

**Water and Environmental Programs  
Engineering Success Stories**

**STATE:** New Jersey  
**BORROWER'S NAME:** Eagleswood Township  
**ENGINEERING FIRM:** Ernst, Ernst, & Lissenden  
**RD CONTACT:** Ramzi A. Himaia, P.E., P.P., Rural Development Engineer  
**PROJECT TIME:** January 1985 - December 1986  
**Counties:** Ocean  
**Keywords:** Pressure sewer, Grinder pumps

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**Low Pressure Sanitary Sewer System To Service Bay Avenue  
Peninsula of Eagleswood Township**

**Description of Problem/Issues:**

Eagleswood Township, lies in the Southeastern portion of Ocean County, N.J., and it is located at the Coastal Section of Atlantic Ocean.

The township is developed in two distinctly different communities. the development along Bay Avenue Peninsula is a low lying waterfront community, while the upland community exhibits the impact of State Highway Route 9 which passes north to south through the township.

The township has viewed the needs of the community and, at this time, has favorably considered a sanitary sewer construction program for the Bay Avenue Section only.

This waterfront community is subject to periodic tidal flooding, and the soils are typically a marsh muck, severely restricting percolation, resulting in serious sub-surface disposal problems, which contaminated the Bay. The Bay Avenue area has an estimated population of 395 persons as compared to the total (1976 Estimate) township population of 870 persons. The existing dwellings on Bay Avenue is 167 units, and a few vacant lots.

The funding agencies, the borrower, and his design consultant, had several meetings to discuss and evaluate the alternatives for serving Bay Avenue with a sanitary sewer system. The following alternatives and their evaluation were discussed.

**1 - No Action:** Under this alternative, no upgrading to existing wastewater management facilities would take place. Twenty-three of these system are cesspool, which are no longer permitted to be built. Twenty-one more of these systems are holding tanks which require frequent pumping. The rest of the existing units were served by a conventional on-site disposal system.

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It was previously established that the existing systems are not functioning satisfactory. Therefore, this alternative was eliminated because it fails to achieve water quality and public water goals.

**2 - Rehabilitation of Existing On-Site Systems:** This alternative was investigated. Bay Avenue lies below the 3 meter (10 foot) elevation and is therefore in the New Jersey designated Critical Area for On-Site Systems. The road and residential development is adjacent to Westecunk Creek and associated wetlands. Lots are small, groundwater is high, making feasibility of construction on-site systems questionable. Mounds would be required in many cases to achieve proper depth to water table, however, lot sizes are often too small to permit a mound without encroaching on wetlands. Off-Site disposal areas are limited because of the low elevation and high groundwater. Such an occurrence would cause tanks to fill and require frequent pumping which becomes costly.

Considering these factors including system feasibility, reliability, cost and ability to achieve water quality and public health goals, this alternative was rejected.

**3 - Holding Tanks:** This alternative was investigated in which each home would be served by a holding tank, with waste pumped at a minimum of 6 -day intervals and waster hauled to Ocean County Utilities Authority (OCUA) - Central treatment facility. This alternative was rejected because of excessive cost.

**4 - Conventional Gravity Collection System:** A conventional gravity collection system to serve the Bay Avenue area was considered and rejected because of high cost. The required deep cuts in saturated muck soils along Bay Avenue caused this alternative to be cost prohibitive.

**SOLUTION:**

As mentioned earlier, the chosen alternative was the Low Pressure Collection system. This alternative calls for grinder pumps at each home to transport waste to a low pressure line placed shallowly @ 3 feet deep, in Bay Avenue, through 1 1/4" P.V.C. pipe. The low pressure line on Bay Avenue discharges the waste into a pumping station which is located on Bay Avenue near the intersection of Bay Avenue with Hwy #9. The pump station, through 6" P. V.C. force main pumps the sanitary sewer to a receiving manhole on Bay Avenue. From this manhole the flow runs by gravity through an P.V.C. Sanitary Sewer Lines. this gravity line runs about 300 L.F. at Bay Avenue, then runs along the East Shoulder of Hwy #9, then through Boring under the highway, the line crosses to Mill Street and connects to the Ocean

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County Utilities Authority manhole which is located at the intersection of Mill Street and Railroad avenue.

The detailed construction components of this project, starting from the residential units to the receiving manhole of Ocean County Utilities Authority, are as follows:

- 167 grinder pumps, installed at the homeowners property and connected to the low pressure main in the street through 1 1/4" P.V.C. pressure service line.
- 1600 L.F. of 1 1/2" PVC low pressure force main installed at the small streets branches out of Bay Avenue.
- 2010 L.F. of 2" P.V.C. pressure force main installed on Bay Avenue.
- 2100 L.F. of 2 1/2" P.V.C. low pressure force main installed on Bay Avenue.
- 1950 L.F. of 3" P.V.C. low pressure force main installed on Bay Avenue.
- 6400 L.F. of 4" P.V.C. low pressure force main installed on Bay Avenue.
- One pumping station installed at Bay Avenue.
- 4050 L.F. of 6" P.V.C. force main installed at Bay Avenue.
- 300 L.F. of 8" P.V.C. gravity main, installed at Bay Avenue.
- 738 L.F. of 8" P.V.C. gravity main, installed along the East Shoulder of Hwy #9.
- 44 L.F. Boring under Hwy #9.
- 1254 L.F. of 8" P.V.C. gravity main, installed on Mill Street.

The total development cost of the project is \$1,133,000.00.

From our post review, the Sanitary Sewer System is performing in good operational condition. This Low pressure sanitary sewer was the first one to be installed in the State of New Jersey. Now we see more of these system installed all over the state.

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