WTD's Priority Asset Management Needs

Presented to Metropolitan Water Pollution Abatement Advisory Committee
Rates and Finance and Engineering and Planning Subcommittees

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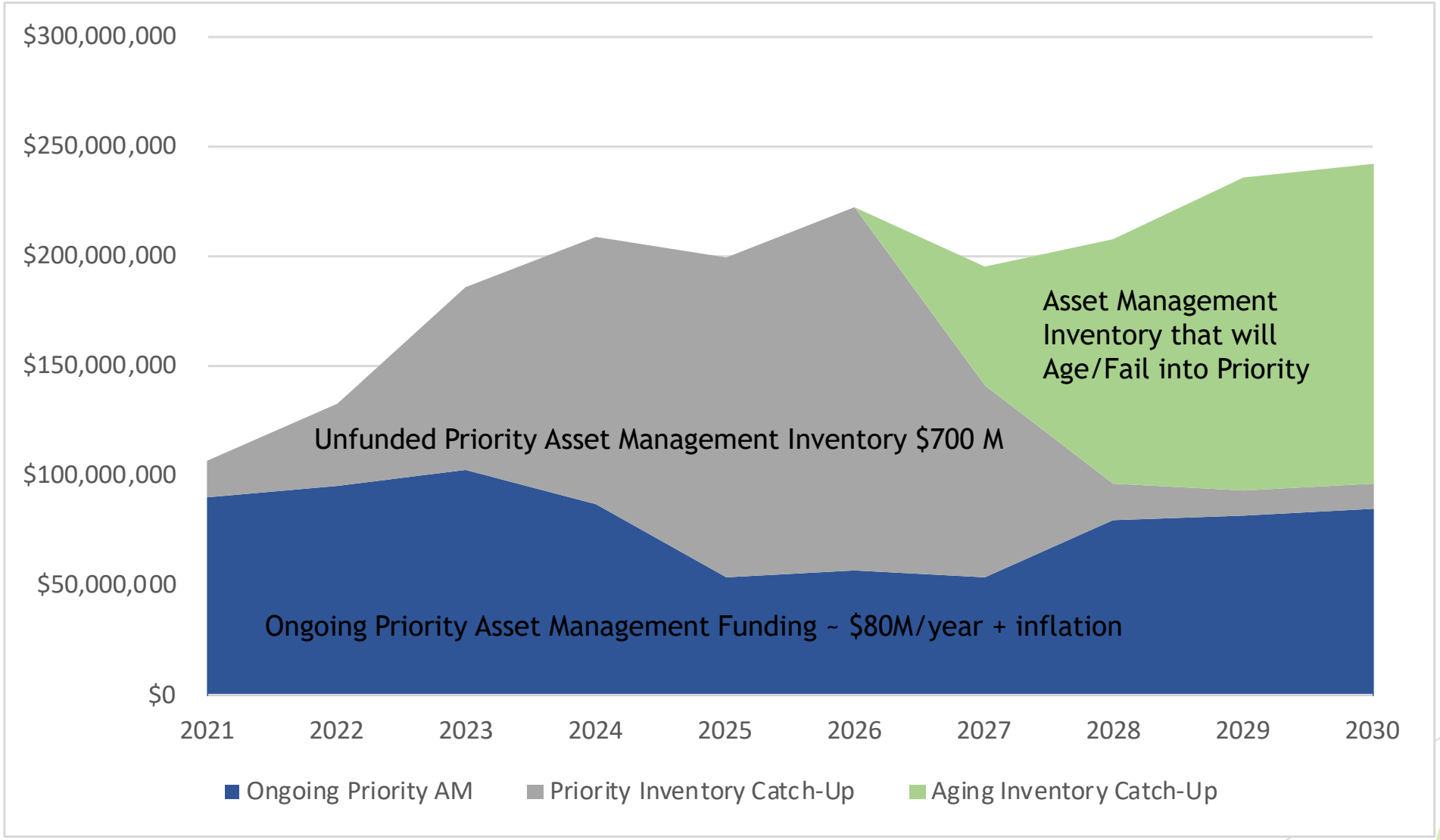
How Capital Portfolio Process Informed Wastewater Rate Process

- Initial list of projects for 6 year plan informed by portfolio prioritization process
- Initial project ranking through data and staff discussion
- Final project decisions made by WTD Management
- Preliminary forecasts for individual projects were rolled up into the capital portion of the rate forecast

Asset Management Inventory Assumptions



Sewer Rate Setting Goals

- Reliability – Offsite and West Point
- Address the most critical asset management risks
- Respond to Growth-Related Demands on the System
- Respond to Executive priorities

Proposed rate plan includes funding to Address Most Critical Risks in Conveyance System

- Hydrogen Sulfide corrosion eats away at concrete pipe wall and reinforcing steel compromising the structural load bearing capacity of pipes
- Rehabilitation restores structural strength to pipes and protects them from future corrosion and is typically more cost efficient and less disruptive than replacement

How are the most critical risks in the conveyance system determined?

