King County

Barton, Murray, Magnolia, and North Beach

Barton Public Meeting
March 18, 2010

CSO Facilities

carollo
Engineers...Working Wonders With Water™

TETRA TECH

And Associated Firms

Meeting Purpose

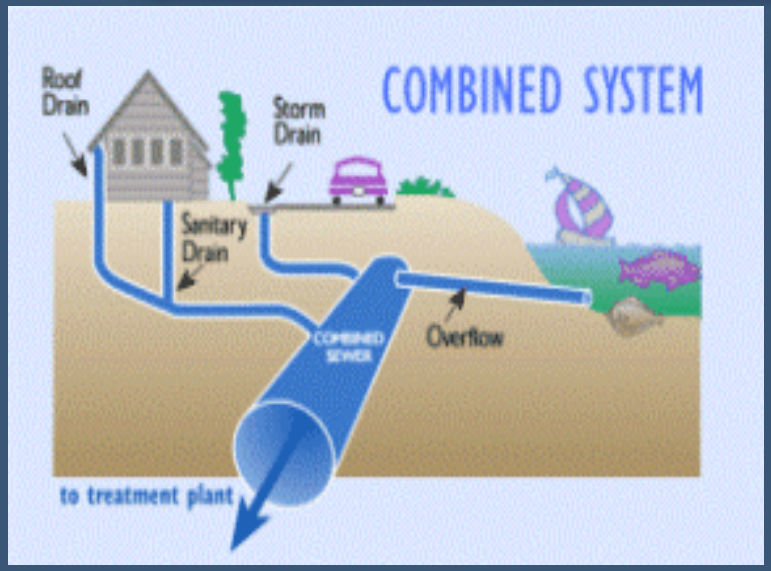
- To present three alternative means for CSO control in the Barton basin
- To present how these alternatives were developed
- To explain why the three alternatives are being considered for further evaluation
- Hear from the community about the alternatives

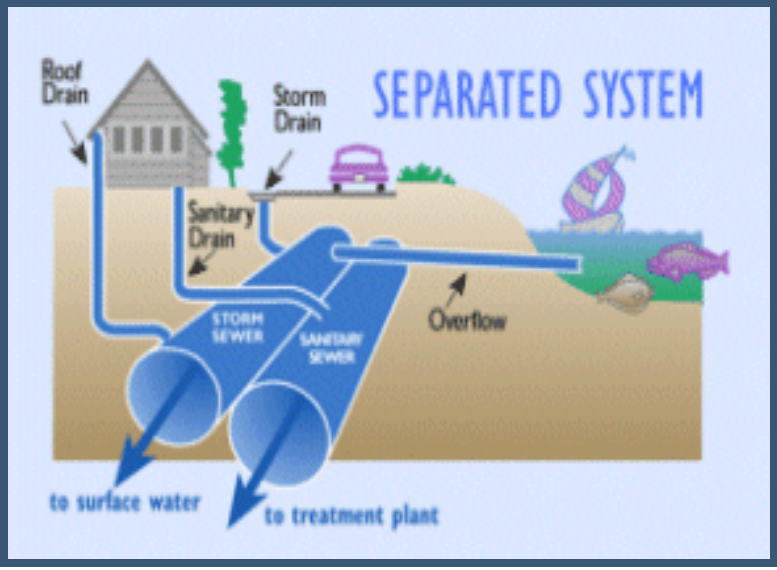
Meeting Agenda

- CSO Control Program Overview
- CSO Beaches Projects Objectives
- CSO Control Approaches
- Barton Basin Requirements
- Barton Basin Alternatives
- Next Steps

CSO Control Program Overview

The Combined Sewer System





- Conveys wastewater & stormwater to treatment plants
- Pipelines & pump stations were sized to captured most of the flow
- Relief points – CSOs – were built to discharge when flows exceed capacity
- Newer systems manage sewage and stormwater separately

What is the CSO Control Target?

