

Wastewater Collection System Overview

The Salmon Beach wastewater collection system removes wastewater from residences using a vacuum system. Two pumps located in the upper (AN1305) pump station create a negative pressure (vacuum) inside a receiving tank located in the lower (AN1304) pump station, using a 6-inch vacuum pipe that connects the receiving tank to the pumps, as shown in Figure 4.

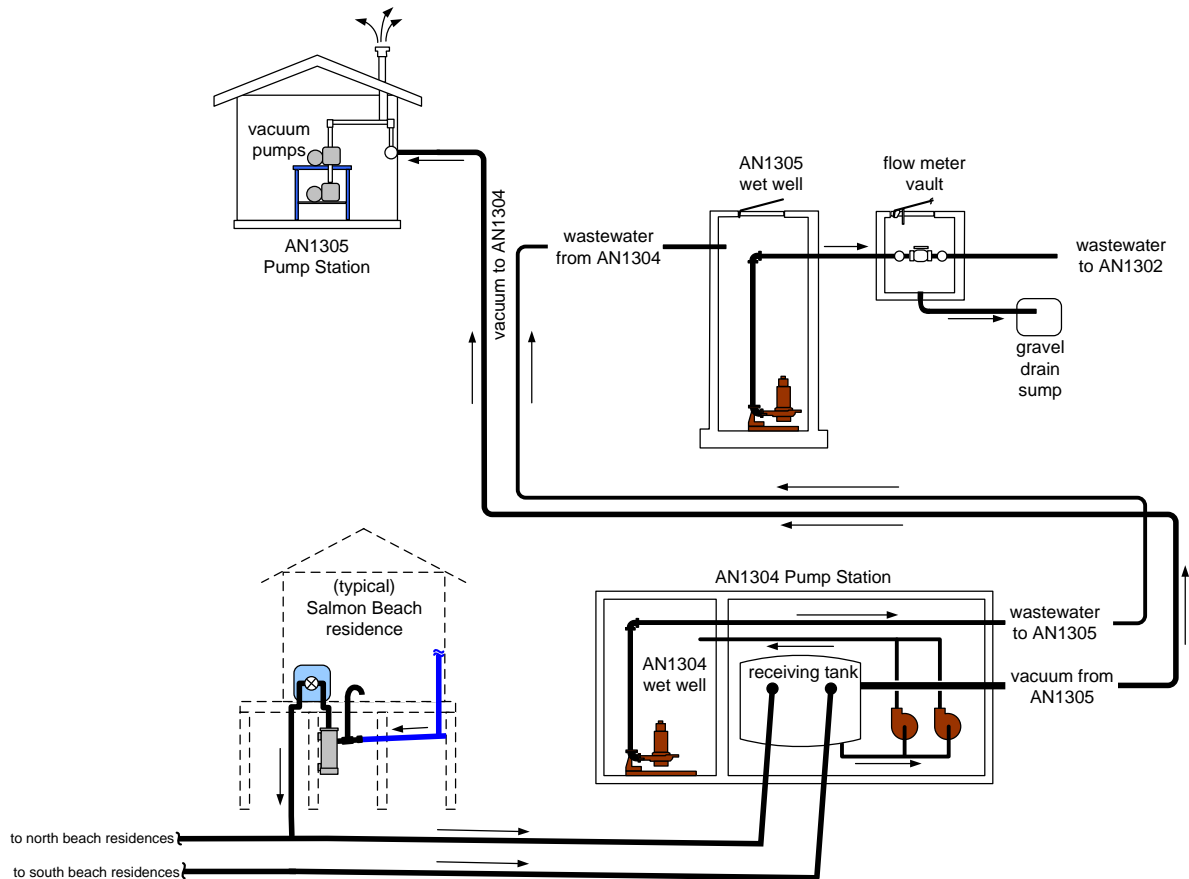


Figure 4. Salmon Beach wastewater collection system

Vacuum system components installed in each residence collect wastewater from the home and use the vacuum pressure to transmit the wastewater through a “lateral” line to the receiving tank. The wastewater level within the receiving tank is monitored, and when it reaches a preset level, it is pumped into a wet well in the lower station.

Grinder pumps move the wastewater from the lower station wet well to the upper station wet well through a 3-inch force main routed up the bluff. The upper station wet well uses grinder pumps to transfer the wastewater to AN1302, which pumps it to the North End Treatment Plant.

The Vacuum System

Wastewater is collected at each residence using a buffer chamber and vacuum interface valve. These components are connected to the lower pump station through a series of vacuum laterals and manifolds.

Buffer Chambers

The buffer chambers are 12-inch diameter cylinders constructed from PVC materials. There is one buffer chamber for each residence. They are attached to a structure piling below floor level and above the beach. Each buffer chamber has three connections:

- Resident-constructed building plumbing (located on the side)
- Interface valve connection (located on top)
- Wastewater level sensing line (also located on top).

The buffer chambers are accessible from the beach, and cannot normally be accessed during high tide except by boat.



