



King County

Department of Natural Resources and Parks
Wastewater Treatment Division

Resiliency and Recovery Program



MWPAAC General Meeting
May 23, 2018

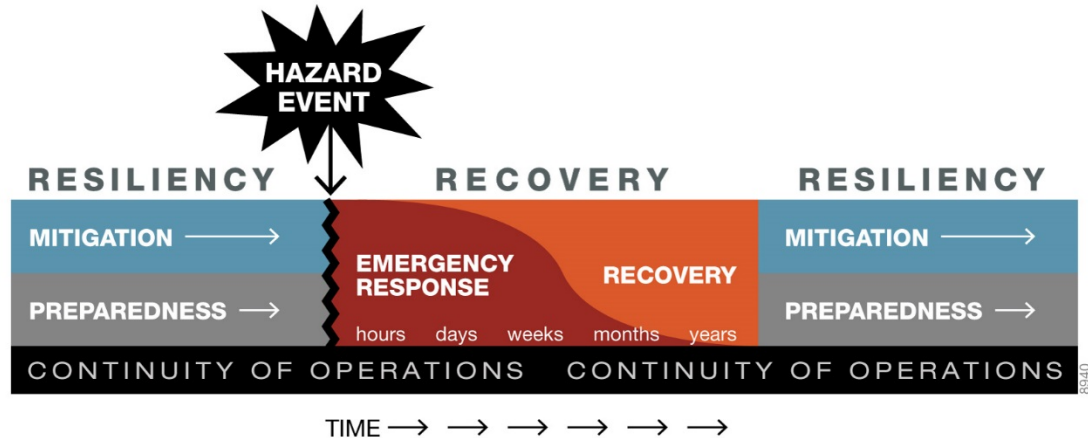


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Project Objective

Develop a comprehensive strategy for preparing King County Wastewater Treatment Division's (WTD) conveyance and treatment facilities for the impacts of a major earthquake, flooding or natural hazard events.



8940



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Project Team

Prime Consultant – HDR Engineering Inc.

- Advanced Industrial Automation Corp
- Aqualyze, Inc.
- Ballantyne Consulting, LLC
- Griffin, Hill & Associates, LLC
- Planning and Management Services, Inc.
- PRR, Inc.
- Reid Middleton
- Shannon & Wilson, Inc.

MWPAAC Taskforce

- Alderwood Water and Wastewater District
- City of Redmond
- City of Seattle



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Seismic Scenarios



Cascadia Subduction Zone, Magnitude 9.0

- Primary focus as the most likely scenario



Seattle Fault, Magnitude 7.2

- Very strong ground motion along Interstate-90 corridor
- Surface fault rupture can result change in sewer grade



South Whidbey Island Fault, Magnitude 7.4

- Very strong ground motion near Brightwater
- Surface fault rupture/change in sewer grade





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Natural Hazards Scenarios



Flooding and Tsunami:

- 100-Year Recurrence Interval Flooding
- 500-Year Recurrence Interval Flooding
- Mechanical Failure-Induced Flooding
- Tsunami inundation associated with the Seattle Fault Scenario



Landslides Caused by Earthquakes



Extreme Weather:

- Tornadoes
- Damaging Winds
- Large Hail Events





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Prioritization of Mitigation Strategies

Criticality Factors

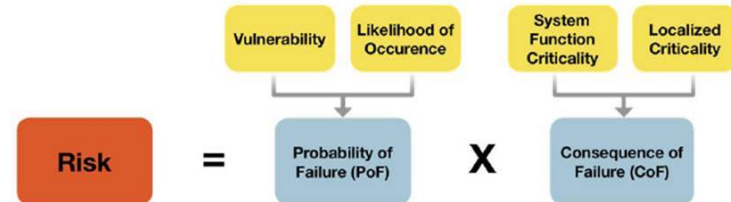
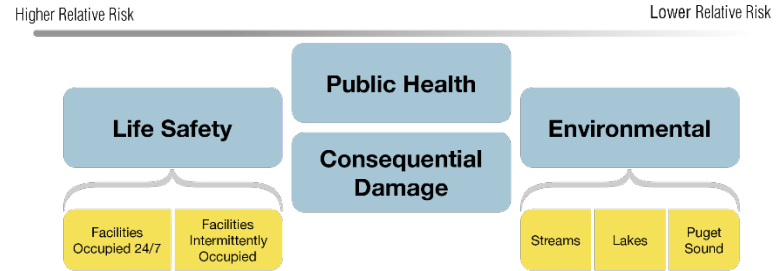
- Life Safety
- Public Health
- Consequent Damage
- Environmental

