S	5.000000	0.0	Good	Strong	-	-	1	-	1	4	-	-	-	Hard Sand	8/14/2019
W39	N-S	5.000000	0.0	Good	Strong	-	-	1	-	1	4	-	-	-	Hard Sand	8/14/2019
W38	N-S	5.000000	15.0	Good	Strong	-	-	-	-	2	4	-	-	-	Hard Sand	8/14/2019
W37	N-S	5.000000	10.0	Good	Strong	-	-	2	-	-	4	-	-	-	Hard Sand	8/14/2019
W36	N-S	5.000000	0.0	Good	Moderate	Interrupted	-	2	-	-	1	3	-	-	Hard Sand	8/14/2019
W35	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	4	-	-	-	Hard Sand	8/14/2019
W34	N-S	5.000000	0.0	Good	Moderate	Interrupted	-	-	1	1	-	4	-	-	Hard Sand	8/14/2019
W33	N-S	5.000000	0.0	Good	Moderate	Interrupted	1	-	-	1	-	4	-	-	Hard Sand	8/14/2019
W32	N-S	5.000000	0.0	Good	Moderate	Interrupted	-	2	-	-	-	4	-	-	Hard Sand	8/14/2019
W31	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	-	4	-	-	Hard Sand	8/14/2019
W30	N-S	5.000000	0.0	Good	Moderate	Interrupted	-	2	-	-	4	-	-	-	Hard Sand	8/14/2019
W29	N-S	5.000000	0.0	Good	Moderate	Interrupted	-	2	-	-	4	-	-	-	Hard Sand	8/14/2019
W28	N-S	5.000000	0.0	Good	Moderate	Interrupted	-	2	-	-	4	-	-	-	Hard Sand	8/14/2019
W27	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	1	3	-	-	Hard Sand	8/14/2019
W26	N-S	5.000000	0.0	Good	Moderate	Interrupted	-	-	-	2	1	3	-	-	Hard Sand	8/14/2019
W25	N-S	5.000000	0.0	Good	Moderate	Interrupted	-	2	-	-	4	-	-	-	Hard Sand	8/14/2019
W24	N-S	5.000000	0.0	Good	Moderate	Interrupted	-	-	-	2	4	-	-	-	Hard Sand	8/14/2019
W23	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	4	-	-	-	Hard Sand	8/14/2019
W22	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	4	-	-	-	Hard Sand	8/14/2019
W21	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	2	2	-	-	Hard Sand	8/14/2019
W20	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	4	-	-	-	Hard Sand	8/14/2019
W19	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	2	2	-	-	Hard Sand	8/14/2019
W18	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	2	2	-	-	Hard Sand	8/14/2019
W17	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	1	3	-	-	Hard Sand	8/19/2019
W16	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	1	3	-	-	Hard Sand	8/19/2019
W15	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	2	2	-	-	Hard Sand	8/19/2019
W14	N-S	3.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	-	4	-	-	Hard Sand	8/19/2019
W13	N-S	3.000000	0.0	Good	Moderate	Interrupted	1	-	-	1	2	2	-	-	Hard Sand	8/19/2019
W12	N-S	3.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	2	2	-	-	Hard Sand	8/19/2019
W11	N-S	3.000000	0.0	Good	Moderate	Interrupted	-	-	-	2	1	3	-	-	Hard Sand	8/19/2019
W10	N-S	3.000000	0.0	Good	Moderate	Interrupted	1	1	-	-	4	-	-	-	Hard Sand	8/19/2019
W9	N-S	3.000000	0.0	Good	Moderate	Interrupted	-	-	2	-	1	3	-	-	Hard Sand	8/19/2019
W8	N-S	3.000000	0.0	Good	Moderate	Interrupted	-	-	-	2	-	3	-	1	Hard Sand	8/19/2019
W7	N-S	3.000000	0.0	Good	Moderate	Interrupted	-	-	-	2	2	2	-	-	Hard Sand	8/19/2019
W6	N-S	3.000000	0.0	Good	Moderate	Interrupted	-	-	-	2	-	3	-	1	Hard Sand	8/19/2019
W5	N-S	3.000000	0.0	Good	Moderate	Interrupted	-	-	-	2	-	2	-	2	Hard Sand	8/19/2019
W4	N-S	3.000000	0.0	Good	Moderate	Interrupted	-	-	-	2	1	3	-	-	Hard Sand	8/19/2019
W3	N-S	3.000000	0.0	Good	Moderate	Interrupted	-	-	-	2	4	-	-	-	Hard Sand	8/19/2019
W2	N-S	3.000000	0.0	Good	Moderate	Interrupted	-	-	1	1	3	1	-	-	Hard Sand	8/19/2019
W1	N-S	3.000000	0.0	Good	Moderate	Interrupted	-	-	-	2	2	2	-	-	Hard Sand	8/19/2019
E1	N-S	3.000000	0	Good	Moderate	Interrupted	-	-	2	-	-	2	-	2	Hard Sand	8/21/2019
E2	N-S	3.000000	0.0	Good	Moderate	Interrupted	1	-	1	-	2	1	-	1	Hard Sand	8/21/2019
E3	N-S	3.000000	0.0	Good	Moderate	Interrupted	1	-	-	1	4	-	-	-	Hard Sand	8/21/2019
E4	N-S	3.000000	0.0	Good	Moderate	Interrupted	1	-	-	1	3	1	-	-	Hard Sand	8/21/2019
E5	N-S	3.000000	0.0	Good	Moderate	Interrupted	1	-	-	1	3	1	-	-	Hard Sand	8/21/2019
E6	N-S	3.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	3	-	-	1	Hard Sand	8/21/2019
E7	N-S	3.000000	0.0	Good	Moderate	Interrupted	-	-	2	-	2	-	2	-	Hard Sand	8/21/2019
E8	N-S	3.000000	0.0	Good	Moderate	Interrupted	-	-	-	2	1	2	-	1	Hard Sand	8/21/2019
E9	N-S	3.000000	0.0	Good	Moderate	Interrupted	1	1	-	-	1	-	1	2	Hard Sand	8/21/2019
E10	N-S	3.000000	0.0	Good	Moderate	Interrupted	-	-	-	2	-	4	-	-	Hard Sand	8/21/2019
E11	N-S	3.000000	0.0	Good	Moderate	Interrupted	1	1	-	-	3	1	-	-	Hard Sand	8/21/2019
E12	N-S	3.000000	0.0	Good	Moderate	Interrupted	1	1	-	-	2	1	1	-	Hard Sand	8/21/2019
E13	N-S	3.000000	0.0	Good	Moderate	Interrupted	1	1	-	-	-	2	1	1	Hard Sand	8/21/2019
E14	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	-	2	-	2	Hard Sand	8/21/2019
E15	N-S	5.000000	0.0	Good	Moderate	Interrupted	1	-	-	1	-	3	-	1	Hard Sand	8/21/2019
E16	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	2	1	-	1	Hard Sand	8/21/2019
E17	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	1	3	-	-	Hard Sand	8/21/2019
E18	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	-	4	-	-	Hard Sand	8/21/2019
E19	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	2	2	-	-	Hard Sand	8/21/2019
E20	N-S	5.000000	0.0	Good	Moderate	Interrupted	-	2	-	-	1	3	-	-	Hard Sand	8/16/2019
E21	N-S	5.000000	0.0	Good	Moderate	Interrupted	-	2	-	-	1	3	-	-	Hard Sand	8/16/2019
E22	N-S	5.000000	0.0	Good	Moderate	Interrupted	-	1	1	-	1	3	-	-	Hard Sand	8/16/2019
E23	N-S	5.000000	0.0	Good	Moderate	Interrupted	-	2	-	-	-	3	-	1	Hard Sand	8/16/2019
E24	N-S	5.000000	0.0	Good	Moderate	Interrupted	-	2	-	-	4	-	-	-	Hard Sand	8/16/2019
E25	N-S	5.000000	0.0	Good	Moderate	Interrupted	-	2	-	-	-	2	-	2	Hard Sand	8/16/2019
E26	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	-	3	1	-	Hard Sand	8/16/2019
E27	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	1	2	-	1	Hard Sand	8/16/2019
E28	N-S	5.000000	0.0	Good	Moderate	Interrupted	1	1	-	-	-	4	-	-	Hard Sand	8/16/2019



**BAY PARK SEWAGE TREATMENT PLANT
CEDAR CREEK OCEAN OUTFALL INSPECTION
TABLE 1
UNDERWATER INSPECTION SUMMARY**

DIFFUSER OUTLET #	PORT ORIENTATION	PORT DIA. (in.)	% OBSTR- UCTED	CONCRETE CONDITION	FLOW		PADEYE CONDITIONS*				ANCHOR BOLT CONDITIONS*				MUDLINE COMPOSITION	DATE OF OBSERVATION
					DEGREE	TYPE	MN	MD	MJ	SV	MN	MD	MJ	SV		
E29	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	-	4	-	-	Hard Sand	8/16/2019
E30	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	4	-	-	-	Hard Sand	8/16/2019
E31	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	1	2	-	1	Hard Sand	8/16/2019
E32	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	2	2	-	-	Hard Sand	8/16/2019
E33	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	-	4	-	-	Hard Sand	8/16/2019
E34	N-S	5.000000	0.0	Good	Moderate	Interrupted	-	2	-	-	-	4	-	-	Hard Sand	8/16/2019
E35	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	-	4	-	-	Hard Sand	8/16/2019
E36	N-S	5.000000	0.0	Good	Moderate	Interrupted	-	1	-	1	1	3	-	-	Hard Sand	8/15/2019
E37	N-S	5.000000	0.0	Good	Moderate	Interrupted	1	-	-	1	-	4	-	-	Hard Sand	8/15/2019
E38	N-S	5.000000	0.0	Good	Moderate	Interrupted	-	1	-	1	1	3	-	-	Hard Sand	8/15/2019
E39	N-S	5.000000	0.0	Good	Moderate	Interrupted	-	2	-	-	1	3	-	-	Hard Sand	8/15/2019
E40	N-S	5.000000	0.0	Good	Moderate	Interrupted	-	1	1	-	1	3	-	-	Hard Sand	8/15/2019
E41	N-S	5.000000	0.0	Good	Moderate	Interrupted	-	-	-	2	-	4	-	-	Hard Sand	8/15/2019
E42	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	4	-	-	-	Hard Sand	8/15/2019
E43	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	1	2	1	-	Hard Sand	8/15/2019
E44	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	-	4	-	-	Hard Sand	8/15/2019
E45	N-S	5.000000	0.0	Good	Moderate	Interrupted	1	-	-	1	-	4	-	-	Hard Sand	8/15/2019
E46	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	-	4	-	-	Hard Sand	8/15/2019
E47	N-S	5.000000	0.0	Good	Moderate	Interrupted	1	1	-	-	1	3	-	-	Hard Sand	8/15/2019
E48	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	-	3	1	-	Hard Sand	8/15/2019
E49	N-S	5.000000	0.0	Good	Moderate	Interrupted	1	1	-	-	4	-	-	-	Hard Sand	8/15/2019
E50	N-S	5.000000	0.0	Good	Moderate	Interrupted	1	1	-	-	-	4	-	-	Hard Sand	8/15/2019
E51	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	1	3	-	-	Hard Sand	8/15/2019
E52	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	-	4	-	-	Hard Sand	8/15/2019
E53	N-S	5.000000	0.0	Good	Moderate	Interrupted	2	-	-	-	-	4	-	-	Hard Sand	8/15/2019
E54	N-S	5.000000	0.0	Good	Steady	-	-	2	-	-	-	4	-	-	Hard Sand	8/15/2019
E55	N-S	5.000000	0.0	Good	Steady	-	-	2	-	-	-	4	-	-	Hard Sand	8/15/2019
E56	N-S	5.000000	0.0	Good	Steady	-	1	-	-	1	2	2	-	-	Hard Sand	8/15/2019
E57	N-S	5.000000	0.0	Good	Steady	-	-	2	-	-	-	4	-	-	Hard Sand	8/15/2019
E58	N-S	5.000000	0.0	Good	Steady	-	2	-	-	-	3	1	-	-	Hard Sand	8/15/2019
E59	N-S	5.000000	0.0	Good	Steady	-	2	-	-	-	2	2	-	-	Hard Sand	8/15/2019
E60	N-S	5.000000	0.0	Good	Steady	-	-	-	-	2	4	-	-	-	Hard Sand	8/15/2019

*Note: MN = Minor, MD = Moderate, MJ = Major, SV = Severe



**BAY PARK SEWAGE TREATMENT PLANT
CEDAR CREEK OCEAN OUTFALL INSPECTION
TABLE 2
BATHYMETRIC SURVEY SUMMARY**

DIFFUSER OUTLET #	COORDINATES		TOP OF DIFFUSER OUTLET ELEVATION (ft)	DEPTH TO TOP OF DIFFUSER OUTLET FROM MLW (ft)	AVERAGE EXPOSED HEIGHT ABOVE MUDLINE (ft)
	LATITUDE	LONGITUDE			
W60	40.566094	-73.450933	-43.0	-40.4	8.3
W59	40.566117	-73.450869	-43.5	-40.9	8.1
W58	40.566133	-73.450803	-43.8	-41.2	7.9
W57	40.566150	-73.450733	-45.6	-43.0	6.1
W56	40.566169	-73.450667	-44.5	-41.9	7.2
W55	40.566192	-73.450603	-44.6	-42.0	7.0
W54	40.566206	-73.450531	-44.4	-41.8	7.4
W53	40.566222	-73.450467	-44.1	-41.5	7.5
W52	40.566244	-73.450397	-44.7	-42.1	6.8
W51	40.566261	-73.450333	-44.5	-41.9	7.1
W50	40.566281	-73.450264	-44.7	-42.0	7.0
W49	40.566294	-73.450197	-44.7	-42.1	6.9
W48	40.566319	-73.450106	-44.3	-41.7	7.0
W47	40.566339	-73.450042	-44.5	-41.9	7.1
W46	40.566369	-73.449978	-45.5	-42.9	5.7
W45	40.566372	-73.449903	-44.7	-42.1	6.6
W44	40.566386	-73.449836	-44.9	-42.3	6.5
W43	40.566411	-73.449769	-45.0	-42.4	6.4
W42	40.566425	-73.449700	-44.7	-42.1	6.6
W41	40.566444	-73.449633	-44.5	-41.8	6.7
W40	40.566464	-73.449567	-44.6	-42.0	6.5
W39	40.566478	-73.449500	-44.7	-42.1	6.3
W38	40.566494	-73.449431	-44.7	-42.1	6.2
W37	40.566514	-73.449361	-44.8	-42.1	6.4
W36	40.566536	-73.449272	-44.6	-42.0	6.0
W35	40.566550	-73.449200	-44.6	-42.0	6.0
W34	40.566569	-73.449136	-44.7	-42.0	6.0
W33	40.566581	-73.449067	-44.6	-42.0	5.8
W32	40.566597	-73.449000	-44.6	-42.0	5.9
W31	40.566614	-73.448928	-44.4	-41.8	6.0
W30	40.566631	-73.448861	-44.4	-41.8	6.0
W29	40.566644	-73.448794	-44.4	-41.8	5.9
W28	40.566661	-73.448725	-44.2	-41.6	5.9
W27	40.566675	-73.448656	-44.2	-41.6	6.1
W26	40.566694	-73.448589	-43.9	-41.3	6.7
W25	40.566714	-73.448519	-43.8	-41.1	6.6
W24	40.566736	-73.448431	-43.8	-41.2	6.6
W23	40.566747	-73.448358	-43.7	-41.0	6.8
W22	40.566764	-73.448289	-43.6	-41.0	6.8
W21	40.566778	-73.448222	-43.5	-40.9	7.1
W20	40.566792	-73.448156	-43.0	-40.4	7.7
W19	40.566814	-73.448086	-42.2	-39.6	8.6
W18	40.566828	-73.448017	-42.1	-39.5	8.8
W17	40.566847	-73.447950	-42.0	-39.4	8.9
W16	40.566867	-73.447881	-42.2	-39.5	8.8
W15	40.566878	-73.447811	-42.8	-40.1	8.3
W14	40.566894	-73.447744	-42.8	-40.2	8.2
W13	40.566914	-73.447675	-43.4	-40.8	7.6
W12	40.566931	-73.447581	-44.5	-41.9	6.7
W11	40.566947	-73.447511	-45.0	-42.4	6.3
W10	40.566961	-73.447444	-45.6	-43.0	5.9
W9	40.566978	-73.447378	-45.7	-43.1	5.9



