

Appendix Q
Site and Civil Concepts of Recommended Plan
Technical Memorandum

Site and Civil Design

Tryon Creek Wastewater Treatment Plant Facilities Plan

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This technical memorandum documents the site and civil concepts. The scope of the site and civil design includes site layouts, access roads within the site, grading, and site drainage.

Site Development Design Standards and Criteria

For permitting purposes, site development and civil design will be subject to the regulations of the City of Lake Oswego. City of Portland design standards will also need to be considered for situations where Portland standards are more stringent than Lake Oswego's. For example, the City of Portland currently has more stringent stormwater management requirements.

This project is located within the City of Lake Oswego flood management area and will be subject to City floodplain development regulations. At the time this facility was constructed the regulatory floodplain boundary and elevation were those shown and identified in the FEMA FIS for Clackamas County. Since that time, Lake Oswego has adopted a more conservative flood elevation and boundary. The new flood management elevation and area are based on the extents and maximum water surface elevation (37.6 feet, City of Portland vertical datum (COP)) of the 1996 flood of record. The resulting increase in the regulatory elevation is 2.3 feet.

Floodplain Management

During the 1996 flood, lower elevation areas of the plant were flooded and isolated from vehicle access. To protect against future flood events and to address current City of Lake Oswego floodplain development standards, all areas within the plant would be elevated above the 1996 flood elevation. Future development concepts for the Foothills area also include filling the new development area above the 1996 flood elevation. The fill within the TCWWTP site would be designed to match future adjacent grades proposed by the Foothills development. Once both of these projects were completed, the plant would be protected from flood events up to the levels witnessed during the 1996 flood.

Vertical Control Datum and Plant Benchmarks

For this project, the horizontal datum is North American Datum 1983 (NAD83), Oregon State Plane, North Zone (Cors 96) (Epoch 2002) based upon the Oregon Real-Time Global Positioning Satellite (GPS) Network (ORGN). The vertical datum is City of Portland Datum.

Roadway Layout

In anticipation of the proposed Foothills development the roadway layout design considered both the existing surrounding roadways and a future Foothills developed roadway layout. Phase 1 consists of the roadway layout prior to the completion of the proposed Foothills Development. Phase 2 will provide additional vehicle access connections to the Foothills Development.

The primary plant entrance will remain at the existing connection to Foothills Road. The existing access roads will be replaced to accommodate raising the roadway elevation above the Lake Oswego Flood Hazard Elevation.

In phase 1, additional access roads will be provided for the new plant buildings. New access roads will be constructed around the new solids loadout, storage and thickening, and base biofilter buildings. A new parking area will be provided at the headworks facility and a road will be constructed from the solids loadout to the headworks facility. A paved connection will be maintained between the headworks facility and the adjacent private storage facility. Access to Highway 43 would be provided via an easement through the existing private storage facility to the new headworks facility.

In Phase 2, additional vehicle access connections will be made to the new Foothills Development. As part of the proposed Foothills Development, the private storage facility adjacent to the headworks will be removed. A new roadway will be constructed to connect the headworks to the Foothills Road near the intersection with Highway 43. Also in Phase 2, a connection will be made to Foothills road just west of the existing biofilter.

All roads shall be designed to accommodate truck turning movements for the largest trucks requiring access to the plant including sludge hauling trucks and emergency vehicles. The existing slopes in the area of the proposed access roads are steep and care should be taken to minimize the slope of the access roads. Longitudinal slopes should not exceed 10%. The minimum road width shall be 24 feet. All access roads will be asphalt concrete over aggregate base.

Cut and Fill Impacts

A significant amount of fill will be required for site grading. Approximately 30,000 cubic yards of fill will be required for grading associated with Phase 1. Fill will be used to:

- Raise the entire site above the Lake Oswego Flood Hazard Elevation (37.6 feet COP),
- Fill the existing stormwater pond, and
- Raise the area around the new headworks and primary clarifier to an elevation of 51.0 feet (COP).
- Raise the site of the solids loadout, storage and thickening, base biofilter buildings and adjacent access roads to an elevation of 41.0 feet (COP).

All fill shall be imported structural fill material. The fill will be placed in conjunction with other facility upgrades, as well as coordinated with any significant fill associated with the planned Foothills development. As a result, the placement of fill on the TCWTP site (and the costs associated with this fill) will be phased over time.

Approximately 11,000 cubic yards of fill will be required below the FEMA 100-year floodplain elevation (35.3 ft COP). To address City of Lake Oswego floodplain development regulations, an equal amount of floodplain storage will need to be constructed to mitigate for the floodplain impacts. Floodplain fill mitigation could likely be accommodated at the City of Lake Oswego park property located at the confluence with Tryon Creek and the Willamette River. The City of Portland Bureau of Environmental Services recently completed a floodplain enhancement project at this site and there is additional opportunity for floodplain mitigation.

