



King County

Asset Management Tier 1 Projects

Presented to the Metropolitan Water Pollution Abatement
Advisory – Engineering and Planning Subcommittee

March 7, 2023



King County

Department of Natural Resources and Parks
Wastewater Treatment Division

Overview

- Asset Management (AM) Decision Making – AM Prioritization Criteria
- Asset Management Tier 1 Definition
- Asset Management Tier 1 Projects in 2023-2032 Rate Plan
- New FTEs and Recent Project Launches



AM Decision Making – AM Prioritization Criteria

Asset Management Plants

Asset Criticality

- Probability and consequence of failure

Organizational Impacts

- Impacts of failure to operations

Asset Condition

- Condition assessment and maintenance records

Asset Obsolescence

- Availability of parts, vendor support, support hardware, software version/support, and cyber security

Asset Management Conveyance

Asset Criticality

- Probability and consequence of failure

Asset Condition

- Pipeline Assessment Certification Program Codes, Structural Defects



Asset Management Tier 1

- Asset Management Tier 1 investments:
 - Equipment or pipeline that is currently in poor condition, or unserviceable
 - Not meeting all intended functions
 - At risk of catastrophic failure due to condition
 - Spare parts unavailable
 - Increased maintenance needs



AM Tier 1 – West Point Process Equipment & Piping

- **Grit Classifier**
- **Boiler**
- **Heat Loop**
- **C1/C2 Pipeline**
- **Instrument and Service Air System**
- **Oxygen Generation System**
- **Propane System**
- **Primary and Final Effluent Flow Meters**
- **Sodium Hypochlorite Disinfection System**
- Consequences of failure include process upsets and/or permit violations



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AM Tier 1 Projects – South Plant Process Equipment & Piping



- **Biogas Scrubbing System**
- **Return Activated Sludge (RAS) Piping and Components**
- **DAFT Tank Metal Components**
- **Secondary Treatment Flow Control**
- **Influent Barscreens**
- **Screening Dewatering Units**
- Consequences of failure include process upsets and/or permit violations



AM Tier 1 – Process Equipment & Piping

- **Vashon Treatment Plant Clarifiers**
- **Brightwater and Carnation Membranes**
- **Brightwater Blowers**
- Consequences of failure include process upsets and/or permit violations



AM Tier 1 – Raw Sewage and Effluent Pumping



- **Hidden Lake Pump Station (Seattle)**
- **Lake Ballinger PS (Shoreline)**
- **Lakeland Hills Pump Station (Auburn)**
- **Murray Pump Station (Seattle)**
- **North Beach Pump Station (Seattle)**
- **South Plant Raw Sewage**
- **West Point Intermediate and Effluent Pump Stations**
- **Consequences of failure include overflows and permit violations**



AM Tier 1 – Instrumentation and Control

- **Ovation Evergreen Control Systems Lifecycle Management**
- **Vashon and Carnation Treatment Plants Controls Systems**
- **Systemwide Offsite Level Controls and Communication**
- **Obsolete systems could lead to control failures, permit violations and cyberattack**



AM Tier 1 – Electrical Equipment



- **Electrical Improvements at West Point and South Plant**
- **Uninterruptable Power Supplies**
- **Standby Power Systems (Generators)**
- Consequences of failure include overflows during power outages



AM Tier 1 – HVAC and Odor Control

- **Brightwater Operations Center Roof & HVAC Replacement**
- **Matthews Park PS Odor Control (Seattle)**
- **South Plant Dewatering and Secondary Treatment Odor Control Systems**
- Leaks could result in equipment damage, safety issues, or permit non-compliance issues



AM Tier 1 – Conveyance Pipes

- **Over 9 Miles of Severely Corroded Gravity Pipe Throughout System:**
 - Auburn
 - Bellevue
 - Issaquah
 - Kenmore
 - Kent
 - Kirkland
 - Redmond
 - Renton
 - Seattle
 - Woodinville
- Failure could result in overflows, traffic disruption, property damage, permit violations



AM Tier 1 Projects – Conveyance Pipes



- **System Wide Force Main Inspection Access**
 - Inspection access is critical in order to plan and implement needed repairs and replacements
- **Medina Pump Station Pump Room Header**
- **Murray Pump Station Force Main (Seattle)**
- Pipe failures lead to potential overflow and permit non-compliance



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AM Tier 1 Projects – Wastewater Gates