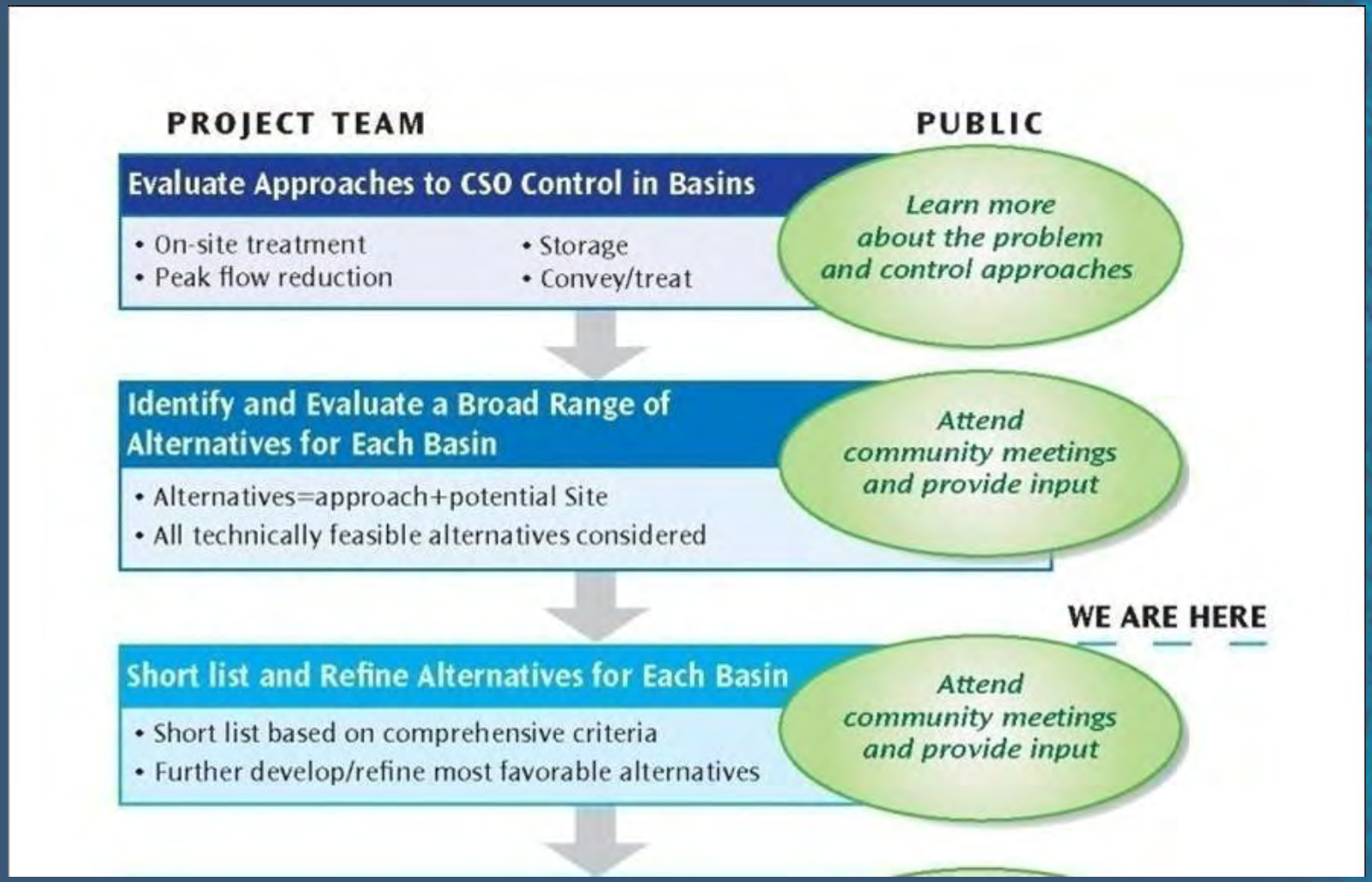
- Set by State Ecology Regulations (WAC 173-245)
- No more than one untreated event per year on a long-term average
- All CSO project to be implemented by 2030 according to Long-Term Control Plan

King County CSO Control Program

- King County has 38 CSOs
- Over half are controlled
- CSO Program set schedule to protect public health, environment, and aquatic life by 2030
- CSO Projects near Puget Sound beaches under construction 2013

CSO Beaches Project Objectives

Opportunities for Public Participation



CSO Control Approaches

CSO Control Approaches

- Approaches Considered
  - Storage
  - On-site Treatment
  - Conveyance & Treatment
  - Peak Flow Reduction (Demand Management)
- Combination of Approaches

