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TECHNICAL MEMORANDUM

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Date: August 07, 2020

Project: **Washington Square Regional Center Update**
Project No: **20609**
RE: **Utility Audit**

EXECUTIVE SUMMARY

The Washington Square Regional Center (WSRC) is one of eight regional centers in the Metro area and is located in Tigard, Beaverton and unincorporated Washington County. The WSRC is envisioned as a dense and walkable commercial hub with abundant housing and mixed-use developments. Over the next two years, Tigard is revisiting this vision for the area of the WSRC within the City of Tigard, which requires understanding the existing utility infrastructure capacities and deficiencies for current and future use, to determine barriers for new and redevelopment.

The WSRC is served by the following public utility service providers:

- Water: City of Tigard, City of Beaverton, Tualatin Valley Water District (TVWD)
- Sewer: City of Tigard, City of Beaverton, Clean Water Services (CWS)
- Stormwater: City of Tigard, City of Beaverton, Clean Water Services (CWS)

The following summary mainly focuses on the areas within the WSRC City of Tigard boundary, but does provide some key comments from other areas within the WSRC boundary.

Based on each service provider's identified deficiencies, Capital Improvement Projects (CIPs), and Master Plans, the system needs can be identified as a combination of the following.

1. The WSRC was originally built when there were minimal (if any) stormwater regulations resulting in a large existing deficiency to stormwater standards. New and redevelopment will be required to meet current stormwater quality, quantity, and hydromodification standards.
2. The WSRC's minimal open space/vacant land limits the options for regional stormwater facilities to serve new and redevelopment. However, the redevelopment of Washington Square Mall could include site planning to incorporate stormwater into landscapes, plazas, and other site features. The Redtail Golf Course is a large piece of property that could redevelop; though, it is outside the City of Tigard's boundaries.
3. The WSRC's high amount of impervious areas results in greater stormwater treatment and detention requirements. New and redevelopment of these impervious areas will be required to meet current stormwater quality, quantity and hydromodification standards.

4. Both the Fanno Trunk line and Metzger Interceptors have existing, insufficient sewer capacities. Future development should look into any downstream deficiencies and work with the City and CWS on any improvements needed.

Recommended options to support future development will require collaboration between the City of Tigard, CWS, TVWD, City of Beaverton and private property owners. Some of these options are as follows:

- Fund and implement CIP projects that are identified in master plans.
- Work with private property owners to develop regional stormwater facilities which are sized to accommodate existing deficiencies, redevelopment, and future development. A regional facility would benefit CWS, City of Tigard, City of Beaverton and private property owners as the facility can be sized to give each jurisdiction stormwater credits to use for future projects.
- Provide incentives for developers of larger sites, or where applicable, to design/construct larger stormwater detention/treatment systems that either over detain, relieving the system elsewhere, or provide additional detention/treatment allowing adjacent properties owners to use that system.
- Encourage and collaborate on innovative techniques, shared facilities, and site master planning and design that incorporates stormwater as an amenity.
- Provide incentives for developers of larger sites, or where applicable, to design/construct upgrades to noted areas of sewer deficiencies.
- Start/continue interjurisdictional coordination in regard to stormwater management.

WATER

Existing Conditions and Known Deficiencies

The WSRC is serviced mostly by Tualatin Valley Water District with some areas serviced by the City of Tigard and the City of Beaverton.

The City of Tigard water lines in the area are in good condition and are approximately 40-45 years from their install dates. The City has not identified any Capital water projects in the area due to their water system in the area being sufficient under its current use.

TVWD is part of the Willamette Water Supply System (WWSS). The WWSS is a partnership between TVWD, the City of Beaverton, and the City of Hillsboro to build a resilient additional water supply for Washington County utilizing the mid-Willamette River at Wilsonville as their water supply source. WWSS is currently in the design, permitting, and construction phases of several projects which will build 30+ miles of water lines, a portion of which will be installed through the planning area in question, and will be part of TVWD's resilient supply connection.