- **South Plant Influent Gates & Actuators**
- **West Point Critical Gates**
- **Denny Way Regulator Station Outfall Gate (Seattle)**
- Many gates are in corrosive environments
- Gates have deteriorated significantly
- Gates control plant flow, isolate facilities, and perform critical emergency plant bypasses - failure consequences range from manual workarounds to permit violations

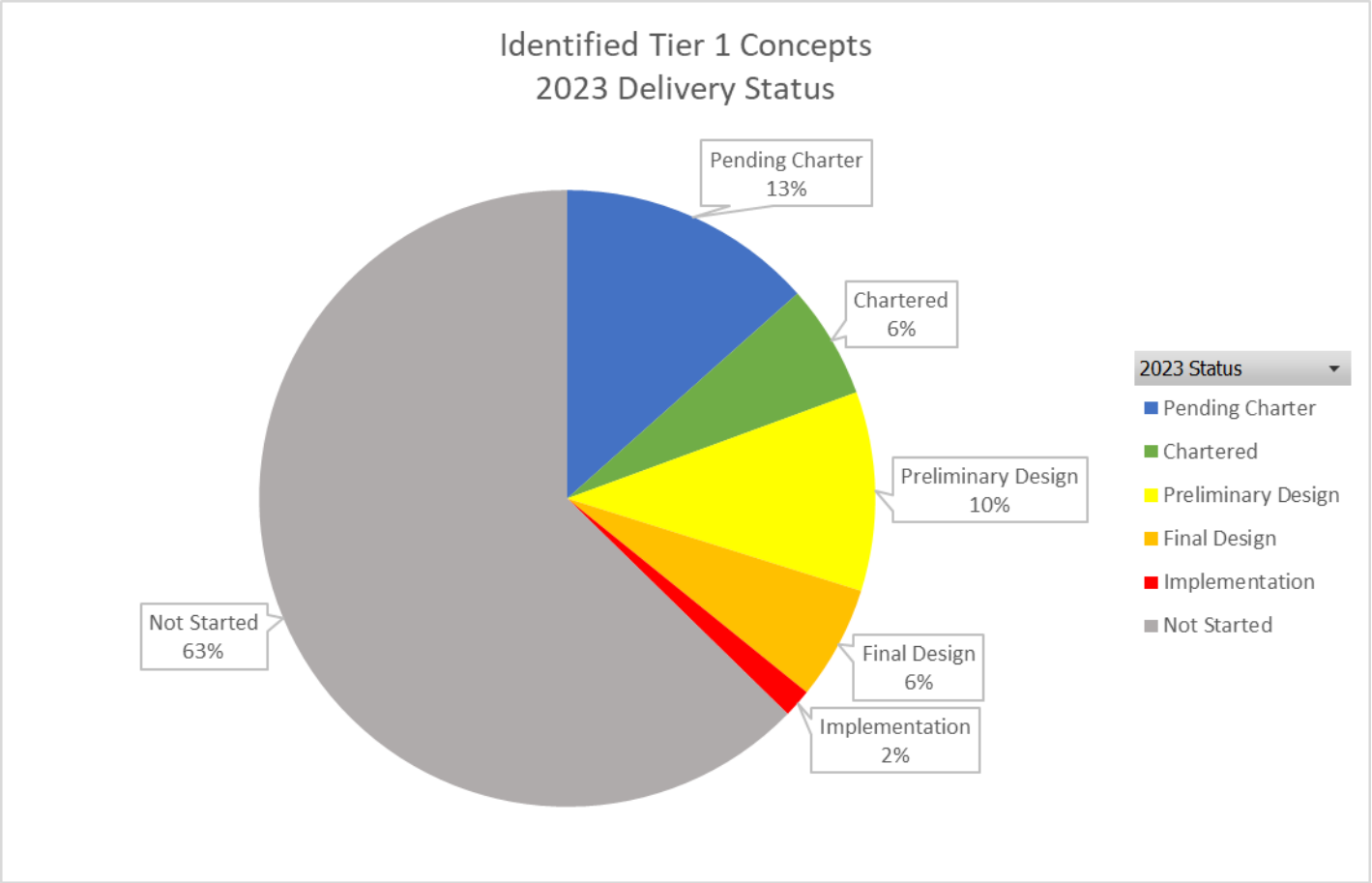


AM Tier 1 Projects – Outfalls

- **Vashon Treatment Plant Outfall**
 - Outfall is in an area prone to landslides and there is a potential for NPDES permit violation and impact to resident access resulting from a break in the pipe caused by landslides



2023 Delivery Status



Questions?

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