



## Meeting Agenda

### Barton, Murray, Magnolia, North Beach CSO Facilities Project King County Department of Natural Resources and Parks Wastewater Treatment Division

**Date of Meeting:** March 20, 2007 **Work Order No.:** 7562A.10

**Time:** 8:00 am to 1:00 pm

**Location:** Carollo - 1218 Third Ave 8th Floor

**Purpose:** Planning Confirmation Workshop #1

**Meeting #** Workshop 202-1

**Anticipated Attendees** County

Consultants

Dave Dittmar	Ron Kohler	Bob Eimstad
Sue Meyer	Bob Swarner	Brian Matson
Doug Williams	Kevin Schock	Jeff Lykken
Jennifer Kauffman	Karen Huber	Allen de Steiguer
Martha Tuttle	John Phillips	Bob Wheeler
Chris Foss	Kathy Loland	Vicki King
Darrell Myers	Kathy Mathena	
Darrin Depew	Ken Eldridge	
Dirk Apgar	Mary Beth Gilbrough	
Eddie Tate	Steve Davidson	
Karl Zimmer	Steve Witkowski	
	William Bailey	

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Workshop Purpose: to provide background information about the Puget Sound Beach CSO Projects, to share current understanding of the CSO problem in each basin, develop an initial list of criteria for the evaluation of alternatives, and to identify alternatives to be considered for initial analysis.

Time	Topic/Activity	Lead	Materials
8:00 AM	<b>Welcome, Purpose, Agenda Review and Introductions</b> <ul style="list-style-type: none"> <li>▪ Participants give their names, affiliation and roles in the projects</li> <li>▪</li> </ul>	Bob Wheeler	
8:10 AM	<b>Project Background</b> <ul style="list-style-type: none"> <li>▪ KC goals for CSO control</li> <li>▪ Synopsis of previous planning efforts and project constraints</li> <li>▪ Purpose and goals of the Planning confirmation phase of project</li> <li>▪ Workshops – expectations for each</li> </ul>	Dave Dittmar Bob Eimstad	
8:30 AM	<b>Project Team Organization and Approach</b> <ul style="list-style-type: none"> <li>▪ Team's overall approach, schedule, and leads</li> <li>▪ Public Involvement – approach, relationship to the technical process, draft public information materials to support public outreach, and status report</li> <li>▪ SERP/SEPA - approach, relationship to engineering process, and status report.</li> </ul>	Bob Eimstad; Jennifer Kauffman, Sue Meyer	<ul style="list-style-type: none"> <li>▪ Revised overall schedule</li> <li>▪ Work Breakdown Structure</li> <li>▪ Draft public information materials: FAQs, PowerPoint presentation</li> </ul>
8:45 AM	<b>North Beach Project</b> <ul style="list-style-type: none"> <li>▪ Description of Basin <ul style="list-style-type: none"> <li>a. collection system summary</li> <li>b. pump station</li> <li>c. force main and downstream impacts</li> <li>d. planned improvements</li> </ul> </li> <li>▪ Previous CSO planning recommendations</li> <li>▪ Model Results <ul style="list-style-type: none"> <li>a. assumptions</li> <li>b. impacts of storage, pumping and disconnection of impervious area runoff</li> </ul> </li> <li>▪ Discussion of problem and potential effective solutions</li> <li>▪ Public Involvement Activities summary and action plan</li> </ul>	Brian Matson Jennifer Kauffman	
9:15 AM	<b>Break</b>		
9:30 AM	<b>Barton and Murray Project</b> <ul style="list-style-type: none"> <li>▪ Description of Basin <ul style="list-style-type: none"> <li>a. collection system summary</li> <li>b. pump stations summary</li> <li>c. force mains and downstream impacts</li> </ul> </li> </ul>	Jeff Lykken Martha Tuttle	<ul style="list-style-type: none"> <li>▪</li> </ul>

