

TECHNICAL SPECIFICATIONS

Section 1 - General Requirements

The Manasquan River intake pump station, located in Howell Township, Monmouth County, is owned and operated by the New Jersey Water Supply Authority (Authority) as part of the Manasquan Water Supply System (MWSS). It consists of a two-story building housing 5 vertical turbine pumps and 8 traveling water screens. The building rests on and above the east bank of the river and water enters the building through a bar rack at the river level.

A. Scope of Work

The Contractor shall furnish all labor, materials, equipment, and supervision necessary to remove accumulated river sediment from the NJWSA's Intake Pumping Station (IPS) on the Manasquan River. The river sediment shall be removed from all concrete floor inverts within the confines of the IPS using hydraulic pumps or suction hoses connected to engine driven trailer pumps.

The contractor shall provide air supplied divers operating suction hoses attached to ground level or submerged pumps or similar pump/vacuum devices. The area where the sediment accumulates is an underwater concrete chamber. The chamber has a lower sump in an area farthest from the river. Sediment must be removed from the entire chamber area, including the sump. The concrete chamber dimensions and measured sediment levels (June 2022) are shown in the attached sketch.

The Contractor is required to gain access to the sediments within the station through deck openings and hatches for both personnel and equipment.

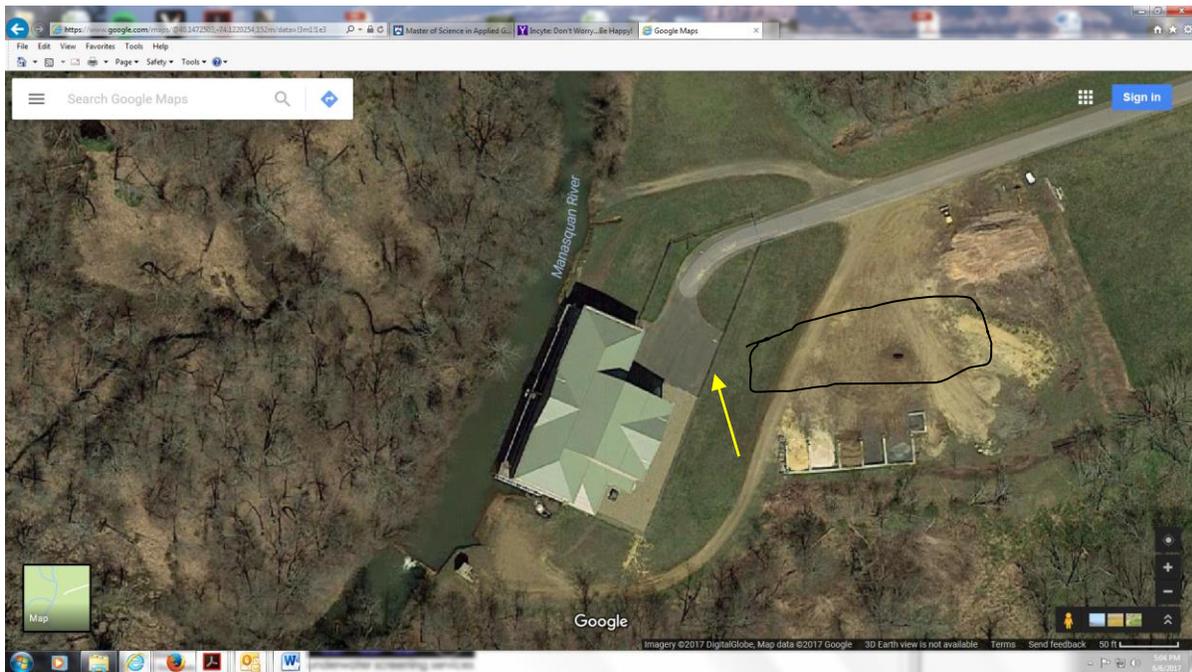
Using the underwater method of sediment removal, the spoils shall be pumped into one or more dewatering bags located in an area approximately 75 yards from the intake as shown in the photo below. The Contractor shall supply the dewatering bags, hoses and pumps. The Authority will spread wood chips below the dewatering bags in any area where there is no grass. There is a man gate in the center of the chain link fence for bringing pumped sediment through discharge hoses to the dewatering bags. Relocation of the material in the dewatering bags once they dry out will be the responsibility of the Authority. The decant water from the dewatering bag (in the designated area) will be allowed to drain off at the site and the contractor is not required to retain the water in a basin or pump the water back to the river. Contractor is to control erosion as needed. The Contractor must monitor the dewatering bag to ensure there are no leaks or tears.

Blue River Technologies Geotextile Sludge Dewatering bags have been

effectively used in past sediment removal operations.

