

I/I CONTROL PROGRAM REGIONAL BEST MANAGEMENT PRACTICES

EVALUATION OF INFLOW AND INFILTRATION
REDUCTION CONCEPTS PHASE 2

MARCH 4, 2021



King County

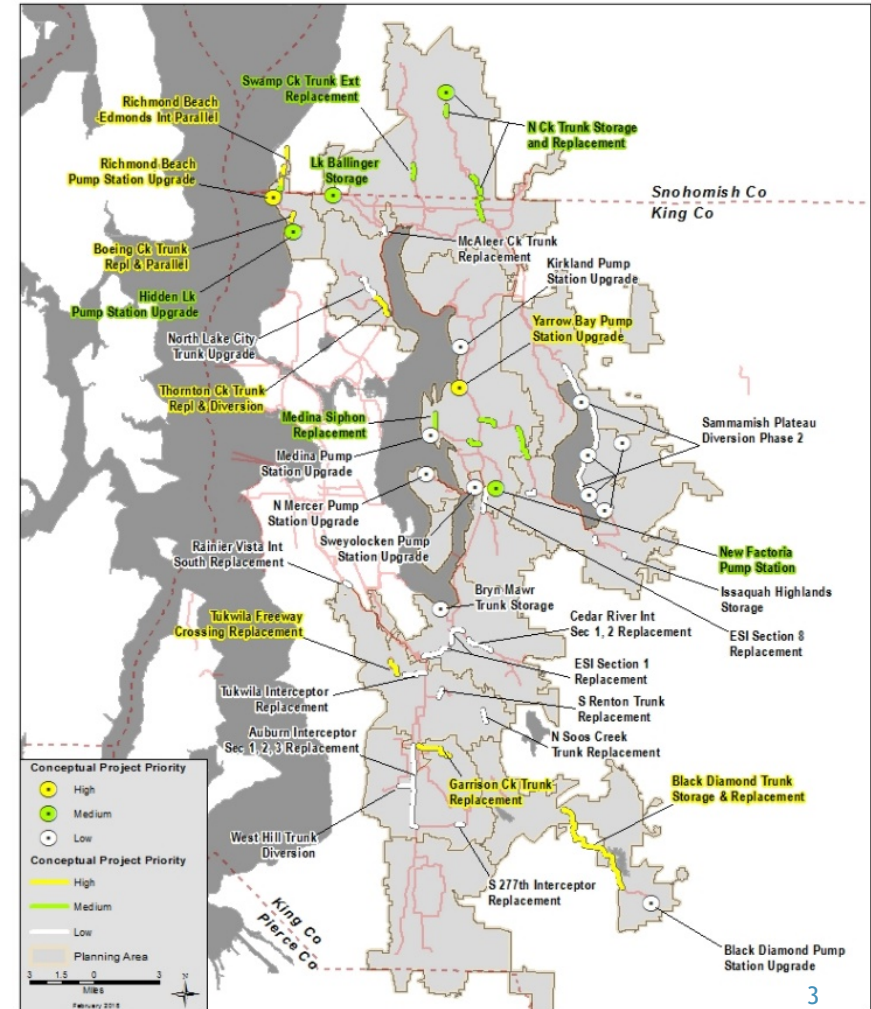
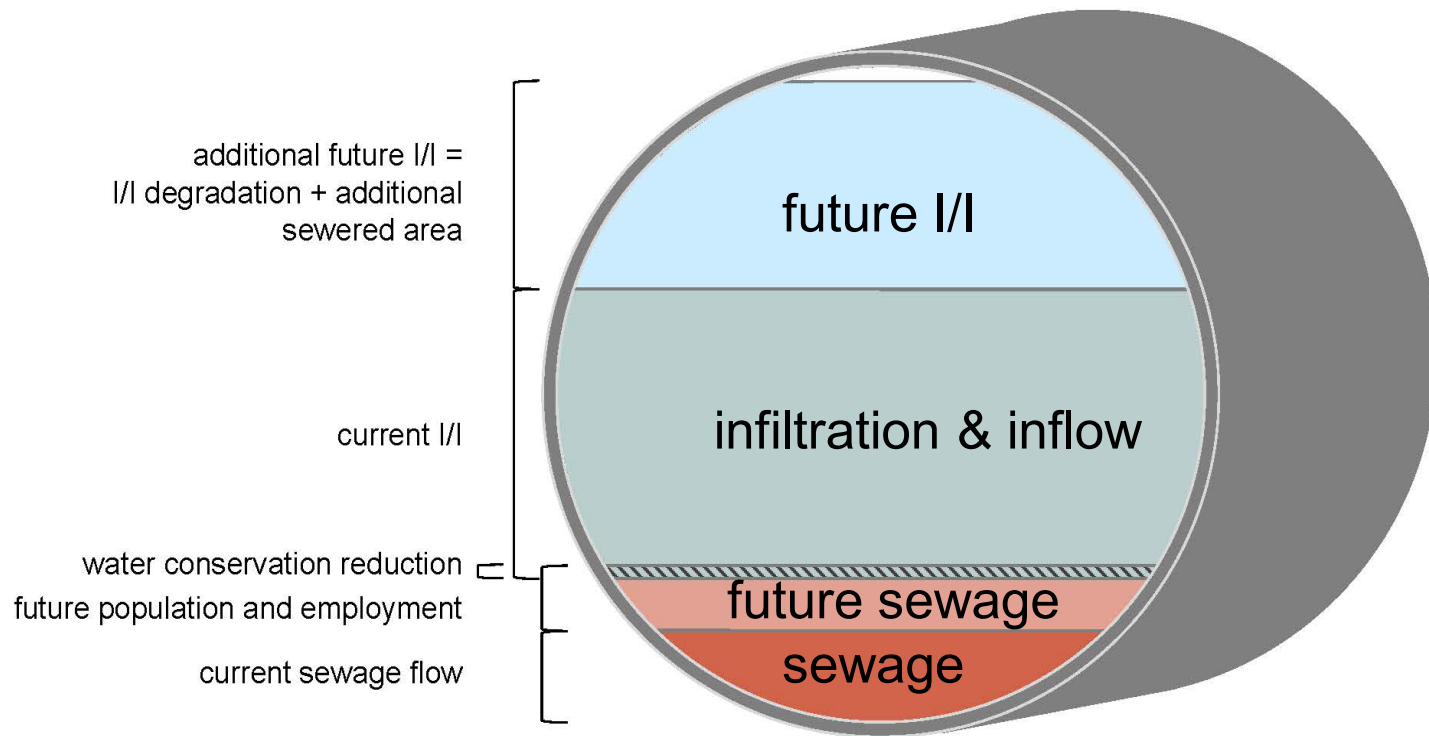
Department of Natural Resources and Parks
Wastewater Treatment Division