	<ul style="list-style-type: none"> <li>d. planned improvements</li> <li>▪ Previous CSO planning recommendations</li> <li>▪ Model Results <ul style="list-style-type: none"> <li>a. assumptions</li> <li>b. impacts of storage, pumping and disconnection of impervious area runoff</li> </ul> </li> <li>▪ Discussion of problem and potential effective solutions</li> <li>▪ Public Involvement Activities summary and action plan</li> </ul>		
<b>10:00 AM</b>	<b>Magnolia</b> <ul style="list-style-type: none"> <li>▪ Description of Basin <ul style="list-style-type: none"> <li>a. collection system summary</li> <li>b. interceptor and downstream impacts</li> <li>d. planned improvements in basin</li> </ul> </li> <li>▪ Previous CSO planning recommendations</li> <li>▪ Model Results <ul style="list-style-type: none"> <li>a. assumptions</li> <li>b. impacts of storage, pumping and disconnection of impervious area runoff</li> </ul> </li> <li>▪ Discussion of problem and potential effective solutions</li> <li>▪ Public Involvement Activities summary and action plan</li> </ul>	Allen de Steiguer Jennifer Kauffman	▪
<b>10:30 AM</b>	<b>Evaluation Criteria</b> <ul style="list-style-type: none"> <li>▪ Purpose of the criteria</li> <li>▪ Review and discussion of initial list</li> <li>▪ Discussion of whether or not to weight factors</li> <li>▪ Agreement on initial list of criteria and weighting, if any</li> </ul>	Bob Eimstad	▪ Draft list of criteria
<b>11:15 AM</b>	<b>Initial List of Alternatives to Be Considered</b> <ul style="list-style-type: none"> <li>▪ Storage, Treatment, Low-Tech, combinations</li> <li>▪ Discussion and input on alternatives and control approaches to be evaluated</li> </ul>	Bob Eimstad	▪ Draft list of CSO control approaches to be considered
<b>11:50 AM</b>	<b>Break - Lunch</b>		
<b>12:15 PM</b>	<b>Input on Technical Workshop #2</b> <ul style="list-style-type: none"> <li>▪ Purpose</li> <li>▪ Agenda topics</li> <li>▪ Participants to be invited</li> </ul>	Bob Wheeler	
<b>12:45 PM</b>	<b>Wrap up and Next Steps</b>	Bob Wheeler	
<b>1:00 PM</b>	<b>Adjourn</b>	Bob Wheeler	

 **King County**

Barton, Murray, Magnolia, and North Beach



**Workshop No. 1** CSO Facilities

March 20, 2007



## Project Background

- Summary of Previous Planning

## Purpose and Goals of Planning Confirmation Phase

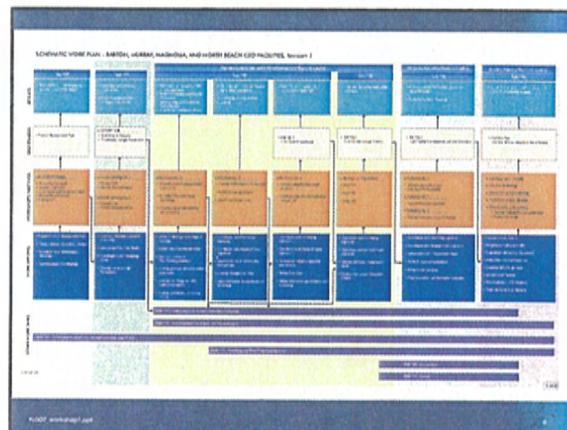
- Common understanding of problem
- Screening of potential solutions
- Identify issues and constraints
- Develop evaluation criteria
- Develop list of alternatives to be developed and evaluated in detail