**BAY PARK SEWAGE TREATMENT PLANT
CEDAR CREEK OCEAN OUTFALL INSPECTION
TABLE 2
BATHYMETRIC SURVEY SUMMARY**

DIFFUSER OUTLET #	COORDINATES		TOP OF DIFFUSER OUTLET ELEVATION (ft)	DEPTH TO TOP OF DIFFUSER OUTLET FROM MLW (ft)	AVERAGE EXPOSED HEIGHT ABOVE MUDLINE (ft)
	LATITUDE	LONGITUDE			
W8	40.566997	-73.447308	-46.2	-43.5	5.5
W7	40.567011	-73.447242	-46.5	-43.8	5.4
W6	40.567031	-73.447172	-46.8	-44.1	5.3
W5	40.567044	-73.447100	-46.5	-43.9	5.7
W4	40.567064	-73.447036	-46.9	-44.2	5.7
W3	40.567078	-73.446967	-46.8	-44.2	5.8
W2	40.567094	-73.446900	-46.5	-43.8	6.5
W1	40.567114	-73.446703	-46.1	-43.5	7.3
Central Cleanout Chamber	40.567169	-73.446778	-45.1	-53.9	NW 8.2'
					NE 7.8'
					SW 8.1'
					SE 7.5'
E1	40.567136	-73.446703	-45.3	-42.7	7.9
E2	40.567153	-73.446636	-45.0	-42.4	7.9
E3	40.567172	-73.446567	-44.6	-42.0	8.1
E4	40.567189	-73.446500	-44.5	-41.9	8.3
E5	40.567208	-73.446431	-44.3	-41.7	8.2
E6	40.567225	-73.446364	-44.4	-41.8	8.1
E7	40.567242	-73.446292	-44.3	-41.7	8.1
E8	40.567256	-73.446222	-44.3	-41.7	7.9
E9	40.567269	-73.446156	-44.5	-41.8	7.7
E10	40.567286	-73.446089	-44.4	-41.8	7.8
E11	40.567303	-73.446022	-44.4	-41.8	7.7
E12	40.567319	-73.445947	-44.8	-42.2	7.2
E13	40.567336	-73.445881	-44.9	-42.3	7.1
E14	40.567353	-73.445814	-45.1	-42.4	7.0
E15	40.567367	-73.445744	-45.1	-42.5	6.9
E16	40.567389	-73.445653	-46.8	-44.2	5.1
E17	40.567406	-73.445586	-46.1	-43.5	5.8
E18	40.567419	-73.445517	-46.2	-43.6	5.2
E19	40.567436	-73.445450	-46.1	-43.5	5.9
E20	40.567450	-73.445378	-45.7	-43.0	6.2
E21	40.567472	-73.445314	-45.3	-42.7	6.4
E22	40.567486	-73.445244	-45.3	-42.6	6.1
E23	40.567503	-73.445172	-45.2	-42.6	6.4
E24	40.567519	-73.445106	-45.3	-42.7	6.0
E25	40.567536	-73.445039	-45.2	-42.6	5.9
E26	40.567553	-73.444969	-45.2	-42.6	5.7
E27	40.567569	-73.444900	-45.5	-42.9	5.2
E28	40.567589	-73.444808	-45.9	-43.3	4.6
E29	40.567603	-73.444742	-45.8	-43.2	4.6
E30	40.567619	-73.444675	-45.8	-43.2	4.4
E31	40.567639	-73.444608	-45.6	-43.0	4.5
E32	40.567658	-73.444542	-45.4	-42.8	4.5
E33	40.567675	-73.444469	-44.9	-42.3	4.7
E34	40.567689	-73.444403	-44.7	-42.1	4.8
E35	40.567706	-73.444331	-44.7	-42.1	4.7
E36	40.567722	-73.444267	-44.5	-41.9	4.7
E37	40.567736	-73.444197	-44.3	-41.7	4.8
E38	40.567758	-73.444131	-44.4	-41.7	5.0
E39	40.567778	-73.444064	-44.2	-41.6	5.0
E40	40.567797	-73.443972	-44.0	-41.3	4.9



**BAY PARK SEWAGE TREATMENT PLANT
CEDAR CREEK OCEAN OUTFALL INSPECTION
TABLE 2
BATHYMETRIC SURVEY SUMMARY**

DIFFUSER OUTLET #	COORDINATES		TOP OF DIFFUSER OUTLET ELEVATION (ft)	DEPTH TO TOP OF DIFFUSER OUTLET FROM MLW (ft)	AVERAGE EXPOSED HEIGHT ABOVE MUDLINE (ft)
	LATITUDE	LONGITUDE			
E41	40.567814	-73.443906	-43.7	-41.1	5.0
E42	40.567833	-73.443836	-43.7	-41.0	5.0
E43	40.567850	-73.443769	-43.6	-41.0	4.8
E44	40.567864	-73.443700	-43.7	-41.1	4.7
E45	40.567881	-73.443631	-44.0	-41.4	4.3
E46	40.567903	-73.443564	-44.2	-41.6	4.2
E47	40.567919	-73.443494	-44.6	-42.0	3.4
E48	40.567936	-73.443433	-43.9	-41.3	4.3
E49	40.567958	-73.443364	-43.9	-41.3	4.3
E50	40.567972	-73.443292	-44.0	-41.4	4.2
E51	40.567989	-73.443225	-44.2	-41.6	4.0
E52	40.568014	-73.443136	-44.7	-42.1	3.3
E53	40.568025	-73.443067	-44.7	-42.1	3.3
E54	40.568039	-73.443000	-44.5	-41.9	3.4
E55	40.568058	-73.442933	-44.4	-41.8	3.1
E56	40.568075	-73.442864	-44.4	-41.7	3.2
E57	40.568092	-73.442794	-44.0	-41.4	3.8
E58	40.568108	-73.442731	-43.9	-41.2	4.0
E59	40.568125	-73.442661	-43.8	-41.2	4.0
E60	40.568144	-73.442594	-43.5	-40.9	4.3

Appendix E

Field Notes



**BAY PARK SEWAGE TREATMENT PLANT
CEDAR CREEK OCEAN OUTFALL INSPECTION
General Notes**

STRUCTURE	ELEMENT	COMMENTS
Diffuser	Padeyes	Generally oriented N-S. Typically exhibit Minor to Moderate corrosion with SL ranging from 5-25%. In isolated locations the padeyes exhibit AD-SV corrosion with up to 100% SL.
Diffuser	Outlet Ports	Outlet ports are generally oriented N-S. Ports measure 6" in diameter. Concrete cap measures 4"+/- thick at the ports. Flow on diffuser lines was observed as strong and uninterrupted to moderate and partially interrupted.
Diffuser	Concrete Cap	Cover is 2.4' high/thick. Marine growth covers 100% of diffuser with 0.5" thick hard barnacle (100%) with mussel growth up to 10" thick (40-50%).
Diffuser	Concrete Riser	Marine growth covers 100% of diffuser with 0.5" thick hard barnacle (100%) with mussel growth up to 10" thick (40-50%). Isolated areas of soft concrete detected at the top of the riser along the joint with softness to a depth of 0.5" to 0.75". Bottom composition consists of hard sand.
Diffuser	Anchor Bolts	Generally oriented at quadrants on NW, NE, SW, SE faces. Older bolts are 1.25" diameter square headed with the head at the bottom bracket and the shaft of the bolt extending roughly 6" above the top bracket. Newer bolts are 3/4" to 7/8" diameter hex headed HDG or 1" to 1.125" SS and are threaded rod extending 1" to 3" above and below the brackets. Older bolts typically exhibit Moderate corrosion with up to 25% Section Loss. Newer HDG bolts typically exhibit Minor corrosion with 5-10% SL with washers exhibiting 30-40% SL. Smaller sizing of the newer bolts coupled with deterioration of washers results in loose connection identified as bolts that are slightly loose to the diver when sounded. Newer SS bolts typically exhibit No Defects.
Diffuser	Anchor Brackets	Generally oriented at quadrants on NW, NE, SW, SE faces. Typically Moderate to Major corrosion with visually estimated Section Loss ranging from 15-40% with brackets typically exhibiting MD corrosion with up to 25% SL. Brackets are pitted 1/16-1/8" deep.
Cleanout Chamber	Base Structure	The base structure measures 12'L (N-S) x 9'W (E-W) and varies in exposed height above the mudline measuring 7.5' to 8.2'. The concrete is intact with minor spalls noted at the top and bottom of the walls. The walls of the chamber were measured to be 12" thick. Five (5) tie-down anchor brackets are secured to the east and west faces with brackets centered approximately 14.5" below the top of the concrete base.
0.153472222	0.661111111	The concrete cover measures 9.3' W x 12.3' L (9'-4"W x 12'-4"L) x 14" Thick and has a 2" to 3" high recess at the bottom that mconforms to the measured dimensions of the chamber base. The concrete cover was fount to be rotated approximately 30 degrees clockwise on its' bearing resulting in an insufficient seal and direct release of effluent. The primary source of release was found to be at the northwest corner of the chamber where the open area measured roughly 3' wide by 4.5' long resulting in a triangular opening approximately 7sf in size. A second, significantly smaller source point was detected at the southwest corner of the chamber where a triangular opening approximately 6" wide by 6" long was found. Upon investigation it was determined that all 10 anchor points securing the concrete cover to the base have failed. It is unclear if external forces contributed to the failure of the cover. No vessel anchors or line were discovered within the immediate vicinity.
0.661805556	0.665972222	The concrete cover was originally secured to the base utilizing 10 pairs of steel anchor brackets (5 on the west and 5 on the east). Each bracket was designed with a slotted opening to accommodate tie-down bolts, similar in construction to those present on the diffuser caps. This was determined through examination of the small percentage of brackets that remain partially intact. As-built plans of the cleanout chamber were not available for reference. In general, these brackets exhibit Moderate to Severe deterioration and many of the brackets showed indications of repair by use of 1/2" thick steel plates to span the deteriorated slotted bearing plates of the brackets. It is clear that all such repairs have failed to varied degrees. It is likely that the base steel is too heavily pitted to adequately accept welds. Please refer to the attached sketch and representative photos of conditions described. Brackets are numbered in ascending order from W-E and S-N.



BAY PARK SEWAGE TREATMENT PLANT
CEDAR CREEK OCEAN OUTFALL INSPECTION
DIFFUSER INSPECTION NOTES

VIDEO START	VIDEO STOP	DIFFUSER OUTLET #	TAG PRESENT?	# OF PORTS	PORT ORIENTAT ION	PORT DIA. (in.)	% OBSTR.	CONCRETE CONDITION	FLOW (Y/N)	FLOW (IN/OUT)	# OF PADEYES AND CONDITION	# OF BOLTS AND CONDITION	MUDLINE COMP.	COMMENTS	DATE	DIVER
3:06 PM	3:12 PM	W60	No	2	E-W	5	0	Good	Y - strong	Out	2 - North - Severe, South - Moderate	4 - <10%, SS	Hard Sand		8/12/2019	JNF
2:57:00 PM, 3:13 PM	3:06:00 PM, 3:14 PM	W59	No	2	N-S	5	0	Good	Y - strong	Out	2 - South - Missing, North - MD-AD corrosion	4 - <10%, 2 bolts hand tight (newer). HDG	Hard Sand	2-bolts loose due to deterioration of washer. Newer bolts typically have lesser SL of bolt	8/12/2019	JNF
2:53:00 PM, 3:14 PM	2:57:00 PM, 3:21 PM	W58	No	2	N-S	5	10	Good	Y - strong	Out	2 - minor pitting 1/16"D, up to 25%SL	4 - 10-15% SL, HDG	Hard Sand	3:17 PM loose bolt due to corroded washer. Old bolts are headed bolts, newer bolts are threaded rod HDG or SS as noted.	8/12/2019	JNF
2:42:00 PM, 3:21 PM	2:53:00 PM, 3:23 PM	W57	No	2	N-S	5	0	Good	Y - strong	Out	2 - minor pitting 1/16"D	4 - 10-15% SL, HDG, all old bolts, tight	Hard Sand	Cover is 2.4' high/thick, bolts 1.125 to 1.25" in diameter with square head on bottom, hex head at top. 3.6-ft max dia. On cap. Concrete 4"+ thick. 3:21 PM typical diffuser port. Marine growth covers 100% of diffuser with 0.5" thick hard barnacle (100%) with mussel growth up to 10" thick (40-50%).	8/12/2019	JNF
3:23 PM	3:28 PM	W56	No	2	N-S	5	0	Good	Y - strong	Out	2 - minor pitting 1/16"D, up to 25%SL	2 - newer bolts (loose), 2 - older and solid - 10-15% SL	Hard Sand		8/12/2019	JNF
3:28 PM	3:39 PM	W55	No	2	N-S	5	0	Moderate	Y - strong	Out	2 - minor pitting 1/16"D, up to 25%SL, MD	3 - old bolts firm. 1 - newer bolt loose	Hard Sand	3:29:00 PM - MD deterioration at top corner of diffuser riser has soft concrete at south face, 0.75-1" deep 3"H x 2.5"W (3:32 PM)	8/12/2019	JNF
3:39 PM	3:43 PM	W54	No	2	N-S	5	0	Good	Y - strong	Out	2 - minor pitting 1/16"D, up to 25%SL, MD	4 - older bolts, MD SL up to 25%	Hard Sand	3:39 PM Typical marine growth	8/12/2019	JNF
3:41 AM	3:52 PM	W53	No	2	N-S	5	0	Good	Y - strong	Out	2 - minor pitting 1/16"D, 10-15%SL, MD	3 - older bolts, MD SL up to 25% 1 - newer bolt, up to 10% SL, loose, washer at 40% SL	Hard Sand	3:43 PM Flagging Flow	8/12/2019	MJD
3:53 PM	3:59 PM	W52	No	2	N-S	5	0	Good	Y-Strong	Out	2 - minor pitting 1/16"D, 10-15%SL, MD	2 - older bolts, MD SL up to 25% 2 - newer bolts up to 10% SL, loose, washer at 40% SL	Hard Sand	Typical Note - SL on bolt brackets is moderate, new bolts approximately 3/4" diameter, old bolts approximately 1" diameter	8/12/2019	MJD
4:01 PM	4:06 PM	W51	No	2	N-S	5	0	Good	Y-Strong	Out	2 - minor pitting 1/16"D, 10-15%SL, MD	3 - older bolts, MD SL up to 25% 1 - newer bolt, up to 10% SL, loose, washer at 40% SL	Hard Sand	4:01 PM 1" thick steel plate 4:05 PM good bolt loose washer	8/12/2019	MJD
4:07 PM	4:11 PM	W50	No	2	N-S	5	0	Good	Y-Strong	Out	2 - South minor pitting 1/16"D, 10-15%SL, North SV - 50% SL northern eye	2 - older bolts, MD SL up to 25% 2 - newer bolts up to 10% SL, loose, washer at 40% SL	Hard Sand	4:11 PM 50% SL of pad eye	8/12/2019	MJD
4:12 PM	4:16 PM	W49	No	2	N-S	5	0	Good	Y-Strong	Out	2 - minor pitting 1/16"D, 10-15%SL, MD	4 - older bolts, MD SL up to 25%	Hard Sand		8/12/2019	MJD
4:16 PM	4:23 PM	W48	No	2	N-S	5	0	Good	Y-Strong	Out	1 - North Eye Only, minor pitting 1/16"D, 10-15%SL, MD. South Eye missing	4 - <10%, SS (3/4" bolts)	Hard Sand		8/12/2019	MJD
4:24 PM	5:30 PM	W47	No	2	N-S	5	0	Good	Y-Strong	Out	North Eye, 40-50% SL, ADV South Eye, 1/16"D, 10-15%SL, MD	3 - older bolts, MD SL up to 25% (south bolt up to 30-40%, ADV) 1 - newer bolt, up to 10% SL, loose, washer at 40% SL	Hard Sand		8/12/2019	MJD
4:30 PM	4:37 PM	W46	No	2	N-S	5	0	Good	Y-Strong	Out	South Eye Only, 1/16"D, 10-15%SL, MD	3 - <10%, SS (3/4" bolts) NORTHWEST BOLT MISSING	Hard Sand	4:31 PM diffuser head is on a 45 degree angle to the north. NORTHWEST BOLT MISSING	8/12/2019	MJD
6:33 PM	6:42 PM	W45	Yes	2	N-S	5	0	Good	Y-Strong	Out	South eye - SV - 80%SL, North Eye - MN - 10% SL	4 - older HDG bolts MN - <10% SL	Hard Sand	6:35 PM Tag present wire tied to both pad-eyes - black tag with white lettering 3x6.	8/12/2019	ZBF
6:42 PM	6:53 PM	W44	No	2	N-S	5	0	Good	Y-Strong	Out	North Eye - MD - 20% SL, South Eye - SV - Missing	3 - older HDG bolts - MN - 5-10 % SL, 1 - older HDG bolt MD - 20% SL	Hard Sand		8/12/2019	ZBF
6:53 PM	7:05 PM	W43	No	2	N-S	5	0	Good	Y-Strong	Out	North Eye - MN - 5% SL, South Eye - SV - 75% SL localized	3 - older HDG bolts, MN 5-10% SL, 1 - newer HDG bolt (East bolt) loose.	Hard Sand		8/12/2019	ZBF
7:05 PM	7:13 PM	W42	No	2	N-S	5	0	Good	Y-Strong	Out	North Eye - MD - 25% SL, South Eye - MD - 25% SL	2 - older HDG bolts - MN - 5-10% SL 1 - older HDG bolt - MD - 25% SL, 1 - newer HDG bolt - 5% SL on bolt, loose AD SL of washer.	Hard Sand		8/12/2019	ZBF
7:13 PM	7:24 PM	W41	No	2	N-S	5	0	Good	Y-Strong	Out	North Eye - MD - 20% SL, South Eye - SV - Missing	3 - older HDG bolts, MN 5-10% SL, 1 - newer HDG bolt (East bolt) - MN - 5% SL on bolt, loose due to AD SL of washer.	Hard Sand		8/12/2019	ZBF
9:41 AM	9:55 AM	W40	No	2	N-S	5	0	Good	Y-Strong	Out	North Eye - MD - 20% SL, South Eye - SV - Missing	3 - older HDG bolts, MN 5-15% SL, 1 - newer HDG bolt MN - 5% SL on bolt, loose due to AD SL of washer.	Hard Sand		8/14/2019	NPO