TODAY'S PURPOSE AND OUTCOMES

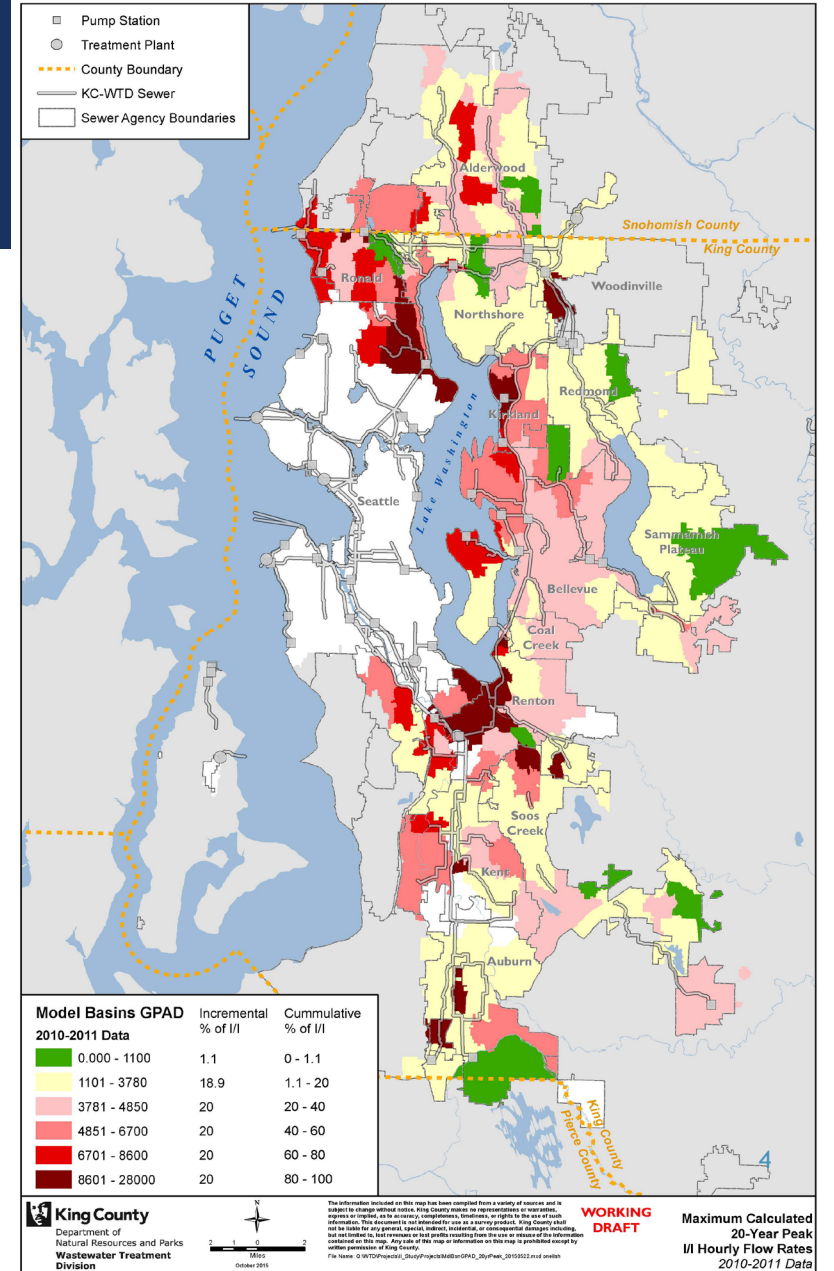
- **Purpose:**
 - Overview of work completed on regional best management practices (BMPs)
 - Present and discuss MWPAAC I/I task force recommendation
 - Discuss possible E&P subcommittee recommendation to MWPAAC
- **Desired Outcomes:**
 - Next steps identified for recommendation