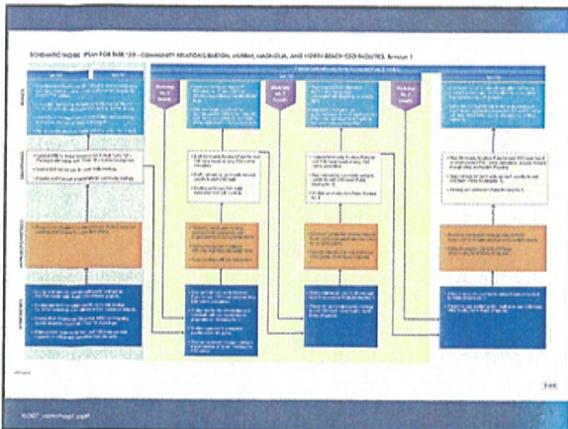
## Planning Confirmation Workshops

- Workshop 1
  - Problem definition
  - Range of control options
  - Identification of policy issues
  - Evaluation criteria
- Workshop 2
  - Short-list of feasible alternatives
  - Finalize evaluation criteria
- Workshop 3
  - Final list of alternatives to be developed in detail
  - Understanding of potential issues and technical info needs

## CSO Basin Leads

- North Beach CSO Basin
  - Brian Matson – Basin Coordinator
  - Jennifer Kauffman – Public Involvement
- Barton / Murray CSO Basin
  - Jeff Lykken – Basin Coordinator
  - Martha Tuttle – Public Involvement
- Magnolia CSO Basin
  - Allen de Steiguer – Basin Coordinator
  - Jennifer Kauffman – Public Involvement



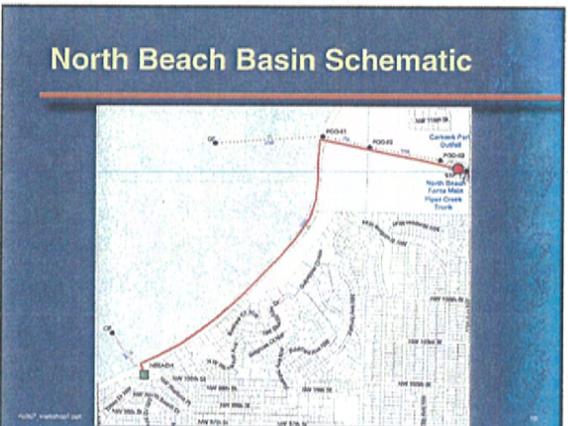


## SEPA/SERP Coordination

- Initial coordination for developing alternative evaluation criteria
- Subsequent coordination following alternative screening

## Overview of CSO Basins in Project

- North Beach
- Barton and Murray
- Magnolia



## North Beach CSO Basin

- XXX acres
- Collection system largely disconnected
- Wet weather flow primarily caused by infiltration

The photograph shows the North Beach CSO Basin, which is a large area of land with a collection system and a pump station. The basin is located in North Beach and is used for the collection and treatment of wastewater. The collection system is largely disconnected, and wet weather flow is primarily caused by infiltration.

## North Beach Pump Station

- Pumping Capacity (4 pumps)
  - Total Installed: 2 @ 3.5 mgd  
2 @ 1.3 mgd
  - Firm: 3.5 mgd (head limits capacity)

The technical drawing shows the layout of the North Beach Pump Station, including the pumps and the collection system. It provides a detailed view of the station's infrastructure and the flow of wastewater through the system.

## North Beach Pump Station

- Forcemain Capacity
  - 7,100 ± lf 14" forcemain NW of railroad tracks to Carkeek Treatment Plant
  - 3.5 mgd at 5 fps

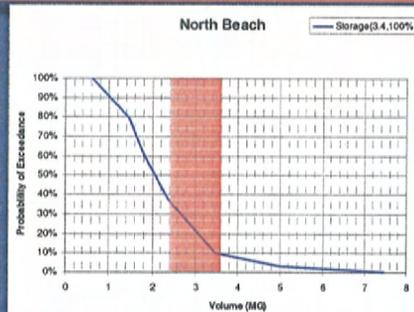
## Previous CSO Planning Recommendations

- Install 140,000 gal storage adjacent to existing pump station
- Expand pump station - upgrade firm pumping capacity to 4.2 mgd
- Build new forcemain – 2,060 LF
- Other sewer improvements

## Current modeling approach

- Modeled storage requirements with current pumping and existing conditions
- Modeled impact of increasing pumping capacity
- Modeled impact of disconnecting impervious area