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9:56 AM	10:10 AM	W39	No	2	N-S	5	0	Good	Y-Strong	Out	North Eye - MD - 25% SL, South Eye - SV - Missing	4 - older bolts, MN 5-10% SL, Brackets are MD-AD with 1/16" deep pitting	Hard Sand		8/14/2019	NPO
10:10 AM	10:20 AM	W38	No	2	N-S	5	0 - mussel g	Good	Y-Strong	Out	North Eye - SV - >75% SL, South Eye - SV - Missing	4 - older bolts, MN 5-10% SL, Brackets are MD-AD with 1/16" deep pitting	Hard Sand	Travel line (1/2" +/- rope) on North side of diffuser between hardware and riser.	8/14/2019	NPO
10:23 AM	10:34 AM	W37	No	2	N-S	5	0 - mussel g	Good	Y-Strong	Out	North Eye - MD - 25% SL, South Eye - MD - 15-20% SL	4 - older bolts, MN 10-15% SL	Hard Sand		8/14/2019	NPO
11:11 AM	11:29 AM	W36	No	2	N-S	5	0	Good	Y - Moderate partially interrupted	Out	North Eye - MD - 25% SL, South Eye - MD - 15-20% SL	3 - older bolts, MN-MD 10-25% SL, 1 newer HDG - MN - 5-10% SL	Hard Sand	Marker Buoy on southern padeye, block on west side. 11:15 AM top cap is one monolithic piece. As-built measurements taken. 6.0' exposed ht. west side. Older bolt diameter measured 1-1/16" dia. = 15%SL. Newer HDG bolt measures 3/4"-7/8" in diameter	8/14/2019	JNF
11:29 AM	11:34 AM	W35	No	2	N-S	5	0	Good	Y - Moderate partially interrupted	Out	North Eye - MN - 15% SL, South Eye - MN 10-15% SL	4 - older bolts, MN- 10-15% SL	Hard Sand		8/14/2019	JNF
11:34 AM	11:39 AM	W34	No	2	N-S	5	0	Good	Y - Moderate partially interrupted	Out	South Eye - SV - 50% SL, North Eye - AD - 40% SL	4 - older bolts, MN-MD- 10-20% SL	Hard Sand		8/14/2019	JNF
11:39 AM	11:43 AM	W33	No	2	N-S	5	0	Good	Y - Moderate partially interrupted	Out	2 - North Eye - MN - 15% SL, South Eye - SV - 50-60% SL	4 - older bolts, MN-MD- 10-20% SL	Hard Sand	Travel line affixed to south eye may have accelerated corrosion from abrasion.	8/14/2019	JNF
11:43 AM	11:46 AM	W32	No	2	N-S	5	0	Good	Y - Moderate partially interrupted	Out	2 - MN-MD 15-20% SL	4 - older bolts, MN-MD- 10-20% SL	Hard Sand		8/14/2019	JNF
11:46 AM	11:50 AM	W31	No	2	N-S	5	0	Good	Y - Moderate partially interrupted	Out	2 - MN 10% SL	4 - older bolts, MN-MD- 10-20% SL	Hard Sand	11:48 AM NE bolt slightly bent at top above the nut to the NE	8/14/2019	JNF
11:50 AM	11:56 AM	W30	No	2	W-E	5	0	Good	Y - Moderate partially interrupted	Out	2 - (W-E) - MN-MD 15-20% SL	4 - newer HDG bolts MN- 10%SL, 3 are loose,	Hard Sand	11:50:00 AM Diffusers and padeyes face W-E, atypical alignment. Diver confirmed location by referencing back to W36.	8/14/2019	JNF
11:56 AM	11:59 AM	W29	No	2	N-S	5	0	Good	Y - Moderate partially interrupted	Out	2 - (N-S) - MD 25% SL	4 - newer HDG bolts MN- 10%SL, All 4 are slightly loose,	Hard Sand		8/14/2019	JNF
11:59 AM	12:03 PM	W28	No	2	N-S	5	0	Good	Y - Moderate partially interrupted	Out	2 - (N-S) - MD 20% SL	4 - Stainless Steel Bolts, No deterioration, NE bolt is slightly loose.	Hard Sand	12:00 PM Stainless steel bolt measured at 1"-1.125" in diameter	8/14/2019	JNF
12:03 PM	12:06 PM	W27	No	2	N-S	5	0	Good	Y - Moderate partially interrupted	Out	2 - (N-S) - MN 10-15% SL	3 - older bolts, MN-MD- 10-25% SL, 1-newer bolt MN - <10% SL.	Hard Sand	SW bolt bent inward slightly.	8/14/2019	JNF
12:06 PM	12:10 PM	W26	No	2	N-S	5	0	Good	Y - Moderate partially interrupted	Out	0 - Both padeyes are missing	3 - older bolts, MN-MD- 15-20% SL, 1-newer bolt MN - <10% SL (slightly loose).	Hard Sand	12:09 PM, Both padeyes are missing, small void where North padeye should be, does not penetrate cap, no flow present	8/14/2019	JNF
1:14 PM	1:21 PM	W25	No	2	N-S	5	0	Good	Y - Moderate partially interrupted	Out	2 - North MD-MJ 30-40% SL, South - SV Missing	3 - older bolts, MN 10-15% SL, 1-newer bolt MN - <10% SL (slightly loose).	Hard Sand	Marker buoy set on W25, clipped to northern padeye.	8/14/2019	ZBF
1:22 PM	1:27 PM	W24	No	2	N-S	5	0	Good	Y - Moderate partially interrupted	Out	0 - Both padeyes are missing	4 - older bolts, MN 10% SL	Hard Sand		8/14/2019	ZBF



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1:27 PM	1:37 PM	W23	No	2	N-S	5	0	Good	Y - Moderate partially interrupted	Out	2 - MN 15% SL	2 - older bolts, MN 10% SL 2 - newer HDG bolts MN <10% SL, slightly loose.	Hard Sand	Exposed height = 6.8' +/-	8/14/2019	ZBF
1:37 PM	1:46 PM	W22	No	2	N-S	5	0	Good	Y - Moderate partially interrupted	Out	2 - MN 10% SL	4 - older bolts, MN 10-15% SL	Hard Sand		8/14/2019	ZBF
1:47 PM	1:56 PM	W21	Yes	2	N-S	5	0	Good	Y - Moderate partially interrupted	Out	2 - North MN 5% SL, South MD 30% SL	2 - older bolts, MN-MD- 10-20% SL, 2 - newer bolt MN - <10% SL, loose.	Hard Sand	1:53 PM Tag present, loose on top partially connected to south side, second tag located connected to both pad eyes, no markings on tag. Location verified.	8/14/2019	ZBF
1:56 PM	2:07 PM	W20	Yes	2	N-S	5	0	Good	Y - Moderate partially interrupted	Out	2 - MN 20% SL	4 - older bolts, MN 10-15% SL	Hard Sand	Exposed height = 7'9" +/- , confirm 5" portal opening	8/14/2019	ZBF
2:08 PM	2:13 PM	W19	Yes	2	N-S	5	0	Good	Y - Moderate partially interrupted	Out	2 - North MN 20% SL, South MN 10% SL	2 - older bolts, MN-MD- 10-20% SL, 2 - newer bolt MN - <10% SL, loose.	Hard Sand		8/14/2019	ZBF
2:14 PM	2:21 PM	W18	Yes	2	N-S	5	0	Good	Y - Moderate partially interrupted	Out	2 - MN 15% SL	2 - older bolts, MN-MD- 10-20% SL, 2 - newer bolt MN - <10% SL, loose.	Hard Sand	Inspected to completion	8/14/2019	ZBF
10:47 AM	10:55 AM	W17	Yes*	2	N-S	5	0	Good	Y - Moderate partially interrupted	Out	2 - MN 5-10% SL	3 - older bolts, MN-MD- 10-20% SL, 1 - newer HDG bolt MN - <10% SL, loose with MD corrosion of washer, not tightened fully on install.	Hard Sand	Buoy previously secured to the south pad eye. 10:51 AM SE bolt is loose, diver tightened by hand. *Tag is present but not legible, white lettering is missing.	8/19/2019	ZBF
10:55 AM	11:04 AM	W16	No	2	N-S	5	0	Good	Y - Moderate partially interrupted	Out	2 - MN 5-10% SL	3 - older bolts, MN-MD- 10-20% SL, 1 - newer HDG bolt MN - <10% SL, loose with MD corrosion of washer, not tightened fully on install.	Hard Sand	11:02 AM Brackets MN 10-15% SL.	8/19/2019	ZBF
11:04 AM	11:13 AM	W15	No	2	N-S	5	0	Good	Y - Moderate partially interrupted	Out	2 - MN 5-10% SL	2 - older bolts, MN-MD- 10-20% SL, 2 - newer HDG bolt MN - <10% SL, loose with AD corrosion of washer and bracket at bolt hole.	Hard Sand	11:08 AM SE bolt has oblong opening in top bracket caused by corrosion producing larger than normal amount of play in the connection. Diver confirmed port diameter to be 5".	8/19/2019	ZBF
11:13 AM	11:20 AM	W14	Yes*	2	N-S	3	0	Good	Y - Moderate partially interrupted	Out	2 - MN 10-15% SL	4 - older bolts, MN-MD- 10-20% SL	Hard Sand	*Tag is present but not legible, white lettering is missing. Exposed height = 8'-8" +/- , 12:15 PM Diver confirmed port diameter to be 3".	8/19/2019	ZBF
11:20 AM	11:26 AM	W13	No	2	N-S	3	0	Good	Y - Moderate partially interrupted	Out	2 - North: MN 5-10% SL, South: SV 100% SL	2 - older bolts, MN-MD- 10-20% SL, 2 - newer HDG bolt MN - <10% SL	Hard Sand	11:23 AM South padeye 100% SL. Diver confirmed port diameter to be 3".	8/19/2019	ZBF
11:26 AM	11:33 AM	W12	No	2	N-S	3	0	Good	Y - Moderate partially interrupted	Out	2 - MN 5-10% SL	2 - older bolts, MN-MD- 10-20% SL, 2 - newer HDG bolt MN - <10% SL with minor play in the connection.	Hard Sand	Diver confirmed port diameter to be 3".	8/19/2019	ZBF
11:33 AM	11:40 AM	W11	No	2	N-S	3	0	Good	Y - Moderate partially interrupted	Out	1 - North: Missing, South: MD 30% SL.	3 - older bolts, MN-MD- 10-20% SL, 1 - newer HDG bolt MN - <10% SL with minor play in the connection.	Hard Sand	Diver confirmed port diameter to be 3".	8/19/2019	ZBF
11:40 AM	11:45 AM	W10	No	2	E-W	3	0	Good	Y - Moderate partially interrupted	Out	2 - South: MN 5-10% SL, North: MD 20% SL	4 - newer HDG bolt MN - <10% SL with minor play in the connection.	Hard Sand	Exposed height = 5'9" +/- , Portal opening measured at 3" diameter, diver back-tracked to determine point of change. 3" opening back to W12. Ports and padeyes oriented E-W	8/19/2019	ZBF
12:20 PM	12:23 PM	W9	No	2	N-S	3	0	Good	Y - Moderate partially interrupted	Out	2 - MJ 30-40% SL	3 - older bolts, MN-MD- 10-20% SL, 1 - newer HDG bolt MN - <10% SL and is loose with a large amount of play in the connection.	Hard Sand	Marker buoy secured to south padeye. 11:46 AM ID plate attached to south padeye. Diver confirmed port diameter to be 3". NW and SE and NE bolts are older bolt that is inverted and is slightly loose. SW bolt is newer and very loose due to SV corrosion of top washer.	8/19/2019	JNF



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12:23 PM	12:29 PM	W8	No	2	N-S	3	0	Good	Y - Moderate partially interrupted	Out	2 - MJ 60-70% SL	4 - older bolts (inverted), MN-MD- 10-20% SL, The NE bolt has SV corrosion and is disconnected.	Hard Sand	Anchor brackets have up to 25% SL. 12:28 PM NE bolt has Severe SL and is disconnected at the top bracket.	8/19/2019	JNF
12:29 PM	12:34 PM	W7	No	2	N-S	3	0	Good	Y - Moderate partially interrupted	Out	0 - South padeye failed due to SL on stem of eye. North eye is missing.	2 - older bolts (inverted), MN-MD- 10-20% SL, 2 - newer HDG bolts with MN 5-10% SL of bolt and MJ SL of washer	Hard Sand	12:34 PM Loose newer HDG bolt with MJ corrosion of washer	8/19/2019	JNF
12:34 PM	12:41 PM	W6	No	2	N-S	3	0	Good	Y - Moderate partially interrupted	Out	1 - South: Missing, North: SV 50% SL	4 - older bolts (inverted), MN-MD- 10-20% SL, The SE bolt has SV corrosion and is disconnected.	Hard Sand	12:35 PM Diver inspecting hardware sounded SE bolt to failure.	8/19/2019	JNF
12:41 PM	12:47 PM	W5	Yes*	2	N-S	3	0	Good	Y - Moderate partially interrupted	Out	1 - South: 100% SL, North: 90% SL.	4 - older bolts (inverted), 2 bolts MN-MD- 10-20% SL, The NW bolt has SV corrosion and is disconnected. SE bolt has 80% SL at middle of shank.	Hard Sand	Exposed height = 5'11" +/- , Portal opening confirmed at 3" diameter. 12:43 PM NW bolt has failed at bottom bracket due to 100% SL. Tag present, but not legible.	8/19/2019	JNF
12:47 PM	12:55 PM	W4	No	2	N-S	3	0	Good	Y - Moderate partially interrupted	Out	1 - North: 100% SL, South: 90% SL.	3 - older bolts (inverted), MN-MD- 10-20% SL, 1- newer HDG bolt at 10% SL.	Hard Sand		8/19/2019	JNF
12:55 PM	1:01 PM	W3	No	2	N-S	3	0	Good	Y - Moderate partially interrupted	Out	1 - South: failed under sounding, North similar condition, but in place	4 - newer HDG bolts slightly loose, MN - 5-10% SL	Hard Sand	12:55 PM Padeyes appear to be shop fabricated with nut welded to top cap. South padeye was loose and failed under sounding. North padeye similar condition, but still in place.	8/19/2019	JNF
1:02 PM	1:05 PM	W2	No	2	N-S	3	0	Good	Y - Moderate partially interrupted	Out	1 - South: Missing, North: MJ 30-40% SL	3 - newer HDG bolts slightly loose, MN - 5-10% SL. 1 - Old bolt, MN-MD 10-20% SL	Hard Sand		8/19/2019	JNF
1:05 PM	1:11 PM	W1	No	2	N-S	3	0	Good	Y - Moderate partially interrupted	Out	1 - North: SV 100% SL, South: SV 70% SL	2 - older bolts (inverted), MN-MD- 10-20% SL, 2- newer HDG bolt at 10% SL, slightly loose when sounded.	Hard Sand	Diffuser is leaning slightly to the north. Exposed height = 5'11" +/- , Portal opening confirmed at 3" diameter. Marker Buoy secured to the south padeye, block on top of cap.	8/19/2019	JNF
1:12 PM	1:17 PM	Clean-out Hatch	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Hard Sand	Rectangular 14" thick concrete lid atop the clean-out hatch is twisted/spun on its seat. Majority of flow is coming from the NW corner of the lid (1:16 PM). Anchor-bolts for tie-down are detached. Approx. size of hatch = 10'W x 15'L.	8/19/2019	JNF
4:05 PM	4:18 PM	E1	Yes	2	N-S	3	0	Good	Y - Moderate Partially Interrupted	Out	2 - South: AD 30-40% SL, North: AD 30-40% SL	4 - older bolts, NE SV 70-80% SL, SE MD 10-20% SL, NW MD 10-20% SL, SW 70% SL between brackets	Hard Sand	Tag present and legible. Photo taken on Olympus on 8/20/19. Exposed height = 7'-10" +/- . Diver confirmed 3 to 3.5' +/- portal opening. 4:05 PM NE bolt 70-80% SL just above bottom bracket. SE bolt travel line tied off. 4:14 PM SW bolt SV SL.	8/21/2019	NPO
3:56 PM	4:03 PM	E2	No	2	N-S	3	0	Good	Y - Moderate Partially Interrupted	Out	2 - South: MN 10-20% SL, North: AD 40-50% SL	2 - newer HDG bolts, SE/SW MN <10% SL, 2 - older bolts, NE MD 10- 20% SL, NW SV 100% SL	Hard Sand	4:02 PM 100% SL on NW bolt above bottom bracket.	8/21/2019	NPO
3:48 PM	3:56 PM	E3	Yes	2	N-S	3	0	Good	Y - Moderate Partially Interrupted	Out	2 - South: MN 10-20% SL, North: SV 60-70% SL	4 - Stainless Steel Bolts, No deterioration. Bolts are bent.	Hard Sand	Tag present confirming location. SE bolt is SS and bent inward between brackets. Appears as though the cap has been twisted clockwise.	8/21/2019	NPO
3:41 PM	3:48 PM	E4	Yes	2	N-S	3	0	Good	Y - Moderate Partially Interrupted	Out	2 - South: SV 50% SL, North: MN 10-20% SL	1 - older bolt, NE MD 10-20% SL, 3 - newer HDG bolts, SE MN <10% SL, SW MN <10% SL, NW MN <10% SL	Hard Sand	Tag present confirming location. Travel line on SW bolt	8/21/2019	NPO
3:29 PM	3:40 PM	E5	Yes	2	N-S	3	0	Good	Y - Moderate Partially Interrupted	Out	2 - South: SV 100% SL, North: MN 10-20% SL	1 - older bolt, NW MD 10-20%, 3 - newer bolts, slightly loose: NE MN <10% SL, SE MN <10% SL, SW MN <10% SL	Hard Sand	Travel line on SW bolt. Exposed height = 8'7" +/- . Diver confirmed 3.5" +/- portal opening	8/21/2019	NPO