Stormwater Management

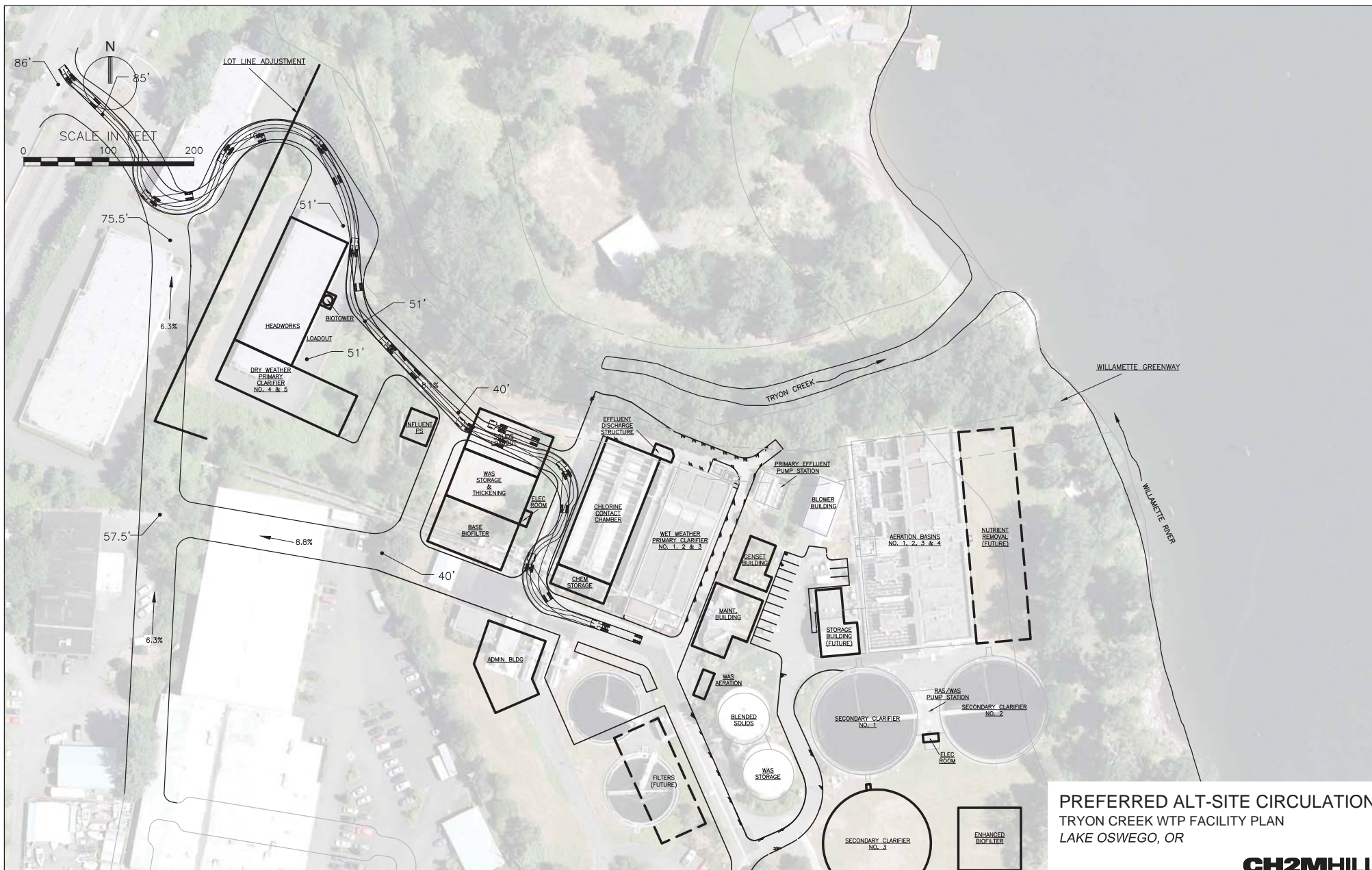
Stormwater management designs will be required to meet both City of Lake Oswego and City of Portland standards. Currently, City of Portland standards are more stringent and in most cases will dictate final designs. Certain City of Portland BMPs, such as the use of Green Roofs, have been incorporated into most recent BES facility upgrades and will likely be required for non-process facilities at TCWTP even though the facility lies outside the city limits of the City of Portland.

Stormwater management will be separated into at least two separate zones. Areas that drain process areas of the plant and areas outside the process area. Process area runoff will be collected, routed and pumped back to the headworks facility. Runoff from outside the process area will be routed to stormwater facilities designed to meet current City of Portland design guidelines. These facilities will include planter strips and vegetated swales that provide detention, treatment, and infiltration of stormwater.

An existing stormwater detention pond located on the southeast corner of the adjacent Public Storage property will need to be relocated when the headworks facility is constructed. This pond provides stormwater management for the Public Storage facility and also serves as the wet well for the adjacent stormwater pumping station. The pump station was constructed following the 1996 flood and provides relief from flooding and excess runoff that collects near the large manufacturing building just southwest of the plant. The pump station will be modified, or an underground wet well will be constructed to replace the detention pond. A new stormwater management facility will then be constructed to manage runoff from the remaining public storage building and the new headworks and primary clarifier facilities.

Water Supply and Fire Protection

Potable water and fire protection for the plant is supplied by the City of Lake Oswego. Additional water demands can be accommodated by the current supply system. Additional fire hydrants will need to be installed to meet Clackamas County Fire Department requirements. Redevelopment of the Foothills area will likely include reconfiguration of the water supply system to the plant, but plant supply would remain unchanged.



PREFERRED ALT-SITE CIRCULATION
 TRYON CREEK WTP FACILITY PLAN
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