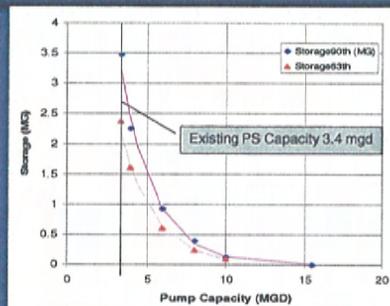
## Storage Capacity Requirement



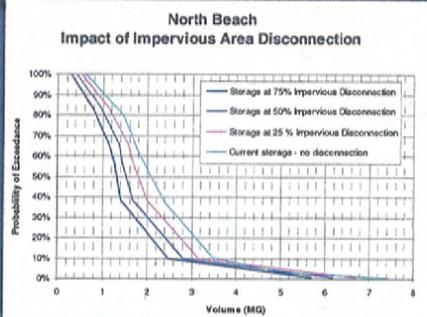
## Footprint of Storage at North Beach



## Increasing North Beach Pump Station capacity could reduce or eliminate storage



## Disconnecting impervious area does not have big impact on storage needs



## North Beach Flow Modeling Preliminary Conclusions

- Required storage volume without increased pumping capacity has increased from 140,000 gallons to approx. 2.5 - 3.5 MG
- Pumping capacity to eliminate storage = 10-12 mgd
- Limited benefit from disconnecting impervious areas

## Questions to be answered

- Is storage practical in vicinity of park and North Beach Pump Station?
- How would additional pumping impact downstream facilities?
  - Add treatment capacity/capability to Carkeek.
  - Lift to 8<sup>th</sup> Ave Interceptor ?
- Pursue partial separation?

## Possible Alternatives

- 3.5 MG storage?
- Increase PS capacity to 10-12 mgd
  - Increase Carkeek wet weather treatment
  - Improve treatment performance?
  - Pump to 8<sup>th</sup> Avenue Interceptor for conveyance to West Point
  - Forcemain alignment impacts capacity
- Combined storage/pumping

## North Beach Basin Public Involvement Status and Summary

- Introduce KC and need for project
- Start with property owner associations in basin (Blue Ridge, N. Beach, Olympic M.)
  - Research property covenants
- Consult vicinity groups with drainage/CSO expertise (Carkeek, Piper's)
- Expand public outreach as relationships are built, options developed



Barton, Murray, Magnolia, and North Beach

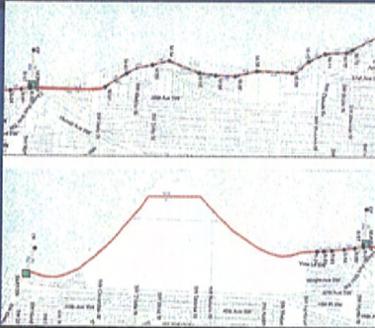


CSO Facilities

# BREAK



## Barton and Murray Basins Schematic



## Barton CSO Basin

- XXX acres
- Mostly combined
- Barton Pump Station pumps to Murray

## Barton Conveyance

- Barton Pump Station: County calculated capacity of 28 MGD
- Discharges to twin 24-inch force mains upgraded by emergency repair
- Pump station upgrade currently being planned by County

## Barton Pump Station Site



## Previous CSO Planning Recommendations for Barton

- Add 7.5 MGD of pumping capacity
- New wet weather pump station located in Vashon/Southworth Ferry Dock parking lot
- Assumed a submersible station with upgraded conveyance capacity to Murray
- 0.5 MG storage option at Fautleroy School also investigated in 1997 Plan Update

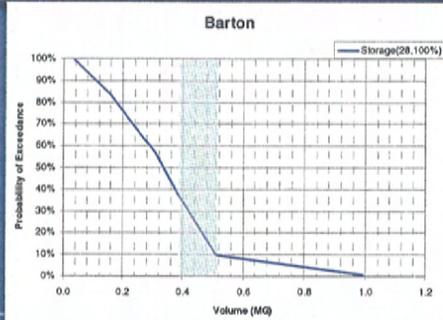
## Barton Optional Storage Site Fautleroy School Parking Lot