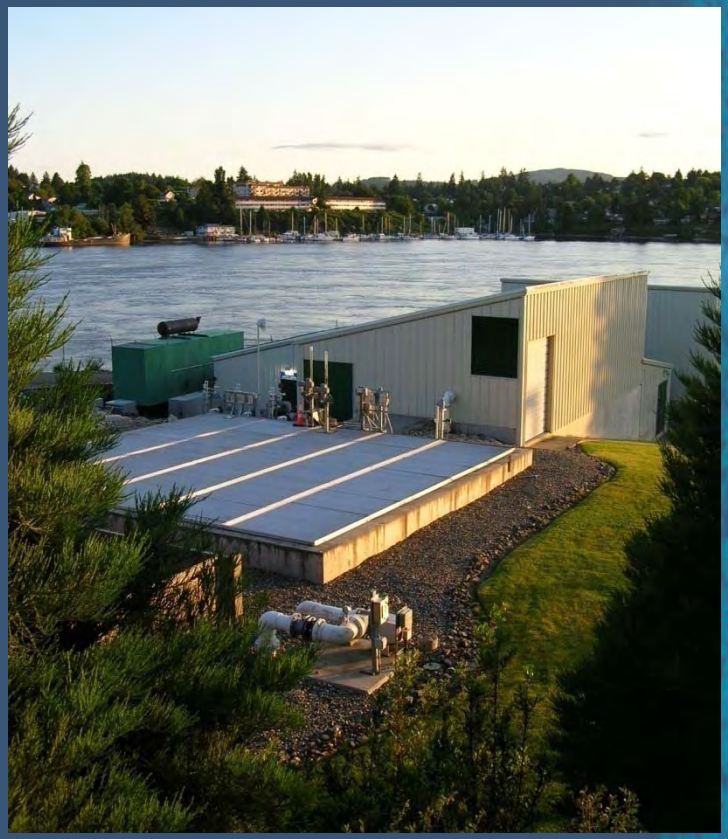
All approaches evaluated for each basin

Storage Approach

- May be “centralized” at bottom of basin, centralized higher in basin, or distributed within basin
- Majority of facility is typically underground
  - Associated facilities located above ground
- Peak flows diverted into storage during wet weather
- Stored flow drained back to collection system following wet weather

On-site Treatment Approach

- Treatment facilities located near the CSO point
- Peak flows are treated and discharged
- Facilities operate only during wet weather events



Conveyance & Treatment Approach

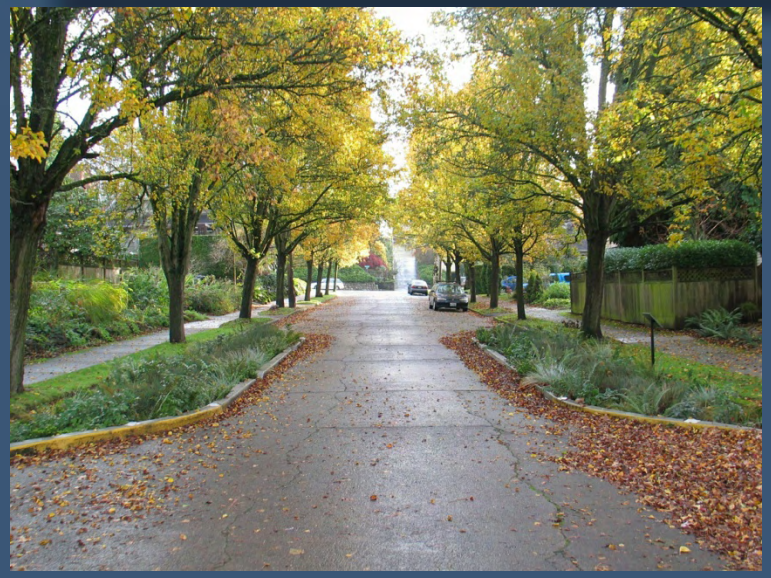
- Increase pump station and pipeline capacity to convey flow downstream for treatment
- Dry weather flow treated at West Point Treatment Plant

- Peak flows treated at "Wet Weather" facility, in this case Alki Treatment Plant

Peak Flow Reduction (Demand Management)

- Separate stormwater from combined system
  - Disconnect catch basins, roof drains, down spouts
- Re-route stormwater to new or existing storm drainage system

Peak Flow Reduction (Green Stormwater Infrastructure)



- Roadside rain gardens, bio-swales
  - Detain or retain storm flows during peaks
  - Provide stormwater treatment
- Green roofs
- Street trees
- Pervious pavement
  - Reduce stormwater runoff

Barton Basin Requirements

Basin Description and Requirements

- 863 acres
- Barton CSOs
  - Average 4 events per year
  - Average 4 million gallons per year
- Control requirements
  - 110,000 gallons of storage, **or**
  - 12 mgd treatment capacity, **or**
  - 12 mgd additional conveyance capacity **or**
  - Approx. 26 acres of disconnection
- Control requirements include planned Barton Pump Station upgrade