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VIDEO START	VIDEO STOP	DIFFUSER OUTLET #	TAG PRESENT?	# OF PORTS	PORT ORIENTAT ION	PORT DIA. (in.)	% OBSTR.	CONCRETE CONDITION	FLOW (Y/N)	FLOW (IN/OUT)	# OF PADEYES AND CONDITION	# OF BOLTS AND CONDITION	MUDLINE COMP.	COMMENTS	DATE	DIVER
3:16 PM	3:29 PM	E6	Yes	2	N-S	3	0	Good	Y - Moderate Partially Interrupted	Out	2 - MN 10-20% SL	1 - older bolt, SW SV 50-60% (bottom 4" at top bracket), 3 - newer bolts, slightly loose NE MN <10% SL slightly loose, SE MN <10% SL, NW MN <10% SL	Hard Sand	MJD tied buoy off to south pad eye. Exposed height = 8'5" +/-. Diver confirmed 3.5" +/- portal opening	8/21/2019	NPO
1:35 PM	1:42 PM	E7	Yes	2	N-S	3	0	Good	Y - Moderate Partially Interrupted	Out	2 - 30-40% SL on south, <10% on north	2 - old bolts, NE 30% SL, NW 40% SL, 2 - newer bolts, SE <10% SL, SW <10% SL	Hard Sand	MJD inspection complete	8/21/2019	MJD
1:28 PM	1:35 PM	E8	Yes	2	N-S	3	0	Good	Y - Moderate Partially Interrupted	Out	1 - 40-50% SL on south, missing on north	1 - older bolt, SW 50-60% (upper 4" at top bracket), 3 - newer bolts, SE <10% SL slightly loose, NE 10-15% SL, NW 10-15% SL	Hard Sand		8/21/2019	MJD
1:18 PM	1:27 PM	E9	Yes	2	N-S	3	0	Good	Y - Moderate Partially Interrupted	Out	2 - 20-30% SL on south, 5- 10% on north	3 - older bolts, NE 80% SL, NW 30- 40%, SW 60-70% SL, 1 - newer bolt, SE <10% SL	Hard Sand	General - when we find instances of heavier SL it is usually within 4-6" of bracket	8/21/2019	MJD
1:08 PM	1:18 PM	E10	No	2	N-S	3	0	Good	Y - Moderate Partially Interrupted	Out	2 - 60% SL on south, 70% on north	4 - newer bolts, SE 10-20% SL, NE 10- 15% SL, SW 10-15% SL, NW 10-15% SL	Hard Sand	up to 20% SL in sw bracket	8/21/2019	MJD
1:01 PM	1:07 PM	E11	Yes*	2	N-S	3	0	Good	Y - Moderate Partially Interrupted	Out	2 - 10% SL on south, 10-20% on north	3 - old bolts, NE <10% SL, SW 10% SL, NW 10-20%, 1 - newer bolt, SE <10% little loose	Hard Sand		8/21/2019	MJD
12:54 PM	1:00 PM	E12	Yes	2	N-S	3	0	Good	Y - Moderate Partially Interrupted	Out	2 - 10-20% SL on south, 5- 10% on north	2 - older bolts, NW 30-40% SL, NE 10-20% SL, 2 - newer bolts, SE/ <10% SL	Hard Sand		8/21/2019	MJD
12:39 PM	12:51 PM	E13	No	2	N-S	3	0	Good	Y - Moderate Partially Interrupted	Out	2 - 5-10% SL on south, 10- 15% on north	4 - older bolts, NE bolt 50-60% SL, SE bolt 20-30% SL, SW bolt 30-40% SL, NW bolt 30% SL	Hard Sand	Diver secured marker buoy on north padeye. Slight chamfering in outside of diffuser port, 3-3.5", Local 100% SL on bottom NE bracket	8/21/2019	MJD
11:34 AM	11:44 AM	E14	Yes	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - MN 5-10% SL	2 - older bolts, MN-MD- 10-20% SL, 2 - older bolts have failed.	Hard Sand	11:37 AM NW bolt (older bolt) has up to 100% SL above bottom bracket, failed bolt. 11:39 AM SW bolt (older bolt) has up to 100% SL above bottom bracket, failed bolt. Two tags present confirming location - one legible. Diver measured portal opening at 5" diameter.	8/21/2019	ZBF
11:15 AM	11:34 AM	E15	Yes	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - South: MN 5-10% SL, North: SV 90% SL	3 - NW bolt is newer HDG MD 10- 20% SL, SE bolt newer HDG MD 25% SL, SW BOLT IS MISSING, NE bolt older MD 10-20% SL.	Hard Sand	SW Bolt is missing, anchor line present next to diffuser heade, possible fouling incident resulting in failed connector. 11:20 AM photo taken of typical condition of anchor bracket at SW bolt location. Exposed height = 6'7" +/- , confirm 5" portal opening. 11:29 AM Tag present confirming location.	8/21/2019	ZBF
11:03 AM	11:14 AM	E16	Yes	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - MN 5-10% SL	2 - older bolts, MN-MD- 10-20% SL, 1 - newer bolt MN - <10% SL. 1- NE BOLT IS MISSING	Hard Sand	11:09 AM NE bolt is missing. 11:13 AM Tag present confirming location	8/21/2019	ZBF
10:56 AM	11:03 AM	E17	No	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - MN 5-10% SL	3 - older bolts, MN-MD- 10-20% SL, 1 - newer bolt MN - <10% SL.	Hard Sand		8/21/2019	ZBF
10:49 AM	10:56 AM	E18	Yes*	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - MN 5-10% SL	4 - older bolts, MN-MD- 10-20% SL	Hard Sand	*Tag is present but not legible, white lettering is missing.	8/21/2019	ZBF
10:43 AM	10:49 AM	E19	No	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - MN 5-10% SL	2 - older bolts, MN-MD- 10-20% SL, 2 - newer HDG bolts MN - <10% SL, slightly loose.	Hard Sand	JEF tied off to norther pad eye. Diver measured port hole opening at 5" diameter.	8/21/2019	ZBF



**BAY PARK SEWAGE TREATMENT PLANT
CEDAR CREEK OCEAN OUTFALL INSPECTION
DIFFUSER INSPECTION NOTES**

VIDEO START	VIDEO STOP	DIFFUSER OUTLET #	TAG PRESENT?	# OF PORTS	PORT ORIENTAT ION	PORT DIA. (in.)	% OBSTR.	CONCRETE CONDITION	FLOW (Y/N)	FLOW (IN/OUT)	# OF PADEYES AND CONDITION	# OF BOLTS AND CONDITION	MUDLINE COMP.	COMMENTS	DATE	DIVER
12:37 PM	12:47 PM	E20	Yes	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - MD 10-20% SL	3 - older bolts, MN-MD- 10-20% SL, 1 - newer bolt MN - <10% SL	Hard Sand	Inspection Complete. Exposed height = 6'2" +/- , confirm 5" portal opening	8/16/2019	JEF
12:29 PM	12:36 PM	E21	Yes	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - MD 10-20% SL	3 - older bolts, MN-MD- 10-20% SL, 1 - newer bolt MN - <10% SL	Hard Sand		8/16/2019	JEF
12:21 PM	12:27 PM	E22	No	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - North 30% SL, South 30- 40% SL	3 - older bolts, MN-MD- 10-20% SL, 1 - newer bolt MN - <10% SL	Hard Sand		8/16/2019	JEF
12:13 PM	12:20 PM	E23	No	2	N-S	5	0	Moderate	Y - Moderate Partially Interrupted	Out	2 - MD 10-20% SL	4 - older bolts, MN-MD- 10-20% SL, SE up to 50% SL,	Hard Sand		8/16/2019	JEF
12:05 PM	12:13 PM	E24	No	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - MD 10-20% SL	4 - newer bolts MN - <10% SL, loose.	Hard Sand		8/16/2019	JEF
11:50 AM	12:02 PM	E25	No	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - MD 10-15% SL	4 - older bolts, MN-MD- NW and SE 10-20% SL, NE And SW bolts up to 50-90% SL	Hard Sand	Exposed height = 5'10" +/- , confirm 5" portal opening	8/16/2019	JEF
11:15 AM	11:21 AM	E26	No	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - MN 5-10% SL	4 - older bolts, MN-MD- 10-30% SL, NW bolt 30% SL	Hard Sand	ZBF tied off buoy on northern pad eye. Inspection complete.	8/16/2019	ZBF
11:03 AM	11:02 AM	E27	No	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - MN 5-10% SL	2 - older bolts, MN-MD- 10-20% SL, 1 - newer bolt MN - <10% SL, loose. 1 - bolt missing	Hard Sand		8/16/2019	ZBF
10:57 AM	11:02 AM	E28	No	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - North MN 10% SL, South MN 15% SL	4 - older bolts, MN-MD- 10-20% SL	Hard Sand		8/16/2019	ZBF
10:52 AM	10:56 AM	E29	No	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - MN 5-10% SL	4 - older bolts, MN-MD- 10-20% SL	Hard Sand		8/16/2019	ZBF
10:41 AM	10:51 AM	E30	No	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - MN 5-10% SL	4 - newer bolts MN - <10% SL, loose.	Hard Sand	Exposed height = 4'5" +/- , confirm 5" portal opening	8/16/2019	ZBF
10:34 AM	10:41 AM	E31	No	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - MN 5-10% SL	3 - older bolts, MN-MD- 10-20% SL, SW older up to 75% SL, 1 - newer bolt MN - <10% SL	Hard Sand	Northwest bolt up to 75% SL on old bolt 10:38:00 AM	8/16/2019	ZBF
10:26 AM	10:33 AM	E32	No	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - MN 5-10% SL	2 - older bolts, MN-MD- 10-20% SL, 2 - newer bolt MN - <10% SL, loose.	Hard Sand		8/16/2019	ZBF
10:21 AM	10:25 AM	E33	No	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - MN 5-10% SL	4 - older bolts, MN-MD- 10-20% SL	Hard Sand		8/16/2019	ZBF
9:39 AM	9:47 AM	E34	Yes	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - MD 10-20% SL	4 - older bolts, MN-MD- 10-20% SL	Hard Sand		8/16/2019	NPO
9:17 AM	9:30 AM	E35	No	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - MN 5-10% SL	4 - older bolts, MN-MD- 10-20% SL	Hard Sand	JEF tied buoy off on north pad eye. Exposed height = 4'6" +/- , confirm 5" portal opening GOOD VIDEO OF THE MODULAR FLOW 9:25 AM	8/16/2019	NPO



**BAY PARK SEWAGE TREATMENT PLANT
CEDAR CREEK OCEAN OUTFALL INSPECTION
DIFFUSER INSPECTION NOTES**

VIDEO START	VIDEO STOP	DIFFUSER OUTLET #	TAG PRESENT?	# OF PORTS	PORT ORIENTATION	PORT DIA. (in.)	% OBSTR.	CONCRETE CONDITION	FLOW (Y/N)	FLOW (IN/OUT)	# OF PADEYES AND CONDITION	# OF BOLTS AND CONDITION	MUDLINE COMP.	COMMENTS	DATE	DIVER
2:03 PM	2:10 PM	E36	Yes	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - North MD 10-20% SL, South 100% SL	3 - older bolts, MN-MD- 10-20% SL, 1 - newer bolt MN - <10% SL	Hard Sand	Inspection Complete	8/15/2019	JEF
1:53 PM	2:00 PM	E37	Yes	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - North MN 10% SL, South 100% SL	4 - older bolts, MN-MD- 10-20% SL	Hard Sand		8/15/2019	JEF
1:46 PM	1:52 PM	E38	No	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - North MD 10-20% SL, South up to 50% SL	3 - older bolts, MN-MD- 10-20% SL, 1 - newer bolt MN - <10% SL	Hard Sand		8/15/2019	JEF
1:37 PM	1:46 PM	E39	No	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - North MD 10-20% SL, South up to 30% SL	3 - older bolts, MN-MD- 10-20% SL, 1 - newer bolt MN - <10% SL	Hard Sand		8/15/2019	JEF
1:24 PM	1:37 PM	E40	Yes	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - North up to 40% SL, South MN 10-20% SL	3 - older bolts, MN-MD- 10-20% SL, 1 - newer bolt MN - <10% SL	Hard Sand	Exposed height = 4'9" +/- , confirm 5" portal opening	8/15/2019	JEF
1:12 PM	1:22 PM	E41	No	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	1 - North missing, South up to 50% SL	4 - older bolts, MN-MD- 10-20% SL	Hard Sand		8/15/2019	JEF
1:01 PM	1:11 PM	E42	No	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - MN 5-10% SL	4 - Stainless Steel Bolts, No deterioration	Hard Sand	ZBF Tied off buoy on northern pad eye	8/15/2019	JEF
12:20 PM	12:27 PM	E43	No	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - MN 5-10% SL	3 - older bolts, MN-MD- 10-20% SL, SW older bolt bent above nut NW 30-35% SL, 1 - newer bolt MN - <10% SL, loose.	Hard Sand	Inspection Complete	8/15/2019	ZBF
12:15 PM	12:19 PM	E44	No	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - MN 5-10% SL	4 - older bolts, MN-MD- 10-20% SL, SE slight movement	Hard Sand		8/15/2019	ZBF
12:07 PM	12:14 PM	E45	No	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	1 - South MN 10% SL, North Missing	4 - older bolts, MN-MD- 10-20% SL	Hard Sand	Exposed height = 4'5" +/- , confirm 5" portal opening	8/15/2019	ZBF
12:00 PM	12:06 PM	E46	No	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - MN 5-10% SL	4 - older bolts, MN-MD- 10-20% SL	Hard Sand		8/15/2019	ZBF
11:56 AM	12:00 PM	E47	No	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - North MN 5-10 % SL, South MN 20% SL	3 - older bolt, MN-MD- 10-20% SL, 1 - newer bolt MN - <10% SL	Hard Sand		8/15/2019	ZBF
11:49 AM	11:55 AM	E48	No	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - MN 5-10% SL	4 - older bolts, MN-MD- 10-20% SL, NW bolt 35-40% SL	Hard Sand		8/15/2019	ZBF
11:43 AM	11:48 AM	E49	No	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - North MD 15% SL, South MN 5-10% SL	4 - Stainless Steel Bolts, No deterioration	Hard Sand		8/15/2019	ZBF
11:33 AM	11:43 AM	E50	No	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - North MD 20% SL, South MN 5-10% SL	4 - older bolts, MN-MD- 10-20% SL	Hard Sand	Exposed height = 4'1" +/- , confirm 5" portal opening, diameter of cap 3'7" (just a check)	8/15/2019	ZBF
11:26 AM	11:32 AM	E51	No	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - MN 5-10% SL	3 - older bolt, MN-MD- 10-20% SL, 1 - newer bolt MN - <10% SL	Hard Sand		8/15/2019	ZBF



