Brightwater Project Progress

MWPAAC
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Brightwater Treatment Plant and Conveyance System
Brightwater Treatment Plant

- Hoffman - North Mitigation, Earthwork and Liquids
  - GCCM - $320 million
- Kiewit Pacific – Solids, Odor Control and Energy
  - Design/Bid/Build - $167 million
Treatment plant construction

Major grading and earthwork
Treatment Plant site – Nov/Dec 2007

Excavation & concrete pour of foundations
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Treatment plant construction

Volunteers planting in North Mitigation Area
October 2007
Treatment Plant Construction Schedule

- **2007** – Complete north mitigation area; complete site earthwork; begin excavation for major structures and start for pipes, tanks & building foundations

- **2008** - Continue construction of tanks, buildings, & major pipes; demolish office building and continue land shaping.

- **2009** - Continue buildings, digesters, install mechanical and electrical systems (pumps, piping, ducts), begin landscaping

- **2010** - Complete buildings, grading, equipment installation, and landscaping

- **Late 2010 - early 2011** – system testing and start-up
Swamp Creek Connector (SCC): Approx 1/3 of the BW Flow entering @ the North Kenmore Portal, Central Contract
North Creek Connector (NCC): Approx 2/3 of the BW Flow entering @ the North Creek Portal, East Contract
East Tunnel Contract - North Creek Portal

- Tunneling, TBM shaft & IPS excavation done under this contract
- Contractor is Kenny Shea Traylor JV
- Design/Bid/Build - $138 million
East Tunnel Contract

BT-1

- **1.68 m (66") INFLUENT FORCE MAIN**
- **1.22 m (48") INFLUENT FORCE MAIN**
- **2.13 m (84") EFFLUENT PIPELINE**
- **0.69 m (27") RECLAIMED WATER PIPELINE**
- **Cellular Concrete Backfill**
- **Bolted, Gasketed Concrete Segmental Lining (0.25 m (10") Min.)**
- **Fiber Optic Cables**
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0.69 m (27") RECLAIMED WATER PIPELINE

5.08 m (16' 8") Minimum
North Creek Portal

- Two large diameter 75-foot deep shafts, one to launch & receive TBMs, and a second to house underground part of IPS
- In September, 19-ft dia. TBM, “Luminita,” launched to mine over 2.5 miles to the treatment plant, expected to take about a year
- Microtunneling of the North Creek Connector continues, the 6-foot diameter pipeline is expected to be completed in early 2008
East Contract - Aerial View of North Creek Portal Site

- Influent Shaft
- Two Lobes of Influent Pump Station
A look inside the TBM
Influent Pumping Station (IPS) at North Creek Portal

- Kiewit Pacific - $92 million design/bid/build contract
- **Contract includes:**
  - 130-mgd pump station expandable to 170 mgd,
  - 10,000-sq. ft. above-grade influent structure, generator/chemical buildings, odor control, pumps, and related utilities
  - Testing and start-up of IPS and off-site conveyance facilities.
Influent Pump Station Contract
North Creek Portal & Influent Pump Station (IPS) Construction schedule

- **2007** – TBM delivered and assembled, conveyance tunnel and pipe construction begins, microtunneling to link IPS and North Creek Pump Station (NCPS) begins

- **2008** – Construction of the IPS and NCPS improvements begins

- **2009** - Tunneling and pipelines completed

- **2010** – IPS construction completed
Central Tunnel Contract North Kenmore Portal

- Tunneling with two TBMs
- Vinci Parsons FK, joint venture
- Design/Bid/Build - $211 million
Central Tunnel Contract

- At North Kenmore 100-ft deep portal, launch two TBMs
- Also construct 200-foot deep receiving portal at Ballinger Way
- First TBM, "Helene," began tunneling 2-miles east to the North Creek Portal
- Early 2008 "Rainier" will begin tunneling west to the Ballinger Way Portal in Shoreline
- Completed 1-mile connection from Swamp Creek Interceptor using cut and cover/ microtunnel
- Construction completed late 2010
North Kenmore Construction

A look down the portal shaft

BT-3 being delivered
North Kenmore Construction

One of the tanks for recycling slurry mix back to TBM face

Manhole being installed
Ballinger Way Portal

- This portal (Portal 5) will be constructed under the Central Tunnel Contract.
- The contractor is Vinci/Parsons RCI/Frontier-Kemper.
- The Central Tunnel Contract includes construction of Kenmore Portal.
Ballinger Way Portal Construction schedule

- Construction of a 25-foot diameter, 200-foot deep TBM retrieval shaft
- Using “ground freezing” - to create structural support for shaft excavation.
- Shaft construction completed in late 2008
- Two TBMs arrive from Kenmore & Point Wells in late 2009.
Ballinger Way Portal Construction schedule

- Mid-2007 – Portal will be constructed
- 2009-2010 - TBMs retrieved, first TBM will arrive from Kenmore, followed by TBM from Point Wells.
- Early 2010 – Odor control facility built and landscaping installed
West Tunnel Contract at Point Wells.

- Tunneling 21,000 feet to Ballinger; 540 feet long microtunnel to connect with marine outfall
- Contractor is Jay Dee/Coluccio/Taisei
- Design/Bid/Build - $102.45 million
West Contract – Work Overview

- BNSF Main Rail Line
- Site Access (Trestle)
- Paramount Property
- Barge Facility
- Marine Outfall (by others)
- Reception Pit
- Point Wells Site
- Marine Outfall Connector Pit
- Jacking Pit
- Open Cut Tunnel Portal
- BT-4 16’ID, 14’ OD, 19,900 LF
- Puget Sound
- Construction Easement
- Site Access (Trestle)
Construction progress at Point Wells

- Site prepared for construction
- Launch and reception shafts excavated to microtunnel the marine outfall connector
- Spoils holding facility established, working on conveyor system to transport spoils by barge
- TBM is under construction at Lovat in Toronto
Construction progress at Point Wells

Point Well site with crane and grout plants
Marine Outfall

- The marine outfall will include 4700 feet of pipe and a 500 foot diffuser at the terminus, 600 feet deep in Puget Sound.
- A team lead by Triton Marine Construction has been selected to design and build the marine outfall.
- Contract cost: $29.1 million
Assembling outfall pipe - reducing construction impacts

Assembling the outfall pipe off-site will reduce impacts at Point Wells

Outfall pipe being towed to target site for installation.
Construction Schedule at Point Wells

- **2007** - Construction of marine outfall connector shafts and portal begins, microtunneling is completed for marine outfall connector.

- **2008** – Tunneling to Ballinger Way begins, marine outfall construction begins with nearshore excavation in the spring and outfall installation in the fall.

- **Early 2010** – Tunneling is completed.
Brightwater Project Cost

- Brightwater January 2007 Cost Estimate - $1.767 billion
- Last of 7 major construction contracts awarded in 2007
  - Influent Pump Station (IPS) contract, bid price of $92 million (approx. $19 million over eng. est.). NTP given 7/07
  - Treatment Plant Solids/Odor Control contract, bid price of $168 million (approx. $25 million below eng. est.). NTP will be given 1/08
  - Marine Outfall Design/Build contract, awarded to Triton Marine Construction, October 2007, $29.1 million (approx. $13 – 19 million below eng. est.)
Questions?