## Barton Optional Storage Site Fautleroy School Parking Lot



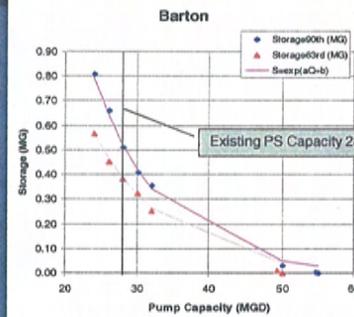
## Storage Capacity Requirement



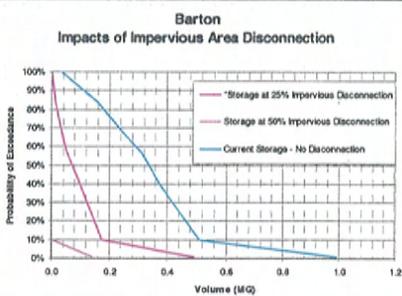
## Footprint of Storage at Barton



## Impacts of increasing pumping on storage requirement



## Disconnecting Impervious Area Impacts Storage Requirement



## Barton Flow Modeling Preliminary Conclusions

- Required storage volume without increased pumping capacity is approximately 0.5 MG
- Pump capacity to eliminate storage ± 53 mgd
- Significant benefit from disconnecting impervious areas – target 50 percent disconnection

## Murray CSO Basin

- XXX acres
- Basin partially separated
- Well developed storm drainage system

## Murray Conveyance

- Murray Pump Station: County calculated capacity of 31.5 MGD
- Discharges to twin 27-inch force mains
- Pump station upgrade currently being planned by County

## Murray Pump Station Site



## Murray Pump Station Site



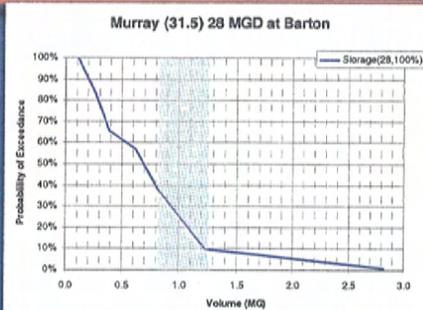
## Previous CSO Planning Recommendations

- 0.8 MG storage tank
- Tank located approximately ¼ mile east of pump station site
- Approximately 500 feet of new 24-inch conveyance piping required for filling and emptying of tank.

## Murray Storage Site?



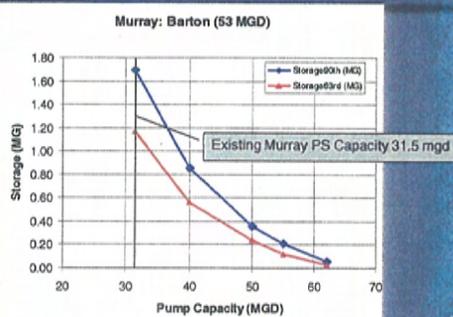
## Storage Capacity Requirement



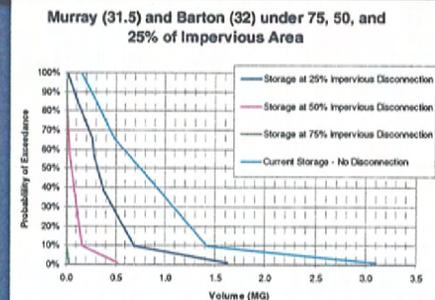
## Footprint of Murray Storage



## Murray Pumping Capacity to Eliminate Storage at Both Barton and Murray – No storage



## Impacts on Murray Storage from Impervious Area Disconnection



## Murray Flow Modeling Preliminary Conclusions

- Required storage volume without increased pumping capacity is approximately 1.3 MG
- Pump capacity to eliminate storage at both Barton and Murray ± 65 mgd
- Significant benefit from disconnecting impervious areas – target 50 –75% disconnection

## Barton and Murray Potential Solutions

- Increased pumping with no storage
  - Barton 53 mgd
  - Murray 65 mgd
  - Increase flow to Alki?
- Storage alone
  - Barton 0.5 MG
  - Murray 1.3 MG
- Impervious area disconnection
  - Target > 50% to eliminate overflows
- Combinations?