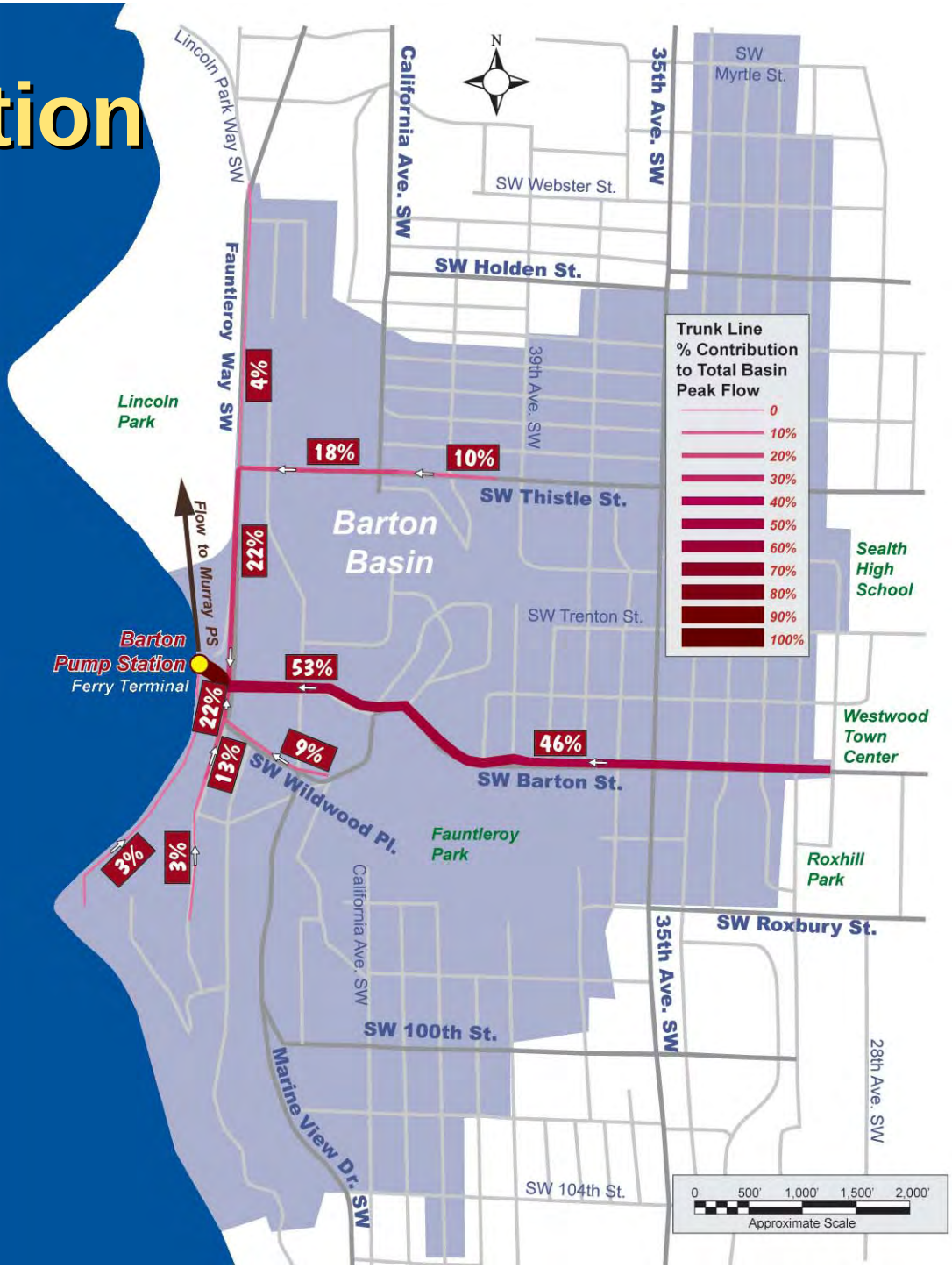
Barton Basin Alternatives

How Were Alternatives The Developed?

- Engineers evaluated the control approaches on a site/area-specific basis
- Critical questions:
  - Is there sufficient room to site and construct the facility?
  - Is it feasible to construct?
  - Will the alternative capture sufficient peak flow?

Flow Distribution in Basin

- Flow converges at Barton Pump Station
- SW Barton Street/SW Director Street trunk carries roughly 50% of basin flow



How Were The Alternatives Evaluated?