**BAY PARK SEWAGE TREATMENT PLANT
CEDAR CREEK OCEAN OUTFALL INSPECTION
DIFFUSER INSPECTION NOTES**

VIDEO START	VIDEO STOP	DIFFUSER OUTLET #	TAG PRESENT?	# OF PORTS	PORT ORIENTATION	PORT DIA. (in.)	% OBSTR.	CONCRETE CONDITION	FLOW (Y/N)	FLOW (IN/OUT)	# OF PADEYES AND CONDITION	# OF BOLTS AND CONDITION	MUDLINE COMP.	COMMENTS	DATE	DIVER
11:20 AM	11:26 AM	E52	No	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - MN 5-10% SL	4 - older bolts, MN-MD- 10-20% SL, SW bolt loose	Hard Sand		8/15/2019	ZBF
11:13 AM	11:20 AM	E53	No	2	N-S	5	0	Good	Y - Moderate Partially Interrupted	Out	2 - MN 5-10% SL	4 - older bolts, MN-MD- 10-20% SL	Hard Sand	NPO tied buoy off on northern pad eye, For the FLOW it does not slow down as much as on 8/14/19 but not steady like 8/12/19	8/15/2019	ZBF
10:02 AM	10:07 AM	E54	No	2	N-S	5	0	Good	Y - Steady	Out	2 - MD 10-15% SL	4 - older bolts, MN-MD- 10-20% SL	Hard Sand	Completed inspection	8/15/2019	NPO
9:53 AM	10:01 AM	E55	No	2	N-S	5	0	Good	Y - Steady	Out	2 - MD 10-15% SL	4 - older bolts, MN-MD- 10-20% SL	Hard Sand	Exposed height = 3'4" +/- , confirm 5" portal opening	8/15/2019	NPO
9:48 AM	9:53 AM	E56	No	2	N-S	5	0	Good	Y - Steady	Out	2 - North MN 10% SL, South 100% SL Whole eye moves, could be disconnecting from concrete	2 - older bolts, MN-MD- 10-20% SL, 2 - newer bolt MN - <10% SL, loose.	Hard Sand		8/15/2019	NPO
9:44 AM	9:48 AM	E57	No	2	N-S	5	0	Good	Y - Steady	Out	2 - MD 10-15% SL	4 - older bolts, MN-MD- 10-20% SL, Southwestern bolt 20-30% SL	Hard Sand		8/15/2019	NPO
9:38 AM	9:44 AM	E58	Yes	2	N-S	5	0	Good	Y - Steady	Out	2 - MN 10% SL	1 - older bolt, MN-MD- 20-25% SL, 3 - newer bolts MN - <10% SL, loose.	Hard Sand	Net is caught on the diffuser, did not obstruct diver	8/15/2019	NPO
9:33 AM	9:37 AM	E59	No	2	N-S	5	0	Good	Y - Steady	Out	2 - MN 10% SL	2 - older bolts, MN-MD- 10-20%, 1 at 50% SL, 2 - newer bolts MN - <10% SL, loose.	Hard Sand		8/15/2019	NPO
9:19 AM	9:32 AM	E60	No	2	E-W	5	0	Good	Y - Steady	Out	2 - West 100% SL, East 50% SL	4 - Stainless Steel Bolts, No deterioration	Hard Sand	Exposed height = 4'4" +/- , confirm 5" portal opening, photo at western pad eye 9:26 AM 100% SL	8/15/2019	NPO



**BAY PARK SEWAGE TREATMENT PLANT
CEDAR CREEK OCEAN OUTFALL INSPECTION
CLEANOUT CHAMBER INSPECTION NOTES**

*See also notes on hand sketch

NOTE ID	ELEMENT	IDENTIFIER	VIDEO TIME	FACE	DEFECT TYPE	LENGTH	WIDTH	DEPTH	DAMAGE GRADE	Comments	DISTANCE FROM TOP	DATE	DIVER
1	Base	SE Corner	8:52 AM	south	spall, no rebar	8"	16"	1.5"			at top	8/20/2019	MJD
2	Bracket	bracket S2	8:57 AM	south	bracket SL				MOD/ADV 40%		14" to bearing	8/20/2019	MJD
3	Bracket	Bracket S1	8:59 AM	south	bracket SL				MOD/ADV 30%		14" to bearing	8/20/2019	MJD
4	Base Bracket	Bracket W1	9:06 AM	west	bracket SL				ADV/SEV 40-60%		15" to bearing	8/20/2019	MJD
5	Base Bracket	Bracket w2	9:10 AM	west	bracket SL				ADV/SEV 40-70%		15" to bearing	8/20/2019	MJD
6	Base Bracket	w3		west	bracket SL				ADV/SEV 40-70%		15" to bearing	8/20/2019	MJD
7	Base Bracket	w4	9:19 AM	west	bracket SL				SEV 50-100%		15" to bearing	8/20/2019	MJD
0.153472222	0.661111111	w5	9:20 AM	west	bracket SL				MOD/ADV 30-40%		15" to bearing	8/20/2019	MJD
0.661805556	0.665972222	n1		north	bracket SL				MOD/ADV 30-40%		15" to bearing	8/20/2019	MJD
0.667311111	0.670833333	n2	9:25 AM	north	bracket SL				MOD/ADV 30-40%		15" to bearing	8/20/2019	MJD
0.671527778	0.674305556	W5	10:33 AM	west	bracket SL				MOD/ADV 30-40%	New plate welded to bottom of bracket. Nominal bracket measurements 7.5"W (out-out), 6.5"W (clear) x 6"H x 3.25"D, 0.75" Thick with 0.5" plate added to bottom of bracket. Base of original bracket estimated at 0.75" thick with 2.5"D x 6"W recess at bottom for bolt measured at 10:38 AM. Slotted bolt opening. Bolt present at mudline.	15" to bearing	8/20/2019	JNF
0.675	0.677777778	E5	10:40 AM	East	bracket SL				MOD/ADV 30-40%	No repair present on bottom of bracket. Bottom bracket opening measured at 1" to 0.5" thickness tapering in toward structure. Majority of bracket remains in place	15" to bearing	8/20/2019	JNF
0.677777778	0.682638889	E4	10:46 AM	East	bracket SL				MOD/ADV 30-40%	0.5" plate welded to bottom of bracket. Bolt in place.	15" to bearing	8/20/2019	JNF
0.683333333	0.729166667	E5	10:47 AM	East	bracket SL				MOD/ADV 30-40%	Bolt pulled through	on cover	8/20/2019	JNF
0.6875	0.692361111	E4	10:48 AM	East	bracket SL				SEV 50-100%	Bolt pulled through	on cover	8/20/2019	JNF
1.6875	Base Bracket	E3	10:49 AM	East	bracket SL				SEV 50-100%	No Visible bolt. Covered in hard coral. Repair plate in place at bottom of bracket, welds appear inadequate	15" to bearing	8/20/2019	JNF
2.6875	Top Bracket	E3	10:51 AM	East	bracket SL				SEV 50-100%	Repair plate in place at bottom of bracket, welds appear inadequate	on cover	8/20/2019	JNF
3.6875	Top Bracket	E2	10:52 AM	East	bracket SL				SEV 50-100%	No repair present	on cover	8/20/2019	JNF
4.6875	Base Bracket	E2	10:53 AM	East	bracket SL				SEV 50-100%	No repair present	15" to bearing	8/20/2019	JNF
5.6875	Base Bracket	E1	10:54 AM	East	bracket SL				SEV 70-100%	No repair present	15" to bearing	8/20/2019	JNF
#REF!	Concrete Base	General	10:58 AM	General					No Damage	Concrete is sound when cleaned and struck with hammer.	General	8/20/2019	JNF
#REF!	Concrete top	General	10:58 AM	General					No Damage	Concrete is sound when cleaned and struck with hammer.	General	8/20/2019	JNF
#REF!	Concrete Base	Base	11:02 AM	East	spall/construction defect at cold joint, no rebar	3.5"	1.4"	10"		Construction defect between casts at cold joint. North end near mudline (photo taken). 2'L on east face, 1.5'L on north face.	7.8'	8/20/2019	JNF
#REF!	Concrete top	General	11:05 AM	General					No Damage	Video paused at 11:08.		8/20/2019	JNF
#REF!	Lifting Eye	SE corner	12:44 PM	Top	SL				MN-MD 10-20%	Lifting eye measures 5" O.D. x 2.5"D x 4.5"H, steel ring is 1.25" diameter ring. Eye is positioned 2.3' from east face, 3.0' from south face. Eye is oriented W-E, opening N-S. Sound when struck with hammer.	0	8/20/2019	NPO
#REF!	Lifting Eye	SW corner	12:49 PM	Top	SL				MN-MD 10-20%	Lifting eye measures 5" O.D. x 2.5"D x 5"H, steel ring is 1.25"H x 1"W ring. Eye is positioned 2.3' from west face, 3.0' from south face. Eye is oriented W-E, opening N-S. Slight vibration to eye when struck by hammer. Does not spin.	0	8/20/2019	NPO
#REF!	Concrete top	General	12:54 PM							Top of cover measures 9.3' W x 12.3' L (9'-4"W x 12'-4"L)	0	8/20/2019	NPO
#REF!	Lifting Eye	NE corner	1:01 PM	Top	SL				MN-MD 10-20%	Eye is positioned 2.3' from east face, 3.1' from north face. Eye is oriented W-E, opening N-S. Sound when struck with hammer.	0	8/20/2019	NPO
#REF!	Lifting Eye	NW corner	1:07 PM	Top	SL				MN-MD 10-20%	Eye is positioned 2.3' from west face, 3.1' from north face. Eye is oriented W-E, opening N-S. Sound when struck with hammer.	0	8/20/2019	NPO
#REF!	Unknown metal	NW corner	1:18 PM	Top						Unknown metal on top of box south of NW lifting eye, 4" thick x 2'-10" L laying E-W.	0	8/20/2019	NPO
#REF!	Concrete top	Bottom of lid	1:25 PM	NW corner	Chamfer Spall	4"	3"	2"		Minor Spall at bottom of lid above recess for gasket.	0	8/20/2019	NPO
#REF!	Brackets	East	1:32 PM	General	NA				General	Diver confirmed # of brackets = 5 on east face of lid and base.	0	8/20/2019	NPO
#REF!	Mudline	General	1:32 PM	General	NA				General	Diver panned base of box from NE corner clockwise.	ML	8/20/2019	NPO



**BAY PARK SEWAGE TREATMENT PLANT
CEDAR CREEK OCEAN OUTFALL INSPECTION
Photo Log - Underwater Photos**

Photo No.	Date	Time	Structure	Identifier	Caption	Diver	Camera
1	8/20/2019	-	Cleanout Chamber	Base	bracket S2	MJD	UWC
2	8/20/2019	-	Cleanout Chamber	Base	spall at se corner	MJD	UWC
3	8/20/2019	-	Cleanout Chamber	General	southwest effluent looking north	MJD	UWC
4	8/20/2019	-	Cleanout Chamber	Base	Bracket W1 on Chamber	MJD	UWC
5	8/20/2019	-	Cleanout Chamber	Lid	Bracket W1 on Lid	MJD	UWC
6	8/20/2019	-	Cleanout Chamber	Lid	Bracket W1 on Lid, cleaned	MJD	UWC
7	8/20/2019	-	Cleanout Chamber	Base	bracket w5	MJD	UWC
8	8/20/2019	-	Cleanout Chamber	Lid	Spall at NW corner of lid within gasket area.	MJD	UWC
0.15347222	1/0/1900		Cleanout Chamber	Overview	SE corner - Cover rotated 30deg clockwise	MJD	Olympus
0.66180556	1/0/1900	-	Cleanout Chamber	Base	bracket S2	MJD	Olympus
0.66736111	1/0/1900	-	Cleanout Chamber	Base	bracket w1	MJD	Olympus
0.67152778	1/0/1900	-	Cleanout Chamber	Base	Brackets W1 and W2	MJD	Olympus
0.675	1/0/1900	-	Cleanout Chamber	Base	Bracket W5	MJD	Olympus
0.67777778	1/0/1900	-	Cleanout Chamber	Overview	NW corner - Effluent escaping (looking south)	MJD	Olympus
0.68333333	1/0/1900	-	Cleanout Chamber	Overview	NW corner - Effluent escaping (looking east)	MJD	Olympus
0.6875	1/0/1900	-	Cleanout Chamber	Overview	SW corner - Effluent escaping (looking northeast)	MJD	Olympus
1.6875	8/20/2019	-	Diffuser	E1	Diffuser E1 - NE Bolt top	JNF	UWC
2.6875	8/20/2019	-	Diffuser	E1	Diffuser E1 - NE Bolt bottom	JNF	UWC
3.6875	8/20/2019	-	Cleanout Chamber	Base	Bracket E5 on base, typical nominal dimensions of bracket	JNF	UWC
4.6875	8/20/2019	-	Cleanout Chamber	Base	Bracket E1 on base, Severe section loss - bracket not suitable for reuse.	JNF	UWC
5.6875	8/20/2019	-	Cleanout Chamber	Base	NW corner of base. Construction defect between casts at cold joint. North end near mudline	JNF	UWC
#REF!	8/20/2019	-	Cleanout Chamber	Base	Typical condition of concrete on base - taken at NE corner	JNF	UWC
#REF!	8/20/2019	-	Cleanout Chamber	Lid	Typical lifting eye - view of SE eye	NPO	UWC
1	8/21/2019	11:09 AM	Diffuser	E16	NE bolt is missing.	ZBF	Olympus
2	8/21/2019	11:13 AM	Diffuser	E16	Tag present on diffuser confirming location	ZBF	Olympus
3	8/21/2019	11:21 AM	Diffuser	E15	Typical condition of anchor bracket. Location chosen to provide unobstructed view of typical Moderate section loss up to 20% with pitting typically 1/8" deep.	ZBF	Olympus
4	8/21/2019	11:30 AM	Diffuser	E15	Typical Padeye with MN 5-10% SL taken at south padeye	ZBF	Olympus
5	8/21/2019	11:30 AM	Diffuser	E15	Padeye with Severe 90-100% SL taken at north padeye	ZBF	Olympus
6	8/21/2019	11:38 AM	Diffuser	E14	Typical failed anchor bolt - taken at NW connector on Diffuser E14	ZBF	Olympus
7	8/21/2019	12:43 PM	Bolt/Bracket	E13	SL NE bolt/bottom bracket	MJD	UWC
8	8/21/2019	1:23 PM	Bolt/Bracket	E9	SL NE bolt/top bracket	MJD	UWC
9	8/21/2019	1:45 PM	Diffuser	E13	Overview	MJD	UWC
1	8/22/2019	10:56 AM	Diffuser	E1	Tag present on diffuser confirming location	JNF	UWC
2	8/22/2019	10:56 AM	Diffuser	E1	View of top looking down	JNF	UWC
3	8/22/2019	10:56 AM	Diffuser	E1	Overall of top with diffuser port in view	JNF	UWC
4	8/22/2019	10:57 AM	Diffuser	E1	Typical cleaned outlet port.	JNF	UWC
5	8/22/2019	10:57 AM	Diffuser	E1	Typical cleaned outlet port, Flagging in flow.	JNF	UWC
6	8/22/2019	10:58 AM	Diffuser	E1	Typical joint between cap and diffuser riser (far, near and with scale)	JNF	UWC
7	8/22/2019	11:04 AM	Diffuser	E1	Typical view of hardware from top to bottom. - NE Bolt	JNF	UWC
8	8/22/2019	11:04 AM	Diffuser	E1	Typical view of hardware - top bracket - NE Bolt	JNF	UWC
9	8/22/2019	11:04 AM	Diffuser	E1	Typical view of hardware - bottom bracket - NE Bolt	JNF	UWC
10	8/22/2019	11:07 AM	Diffuser	E1	4:14 PM SW bolt SV SL.	JNF	UWC
11	8/22/2019	11:32 AM	Diffuser	E2	Typical newer HDG bolt. Taken at SW bolt - Typ. SL.	JNF	UWC
12	8/22/2019	11:32 AM	Diffuser	E2	Typical rusted washer at newer HDG Bolt.	JNF	UWC
14	8/22/2019	11:31 AM	Diffuser	E3	Overall view of Stainless Steel Bolts, No deterioration. Bolts are bent, appears as though the top cap has been twisted/rotated counterclockwise. SE bolt in view.	JNF	UWC
15	8/22/2019	11:31 AM	Diffuser	E3	SS bolt interface with top bracket. SE bolt in view.	JNF	UWC
16	8/22/2019	11:31 AM	Diffuser	E3	SS bolt interface with bottom bracket. SE bolt in view.	JNF	UWC

Field Inspection Report, Nassau County, Cedar Creek Outfall

(Inspectronic Corporation, December 23, 2013)

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FIELD INSPECTION REPORT

**NASSAU COUNTY
CEDAR CREEK OUTFALL**

BY:
INSPECTRONIC CORPORATION
DATE:
DECEMBER 23, 2013

INTRODUCTION:

September 26th, 2013, through December 8th, 2013, Inspectronic Corporation Performed work as per its current blanket contract for the removal of sand from the inside of the Cedar Creek Outfall diffuser section. The reinstallation of W-3, W-10, E-25 diffuser caps, Diffuser Cap retaining bolts. The Reinstallation of the Main Clean out Chamber cover, replacement of necessary retaining bolts and Brackets. A final video inspection was performed to verify all completed work.