I/I IN THE REGIONAL WASTEWATER CONVEYANCE SYSTEM

Components of Future Flows



PEAK I/I HOURLY FLOW RATES VARY IN THE REGIONAL SYSTEM

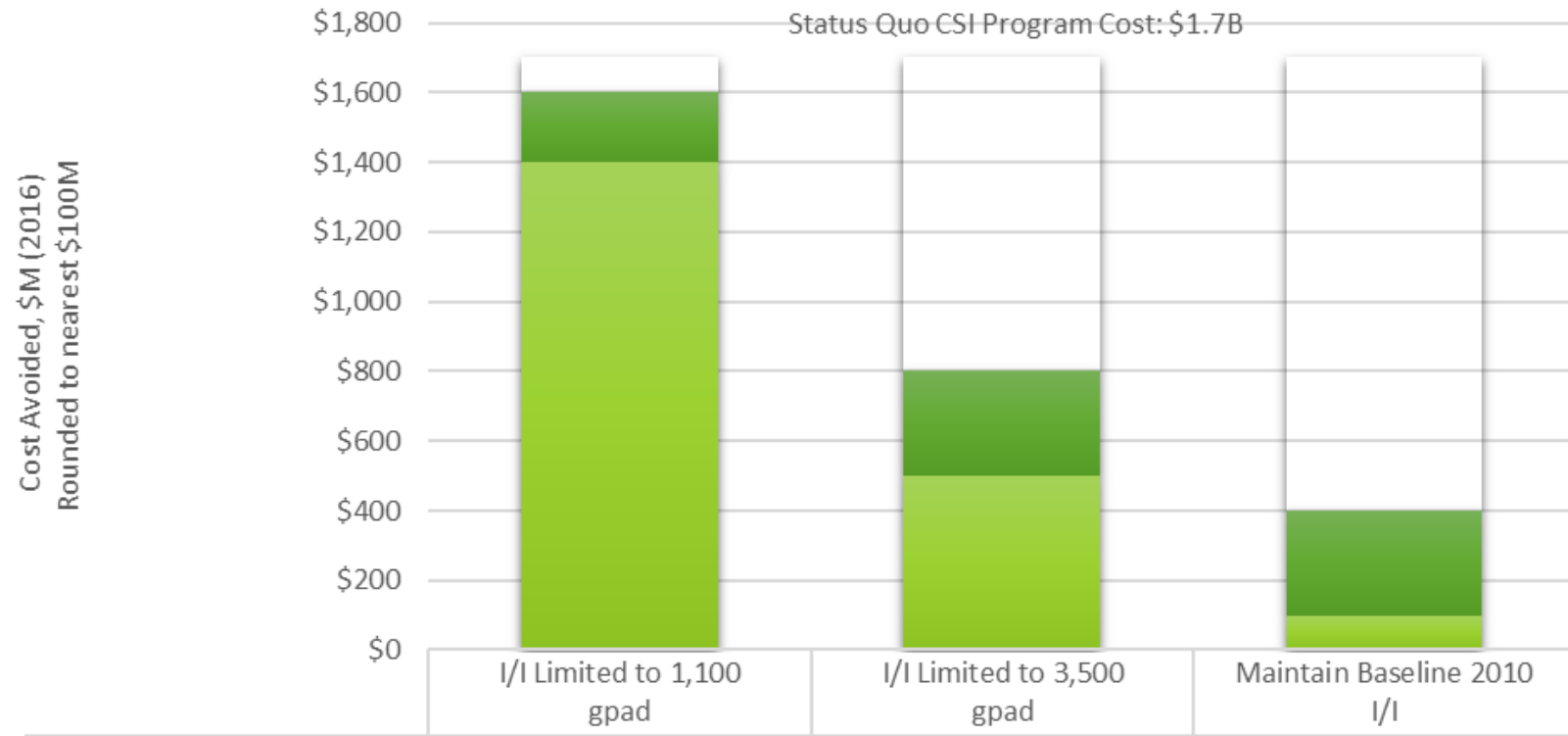


WHY I/I REDUCTION?

I/I reduction avoids costs

- Cost avoidance is difference between status quo cost and other scenarios