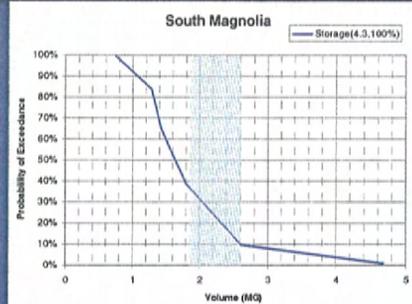
## Previous CSO Planning Recommendations

- 1.3 MG storage Tank
  - \$6 million in \$1997
- Or, alternatively
- Rooftop separation of 900 homes
  - \$3 million in \$1997.

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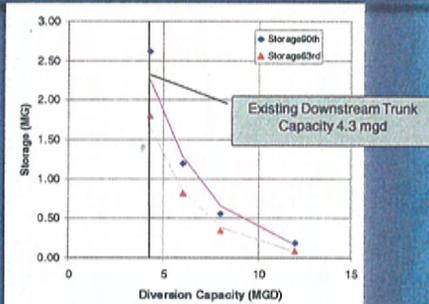
## Storage Capacity Requirement



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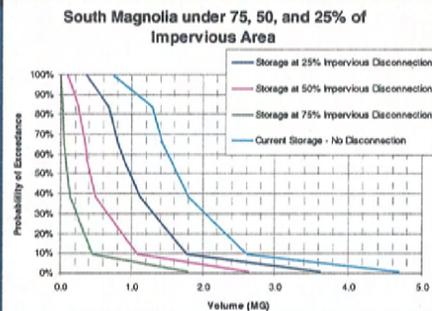
## Impacts of increasing downstream conveyance on storage requirement



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## Disconnecting Impervious Area Impacts Storage Requirement



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## S. Magnolia Flow Modeling Preliminary Conclusions

- Required storage volume has increased from 1.3 MG to  $\pm 2.6$  MG
- 40% impervious area disconnection required to meet previous storage volume.
- $\pm 15$  mgd downstream conveyance capacity required with no storage

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## Questions to be answered

- What are downstream capacity constraints, EBI Section 8, and Interbay PS?
- Should we consider increasing capacity of South Magnolia Trunk as option?
- How much connected impervious area contributes inflow?

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## Possible Alternatives

- 2.6 MG storage
- No basin storage and add capacity to South Magnolia Trunk (15 mgd)
- Increase conveyance to 15 mgd and put storage upstream of Interbay PS.
- Combination

## South Magnolia Public Involvement Status and Summary

- Develop purpose and need statement and outreach strategy
- Start with immediate neighbors
- Explore options with Port of Seattle
- Consult three major community groups
- Expand public involvement as options develop

## Summary and Input Needed

- Level of Control
  - 63% vs. 90%
- Establishing pump station capacity
  - Peak capacity needs
  - Redundancy requirements
- Flexibility with storage locations
  - How far up into basin can storage be located?
- Partial Separation
  - Private property issues
  - Stormwater permit requirements
  - Additional modeling will be needed
  - KC/SPU working relationship and commitments
  - Cost effectiveness evaluation more complex

## Draft Evaluation Criteria

- Screening level criteria
- More refined criteria will be subsequently developed to evaluate site specific alternatives
- Weighting of criteria?

## Evaluation Criteria

- Affordability
- Ease of Operation and Maintenance
- Technical Feasibility and Compatibility
- Environmental Benefit
- Flexibility
- Community Considerations
- Fits with Other Programs and Initiatives

## Discussion of Alternatives to Be Considered

- Concerns and issues with storage
  - North Beach
  - Murray and Barton
  - Magnolia
- Pumping and downstream conveyance/treatment
- Disconnecting Impervious Area
  - Implementation Issues
  - Low tech and low cost option?
- Other options?
  - Change regulatory requirements



Barton, Murray, Magnolia, and North Beach



CSO Facilities

LUNCH