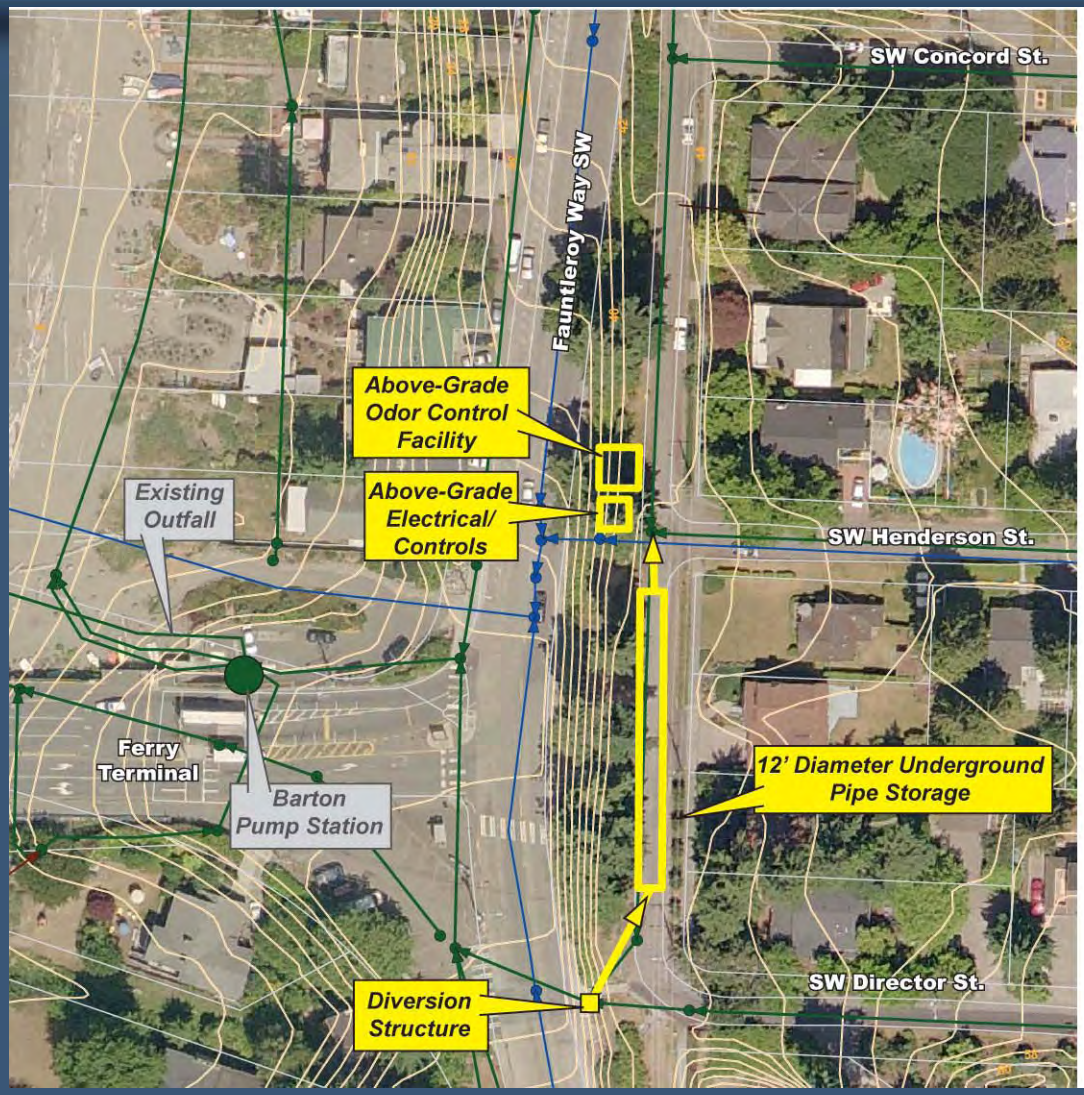
- Individual alternatives were evaluated using a range of factors:
  - Land Use/Permitting
  - Environmental
  - Community
  - Costs
  - Operations & Maintenance
  - Design and engineering
- Your input used to shape and inform these factors

Evaluation Results

- On-site Treatment
  - Operational complexity
  - High construction and operating costs
- Conveyance & Treatment
  - Downstream conveyance capacity limits
- Storage & Peak Flow Reduction
  - Basin flow characteristics favor storage and peak flow reduction
- Three alternatives were identified for further evaluation

Upper Basin,
East of 35th Ave SW
(Green Stormwater Infrastructure)
Lincoln Park
Upper Fauntleroy Way SW
(Underground Storage)
Barton Pump Station
Former Fauntleroy School Site
(Underground Storage)
418
417
416
415
414
Fauntleroy Park
Roxhill Playground
Puget Sound
SW KENYON ST
SW THISTLE ST
SW TRENTON ST
SW DIRECTOR ST
SW BARTON ST
SW CAMBRIDGE ST
SW ROXBURY ST
SW 100TH ST
SW 102ND ST
SW 104TH ST
SW 106TH ST
MARINE VIEW DR SW
CALIFORNIA AVE SW
FAUNTLEROY WAY SW
35TH AVE SW
KC-WTD Pump Station
KC-WTD Conveyance
KC-WTD CSO Outfall
Alternatives
Barton Basin
Park
2,000
1,000
0
2,000
Feet