- Higher levels of I/I removed = higher avoided capital costs
- Avoided costs are seen over time
- I/I control equal to I/I degradation rates would delay most projects

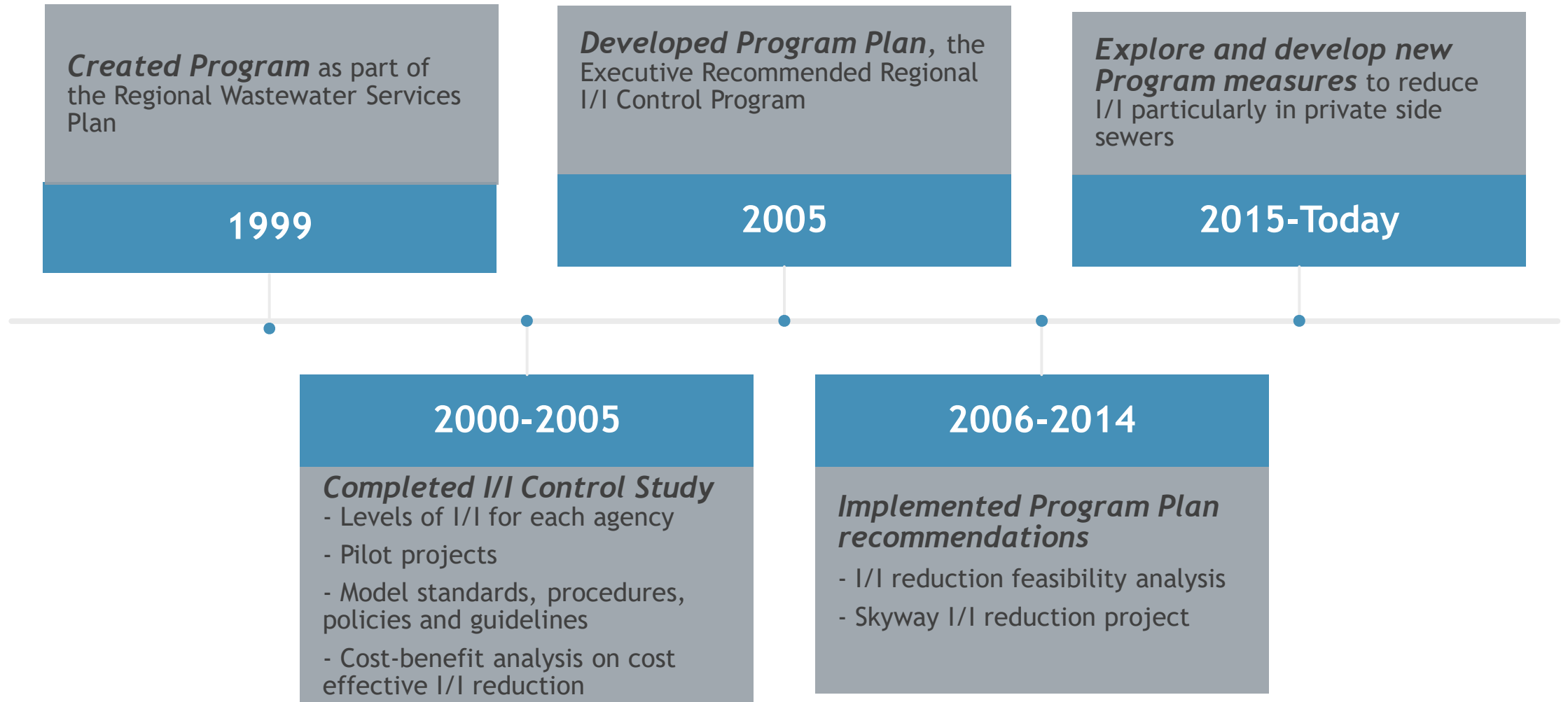
Range of Total CSI Project Cost Savings by I/I Reduction over 40-Years