Risk

- Consequence of Failure: Expected System Performance
- Probability of Failure: Vulnerability to Hazard

Team Validation

Equity and Social Justice

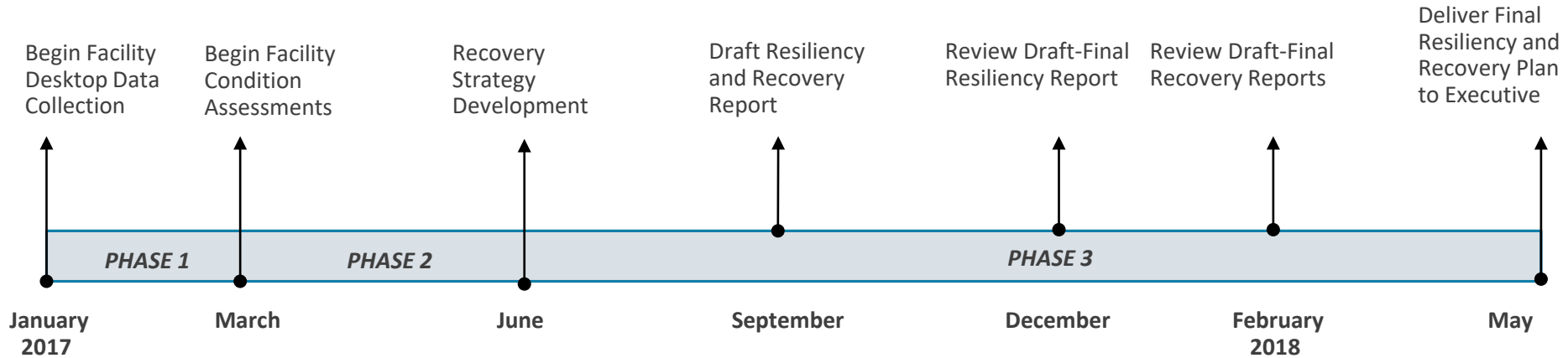




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Schedule





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Completed Since October 2017 Briefing

October 2017

- Developed conceptual solutions for problems identified
- Developed pre-class 5 Cost Estimates for preliminary solutions

November 2017

- Refined Capital Projects List

December 2017

- Draft Resiliency Recommendations Report WTD Management Review

January 2018

- Draft Recovery Recommendations Report WTD Management Review

May 2018

- Deliver Final Resiliency and Recovery Reports to Executive



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Resiliency Mitigation Concepts

- 17 Seismic Structural
- 10 Seismic Liquefaction
- 1 Landslide
- 8 Flooding
- 5 Programmatic Improvement Projects
- 11 Recommendations for Further Study





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Capital Investments

- Near- and long- term capital investments
- Recommendations for further study will potentially turn into capital projects
- WTD's proposed six-year Capital Improvement Program:
 - Two capital projects estimated at approximately \$22 million
 - Remaining CIP projects estimated at approximately \$128 million





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Recovery Recommendations

- Strategies are designed to drive timely, efficient and safe system recovery





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Recovery Recommendations

- Preparedness and Recovery Strategies:
 - WTD Continuity of Operations Plan
 - Designated Emergency Management Program Coordinator
 - Employee Training + Capacity Development
 - Contracting + Procurement
 - System-wide Information + Documentation
 - Financial Risk Management
 - Emergency Recovery Working Group





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Program Next Steps

- Identify synergies in six-year capital improvement projects
- Systemwide Comprehensive Plan efforts will inform financial analysis and implementation timeframe
- Ongoing coordination and briefings with WTD management and regional stakeholders
[i.e. WAWARN: Utilities Helping Utilities, communication strategies, response/recovery efforts]





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Program Implementation

- Leadership support
- Resiliency & Recovery program manager
- Capital improvement portfolio integration: Resiliency & Recovery sub-portfolio
- Designated resiliency mitigation funding



Thank You



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