Figure 5. Buffer chambers

Vacuum Interface Valves

The vacuum interface valves are polyethylene housings located on the residence deck or attached to the side of the residence. There is one vacuum interface valve for each residence. Each valve has three connections:

- Interconnection to the buffer chamber
- Wastewater level sensing line from the buffer chamber
- Discharge connection to the vacuum lateral

The vacuum interface valves are accessible from the residence decks or beach, depending on location, and cannot normally be accessed during high tide except by boat.



Figure 6. Vacuum interface valve

Vacuum Laterals

The vacuum laterals are 2-inch diameter PVC and HDPE pipes. There is one vacuum lateral for each vacuum interface valve. The vacuum laterals are connected to the discharge side of the interface valve and extend down a nearby piling, into the beach, then under the beach to a vacuum manifold.

Vacuum laterals are only accessible during low tides.

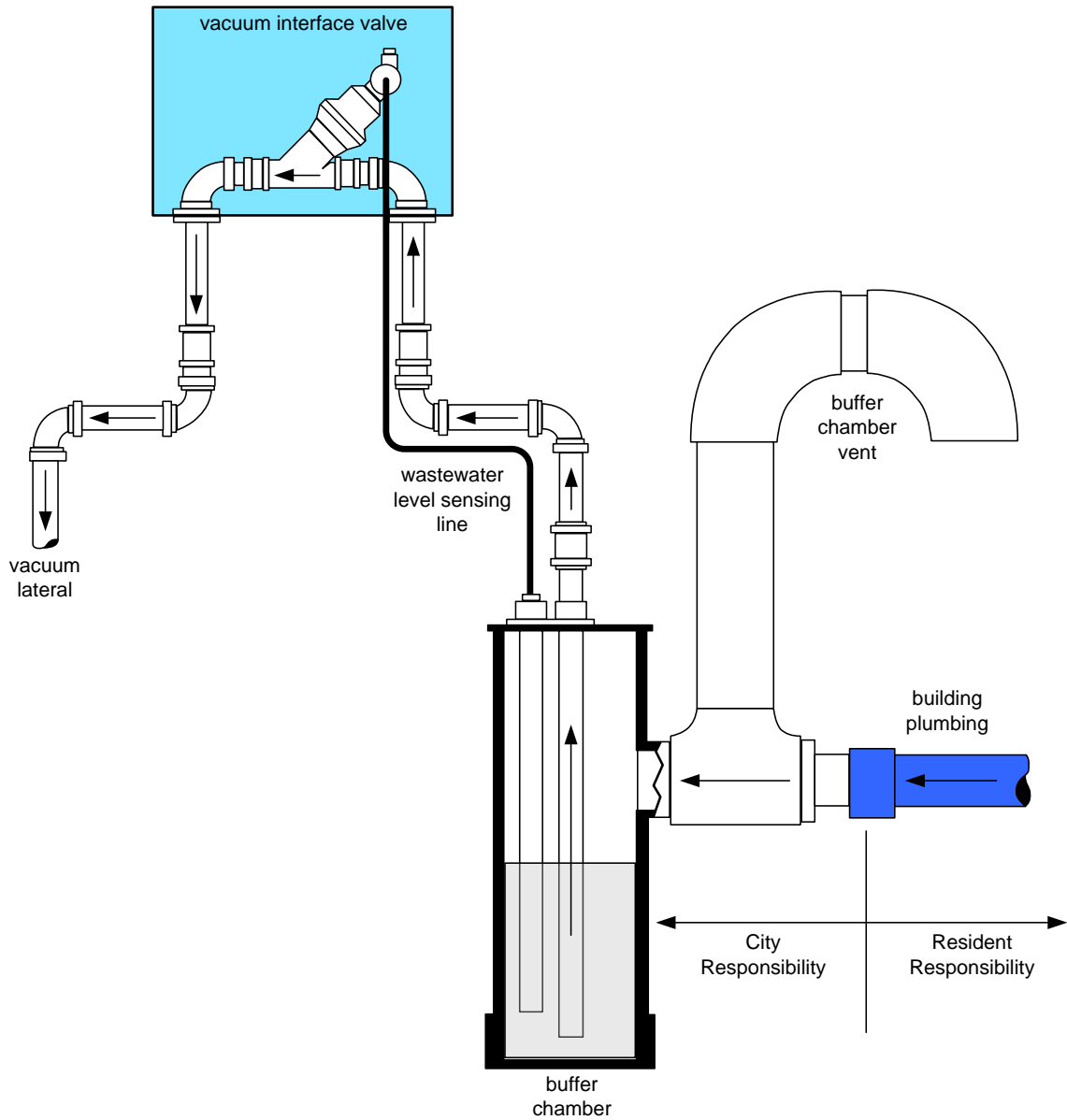


Figure 7. Vacuum system components for each residence

Vacuum Manifolds

Vacuum manifolds are 4-inch HDPE pipe. There are two vacuum manifolds buried in the beach – one extending north from the vacuum receiving station to Cabin #1 and one extending south from the vacuum receiving station to Cabin #104. Each manifold has widely-spaced isolation valves.

Vacuum manifolds are only accessible during low tides.