Proposed Capital Improvement Projects

The following Capital Improvement projects in the vicinity have been identified by TVWD for completion in the near-term planning horizon:

- Metzger North South Transmission Main - TVWD
    - TVWD is installing approximately 10,000 feet of a new, high pressure water

transmission main and valves to provide a resilient domestic water service and increased fire flow capabilities.
    - The new water transmission main runs from SW Taylors Ferry Road, south down SW 74th Avenue and SW 72nd Avenue, east along SW Pine Street and south down SW 68th Parkway ending at SW Atlanta Street.
    - June 2020 - Fall 2020 Under Construction
- Greenburg Rd Waterline Replacement: Oak to Hall - TVWD
    - TVWD is upgrading approximately 2,700 LF of existing 6-inch pipe to 12-inch to account for fire flow deficiencies.
    - Fall 2020 Construction
- SW 69th Ave and SW 66th Ave Waterline Replacement (P-166, P-164) - TVWD
    - This project extends from the southern extents of the Metzger North-South project west to SW 69th Avenue and south to Dartmouth. It also includes a section of pipe along SW 66th Avenue and SW 68th Avenue at Hampton Street.
    - TVWD will upgrade and replace approximately 3,100 LF of existing 6-inch pipe to both 8-inch and 12-inch piping to account for fire flow deficiencies.
    - Fall 2020 Construction
- Taylors Ferry Reservoir Project – TVWD
    - TVWD will replace existing, aging reservoirs on Taylors Ferry Road at SW 65th Avenue to meet updated seismic standards.
    - 2021 Construction Start
- Metzger Pipeline East Project (MPE_1.0) - TVWD
    - As part of the WWSS, TVWD is installing a 48-inch pipeline in SW Scholls Ferry Rd. from SW Roy Rogers Rd. to SW Beaverton Hillsdale Hwy.
    - This 48" pipeline will connect TVWD existing system to the new WWSS system.
    - 2021-2025 Construction
- Other pipeline replacements and upgrades identified in the TVWD Master Plan are not needed until the long-term planning horizon (2048-2068).

The following CIPs in the vicinity have been identified by the City of Beaverton for completion in the near-term planning horizon:

- Nimbus North - Hall to Denney Commerce Center (system upgrade), Phase 1, 2 & 3 – CIP 4169B/C
    - City of Beaverton will replace the existing cast iron waterline with approximately 3,400 LF of 6-inch, 8-inch & 12-inch ductile iron pipe and associated hydrants, water, and fire services.
    - Water Operations staff have rated this project a top priority because the existing cast iron waterline was constructed in 1975 and has experienced numerous breaks in recent years.
    - Phase 1 December 2020 Construction Completion
    - Phase 2 December 2021 Construction Completion
    - Phase 3 December 2022 Construction Completion
- East Transmission Intertie – Nimbus to Western Ave (TVWD Opportunity Project) – CIP 4172

  - City of Beaverton will simultaneously install 12,800 ft of 16-inch waterline in parallel with the 48-inch TVWD Metzger Pipeline project.
  - 2021-2025 Construction
- Nimbus South -Hall to Scholls (System Upgrade) – CIP 4170
  - City of Beaverton has identified this water CIP project in their FY 2021-22 through FY 2029-30.
  - 2023 Design start

Barriers to Future Development
Future development of the area shouldn't be hindered by the water supply or quality if the identified Capital Improvement projects continue on through to construction completion.

SANITARY SEWER

Existing Conditions and Known Deficiencies
The WSRC is served by the City of Tigard, City of Beaverton, and Clean Water Services (CWS). The Tigard-owned sanitary systems convey flow to the CWS Metzger/Fanno interceptor lines that run along Ash Creek and Fanno Creek. The Metzger Interceptor along Ash Creek is a 30-inch line that connects to the Fanno Creek Interceptor, which is a 60-inch line in this location. The Fanno Creek Interceptor eventually discharges to the Clean Water Services Durham Wastewater Treatment Facility (WWTF). Some of the Beaverton-owned lines drain into these same CWS trunk lines.