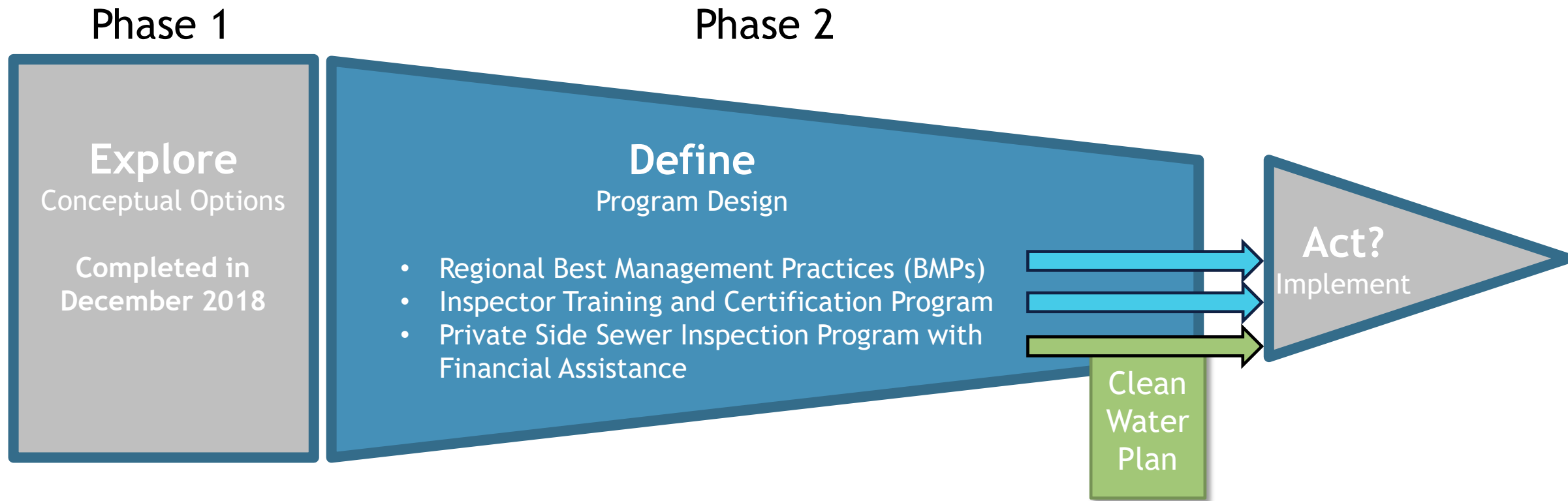
Costs Avoided - Low range	\$1,400 M	\$500 M	\$100 M
Costs Avoided - High Range	\$1,600 M	\$800 M	\$400 M

Remaining CSI Program Cost	\$100 - 300 M	\$900 - 1,200 M	\$1,300 - 1,600 M
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WHAT HAS THE REGION DONE TO CONTROL I/I?