As of mid-June 2022, the Authority estimates 12,000 cubic feet of accumulated material in the chamber. However, as described below in Background Information, sediment accumulations are not uniform throughout the chamber and the Contractor is solely responsible for assessing volumes prior to bid and for removing all accumulated sediment at the time of the work. Characterization of the sediment, based on past dredging, is also described below.

The black oval is the only allowed area for the dewatering bag placement. The Arrow is pointing to the chain link fence gate location at the edge of the paved parking area.



B. Background Information

The IPS is the pumping facility that draws water off the Manasquan River for supply of raw water to the Manasquan Reservoir and Authority contractual customers of the Manasquan Reservoir Water Supply System. The IPS is located along the bank of the Manasquan River off Hospital Road in Wall Township, Monmouth County on the Authority's Intake Facilities complex for the Manasquan Water Supply System.

The IPS structure is 160 feet in length with the same alignment as the river bank. The water first enters the station through steel bar racks, which serve to remove the larger floating debris such as branches, cans, or bottles.

The water then flows under the IPS deck in the forebay area through eight sectionalized channels. Each channel is equipped with a traveling water screen to remove small floating debris such as leaves and small twigs. The area between the river entrance and the traveling water screens is normally 4.5 feet deep in water in the summer. If there is a heavy rain the depth can increase by another 2-3 feet. After the traveling water screens, for another 10' x 160' the water depth is also normally 4.5 feet in September. After 10 feet beyond the traveling water screens, the IPS has a wet well sump area, which is the withdrawal point of the water through vertical turbine pumps. Each vertical pumping unit is outfitted with a 600-horsepower electric motor. The depth of the water in the wet well sump area is 13 feet when the sediment is removed, and the river is at normal level.

The IPS was last cleaned of accumulated river sediment in September of 2021. The material was predominantly muck, silt/clay, sand, decaying organics, and twigs with a small amount of gravel. The sand is typically in the area close to the bar rack. Mostly silt and organics were found between the traveling water screens and the pumps. The sand dewateres quicker through the dewatering bags than the silts/clays.

Please note that the wet well pump sump area as shown on attached plan view is 22' x 45'. The plan shows a depth of material in the sump of 1 foot as measured in two locations. However, the contractor should plan and assume that the entire sump area is full of sediment to a depth of 2 foot of material.

The Authority has measured the sediment accumulated in the submerged area of the IPS channels. This work was accomplished June of 2022 and is reflected in the measurements showing the sediment depths within the IPS. The sediment measurements are part of these bid documents. The quantity of sediment within the IPS submerged chamber was measured at depths that are normally expected. Also note that some mounding has historically occurred in certain sections adjacent to the wall, so these measurements are averages. The contractor is responsible to remove all sediment for the lump sum price, so a safety margin should be considered.

Photos below are of the dewatered chamber from the 2015 removal which included use of a Portadam:





C. Protection of Water Resources

1. General: The Contractor shall not pollute the adjacent river or IPS area with trash, debris, fuels, oils, acids, sediment laden water or any other harmful materials. Fueling of all construction equipment and vehicles shall be done in a manner to avoid spillage onto the ground, access roadway, and concrete deck or into the river. All work under this Contract shall be performed in such a manner that objectionable conditions will not be created in the waters adjacent to the project area.
2. Spills: Special measures shall be taken at all times to prevent chemicals, fuels, oils, greases, sediments, and waste washings from entering the water or spilling onto the IPS deck. If spills of this nature occur, the Authority representative will be notified immediately of the location, type, and quantity of spillage. The Contractor will be responsible for prompt cleanup of the spillage in accordance with the New Jersey Department of Environmental Protection Standards.
3. Disposal: Disposal of any materials, wastes, sediments, effluents, trash, garbage, etc. in areas adjacent to the river or the IPS will not be permitted. River sediments may only be disposed of into the dewatering bags.

All used hoses, mud suits and other trash generated by the contractor must be taken off site at the conclusion of the project. NJWSA does not have a dumpster available for this material.

D. Flood Protection

The Contractor is notified that the Manasquan River is subject to considerable flow variations and occasional flooding depending upon day-to-day changing weather during the construction period. The river's drainage

area to the IPS is approximately 65 square miles. Substantial flow data has been collected and will be made available to the Contractor upon written request to the Authority. September is historically a lower flow month. Flow changes in the river can be viewed at <https://waterdata.usgs.gov/usa/nwis/uv?01408029>

The Contractor shall familiarize themselves with these factors and their impacts on the progress of the work or project costs. No additional payment will be made for any inconvenience caused by any floods or abnormal river flows during the construction period. However, a reasonable extension of time will be granted to complete the work if abnormal river flows impact the project.