NOTE: No special use permits or confined space permits were required and none were issued.

SCOPE OF WORK:

1. Mobilize all diving equipment to Jones Beach Inlet East Marina.
2. Perform survey to locate all diffusers including the cleanout chamber located at the beginning of the east and west diffuser lines.
3. Remove all sand located in the outfall system.
4. Reinstallation of W-3 diffuser cap.
5. Reinstallation of W-10 diffuser cap.
6. Reinstallation of E-24 diffuser cap.
7. Reinstallation of the Clean out Chamber cover.
8. Pressure wash 120 Diffusers and Clean Out Chamber hardware.
9. Remove and Replace corroded retaining bolts.
10. Weld new retention brackets on various diffuser caps.
11. Perform underwater color video inspection of all operational diffusers including cleanout chamber cover reinstallation.
12. Provide detailed report of all repair work.

TOOL BOX MEETING:

Each morning, all onsite diving and supervisory personnel will attend a toolbox meeting. This meeting will cover the following safety issues:

- Location of life jackets, fire extinguishers and radio equipment.
- Mandatory use of personnel safety equipment.
- Duties and responsibilities of each crewmember in case of emergency.
- Tasks and accomplishments to be met by the diver during each dive.

LIST OF PERSONNEL AND EQUIPMENT:**A) Personnel:**

One (1) Captain / Forman

One (1) Supervisor

Four (4) Diver/Tender

B) Equipment:

One (1) Work Vessel

Two (2) Full dive stations

One (1) Pump system

One (1) Deck chamber

Two (2) 325 Dive compressors

One (1) Underwater CCTV system

One (1) U/W Burning equipment

One (1) Generator

PROJECT CONSIDERATIONS

After review of the projected tasks, it was determined that there were several considerations to be addressed prior to performing the diving inspection work:

1. The outfall is located approximately two miles off shore of Long Island in the Atlantic Ocean. This location will be strongly affected by weather. It was determined that winds greater than 15 to 25 knots will cause a delay in work (i.e. weather day).
2. The overall distance of the diffuser line is approximately 2400 feet. This large distance would have to be made easier for the diver to travel. With that in mind, the first task would be to reinstall a travel line (i.e. 1/4 ploy rope) between each diffuser for the entire area to be repaired.

SUMMARY OF RESULTS:

A. West Diffuser line:

1. All ID tags on the Diffusers covers were replaced or cleaned for inspection purposes.
2. Removed and replaced various diffuser covers to gain access to the interior of the diffuser line.
3. Pump and side cast approximately 470 yards of sand that had accumulated in the pipeline due to the cleanout chamber cover being dislodged.

4. All other diffusers were pressure washed to facilitate the inspection and verification of hardware to be replaced.
5. Removed and replaced 57 retaining bolts with A325 hot-dipped galvanized bolts.
6. W-3 Diffuser: was previously removed by unknown means. It was reinstalled after completion of cleaning operations and is working properly.
7. W-10 Diffuser was previously removed by unknown means. It was reinstalled after completion of cleaning operations and is working properly.
8. W-46 Riser is leaning at a 45 degree angle to the north. There are no visible signs of damage. This diffuser angle was reported during the last inspection in 2012.
9. W-1 through W-60 diffusers are now producing a positive flow out of each port.

B. East Diffuser Line:

1. All ID tags are installed on the diffuser tops.
2. Removed various diffuser caps to gain access to the interior of the diffuser line.
3. Pump and side cast approximately 310 yards of sand that had accumulated in the pipeline due to the cleanout chamber cover being removed.

4. All other diffusers were pressure washed to facilitate the inspection and verification of hardware to be replaced
5. Removed and replaced 56 retaining bolts with A325 hot-dipped galvanized bolts..
6. E-24 Diffuser was previously removed by unknown means. It was reinstalled after completion of cleaning operations and is working properly.
7. Diffuser E-15 had a fishing net entangled on it. This was removed and there are no indications of damage.
8. Diffuser E-60 has a fishing net entangled on it. This was removed and there are no indications of damage.
9. The diffusers are producing positive flow out of the ports from diffuser E-1 up to and including diffuser E-60.

C. Cleanout Chamber

1. Cleanout Chamber cover has been reinstalled and reattached with 20 new 1 ¼ hot-dipped galvanized bolts.
2. Repair 16 Tie Down brackets on the cleanout chamber and cover.
3. Cover appears to be in good condition and fit for service.
4. Minor Spaulding on the cover gasket area is evident, but not considered critical. Four lifting pad eyes are in good serviceable condition.

5. Minimal signs of spalling with the exception of the southeast lower corner where the cribbing mates to the tee section.
6. *There is severe undermining of the sea floor at the Cleanout chamber which is now starting to expose the below grade outfall structure.

***The Outfall Chamber and surrounding diffusers from E4 to W4 are experiencing severe washout and undermining of the outfall structure. It is highly recommended that a fill material (gravel) be placed to secure the structure from further erosion.**

During this years repair and final survey it was recognized that the Defined protection area of the Outfall which is displayed on the current NOAA charts for warning of marine traffic to stay clear of the Outfall is not properly marked. This defined safety area is to the South and East of the true outfall location.

This improper marking allows for the commercial fishing vessels to operate over the outfall. This incorrect marking of the Charts may be a significant contributing factor to the continued damage of the outfall structure.

RECOMMENDATION:

A. Cleanout Chamber:

- Place an estimated 200 Yards of Gravel to backfill and protect the Chamber from continued storm erosion.
- Inspection of all Retaining bolts and overall condition on a yearly schedule.

B. West Diffuser Line:

- Place an estimated 300 Yards of Gravel to backfill and protect the Diffusers from continued storm erosion
- Continue the periodic replacement of tie down bolts on an as needed base.
- Perform yearly inspection to remove any fishing nets that may be blocking the proper operation of the ports.

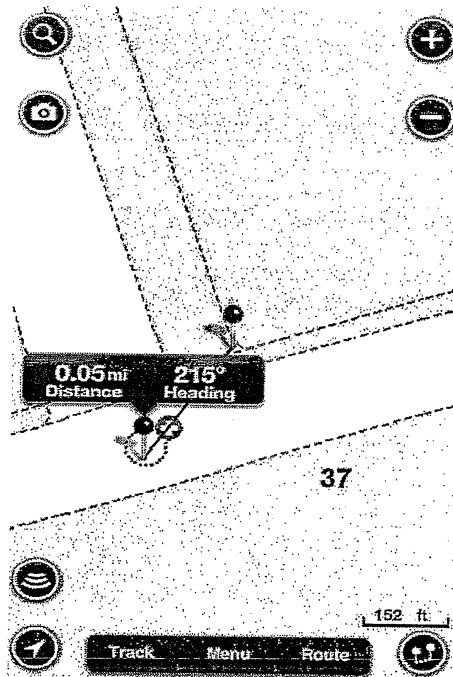
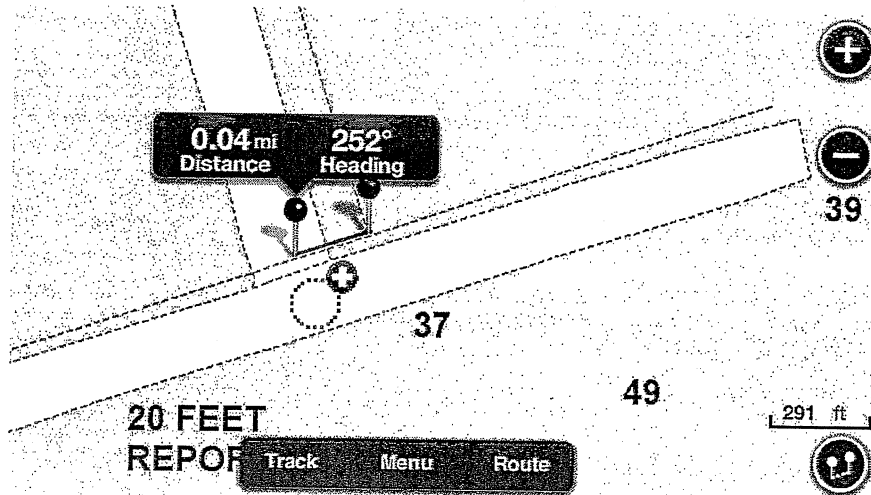
C. East Diffuser Line:

- Place an estimated 300 Yards of Gravel to backfill and protect the Diffusers from continued storm erosion
- Continue the periodic replacement of tie down bolts on an as needed base.
- Perform yearly inspection to remove any fishing nets that may be blocking the proper operation of the ports.

Estimated cost for recommended gravel installation is \$470,000.00 or \$587.50 per yard.

D. Outfall Location

- Contact NOAA to request a review of defined restricted area which is currently improperly marked
- Correct Defined area including a *Notice to Mariners* of the changed restricted area location.



- Red Pin denotes actual Cleanout Chamber location.
- Purple Pin (pictured above) denotes 211 feet horizontal distance of the safety zone offset for the Cleanout Chamber.
- Purple Pin (pictured left) denotes 264 feet diagonal distance of the safety zone offset for the Cleanout Chamber.
- The depth (pictured above and left) of 37 feet MLW is incorrect the correct depth should be approximately 48 feet MLW. This severe change in sea floor depth has placed the outfall structure and several Diffuser assemblies approximately 8 to 10 Feet above the original Sea floor.....

Video Log TimeEvent

W-1 through W-17

00:03:21	West (W) 1 Diffuser: Tag present. One good pad eye, other pad eye is broken. Port holes have good flow. Hardware is in good condition.
00:05:43	W2 - Diffuser: Tag present, one pad eye present. Good flow from both port holes.
00:08:57	W3 - Diffuser: Tag is present, 2 pad eyes present. Good flow from both port holes. Hardware is in good condition.
00:10:30	W4 - Diffuser: Tag present, 2 good pad eyes present, Good flow from both port holes.
00:12:41	W5 - Diffuser: Tag and two pad eyes are present. Good flow from both port holes.
00:16:03	W6 - Diffuser: Tag present, pad eyes are not in good shape. Good flow from both port holes.
00:16:40	W7 - Diffuser: No tag present, 1 pad eye is present. Good flow from both port holes. Hardware is in good condition.
00:18:20	W8 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes.
00:20:12	W9 - Diffuser: Tag present, 2 pad eyes present. Port holes have good flow.
00:22:23	W10 - Diffuser: No tag present, 2 pad eyes are present. Good flow from both port holes. Hardware is in good condition, bolts were replaced.
00:24:57	W11 - Diffuser: Tag present, one pad eye is present. Good flow from both port holes.
00:27:08	W12 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes.
00:29:38	W13 - Diffuser: Tag present, no pad eyes are present. Good flow from both port holes.

<u>Video Log Time</u>	<u>Event</u>
00:31:56	W14 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes.
00:34:09	W15 - Diffuser: Tag present, 2 good pad eyes present. Hardware is in good condition. Good flow from both port holes.
00:36:38	W16 - Diffuser: Tag present, 2 pad eyes are present. Good flow from both port holes.
00:38:50	W17 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes.
<u>Video Log Time</u> W-18 through W-32	<u>Event</u>
00:00:01	W18 - Diffuser: Tag present, 2 pad eyes are present. Good flow from both port holes. One bolt was replaced and rests are in good condition.
00:01:54	W19 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes. Two bolts are in good condition and two were replaced.
00:03:35	W20 - Diffuser: Tag present, 2 pad eyes are present. Hardware is in good condition and good flow from both port holes.
00:04:56	W21 - Diffuser: Tag present and both pad eyes are in good shape. Two bolts are in good condition and two were replaced. Good flow from both port holes.
00:06:14	W22 - Diffuser: Tag present and both pad eyes are in good shape. Good flow from port holes. Hardware is in good condition.
00:07:43	W23 - Diffuser: Tag present, 2 pad eyes are present and in good shape. Good flow from both port holes. Two bolts are in good condition and two were replaced.
00:10:02	W24 - Diffuser: No tag and no pad eyes are present. Good flow from both port holes. Hardware is in good condition.

<u>Video Log Time</u>	<u>Event</u>
00:12:02	W25 - Diffuser: No tag present, one pad eye is present. Three bolts are in good condition and one was replaced. Good flow from both port holes.
00:13:31	W26 - Diffuser: Tag is present but was found on the side. Good flow from both port holes. Three bolts are in good condition and one was replaced.
00:15:11	W27 - Diffuser: Tag and two pad eyes are present. Good flow from both port holes. Hardware is in good condition.
00:16:53	W28 - Diffuser: Tag present, 2 pad eyes are present. Good flow from both port holes and all 4 stainless bolts are intact.
00:18:46	W29 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes. All 4 bolts are new.
00:21:44	W30 - Diffuser: All 4 bolts are in good condition and good flow from both port holes.
00:22:40	W31 - Diffuser: No tag present. All four bolts are in good condition. Good flow from both port holes.
00:24:31	W32 - Diffuser: Tag present, 2 pad eyes present. All four bolts are in good condition and good flow from both port holes.
00:27:22	Diver came back to W-30 to verify if tag was present. Tag is present.

Video Log Time
W-33 through W-60

<u>Video Log Time</u>	<u>Event</u>
00:00:16	W33 - Diffuser: Tag present. Good flow from both port holes. All four existing hardware is in good condition.
00:01:54	W34 - Diffuser: Tag present, 2 pad eyes present. Hardware is in good condition and good flow from both port holes.
00:03:22	W35 - Diffuser: Tag present, 2 good pad eyes are present. Hardware is in good condition and good flow from both port holes.

<u>Video Log Time</u>	<u>Event</u>
00:04:48	W36 - Diffuser: Tag present, no pad eyes present so tag was put on the side. Good flow from both port holes and hardware is in good condition.
00:06:28	W37 - Diffuser: Tag present, 2 good pad eyes present. Hardware is in good condition and good flow from both port holes.
00:08:12	W38 - Diffuser: No tag present. Hardware is in good condition and good flow from both port holes.
00:09:53	W39 - Diffuser: Tag present. Hardware is in good condition and good flow from both port holes.
00:11:45	W40 - Diffuser: Tag present. Three bolts are in good condition and one was replaced. Good flow from both port holes.
00:13:07	W41 - Diffuser: Tag present. Three existing bolts are in good condition and one was replaced. Good flow from both port holes.
00:14:19	W42 - Diffuser: Tag present, 2 pad eyes are present. Good flow from both port holes. Three bolts are in good condition and one bolt was replaced.
00:15:47	W43 - Diffuser: Tag is present. Good flow from both port holes. Three bolts are in good condition though one is a little bent. One bolt was replaced.
00:17:37	W44 - Diffuser: No tag present. All bolts are in good condition and good flow from both port holes.
00:20:10	W45 - Diffuser: Tag present. All bolts are in good condition and good flow from both port holes.
00:21:59	W46 - Diffuser: Tag is present, both pad eyes are present. All bolts are stainless and are in good condition. Good flow from both port holes.
00:27:44	W47 - Diffuser: Tag and pad eyes are present. Good flow from both port holes. All bolts are in good condition, three of which are brand new.
00:29:03	W48 - Diffuser: Tag is present. Only one pad eye is present. All bolts are stainless and are in good condition. Good flow from both port holes.