Upper Fauntleroy Way SW, Underground Storage

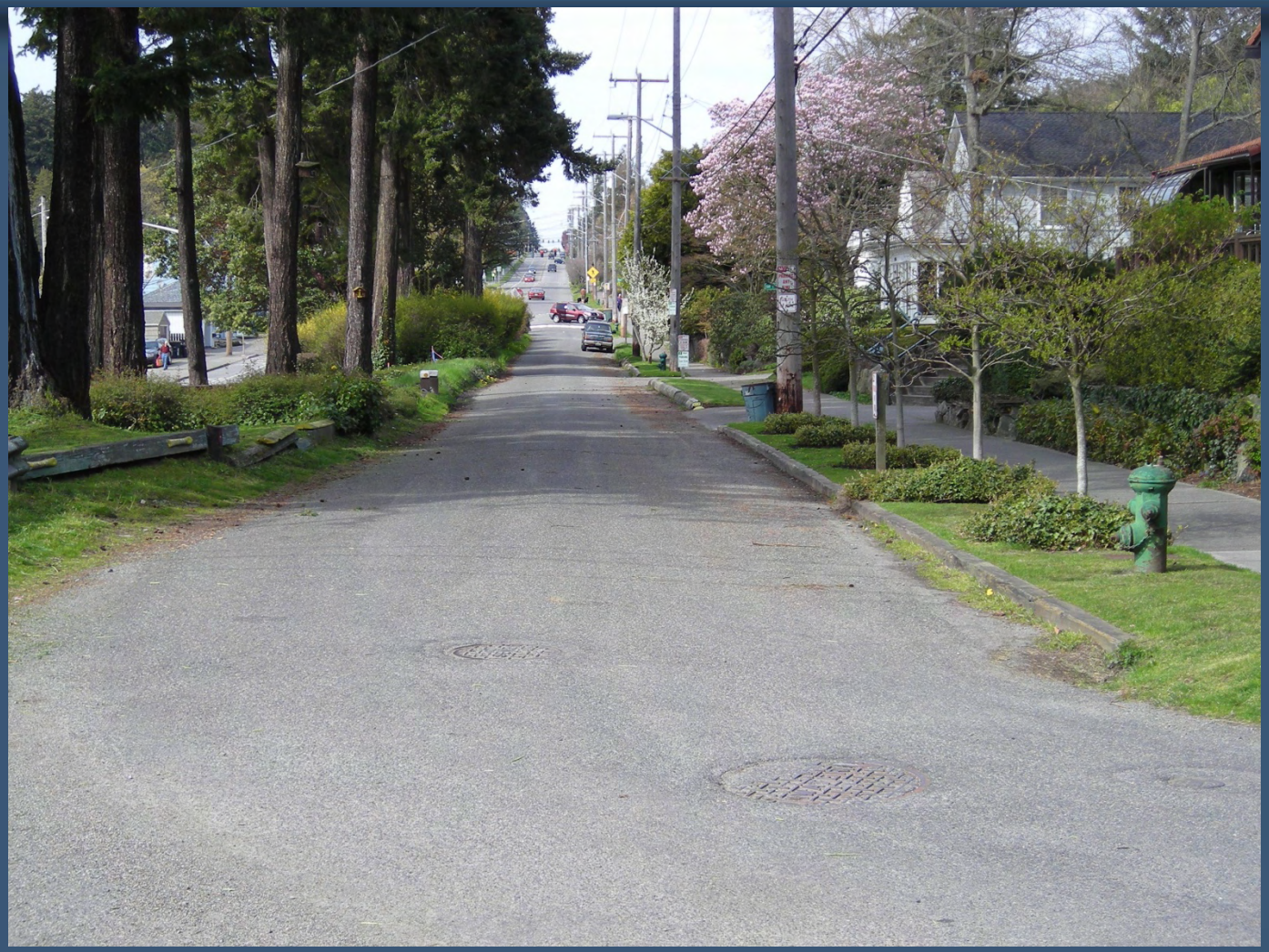


N

0 25' 50' 75' 100'
Approximate Scale

Legend
- Combined Sewer System
- Storm Sewer System
- Sanitary Sewer System
- 2' Topographic Contour