- Conveyance pipeline asset management projects are prioritized based on condition and criticality
- Condition: A typical prioritized project has lost concrete pipe wall and has reinforcing steel exposed to the corrosive environment within the pipe
- Criticality: A typical prioritized project will also have the potential for
  - overflows from 25 MGD to over 50 MGD and/or
  - overflows impacting sensitive water bodies (such as rivers, streams, and wetlands) and/or
  - overflows impacting high human density areas and/or
  - would impact other infrastructure and traffic if failure causes a sinkhole

Highest priority conveyance pipeline projects included in rate assumptions*

- Bellevue Interceptor: approximately 1.1 miles of pipe located along Bellevue Way SE, $40M allocated
- Lake Hills Boulevard Siphon:, approximately 1,700 feet of pipe located near Lake Hills Boulevard and 154th Ave SE in Bellevue, $5M allocated
- Elliott Bay Interceptor Section 8:, approximately 2,000 feet of gravity pipe located along the BNSF Right of Way next to the Interbay Golf Center in Seattle, $13M allocated

Additional priority projects included in rate assumptions*

Other Identified Priority Projects include projects in:

- Bellevue – additional 2 miles of the Eastside Interceptor, $127M allocated
- Woodinville – approximately 4.75 miles of the N. Creek Force Main, $38M allocated
- Renton – 2,000 linear feet of May Creek, South, and Eastside Interceptors, $21M allocated
- Kirkland – 2,500 linear feet of Juanita and Eastside Interceptors, $23M allocated
- Issaquah Interceptor – 1,100 linear feet, $10M allocated
- Kent Cross Valley Interceptor – 1,300 linear feet, $10M allocated
- Redmond Interceptor – 500 linear feet, $4M allocated
- Kenmore Interceptor Landfall Structure - $1.2M allocated

How does an asset management project at a facility become priority?

- Asset management projects located at facilities are prioritized based on condition, criticality, obsolescence, and organizational impact of asset failure
- A typical project will have the following characteristics:
  - Condition: asset is not reliably meeting its design functionality and has less than 2 years before meeting the end of service life
  - Obsolescence: asset is in a state in which spare parts and the ability to maintain the asset is challenged to impossible
  - Criticality: consequence of failure that ranges from increased operational costs up to immediate capacity loss, environmental damage, reportable permit violations, safety violations, or potential serious injury or even potential loss of life
  - Organizational Impact of Asset Failure: impacts ranging from around a 60% up to over 100% increase of operational efforts beyond what is normally required for the asset

Address Most Critical Risks and Improve Reliability at Offsite Facilities*

- Upgrade level control systems at offsite facilities
  - Approx. 134 unsupported Moore process controllers at facilities throughout system – spare parts will not be available
  - Sweyolocken Root Cause Analysis and After Action Report identified that physical floats and outdated communication systems are critical vulnerabilities throughout system
  - This project would evaluate all offsite facilities, replace obsolete process controllers, and bring all facilities into compliance with modern level control design standards
  - $70M allocated

Address Most Critical Risks and Improve Reliability at Offsite Facilities*

- Pump Station Upgrades / Raw Sewage Pump replacements / Electrical Upgrades
  - North Beach PS in Seattle - raw sewage pumps and force main are at end of life, risks of permit compliance if failure, $42M allocated
  - Lakeland Hills PS in Auburn – pumps are at end of life, $20M allocated
  - Lake Ballinger PS in Shoreline – multiple systems (mechanical and electrical) are at end of life, $20M allocated
  - Hidden Lake PS in Seattle – pumps are not being supported by manufacturer, no spare parts, $17M allocated
  - Murray PS in Seattle – pumps are at end of life, $17M allocated

Address Most Critical Risks and Improve Reliability at West Point Treatment Plant*

- Address risks posed by electrical systems in the Main Substation, 13kV and 480V Distribution Systems
  - Electrical equipment nearing or at end of life
  - Motor Control Centers installed in 1990's not supported by manufacturers, no spare parts available
  - Equipment failures could cause permit violations
  - $57M allocated

*All costs above are pre-planning level estimates and have an estimated range of **greater than** -50% to +100%

Address Most Critical Risks and Improve Reliability at West Point Treatment Plant*

- Address risks in intermediate and effluent pumping systems
  - Pumps not been rebuilt since installation in the 1990's
  - Vibration levels and visual inspections indicate refurbishment or replacement is required
  - Failure of pumps could cause permit violation
  - $69M allocated

*All costs above are pre-planning level estimates and have an estimated range of **greater than** -50% to +100%

Address Most Critical Risks and Improve Reliability at South Treatment Plant*

- Replace barscreen equipment and screenings dewatering equipment at end of life, $20M allocated
- Replace raw sewage pump #3 at end of life, $10M allocated
- Replace switchgear and motor control centers at the end of life, $6M allocated
- Replace failing and inaccurate flow control equipment, $4M allocated

Questions?

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