CWS identified existing capacity deficiencies in the Fanno Trunk Line and at the end of the Metzger Interceptor line. CWS also identified a need to complete an updated Durham Facility Plan since the last one was completed in 2008. Once completed, this Facility Plan should identify any current or future conveyance or treatment plant deficiencies.

Proposed Capital Improvement Projects
The following Capital Improvement projects in the vicinity have been identified by Clean Water Services. The City of Tigard has not identified any CIPs currently.

- Various Durham WWTF Upgrades/Projects – CWS
- Durham Facility Plan - CWS
  - Update the Durham Facility Plan for existing and future treatment plant deficiencies.
  - 2020-2021 Under Construction
- Metzger/Fanno Interceptor Under RRX - CWS
  - CWS has identified that the last few pipe segments of their Metzger Interceptor line need upsizing. This line is also affected by the Fanno Creek trunk line backwater effects.
  - This project recommends upsizing this line segment, but the deficiency will not be solved until the Fanno Trunk is upgraded to provide sufficient capacity.
  - Currently in the planning and study phase. No construction timeline has been identified.

The following Capital Improvement projects in the vicinity have been identified by the City of Beaverton:

- Sewer in ODOT HWY 217 ROW Improvements – CIP 6106
    - ODOT is constructing a sound wall on the east side of HWY 217, north of Hall Blvd. Once constructed the sound wall will limit the ability to do future construction on the existing sewer. One segment of pipe and many manholes are undersized. The upgrades to the sewer system need to occur prior to sound wall installation.
    - 2020 Design Start

Barriers to Future Development
Future development which includes additional sewer services and connections, such as multifamily housing or high-density housing, could encounter barriers to development due to the deficiencies in the Fanno Trunk line and Metzger Interceptor as these capacity insufficiencies would likely get worse.

STORMWATER

Existing Conditions and Known Deficiencies
The WSRC area is mostly devoted to commercial activity with very little vacant land along with high traffic throughways such as Highway 217, Scholls Ferry Road, Hall Blvd, Greenburg Rd, and the WES commuter train. In the Washington Square Mall area alone, there are more than 200 acres of impervious area. Most of the WSRC land was developed in the 1970's and 1980's before water quality or stormwater detention facilities were required in Washington County. There has been very little redevelopment or new infrastructure in recent years to bring the existing areas up to current standards, meaning a majority of this area is lacking and deficient in both water quality and detention.

The WSRC basin drains to both Ash Creek and Fanno Creek. Both Creeks are known to provide habitat for steelhead trout and are water quality limited under the Clean Water Act for phosphorus, bacteria, dissolved oxygen, and temperature. Analysis of Ash Creek in this area shows channelization, siltation, and flooding. Ash Creek has also been identified by CWS as having a moderate to moderately severe erosion risk.

The City of Tigard stormwater master plan has identified a program recommendation for the Washington Square Mall Retrofit Plan. As the Washington Square Mall area has great potential for redevelopment and is located adjacent to HWY 217, this retrofit plan could provide the opportunity for the private property owners of the Washington Square Mall, the City, CWS and potentially other partners to work together to coordinate stormwater retrofits to bring the area up to current stormwater quality and quantity standards.

Proposed Capital Improvements Projects
The following Capital Improvement projects have been identified in the vicinity:

- Highway 217 Auxiliary Lanes & Hall Blvd Bridge Widening in Tigard - ODOT
    - Project consists of adding new auxiliary lanes, on-ramp to off-ramp connections, replacing the Hall Blvd overpass between OR 99W and Pfaffle Street, and associated storm drainage.
    - 2021 – 2025 Construction
- Washington Square Stormwater Retrofit Plan – City of Tigard

  - The City has funded the development of the Retrofit Plan in its CIP.
  - The plan aims to identify specific retrofit opportunities and to develop partnerships needed to achieve multiple benefits.

