APPENDIX D
Pump Station Notes

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CH2M HILL visited the following pump stations to assess conditions:

- Mill Creek
- Rainier
- Stevens
- I-5 (Wal-Mart)
- Santiam

This appendix provides a summary of the visiting technician's notes for each pump station based.

Mill Creek Pump Station

The Mill Creek Pump Station was originally constructed in 1975 and pumps all but a very small portion of Woodburn's flow to the plant. The station was constructed with three shaft-driven pumps, which have been replaced over time with dry-pit immersible pumps. A trailer-mounted engine-driven pump was installed in 2001 and provides additional capacity for peak flows.

Twice in the past six years, the City has had to run all three internal pumps. The pumps are sized to handle peak flows, and typically cycle frequently during low flow periods. The discharge piping includes an actuated throttling valve that allows a portion of the flow to be pumped back into the wetwell so that the pump can operate on its curve. The wetwell is undersized, and the main trunk lines feeding the station typically serve as additional storage. Dual force mains from the pump station to the plant (18-inch and 24-inch) provide some measure of redundancy. The 24-inch force main was installed in 2000.

Pump removal is problematic. There is a monorail directly above the pump hatches, but no clear mechanism to remove the pumps from the building. Level instrumentation in the wetwell works well. The plant has no odor control, but experiences few complaints. The lower level(s) of the station are accessed via a spiral staircase. The spiral staircase represents a major access concern—both for routine personnel access as well as for life-safety in the event of an injury or catastrophic failure.

Alternative development considerations are as follows:

- Define mechanisms to efficiently pump the full range of flows.
- As the pump station is evaluated for expansion and redundancy, evaluate dual wetwells and pumping systems that would allow for system shutdown and maintenance during seasonal low flow periods.

- Document system deficiencies such as equipment lifting and removal, maintenance access and instrumentation and control issues for further consideration during subsequent design activities.

Rainier Pump Station

The Rainier Pump Station was originally designed as an airlift pump station and retrofit with submersible pumps. The floor of the wetwell was not designed as such. Discharge valves are located in an adjacent valve vault; there is no above grade structure.

The station simply lifts flow and discharges into a gravity line that feeds Mill Creek Pump Station. This gravity line is undersized and the area annually experiences backups. This gravity line is interconnected with the pump suction to allow for some relief when the downstream line is overloaded. In this instance, flow recirculates through the pump station, and flow is effectively stored in the upstream gravity piping until capacity frees up in the downstream line.

Alternative development considerations are as follows:

- Define projected flows; identify impacts of increased flow on station capacity once downstream restriction is remedied.
- Document system deficiencies for further consideration during subsequent design activities.

Stevens Pump Station

The Stevens Pump Station is located west of I-5. The station was originally designed as a submersible station and the pumps were upgraded in 1993. The pump discharge valves are located inside the wetwell. The station force main is approximately 500 feet and discharges into a gravity line that feeds the I-5 Pump Station.

The pump station is located in a residential area off the street right-of-way on the edge of a creek corridor. It includes no odor control, and receives no complaints. The station is enclosed with chain link fence with privacy slats.

The station has no hookup for a portable generator. If power fails, the system would overflow at an upstream manhole.

Alternative development considerations are as follows:

- Define projected flows; identify impacts of increased flow on station capacity.

I-5 (Wal-Mart) Pump Station

The I-5 Pump Station is located just east of I-5, south of Wal-Mart. This station is the second largest pump station after Mill Creek. It is a submersible station with no above-grade structures. The station has a below-grade electrical vault and pigging vault.

The station is enclosed with temporary construction fencing that was never replaced. Staff has not experienced problems with vandals, but the site is not secure. Vaults are locked with

padlocks. The station includes no odor control, and receives no complaints – but there are no nearby receivers to complain.

The station receives a heavy grease load and tends to accumulate grease balls. The station requires cleaning every six months. Staff enters the wetwell and must construct long flexible tubing to allow for vactor truck cleanout. A fixed pipe would greatly facilitate this effort.

Alternative development considerations are as follows:

- Define projected flows; identify impacts of increased flow on station capacity.
- Document system deficiencies for further consideration during subsequent design activities.

Santiam Pump Station

The Santiam Pump Station was originally constructed in 1968 as a temporary construction pump station and was never decommissioned. It was originally a large manhole and was retrofit with two small submersible pumps. The discharge piping and valves are in the wetwell, directly above the pumps. Pump removal requires complete demolition of the discharge piping and valves.

The station is located in a residential neighborhood between the sidewalk and the street. The electrical panel is located across the street and is a constant maintenance issue.

The plant could be eliminated if an easement can be purchased to allow for gravity flow from the subbasin to the I-5 pump station.

Alternative development considerations are as follows:

- Identify system options for elimination of station