<u>Video Log Time</u>	<u>Event</u>
00:30:30	W49 - Diffuser: Tag and both pad eyes are present. All bolts are in good condition. Good flow from both port holes.
00:32:01	W50 - Diffuser: No tag present. Good flow from both port holes. Two of bolts are brand new and two existing bolts are in good condition.
00:33:37	W51 - Diffuser: Tag and both pad eyes are present. Good flow from both port holes. Three existing bolts are in good condition and one brand new bolt.
00:34:52	W52 - Diffuser: No tag present. Good flow from both port holes. Two bolts are brand new and two existing bolts are in good condition.
00:36:26	W53 - Diffuser: Tag present. Good flow from both port holes. Three bolts are in good condition and one brand new bolt.
00:38:07	W54 - Diffuser: Tag present. Good flow from both port holes. Hardware is in good condition.
00:40:19	W55 - Diffuser: Good flow from both port holes. Three bolts are in good condition and one brand new bolt.
00:43:44	W56 - Diffuser: Tag present. Good flow from both port holes. Two bolts are in good condition and two are brand new.
00:46:16	W57 - Diffuser: Tag present. All bolts are in good condition. Good flow from both port holes.
00:48:48	W58 - Diffuser: Tag present, 2 pad eyes present. Two existing bolts are in good condition and two are brand new. Good flow from both port holes.
00:51:47	W59 - Diffuser: No tag present. Good flow from both port holes. Two bolts are in good condition and two are brand new.
00:58:07	W60 - Diffuser: No tag present. All bolts are stainless and are in good condition. Good flow from both port holes.

<u>Video Log Time</u>	<u>Event</u>
E-1 through E-22	
00:00:01	East (E) 1 - Diffuser: Tag present, 2 pad eyes present. No replacement for hardware because they are in good shape. Good flow from both port holes.
00:01:33	E2 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes. Two bolts are in good condition and two are brand new.
00:03:09	E3 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes. Hardware is stainless so no replacement needed.
00:04:30	E4 - Diffuser: Tag present, 2 pad eyes present. Three bolts were replaced. Good flow from both port holes.
00:05:56	E5 - Diffuser: Tag present, 2 pad eyes present. Three bolts were replaced. Good flow from both port holes.
00:07:44	E6 - Diffuser: Tag present, 2 pad eyes present. Three bolts were replaced. Good flow from both port holes. Diver made travel line.
00:11:00	E7 - Diffuser: Tag present, 2 pad eyes present. Two bolts are in good condition and two were replaced. Good flow from both port holes. Diver made travel line.
00:15:48	E8 - Diffuser: Tag present, 1 pad eye is present. Good flow from both port holes. One existing bolt is in good condition and three were replaced.
00:17:21	E9 - Diffuser: Tag present, 1 pad eye present. Good flow from both port holes. Three existing bolts are in good condition and one was replaced.
00:19:25	E10 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes. Hardware is in good condition.
00:20:52	E11 - Diffuser: Tag present, 2 pad eyes present. Three existing bolts are in good condition and one was replaced. Good flow from both port holes.
00:22:26	E12 - Diffuser: Tag present, 2 pad eyes present. Two existing bolts are in good condition and two were replaced. Good flow from both port holes.

<u>Video Log Time</u>	<u>Event</u>
00:24:06	E13 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes. Three existing bolts are in good shape and one was replaced.
00:26:01	E14 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes. Two bolts are in good shape and two were replaced.
00:27:52	E15 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes. Three bolts are in good condition and one was replaced.
00:29:43	E16 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes. Three bolts are in good shape and one was replaced.
00:31:56	E17 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes. Three bolts are in good condition and one was replaced.
00:33:36	E18 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes. Hardware is in good condition.
00:38:42	E19 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes. Two bolts are in good condition and two were replaced.
00:44:31	E20 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes. Three bolts are in good condition and one was replaced.
00:51:31	E21 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes. Three bolts are in good condition and one was replaced.
00:53:04	E22 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes. Three bolts are in good condition and one was replaced.

Video Log Time
E-23 through E-24Event

00:00:54

E23 - Diffuser: Tag present, 2 pad eyes present. Hardware is in good condition. Good flow from both port holes.

00:11:21

E24 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes. All four bolts were replaced.

Video Log Time
E-25 through E-44Event

00:00:02

E25 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes. Hardware is in good condition.

00:02:16

E26 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes. Hardware is in good condition.

00:04:47

E27 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes. Two bolts are in good condition and two were replaced.

00:06:44

E28 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes. Hardware is in good condition.

00:09:03

E29 - Diffuser: Tag present. Good flow from both port holes. Hardware is in good condition.

00:10:46

E30 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes. All four bolts were replaced with new bolts.

00:12:24

E31 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes. One bolt was replaced and the rest are in good condition.

00:14:02

E32 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes. Two bolts are in good condition and two were replaced.

00:15:44

E33 - Diffuser: No tags present, 2 pad eyes present. Good flow from both port holes. Hardware is in good condition.

00:17:43

E34 - Diffuser: Tag present. Good flow from both port holes. Hardware is in good condition.

<u>Video Log Time</u>	<u>Event</u>
00:19:18	E35 - Diffuser: Tag present. Good flow from both port holes. Hardware is in good condition.
00:20:47	E36 - Diffuser: Tag present. Good flow from both port holes. Three bolts are in good condition and one was replaced.
00:22:43	E37 - Diffuser: Tag present. Good flow from both port holes. Hardware is in good condition.
00:24:42	E38 - Diffuser: Tag present. Good flow from both port holes. Three of existing bolts are in good condition and one was replaced.
00:26:33	E39 - Diffuser: No tag present, 2 pad eyes present. Good flow from both port holes. One bolt was replaced and the rest are in good condition.
00:28:16	E40 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes. One bolt was replaced and the rest are in good condition.
00:33:11	E41 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes. Hardware is in good condition.
00:38:26	E42 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes. Hardware is in good condition.
00:40:55	E43 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes. One bolt was replaced and the rest are in good condition.
00:42:30	E44 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes. Hardware is in good condition.
<u>Video Log Time</u> E-45 through E-60	<u>Event</u>
00:00:44	E45 - Diffuser: No tag present. Hardware is in good condition. Good flow from both port holes.
00:02:39	E46 - Diffuser: No tag present. Hardware is in good condition. Good flow from both port holes.

<u>Video Log Time</u>	<u>Event</u>
00:04:16	E47 - Diffuser: Tag present. Good flow from both port holes. One bolt is brand new and three are existing bolts that are in good condition.
00:05:25	E48 - Diffuser: Tag present, 2 pad eye present. Hardware is in good condition. Good flow from both port holes.
00:07:00	E49 - Diffuser: No tag present, 2 pad eyes present. All bolts are stainless steel. Good flow from both port holes.
00:08:13	E50 - Diffuser: No tag present. Good strong flow from both port holes. Hardware is in good condition. Diver found a little damage on the cap.
00:12:19	E51 - Diffuser: Tag present (what's left of it). Good flow from both port holes. One bolt is brand new and the rest are in good condition.
00:13:56	E52 - Diffuser: No tag present, 2 pad eyes present. Hardware is in good condition. Good flow from both port holes.
00:15:26	E53 - Diffuser: Tag present, 2 pad eyes present. Hardware is in good condition. Good flow from both port holes.
00:20:36	E54 - Diffuser: Tag present, 2 pad eyes present. Hardware is in good condition. Good flow from both port holes.
00:29:41	E55 - Diffuser: Tag present, 1 pad eye present. Hardware is in good condition. Good flow from both port holes.
00:32:17	E56 - Diffuser: Tag present, 2 pad eye present. Good flow from both port holes. Two bolts are in good condition and two are brand new.
00:36:18	E57 - Diffuser: No tag present, 2 pad eyes present. Hardware is in good condition. Good flow from both port holes.
00:41:33	E58 - Diffuser: Tag present. Good flow from both port holes. One bolt is brand new and the rest are in good condition.
00:43:45	E59 - Diffuser: Tag present, 2 pad eyes present. Good flow from both port holes. Two bolts are in good condition and two are brand new.

<u>Video Log Time</u>	<u>Event</u>
00:52:50	E60 - Diffuser: No tag present, 2 pad eyes present. Good flow from both port holes. Hardware is in good condition. Diver cleared net.
<u>Video Log Time</u> Cleanout Chamber	<u>Event</u>
00:00:03	Diver travels from E1 to crib.
00:00:43	Diver reaches southeast corner of crib and shows pad eye, it is in good condition.
00:00:52	Diver travels to eastside of southeast corner and inspects bolts. 1 st bolt has top plate installed and bottom plate welded to the crib. 2 nd bolt's bottom plate was welded while its upper plate was replaced and welded. 3 rd bolt has its upper plate replaced and welded while no work has done to its bottom plate. It is in good condition. 4 th bolt's top plate was welded back into its place while its bottom plate was replaced. 5 th bolt's top and bottom bracket weren't replaced because they are in good condition.
00:03:01	Diver travels to north end of crib and shows pad eyes from northeast and northwest corner lid are in good condition.
00:04:10	Diver is back on northeast corner and shows pad eye on crib is in good condition.
00:04:31	Diver travels to northwest and shows pad eye is in great shape.
00:04:38	Diver travels to inspect northwest bolts. 1 st bolt's top and bottom bracket are in good condition so no work has done. 2 nd , 3 rd , and 4 th bolts' top and bottom brackets were replaced and welded into place.
00:06:24	Diver travels to southwest corner to inspect 5 th bolt. Its top and bottom plates were replaced and welded.
00:06:46	Diver travels to south side to check on pad eyes, they are in good condition.
00:07:09	Diver confirms that crib and top of the crib is back, installed straight,

INSPECTRONIC CORPORATION

DIFFUSER	Pressure Washed	BOLTS NEEDED	BOLTS REPLACED	REMARKS	TAG
W1	√	0	0	One Pad Eye Missing	√
W2	√	1	1	One Pad Eye Missing	√
W3	√	1	1	Replaced tie down bracket	√
W4	√	0	0		√
W5	√	1	1		√
W6	√	0	0		√
W7	√	0	0	One Pad Eye Missing	
W8	√	0	0		√
W9	√	0	0	Replaced tie down bracket	√
W10	√	4	4	Replaced cap (used to gain access to clean)	
W11	√	0	0	One Pad Eye Missing	√
W12	√	0	0		√
W13	√	0	0	Two Pad Eye Missing	√
W14	√	0	0		√
W15	√	2	2		√
W16	√	1	1		√
W17	√	0	0		√
W18	√	1	1		√
W19	√	2	2		√
W20	√	0	0		√
W21	√	2	2		√
W22	√	0	0		√
W23	√	2	2		√
W24	√	0	0	Two Pad Eye Missing	
W25	√	1	1	One Pad Eye Missing	
W26	√	1	1		√
W27	√	0	0		√
W28	√	4	4	Replaced cap (used to gain access to clean)	√
W29	√	4	4		
W30	√	4	4		√
W31	√	0	0		√
W32	√	0	0		√
W33	√	0	0		√
W34	√	1	1		√
W35	√	0	0		√
W36	√	1	1	Two Pad Eye Missing	√
W37	√	0	0		√
W38	√	0	0		
W39	√	0	0		√
W40	√	1	1		√
W41	√	1	1		√
W42	√	1	1		√

INSPECTRONIC CORPORATION

DIFFUSER	Pressure Washed	BOLTS NEEDED	BOLTS REPLACED	REMARKS	TAG
W43	√	1	1		√
W44	√	0	0		
W45	√	0	0		√
W46	√	0	0	Stainless Bolts	√
W47	√	3	3		√
W48	√	4	4	Replaced cap (used to gain access to clean)	√
W49	√	0	0		√
W50	√	2	2	Replaced tie down bracket	
W51	√	1	1		√
W52	√	2	2		
W53	√	1	1		√
W54	√	0	0		√
W55	√	1	1		√
W56	√	2	2		√
W57	√	0	0		√
W58	√	2	2		√
W59	√	2	2		√
W60	√	0	0	Stainless Bolts	
Total		57	57		

INSPECTRONIC CORPORATION

DIFFUSER	Pressure Washed	BOLTS NEEDED	BOLTS REPLACED	REMARKS	TAG
E1	√	0	0		√
E2	√	2	2		√
E3	√	0	0	Stainless (used to gain access to clean)	√
E4	√	3	3		√
E5	√	3	3		√
E6	√	3	3		√
E7	√	2	2		√
E8	√	3	3	Replaced tie down bracket	√
E9	√	1	1	One Pad Eye Missing	√
E10	√	0	0	Replaced cap (used to gain access to clean)	√
E11	√	1	1		√
E12	√	2	2		√
E13	√	1	1		√
E14	√	2	2		√
E15	√	1	1	Replaced tie down bracket	√
E16	√	1	1	Fishnet Removed	√
E17	√	1	1		√
E18	√	0	0		√
E19	√	2	2		√
E20	√	1	1		√
E21	√	1	1		√
E22	√	1	1		√
E23	√	0	0	DL	√
E24	√	4	4	Replaced cap (used to gain access to clean)	√
E25	√	0	0		√
E26	√	0	0		√
E27	√	2	2	Replaced tie down bracket	√
E28	√	0	0		√
E29	√	0	0		√
E30	√	4	4		√
E31	√	1	1		√
E32	√	2	2		√
E33	√	0	0		
E34	√	0	0		√
E35	√	0	0		√
E36	√	1	1		√
E37	√	0	0		√
E38	√	1	1		√
E39	√	1	1		
E40	√	1	1		√
E41	√	0	0		√
E42	√	0	0	Replaced cap (used to gain access to clean)	√

INSPECTRONIC CORPORATION

DIFFUSER	Pressure Washed	BOLTS NEEDED	BOLTS REPLACED	REMARKS	TAG
E43	√	1	1		√
E44	√	0	0		√
E45	√	0	0		
E46	√	0	0		
E47	√	1	1		√
E48	√	0	0		√
E49	√	0	0	Stainless (used to gain access to clean)	
E50	√	0	0	Minor spawling of the concrete	√
E51	√	1	1		√
E52	√	0	0		√
E53	√	0	0		√
E54	√	0	0		√
E55	√	0	0	One Pad Eye Missing	√
E56	√	2	2		√
E57	√	0	0		
E58	√	1	1	Replaced tie down bracket	√
E59	√	2	2	Cleared Cable	√
E60	√	0	0	Clear fishing net	√
Total		56	56		

United States Army Corps of Engineers (USACE)
Nationwide Permit

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DEPARTMENT OF THE ARMY
NEW YORK DISTRICT, CORPS OF ENGINEERS
JACOB K. JAVITS FEDERAL BUILDING
26 FEDERAL PLAZA
NEW YORK, NEW YORK 10278-0090

Regulatory Branch

January 24, 2024

SUBJECT: Permit Application Number NAN-2023-00965-EMI
by Nassau County Department of Public Works

Nassau County Department of Public Works
Attn: Kenneth G. Arnold, P.E.
1194 Prospect Avenue
Westbury, New York 11590
(516) 571-9607

Dear Mr. Arnold:

On December 22, 2023, the New York District of the U.S. Army Corps of Engineers received a request for Department of the Army authorization for the discharge of fill material into and/or the placement of structures in and over navigable waters of the United States. The proposed work includes the installation of a steel shell to be placed over the existing Cedar Creek Ocean Outfall outlet chamber by filling pre-cast shells with grout and installing the shell to synthetic grout bags and placing gravel filled matting and concrete blocks around the shell to prevent scouring. The steel shell will cover and associated matting and concrete blocks would cover approximately 2,500 square feet and approximately 60 cubic yards of fill will be discharged below Spring High Water. Additional activities include the replacement of approximately one hundred and twenty (120) 36-inch riser pipes, cleaning of the existing pipes and removal of debris and accumulated sediment. All removed debris and sediment will be placed on a barge and disposed of at an approved upland facility. The site is located in the Atlantic Ocean (40.566711, -73.446797), off of the Village of Massapequa, Town of Oyster Bay, Nassau County, New York.

The specific applicant-provided details are as shown on the attached permit drawings titled "Bay Park Conveyance Project", prepared by Hazen-Arcadis, dated September 2023 and "Cedar Creek Ocean Outfall Diffused Modification", prepared by Hazen-Arcadis, dated October 2023.