The following Capital Improvement Projects are identified in master plans but currently not scheduled or funded.

- Bagan Park Stream Restoration & Water Quality Enhancement - Tigard
  - Project would install pre-settling manholes upstream of outfalls at Hwy 217 and SW Greenburg Road to improve water quality in Ash Creek;
  - Construct a new water quality and/or detention facility at the western end of Bagan Park;
  - Light touch grade control to stop further channel degradation and help aggrade the stream bed.
- Oak Street Property Acquisition & Floodplain Restoration - Tigard
  - A private home at SW Oak Street and SW 87th Avenue is located extremely close to the creek. Ash Creek is eroding the bank adjacent to the house and the property routinely floods.
  - Project would acquire the property and the structure would be demolished.
  - Aboveground storage would be added to slow storm flow and reduce channel incision in the downstream wetlands.
  - Native vegetation would be re-established in the excavated floodplain.

Barriers to Future Development

Future development may find it challenging to meet stormwater quality, quantity, and hydromodification standards. The existing impervious areas and minimal open space/vacant lots limit options for stormwater treatment and detention. Advance site master planning should incorporate stormwater management needs to find ways to maximize multiple uses, particularly for above ground facilities.

SURFACE STORMWATER FACILITY

Pros	Cons
• Lower construction cost	• Reduces developable land
• Landscaping requirements can be met with storm facilities	• If not maintained properly can appear run down.
• Can be designed as an attractive site amenity	
• Lower long-term maintenance cost	
• Can be integrated into other site elements (i.e. parks, plazas, street trees.)	
• Reduces heat-island effect	
• Reduces impervious area resulting in less treatment and detention	
• Provides habitat for wildlife	

UNDERGROUND STORMWATER FACILITY

Pros	Cons
• Frees up developable land i.e. parking	• High Construction Cost
• Can be located under parking or other site features.	• Higher long-term maintenance cost
• Can be coupled with porous pavements to reduce effective impervious area.	• Does not fully comply with water quality/ LIDA requirements.
• Can be coupled with sidewalk and street trees	

GREENROOFS

Pros	Cons
• Long life roof reduces HVAC costs	• Increased construction cost
• Can be designed as an attractive site amenity	• Increased weight load

POROUS PAVEMENTS

Pros	Cons
• Reduces impervious area resulting in less treatment and detention	• Requires maintenance to maintain infiltration
• Reduces storm conveyance structures & piping	• Lower pavement strength

RECOMMENDATIONS

A collaborative approach to system planning and projects between the City of Tigard, City of Beaverton, Clean Water Services, other public agencies, and private property owners is encouraged. Some of these options areas follows:

Water

- Continue to fund and implement identified CIPs.

Sanitary

- Fund and implement projects that are identified in master plans but not currently being funded.
- Provide incentives for developers of larger sites, or where applicable, to design/construct upgrades to deficient systems in the vicinity.

Stormwater

- Fund and implement projects that are identified in master plans but not currently being funded.
- Work with private property owners to develop locations of regional stormwater facilities which are sized to accommodate existing deficiencies, redevelopment and future development. A regional facility would benefit CWS, City of Tigard and private property owners as the facility can be sized to give each jurisdiction stormwater credits to use for future projects.
- Provide incentives for developers of larger sites, or where applicable, to design/construct larger stormwater detention/treatment systems that either over detain, relieving the system elsewhere, or provide additional detention/treatment allowing adjacent properties owners to use that system.
- Develop a technical analysis and calculation of the existing and future stormwater needs which would include:
    - A map of the WSRC drainage basins
    - An estimate of existing volume and surface area runoff and existing detention needs.
    - An estimate of future detention needs based on redevelopment.
    - Locations of possible above-ground detention sites.
- Undertake sub-area master planning, conducted cooperatively between the public agencies and land owners/developers, to identify sub-basin strategies, priorities, and implementation tasks to benefit all parties.

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