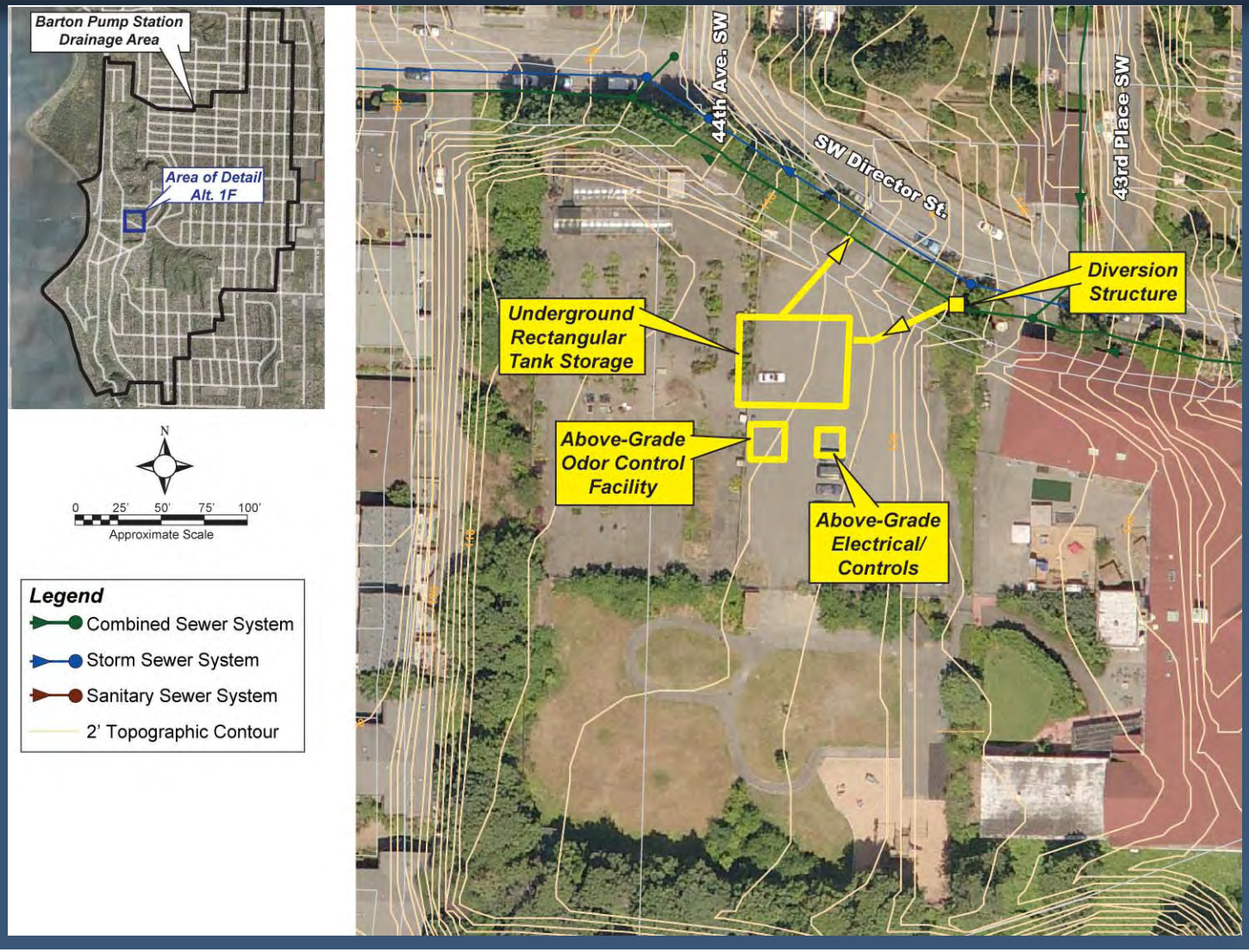
Upper Fauntleroy Way SW, Underground Storage



Upper Fauntleroy Way SW, Underground Storage

- **Benefits**
  - Located in moderate use street
  - Safer access for operations and maintenance crew than busy arterials
  - Similar to other King County facilities
- **Challenges**
  - Utility relocation will be required
  - Potential archaeological resources in the area
  - Location needed for odor control and electrical facilities
  - Traffic and residential access disruptions during construction
  - Location is not at the bottom of basin; requiring larger facility size to achieve control
  - Lack of construction staging area