Based on the information submitted to this office, and accomplishment of notification in accordance with the applicable federal requirements, our review of the project indicates that an individual permit is not required. It appears that the activities within the jurisdiction of this office could be accomplished under Department of the Army Nationwide General Permit Numbers 3 and 7. The nationwide permits are prescribed as a Reissuance and Modification of Nationwide Permits in the Federal Register dated December 27, 2021 (86 FR 73522). The work may be performed without further authorization from this office provided the activity complies with the permit conditions listed in Section B, Numbers 3 and 7, Section C, any applicable New

SUBJECT: Permit Application Number NAN-2023-00965-EMI
by Nassau County Department of Public Works

- 2 -

York District regional conditions, the following special condition(s), and any applicable regional conditions added by the State of New York, copies enclosed.

Special Conditions

(A) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

This determination covers only the work described in the submitted material. Any major changes in the project may require additional authorizations from the New York District.

Care should be taken so that construction materials, including debris, do not enter any waterway to become drift or pollution hazards. You are to contact the appropriate state and local government officials to ensure that the subject work is performed in compliance with their requirements.

This verification is valid until March 14, 2026, unless the nationwide permit is modified, reissued, or revoked. This verification will remain valid until March 14, 2026, if the activity complies with the terms of any subsequent modifications of the nationwide permit authorization. If the nationwide permits are suspended, revoked, or modified in such a way that the activity would no longer comply with the terms and conditions of a nationwide permit, and the proposed activity has commenced, or is under contract to commence, the permittee shall have 12 months from the date of such action to complete the activity.

This authorization is conditional on the applicant's receipt of the required coastal zone management concurrence or waiver from the New York State Department of State (NYSDOS). No work may be accomplished until the required approval from NYSDOS has been obtained.

Within 30 days of the completion of the activity authorized by this permit and any mitigation required by this permit, you are to sign and submit the attached compliance certification form to this office.

In order for us to better serve you, please complete our Customer Service Survey located at <https://www.nan.usace.army.mil/Missions/Regulatory/Customer-Survey/>.

Regulatory Branch

January 24, 2024

SUBJECT: Permit Application Number NAN-2023-00965-EMI
by Nassau County Department of Public Works
- 3 -

If any questions should arise concerning this matter, please contact me at
Christopher.W.Minck@usace.army.mil or (917) 790-8547.

Sincerely,

Christopher Minck
Project Manager, Eastern Section

Enclosures

**PERMIT APPLICATION DRAWINGS HAVE BEEN
EXCLUDED FOR CLARITY.**

NATIONWIDE GENERAL PERMIT **COMPLIANCE CERTIFICATION** **AND REPORT FORM**

Permit File Number: NAN-2023-00965

Permittee: Nassau County Department of Public Works

Location: Jones Beach Island (40.566711, -73.446797), Town of Oyster Bay, Nassau County, New York

Date Permit Letter Issued: January 24, 2024

Within 30 days of the completion of the activity authorized by this nationwide general permit and any mitigation required in the verification letter, please sign this certification and return it to the address at the bottom of this form.

Please note that your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with the permit's terms and conditions you are subject to permit suspension, modification or revocation.

I hereby certify that the work authorized by the above referenced nationwide general permit has been completed in accordance with the terms and conditions of said permit, and required mitigation was completed in accordance with the permit conditions.

Signature of Permittee

Date

PLEASE FAX THIS FORM TO (212) 264-4260 OR EMAIL TO CENAN-R-PERMIT-APP@USACE.ARMY.MIL.

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New York State Office of Parks, Recreation and Historic Preservation
(NYSOPRHP) – Consultation & No Effects Letter

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**New York State
Parks, Recreation and
Historic Preservation**

KATHY HOCHUL
Governor

ERIK KULLESEID
Commissioner

June 02, 2023

Richard Gilmour
Principal Planner
Arcadis U.S., Inc.
17-17 Route 208 North, Suite 200E
Fair Lawn, NJ 07410

Re: USACE
Cedar Creek Ocean Outfall Diffuser Modification
Oyster Bay, Nassau County, NY
23PR04520

Dear Richard Gilmour:

Thank you for requesting the comments of the State Historic Preservation Office (SHPO). We have reviewed the project in accordance with Section 106 of the National Historic Preservation Act of 1966. These comments are those of the SHPO and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the National Environmental Policy Act and/or the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8).

Based upon this review, it is the opinion of the New York SHPO that no historic properties, including archaeological and/or historic resources, will be affected by this undertaking.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

R. Daniel Mackay

Deputy State Historic Preservation Officer
Division for Historic Preservation

rev: J. Betsworth

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New York State Department of Environmental Conservation (NYSDEC)

Excavation & Fill in Navigable Waters

401 Water Quality Certification

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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Permits, Region 1

SUNY @ Stony Brook, 50 Circle Road, Stony Brook, NY 11790

P: (631) 444-0365 | F: (631) 444-0360

www.dec.ny.gov

October 7, 2024

Nassau County
1 West Street
Mineola, NY 11501

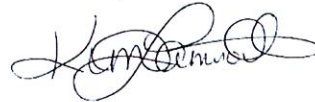
Re: NYSDEC Permit # 1-2820-00653/00068
Cedar Creek Water Pollution Control Plant – 3340 Merrick Rd & Cedar Creek Pk
Rehabilitation and Modification of Ocean Outfall Chamber and Diffuser

Dear Permittee:

In conformance with the requirements of the State Uniform Procedures Act (Article 70, ECL) and its implementing regulations (6NYCRR, Part 621) we are enclosing your permit for the referenced activity. Please carefully read all permit conditions and special permit conditions contained in the permit to ensure compliance during the term of the permit. If you are unable to comply with any conditions please contact us at the above address.

Enclosed is a permit sign which is to be conspicuously posted at the project site and protected from the weather and a Notice of Commencement/Completion of Construction.

Sincerely,



Kim Lamiroult
Environmental Analyst

cc: Richard Gilmour; Arcadis U.S., Inc.
BMHP
File



Department of
Environmental
Conservation



PERMIT
Under the Environmental Conservation Law (ECL)

Permittee and Facility Information

Permit Issued To:
NASSAU COUNTY
1 WEST ST
MINEOLA, NY 11501

Facility:
CEDAR CREEK WPCP
3340 MERRICK RD & CEDAR CREEK PK
WANTAGH, NY 11793

Facility Application Contact:
ARCADIS US INC
RICHARD GILMOUR
17-17 RTE 208 N STE 200E
FAIR LAWN, NJ 07410
(201) 398-4327

Facility Location: in HEMPSTEAD in NASSAU COUNTY

Facility Principal Reference Point: NYTM-E: 626.268 NYTM-N: 4501.233
Latitude: 40°39'08.3" Longitude: 73°30'23.3"

Authorized Activity: Rehabilitation and modification of the ocean outfall chamber and diffuser. KLL

All work shall be done in accordance with the following plans, stamped 'NYSDEC Approved' on 10/7/2024:

- Hazen Arcadis, pages 1-2 (of 61), dated October 2023
- McMillen JA Engineering, pages 3-10 and 12-15 (of 61), dated September 2023
- Delve Underground Engineering, page 11 (of 61), dated December 2023
- Hazen Arcadis, pages 16-61 (of 61), dated October 2023

Permit Authorizations

Tidal Wetlands - Under Article 25

Permit ID 1-2820-00653/00068

New Permit Effective Date: 10/7/2024 Expiration Date: 10/6/2029

Water Quality Certification - Under Section 401 - Clean Water Act

Permit ID 1-2820-00653/00069

New Permit Effective Date: 10/7/2024 Expiration Date: 10/6/2029

Excavation & Fill in Navigable Waters - Under Article 15, Title 5

Permit ID 1-2820-00653/00070

New Permit Effective Date: 10/7/2024 Expiration Date: 10/6/2029



NYSDEC Approval

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this permit.

Permit Administrator: LAURA F STAR, Deputy Regional Permit Administrator
Address: NYSDEC Region 1 Headquarters
SUNY @ Stony Brook|50 Circle Rd
Stony Brook, NY 11790 -3409

Authorized Signature: _____

Date 10/7/24

Distribution List

ARCADIS US INC
Bureau of Marine Habitat Protection
File

Permit Components

NATURAL RESOURCE PERMIT CONDITIONS

WATER QUALITY CERTIFICATION SPECIFIC CONDITION

GENERAL CONDITIONS, APPLY TO ALL AUTHORIZED PERMITS

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

**NATURAL RESOURCE PERMIT CONDITIONS - Apply to the Following
Permits: TIDAL WETLANDS; WATER QUALITY CERTIFICATION;
EXCAVATION & FILL IN NAVIGABLE WATERS**

1. Conformance With Plans All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans were prepared by Hazen Arcadis, pages 1-2, dated October 2023; McMillen JA Engineering, pages 3-10 and 12-15, dated September 2023; Delve Underground Engineering, page 11, dated December 2023; Hazen Arcadis, pages 16-61, dated October 2023.

2. Post Permit Sign The permit sign enclosed with this permit shall be posted in a conspicuous location on the worksite and adequately protected from the weather.



3. Notice of Commencement At least 48 hours prior to commencement of the project, the permittee and contractor shall sign and return the top portion of the enclosed notification form certifying that they are fully aware of and understand all terms and conditions of this permit. Within 30 days of completion of project, the bottom portion of the form must also be signed and returned, along with photographs of the completed work.

4. Storage of Equipment, Materials The storage of construction equipment and materials shall be confined to the upland area landward of the bulkhead or on a barge.

5. No Dredging or Excavation No dredging, excavating or other alteration of shoreline or underwater areas is authorized by this permit, nor shall issuance of this permit be construed to suggest that the Department will issue a permit for such activities in the future.

6. Repairs to Structures All repairs to existing structures shall be confined to replacement of existing elements with no change in design, dimension or materials, unless specifically authorized by this permit.

7. Clean Fill Only All fill shall consist of clean sand, gravel, or soil (not asphalt, slag, flyash, broken concrete or demolition debris).

8. Precautions Against Contamination of Waters All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.

9. Materials Disposed at Upland Site Any demolition debris, excess construction materials, and/or excess excavated materials shall be immediately and completely disposed of in an authorized solid waste management facility. These materials shall be suitably stabilized as not to re-enter any water body, wetland or wetland adjacent area.

10. State Not Liable for Damage The State of New York shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the State for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.

11. No Interference With Navigation There shall be no unreasonable interference with navigation by the work herein authorized.

12. State May Require Site Restoration If upon the expiration or revocation of this permit, the project hereby authorized has not been completed, the applicant shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may lawfully require, remove all or any portion of the uncompleted structure or fill and restore the site to its former condition. No claim shall be made against the State of New York on account of any such removal or alteration.



13. State May Order Removal or Alteration of Work If future operations by the State of New York require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Department of Environmental Conservation it shall cause unreasonable obstruction to the free navigation of said waters or flood flows or endanger the health, safety or welfare of the people of the State, or cause loss or destruction of the natural resources of the State, the owner may be ordered by the Department to remove or alter the structural work, obstructions, or hazards caused thereby without expense to the State, and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners, shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore to its former condition the navigable and flood capacity of the watercourse. No claim shall be made against the State of New York on account of any such removal or alteration.

WATER QUALITY CERTIFICATION SPECIFIC CONDITIONS

1. Water Quality Certification The authorized project, as conditioned pursuant to the Certificate, complies with Section 301, 302, 303, 306, and 307 of the Federal Water Pollution Control Act, as amended and as implemented by the limitations, standards, and criteria of state statutory and regulatory requirements set forth in 6 NYCRR Section 608.9(a). The authorized project, as conditioned, will also comply with applicable New York State water quality standards, including but not limited to effluent limitations, best usages and thermal discharge criteria, as applicable, as set forth in 6 NYCRR Parts 701, 702, 703, and 704.

GENERAL CONDITIONS - Apply to ALL Authorized Permits:

1. Facility Inspection by The Department The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71- 0301 and SAPA 401(3).

The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

2. Relationship of this Permit to Other Department Orders and Determinations Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.



3. Applications For Permit Renewals, Modifications or Transfers The permittee must submit a separate written application to the Department for permit renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing. Submission of applications for permit renewal, modification or transfer are to be submitted to:

Regional Permit Administrator
NYSDEC Region 1 Headquarters
SUNY @ Stony Brook|50 Circle Rd
Stony Brook, NY11790 -3409

4. Submission of Renewal Application The permittee must submit a renewal application at least 30 days before permit expiration for the following permit authorizations: Excavation & Fill in Navigable Waters, Tidal Wetlands, Water Quality Certification.

5. Permit Modifications, Suspensions and Revocations by the Department The Department reserves the right to exercise all available authority to modify, suspend or revoke this permit. The grounds for modification, suspension or revocation include:

- a. materially false or inaccurate statements in the permit application or supporting papers;
- b. failure by the permittee to comply with any terms or conditions of the permit;
- c. exceeding the scope of the project as described in the permit application;
- d. newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;
- e. noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

6. Permit Transfer Permits are transferrable unless specifically prohibited by statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.



NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification

The permittee, excepting state or federal agencies, expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under Article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

Item B: Permittee's Contractors to Comply with Permit

The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits

The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights

This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.



Department of
Environmental
Conservation

NOTICE

The Department of Environmental Conservation (DEC) has issued permit(s) pursuant to the Environmental Conservation Law for work being conducted at this site. For further information regarding the nature and extent of work approved and any Departmental conditions on it, contact the Regional Permit Administrator listed below. Please refer to the permit number shown when contacting the DEC.

Regional Permit Administrator
SHERI AICHER

Permit Number: 1-2820-00653/00068

Expiration Date: 10/6/2029

NYSDEC Region 1 Environmental Permits
50 Circle Road
Stony Brook, NY 11790-3409
Email: dep.r1@dec.ny.gov

Note: This notice is **NOT** a permit

NOTICE OF COMMENCEMENT OF CONSTRUCTION

RETURN THIS FORM TO: COMPLIANCE

Marine Habitat Protection - NYSDEC
SUNY at Stony Brook
50 Circle Road
Stony Brook, NY 11790-3409

Or Fax to: 631-444-0272

E-Mail: dec.sm.R1MHP-BEH@dec.ny.gov

PERMIT NUMBER: _____ EXPIRATION DATE: _____

PERMITTEE NAME & PROJECT ADDRESS: _____

CONTRACTOR NAME & ADDRESS: _____

TELEPHONE: _____

Dear DEC:

Pursuant to the special conditions of the referenced permit, you are hereby notified that the authorized activity shall commence on _____. We certify that we have read the referenced permit and approved plans and fully understand the authorized project and all permit conditions. We have inspected the project site and can complete the project as described in the permit and as depicted on the approved plans. We can do so in full compliance with all plan notes and permit conditions. The permit, permit sign, and approved plans will be available at the site for inspection in accordance with General Condition No. 1. (Both signatures required)

PERMITTEE: _____ DATE _____

CONTRACTOR: _____ DATE _____

THIS NOTICE MUST BE SENT TO THE ABOVE ADDRESS **AT LEAST TWO DAYS PRIOR TO COMMENCEMENT OF THE PROJECT** AND/OR ANY ASSOCIATED ACTIVITIES. FAILURE TO RETURN THIS NOTICE, POST THE PERMIT SIGN, OR HAVE THE PERMIT AND APPROVED PLANS AVAILABLE AT THE WORK SITE FOR THE DURATION OF THE PROJECT MAY SUBJECT THE PERMITTEE AND/OR CONTRACTOR TO APPLICABLE SANCTIONS AND PENALTIES FOR NON-COMPLIANCE WITH PERMIT CONDITIONS.

Cut along this line X X X X X X X

NOTICE OF COMPLETION OF CONSTRUCTION

RETURN THIS FORM TO: COMPLIANCE

Marine Habitat Protection - NYSDEC
50 Circle Road
Stony Brook, NY 11790-3409

Or Fax to: 631-444-0272

E-Mail: dec.sm.R1MHP-BEH@dec.ny.gov

PERMIT NUMBER: EXPIRATION DATE:

PERMITTEE NAME & PROJECT ADDRESS:

CONTRACTOR NAME & ADDRESS: _____

TELEPHONE: _____

Pursuant to special conditions of the referenced permit, you are hereby notified that the authorized activity was completed on _____, We have fully complied with the terms and conditions of the permit and approved plans. (Both signatures required)

PERMITTEE: _____ DATE _____

CONTRACTOR: _____ DATE _____

THIS NOTICE, WITH PHOTOGRAPHS OF THE COMPLETED WORK AND/OR A COMPLETED SURVEY, AS APPROPRIATE, MUST BE SENT TO THE ABOVE ADDRESS WITHIN 30 DAYS OF COMPLETION OF THE PROJECT.

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