OVERVIEW OF CURRENT I/I WORK



PHASE 1: EXPLORE CONCEPTS - WORK COMPLETED

Purpose: Explore concepts for programmatic I/I reduction in the region and over decades.

Technical Reports on King County Regional I/I Control website

- **Verify 2004 King County Final Draft Regional I/I Control Standards, Procedures and Policies**
- **Assessment of Existing Local Agency Sewer and Side Sewer Standards**
- **Approach to Achieve Common Sewer and Side Sewer/Lateral Standards**
- **Evaluation of Current Inspection Programs at Cities and Sewer Districts**
- **Outline for a Standardized Regional Inspection Training Program**
- **Private Side Sewer Program Identification and Relevance to the King County Wastewater Service Area**
- **Private Side Sewer Program Evaluation Process**

PHASE 2: DEFINE PROGRAMS - WORK UNDERWAY

Draft technical reports are underway:

1. Regional Best Management Practices - draft report available
 - [Draft Regional Side Sewer Best Management Practices Development, December 2020](#)
2. Inspector Training and Certification Program - draft report expected Q1/Q2 2021
3. Private Side Sewer Inspection Program with Financial Assistance Program - draft report expected Q1/Q2 2021

Phase 2 is expected to result in MWPAAC recommendation on regional implementation of side sewer BMPs and inspector training and certification program. No recommendation on side sewer inspection program is expected due to the need for further discussion.

REGIONAL BEST MANAGEMENT PRACTICES

DRAFT TECHNICAL MEMO

1. Introduction
2. Regional Side Sewer BMP Toolkit
 - Goal
 - Objectives
 - Success Factors
3. Side Sewer BMP Listing
 - Side Sewer I/I Prevention BMPs
 - Proactive Side Sewer Maintenance BMPs
 - Other Private Property I/I Source Identification/Mitigation BMPs
4. BMP Consideration and Refinement
 - Issues for Consideration and Initial Recommendations
 - I/I Task Force Feedback
5. Side Sewer BMP Recommendations
6. Next Steps

Draft technical memo available at: <https://www.kingcounty.gov/services/environment/wastewater/ii.aspx>

Final technical memo will include and be tailored to the MWPAAC recommendation.

REGIONAL BEST MANAGEMENT PRACTICES

GOAL

Goal

- Regional, consistent use of three to five best management practices with the greatest potential to reduce I/I in separated basins applied by the majority if not all WTD's component agencies.

Assumptions

- BMPs that address I/I sources related to side sewers, not mainlines, are expected to have a higher potential for more local agencies to achieve reduction goals.
- Establishing regional BMPs will raise awareness of the need for increased, proactive attention on side sewers to achieve project goals.

LIST OF BMPS IDENTIFIED

- A1. Watertight side sewer specifications, standard drawings, and proper methods for new and repaired side sewers
- A2. New side sewer construction inspection and product-specific inspection requirements
- A3. Repair, rehabilitation, and replacement inspection requirements
- A4. Side sewer contractor prequalification
- A5. Unauthorized connection prohibition
- A6. Side sewer design guidelines that address flood-prone areas
- A7. Lake line guidelines and lakefront property provisions
- A8. Over-water structure connection provisions and recommendations
- A9. Side sewer design guidelines in steep areas
- A10. Side sewer disconnection, reconnection, and demolition requirements
- B1. Side sewer maintenance responsibility declaration and enforcement mechanism
- B2. Tree and sewer main separation requirement
- B3. Model courtesy notice to property owner / occupant regarding roots in lateral connections
- B4. Model web content for local agencies
- B5. Side sewer maintenance guideline documents
- C1. CCTV inspection specifications
- C2. Rainfall simulation and dye testing specification
- C3. Illicit source disconnection public education materials
- C4. Cleanout cap replacement program