E. Time of Completion

The sediment removal service shall be completed within 12 consecutive calendar days of the Authority making the site available and the Contractor starting sediment removal operations. This allotted time does not include the necessary time to mobilize and demobilize the sediment removal equipment from the work site. The Authority's normal business hours are between 7:30 A.M. and 4:00 P.M. on normal workdays. If the Contractor for any reason wants to work beyond the limits set for a normal workday, the Contractor shall coordinate with the Authority representative prior to the work. The contractor is welcome to work beyond normal business hours on any day except for the last workday. The reason for not allowing additional work on the last day is that the Authority personnel would then also have to work late that day to perform an inspection of the wet well. The contractor is not permitted to work on non-regular workdays such as Saturdays or Sundays.

After each day when the contractor is finished and on weekends, the Authority will use one intake pump through the night to remove water from the river in the normal fashion. Any pumps or suction hoses left in the water would have to be tied off to the fixed ladders under the water or suspended for the night and weekend.

The contractor is to walk the bottom with a rod on the last day and sound the bottom to demonstrate the sediment has been removed. This is to be witnessed by Authority staff to confirm that the sediment has been removed.

If the river staff gauge reading is 7.6' or below on the day of inspection, Authority staff will walk through the chamber with chest waders and a pole and only the deep pump sump will have to be inspected by the Contractor's diver.

F. Submittals

1. **Equipment:** The Contractor shall supply a list of the equipment proposed to accomplish the sediment removal services with this Invitation for Bids. For all equipment that will come into contact with the IPS sediment, the Contractor shall submit a written certification to the Authority representative that all equipment used for this project is free of any chemical, Fecal coliform and physical contamination prior to beginning the work.
2. **Labor:** The Contractor shall supply the proposed labor force necessary to accomplish the sediment removal services with this Invitation for Bids.
3. **References:** The Contractor shall submit a list of three (2) business or governmental organizations where services of like or similar nature have been performed within the past six years. The list shall include the organization name, address (where the services were performed), approximate dollar value of the completed project, name of person most familiar with the work and their telephone number with this Invitation for Bid.

G. Observation and Inspection

An Authority representative shall have the opportunity to verify that the work is being properly performed. Observation of the work shall not relieve the Contractor of his obligation to properly perform the work and to make good any defects in workmanship and materials.

Periodic inspections of the sediment removal work from within the IPS may be made to assess the quality of the removal process and the progress of the work. The Contractor shall assist the Authority in performing the inspection by providing whatever labor and equipment is necessary. The Contractor shall correct any deficiencies noted during these inspections.

Section 2 - IPS Sediment Removal Services

A. Mobilization and Demobilization

This work shall consist of furnishing all labor, supervision, materials, equipment and incidentals necessary for mobilization and demobilization in accordance with these Specifications, project work requirements and directions of the Authority representative.

The work shall consist of initiating the work of the contract and may include such items that are required at the beginning of the project such as protecting existing structures, setting up the site for equipment and any temporary facilities, and upon completion of the work, the removal from the

site of all equipment, expendable supplies, trash and temporary facilities including the cleaning and restoration of the site to its original condition.

B. Sediment Removal Method

The Contractor is responsible to remove accumulated sediment from within all IPS areas described in these specifications and shown on the Drawings. The Contractor shall not remove any river sediment in areas outside of the IPS area unless approved, in writing, by the Authority representative. The current sediment depth at given locations within the IPS areas is shown on the sediment depth drawing along with all invert elevations of the concrete floor.

The river sediment shall be removed from all concrete floor inverts within the confines of the IPS up to the inside of the grate structure.

D. Safety Practices

The Contractor shall, at all times, perform work in a manner consistent with regulations of Federal OSHA or State PEOSHA. Additionally, the Contractor shall perform work in a manner consistent with Authority Safety Policies including Confined Space Entry and Lock Out/Tag Out. Hearing protection must be worn in the vicinity of the loud pumps or trucks. It will be the responsibility of the Authority to inform the Contractor and the Contractor's personnel on the above-mentioned Authority Safety Policies. Authority equipment needing to be locked out will be done so by the Authority with the Contractor adding their own locks.

The Authority will coordinate lock out/tag out of the pumps and traveling water screens with the contractor. However, one river intake pump will be used at night and turned off in the morning before the diver(s) re-enter the chamber each day.

F. Clean Up and Site Restoration

During its progress, the work and adjacent areas shall be kept cleaned up, and all rubbish, surplus materials, and unneeded construction equipment shall be removed and all damage repaired. The Contractor shall prevent material or debris from entering the Manasquan River.

General area of the upper floor above the wet well. The floor of the wet well (sump) is 16.5' below the ground floor shown in photo below:



Building entrance area:



Bar rack:



One of the dewatering bags used in 2017:

