Post Point Resource Recovery Plant Projects Update

August 7, 2023

Agenda

- History
- Cost Background
- Solids Handling Projects
- Other Plant Projects
- Emerging Technologies

History

- 1974 – Replaced Whatcom Creek Sewer plant with Post Point Facility
  - Primary Treatment
- 1993 – Completion of Post Point Secondary Treatment
  - $55 million ($108 million in 2022 dollars)
- 2007 – Climate Action Plan
  - Replace incinerators with pyrolysis, if feasible
- 2008 – CDM Biosolids conversion technology study
  - Recommends conversion to Fluidized Bed Incineration
  - Conversion not justified based on conventional cost/benefit analysis

History

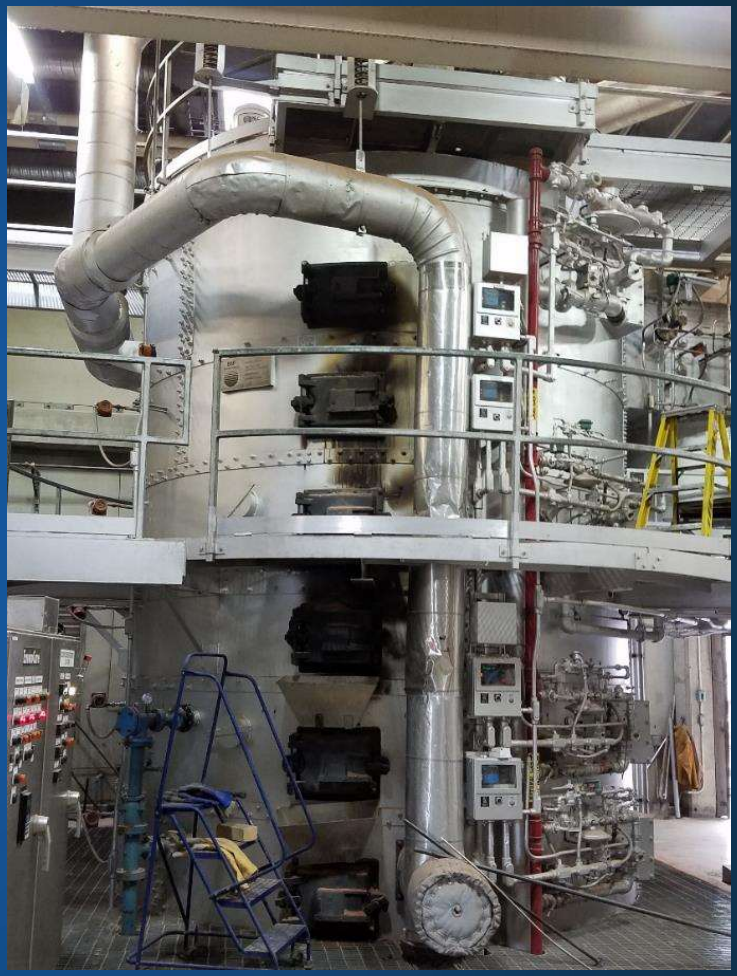
- 2009 – Comprehensive Sewer Plan
  - Upgrade liquid process
  - Replace incineration
- 2010 – CDM Biosolids Plan study
  - Fluidized bed w/o energy recovery based on conventional cost/benefit analysis
- 2011 – Facility Plan for Liquid Stream Upgrade developed.
  - No change in solids handling
- 2012 – Council Approved rates and structure for Liquid Stream Upgrade
- 2012-2015 – Construction of Liquid Stream Plant Improvements Project
  - $70 million

History

- 2016 – Initiation of Biosolids Resource Recovery Project
- 2017-2019 – Biosolids Project Criteria, Evaluation and Selection
- 2018 – Climate Action Plan identifies digestion to replace incineration
  - Bio-gas as a renewable energy source
- 2022 – Biosolids Project paused
  - Affordability concerns, Contaminates of Concern and other factors.
- 2022-2023 – Implemented repair/maintain asset management strategy

Cost projection (Sept 2022)

			Resource Recovery	Maintenance of Incinerators
1	WIFIA Loan application ($429.5m)	Incinerator Functionality	$ 5,000,000	$ 100,000,000
2		End Use	$ 10,000,000	$ -
3		Cost of property	$ 10,000,000	$ -
4		Resource Recovery	$ 218,000,000	$ -
5		Escalation/Inflation	$ 101,000,000	$ 50,000,000
6		Plant Wide Generators	$ 21,000,000	$ 21,000,000
7		Design	$ 41,000,000	$ -
8		Planning	$ 8,000,000	$ -
9		Other Capital	$ 15,000,000	$ -
10		Financing Fee	$ 500,000	$ -
11	Nutrients low (incineration)		$ 200,000,000	$ 200,000,000
12	Nutrients high (digesters)		$ 200,000,000	$ -
13	Additional O&M Expenses Nutrient requirements		$ 57,200,000	$ 30,000,000
14	Additional O&M exdpenses for biosolids/digesters		$ 8,580,000	$ -
15	Annual Capital/Reserve		$ 140,000,000	$ 140,000,000
16		**Total**	$ 1,035,280,000	$ 541,000,000



Cost comparison (updated to current)

			Maintenance of Incinerators	Estimated costs and actual expenses since Sept 2022
1	WIFIA Loan application ($429.5m)	Incinerator Functionality	$ 100,000,000	$ 24,895,000
2		End Use	$ -	
3		Cost of property	$ -	
4		Resource Recovery	$ -	
5		Escalation/Inflation	$ 50,000,000	
6		Plant Wide Generators	$ 21,000,000	$ 8,000,000
7		Design	$ -	
8		Planning	$ -	
9		Other Capital	$ -	$ 9,480,000
10		Financing Fee	$ -	
11	Nutrients low (incineration)		$ 200,000,000	$ 1,000,000
12	Nutrients high (digesters)		$ -	
13	Additional O&M Expenses Nutrient requirements		$ 30,000,000	
14	Additional O&M exdpenses for biosolids/digesters		$ -	
15	Annual Capital/Reserve		$ 140,000,000	
16		**Total**	$ 541,000,000	$ 43,375,000

Solids Handling Projects

Sludge Tank Replacement Project

- Tank provides temporary sludge storage for wet-weather events and incinerator maintenance activities.
- Project will replace the existing tank with a dual tank system to maximize process flexibility and reliability.
  - Design-Construction: 2023-2025
  - $16,500,000

On-Call Incinerator Repairs

- On-Call Incinerator repair work to ‘catch up’ with deferred maintenance needs.
- Annual project work provides preventative maintenance and rehabilitation work to maximize incinerator reliability.
  - Approx $500,000 annual project budget.
- Costs:
  - 2020: $400,000
  - 2021: $360,000
  - 2022: $665,000
  - 2023: $670,000 (Projected)

Incinerator Programmable Logic Controller (PLC) Replacement

- PLC is the primary computer which controls the Incinerator system.
- Replacement is part of a current multi-year, phased project to replace all PLC's City-wide.
  - Phases 1-4: Replacement of all other PLC's in system.
  - Proposed Phase 5: Replacement of Incinerator PLC.
  - Phased PLC replacement project initiated in 2015, continuing through 2026.
- Cost Estimate
  - Phases 1-4: $4,500,000
  - Phase 5/Incin: $3,000,000

Incinerator Emission Control System Replacement

- Air emissions are primarily scrubbed by a Wet Electrostatic Precipitator (WESP)
- Existing WESP is at end-of-life
- Exploring air pollution control equipment upgrade options to reduce emissions
- Cost
  - $1,500,000 (Direct WESP Replacement)
  - $TBD (Upgrades)

Continuous Emissions Monitoring System (CEMS) Replacement

- The CEMS is the system of sensors and equipment which measure and monitor our air quality emissions.
- CEMS is regulatorily required and must remain operational for air emission reporting.
  - Existing CEMS is at end-of-life; replacement is needed to provide resiliency and minimize regulatory risk.
  - Procurement: 2023-2024
  - Installation/Construction: 2024-2026
- Cost Estimate
  - $1,300,000

Incinerator Feed Pump Replacement

- Replacement of existing piston pumps (1992).
- Provides reliable and redundant feed to Incinerators.
  - Design-Construction – 2019-2024
- Costs
  - $1,900,000

Other Plant Projects

Nutrient Reduction and Optimization Project

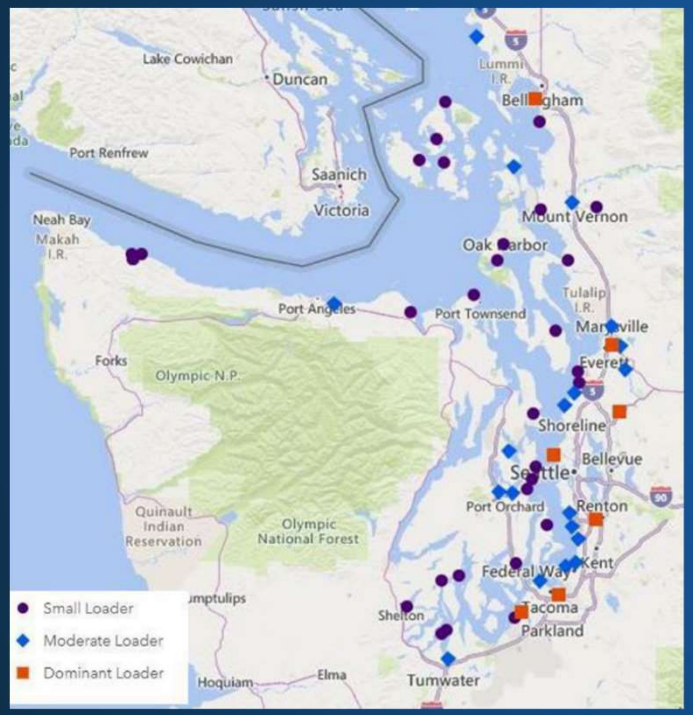
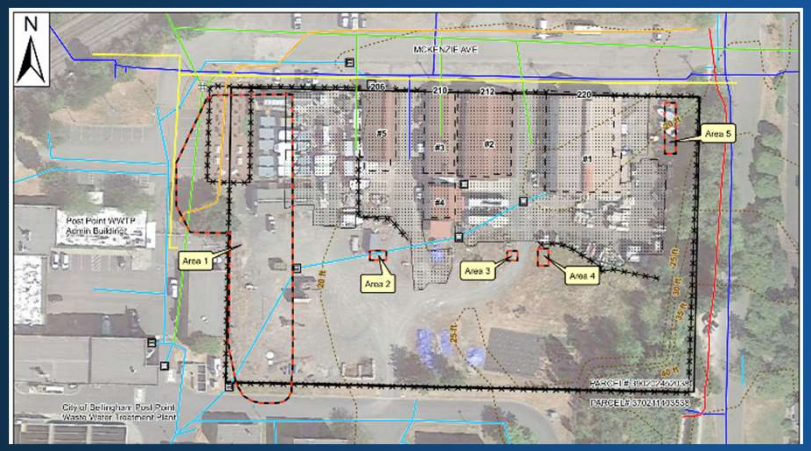


Image courtesy WA Dept of Ecology

- Puget Sound Nutrient General Permit requires optimizing nitrogen removal and nutrient reduction evaluation
  - Protection of the Salish Sea
- Plant Optimization is required to stay ahead of changing regulations
- Cost
  - Optimization/Reporting $1,000,000
  - Partially supported by Ecology Grant ($125,000)

McKenzie Site Contamination Cleanup

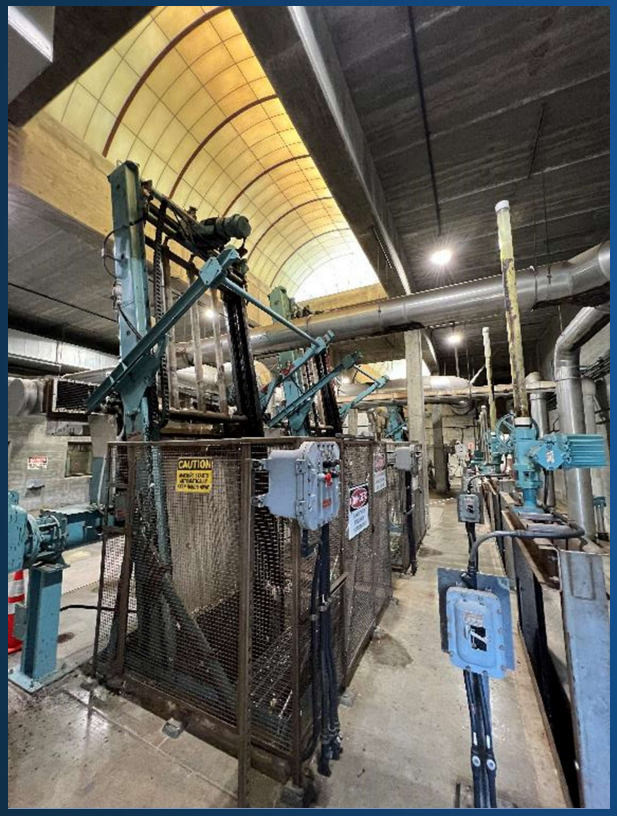


- Various studies and cleanup actions since 1994.
- Site has contaminated soils and groundwater.
- Planning/Design 2024
- Cost Estimate
  - $4,300,000
  - (2021 estimate for full remediation)

Emergency Backup Generator Replacement

- Existing generators and control systems at end-of-life (1991)
- Reliable backup power required for this critical facility
  - Design-Construction: 2023-2026
- Cost Estimate
  - $8,000,000

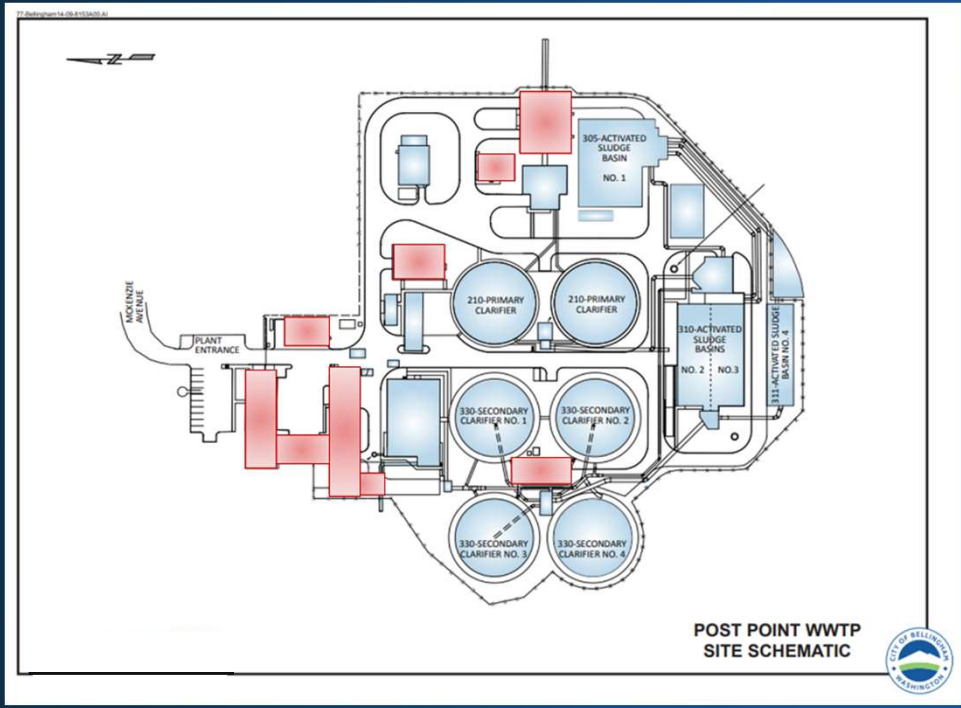
Headworks Condition Assessment and Bypass Design



- Headworks components are from 1974 & 1992
- Project will identify priority replacement and upgrade needs within these facilities.
  - Design/Assessment: 2023-2024
- Cost Estimate
  - Design/Assessment: $530,000

Chlorine Gas Replacement Project

- Increases plant and community safety by removing chlorine gas canisters
- Generates safer and less volatile hypochlorite (chlorine solution) on-site
- Project completed June 2023.
- Cost
  - $3,200,000



Plant-Wide Roof Replacements

- Roof assemblies at Post Point are end-of-life
  - 12 buildings, ~ 40,000sf of roof
  - Included in the City-wide Roofing solicitation (2023-2025)
- Cost
  - Design/Construction ~$1,500,000

Emerging Technologies

Emerging Technology Pilot Projects

- Request For Proposal (RFP) for onsite Pilot tests released 2023
  - Solicitation for technology vendors to partner with the City.

Staff Research - Emerging Technologies

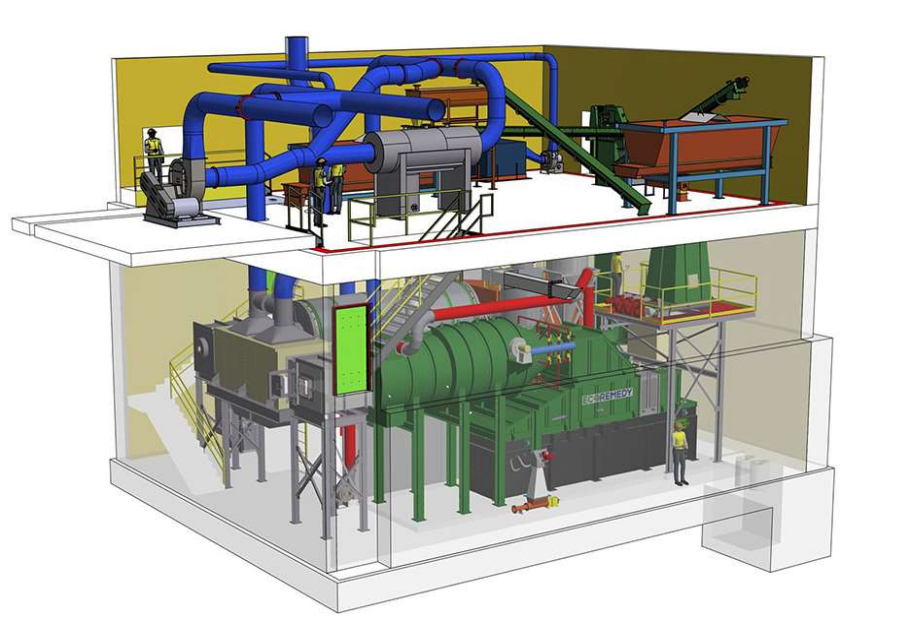


Image courtesy EcoRemedy, LLC

- Attendance at national conferences for Biosolid and Residuals
- Contact with over 15 potential vendors of various technologies.
- Site visits to plants in development California (pyrolysis) and Washington (drying, gasification)
- Operational gasification plant in Loganholme, Australia

Post Point Resource Recovery Plant Projects Update

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