BMP CONSIDERATIONS AND REFINEMENT

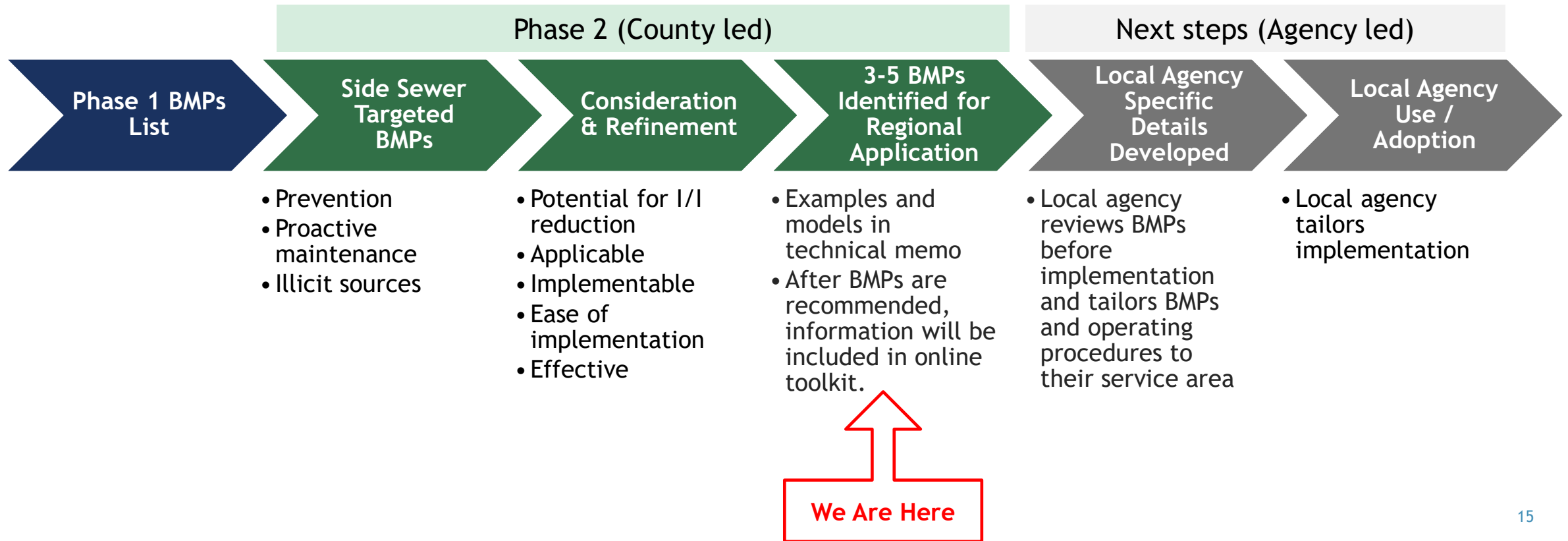
- Highest potential for I/I reduction or prevention
- Applicable - Applicable to many component agencies
- Implementable - Able to be implemented by many component agencies
- Ease of implementation - Able to be implemented without extreme challenges
- Effective - Effective for component agencies experiencing high rates of I/I

WHAT WILL BE INCLUDED FOR EACH BMP?

- Brief discussion of intent of BMP
- Model language that can be customized
- Suggested steps for implementation
- Examples of how BMP was implemented elsewhere and templates if available
- Information will be available online in a side sewer BMP toolkit for use by sewer agencies

REGIONAL BEST MANAGEMENT PRACTICES

APPROACH TO REACH IMPLEMENTATION OF SELECTED BMPS



POTENTIAL NEXT STEPS FOR IMPLEMENTATION (AGENCY LED)

- Agency review prior to implementation may include:
 - Staffing requirements, roles, and responsibilities
 - Customer education and communication plan
 - Budget and funding impacts
 - Information management system to track appropriate data
 - Standard/acceptable means and methods
 - Performance criteria development to measure effectiveness
- Write standard operating procedures or documented workflow
- Adopt and/or implement BMP

2021 PROJECT SCHEDULE

Dependent on contract amendment under negotiation. Refined schedule expected in March.





TASK FORCE RECOMMENDATION

TASK FORCE ROLE

- Provide technical expertise in the areas of program development, I/I reduction BMPs, sewer inspection training and private side sewer inspection.
- Make recommendations to the E&P subcommittee on:
 - Major components of inspection training and certification program
 - 3-5 regional BMPs that reduce I/I
- Provide feedback to WTD staff and consultants on other aspects of the I/I project including:
 - Goals and critical success factors for each program
 - Major components of private side sewer inspection program with associated financial assistance program
 - Benefit evaluation for private side sewer program
- Act as liaison with other staff at your agency and with other local agencies to gather additional expertise and share project updates

RATIONALE FOR RECOMMENDED BMPS

- Slows I/I increases due to degradation aiming to lessen the need for future capacity projects
- Broadly applicable to most agencies, and reasonably implementable
- Supports good stewardship of sewer systems and supports component agencies in supporting customers' responsibility to maintain private side sewers
- Sets an even bar of quality for side sewer construction and inspection information among agencies
- Consistency between cities and districts may result in increased knowledge of customers' side sewer responsibilities and helps to reduce customer confusion

BMPS RECOMMENDED

Strengthen illicit connection authority making rules clearer to customers

A5. Unauthorized connection prohibition

Support customers in taking care of their responsibility to limit I/I

B3. Model courtesy notice to property owner / occupant regarding roots in lateral connections

B5. Side sewer maintenance guideline documents

C3. Illicit source disconnection public education materials

A5. UNAUTHORIZED CONNECTION PROHIBITION

- Provides model code language for adoption of legal authority, which clearly states that unauthorized connections must be removed and provides appropriate enforcement mechanisms to accomplish proper disconnection on new construction or a substantial remodel.
- Strengthens and more clearly states the details of legal authority i.e. authority to perform tests on private property to identify unauthorized connections and to establish the following: what happens when unauthorized connections are found (who is responsible for disconnecting and redirecting clear water flow), allowable timeframes to complete the work, and what penalties can be incurred if compliance is not met.

Local or National Example in Technical Memo

Soos Creek Water and Sewer District,
Side Sewer Specification 10

City of Auburn, Engineering Design
Standards Section 7.08.3(4)

B3. MODEL COURTESY NOTICE TO PROPERTY OWNER / OCCUPANT REGARDING ROOTS IN LATERAL CONNECTIONS

- Provides model courtesy notice of sewer utility findings during routine inspections to property owner making them aware of root intrusion and their responsibility for maintaining the side sewer (including hiring a plumber to clear roots).
- Reduces the number of backup-related service requests for the utility and possible emergency repair work.

Local or National Example in
Technical Memo

County of Los Angeles Department
of Public Works

B5. SIDE SEWER MAINTENANCE GUIDELINE DOCUMENTS

- Provides side sewer maintenance guidelines educating property owners on their responsibilities for maintaining, inspecting, and repairing their side sewers.
- Educates property owners on their side sewer maintenance responsibility.

Local or National Example in Technical Memo

King County WTD “Know Your Sewer Card”

City of Tacoma, Private Contractor Inspection Information: “Before you buy or sell a property” educational flyer

City of Tacoma, Private Contractor Inspection Information: tip sheet

City of Tacoma, *Side Sewer Condition Assessment and Repair Recommendations Manual*

C3. ILLICIT SOURCE DISCONNECTION PUBLIC EDUCATION MATERIALS

- Provides good customer service and educational materials regarding unauthorized connections and proper sewer maintenance responsibilities.
- Educates property owners on their side sewer maintenance responsibility.

Local or National Example in Technical Memo

City of Kirkland Downspout Disconnection Program

Delaware County, Penn., Regional Water Quality Control Authority, Disconnecting & Redirecting Your Sump Pump & Downspouts brochure

OTHER BMPS FOR FUTURE CONSIDERATION

All identified BMPs were considered relevant and are recommended for implementation in the future.

Some of these BMPs are closely related to the side sewer inspection program and may be appropriate to consider for regional implementation if that program moves forward. These BMPs include:

- A.1 Watertight side sewer specifications, standard drawings, and proper methods for new and repaired side sewers
- A.2 New side sewer construction inspection and product-specific inspection requirements
- A.3 Repair, rehabilitation, and replacement inspection requirements
- A.4 Side sewer contractor prequalification
- A.10 Side sewer disconnection, reconnection, and demolition requirements

DISCUSSION OF RECOMMENDATION

NEXT STEPS ON BMPS RECOMMENDATION

- Does E&P subcommittee want to make a recommendation to full MWPAAC?

RECOMMENDATION STEPS

Taskforce
Recommendation to
E&P

Lead by Taskforce members:
Cynthia Lamothe
Bob Elwell

E&P
Recommendation to
MWPAAC

Lead by:
TBD

MWPAAC
Recommendation to
WTD Director

Lead by:
TBD

THANK YOU

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206-477-8554

END