Former Fauntleroy School Site, Underground Storage

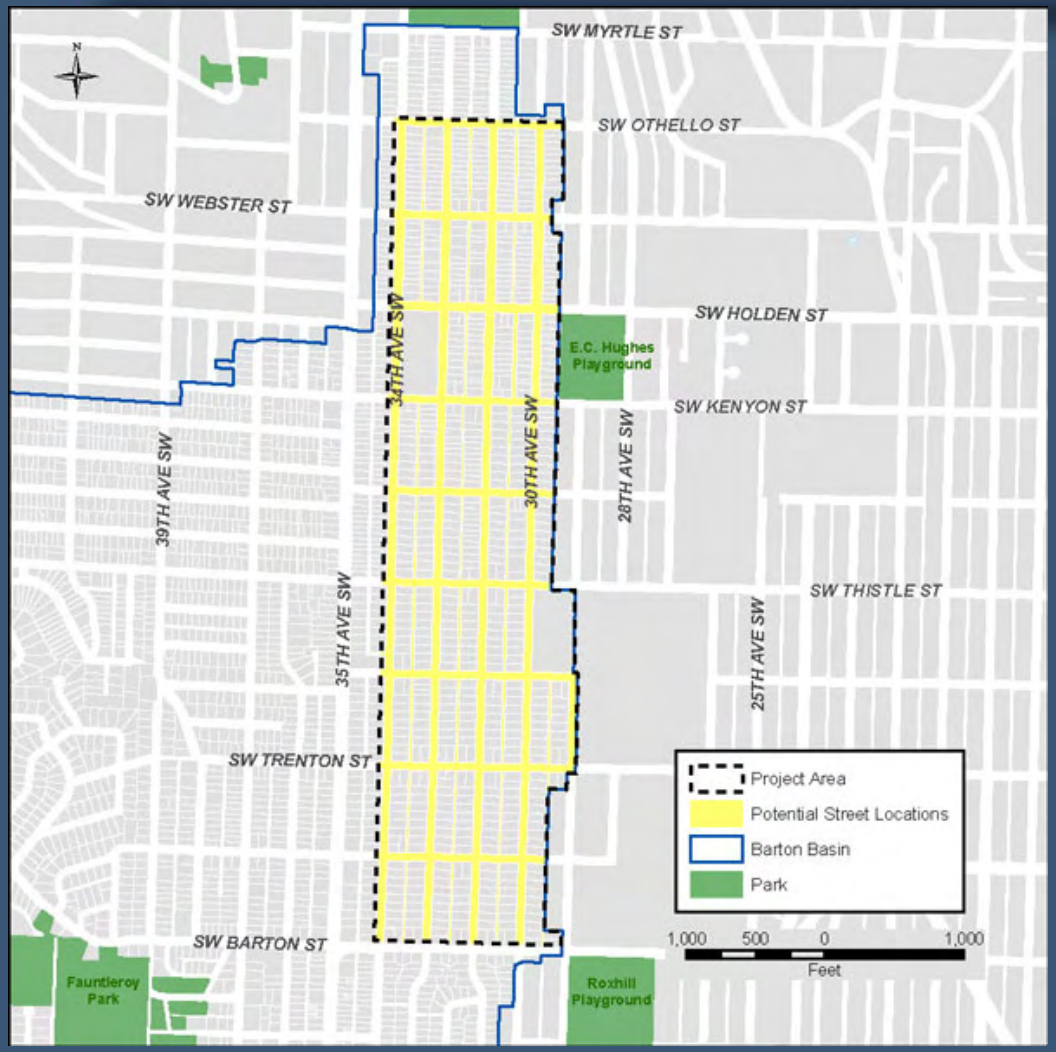


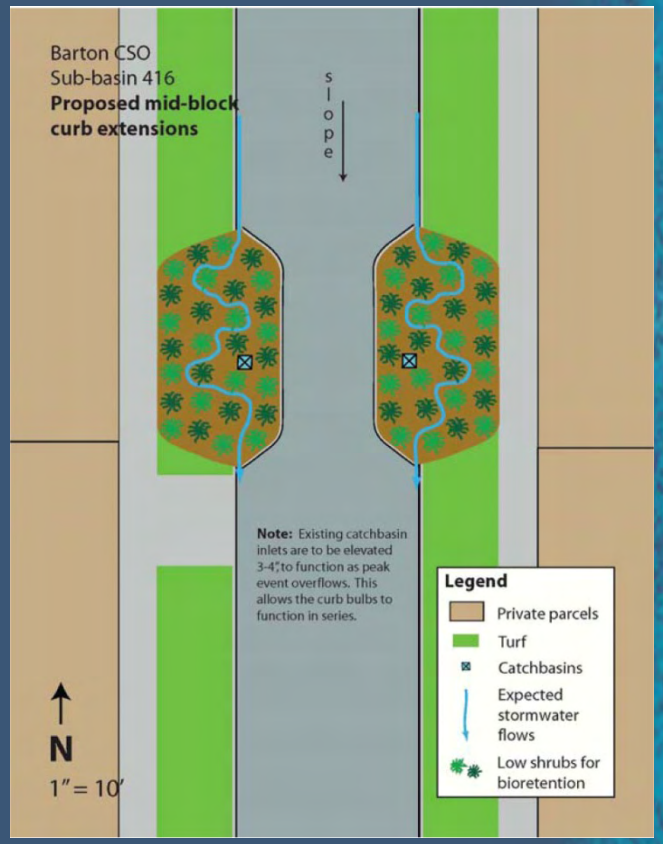
Former Fauntleroy School Site, Underground Storage

Former Fauntleroy School Site, Underground Storage

- **Benefits**
  - Ample space for facility layout and construction
  - Off-street access for operations and maintenance crews
  - Similar to other King County facilities
- **Challenges**
  - Location is not at the bottom of basin; requiring larger facility size to achieve control
  - Involves use of private property

Upper Basin, East of 35th Ave SW (Green Stormwater Infrastructure)



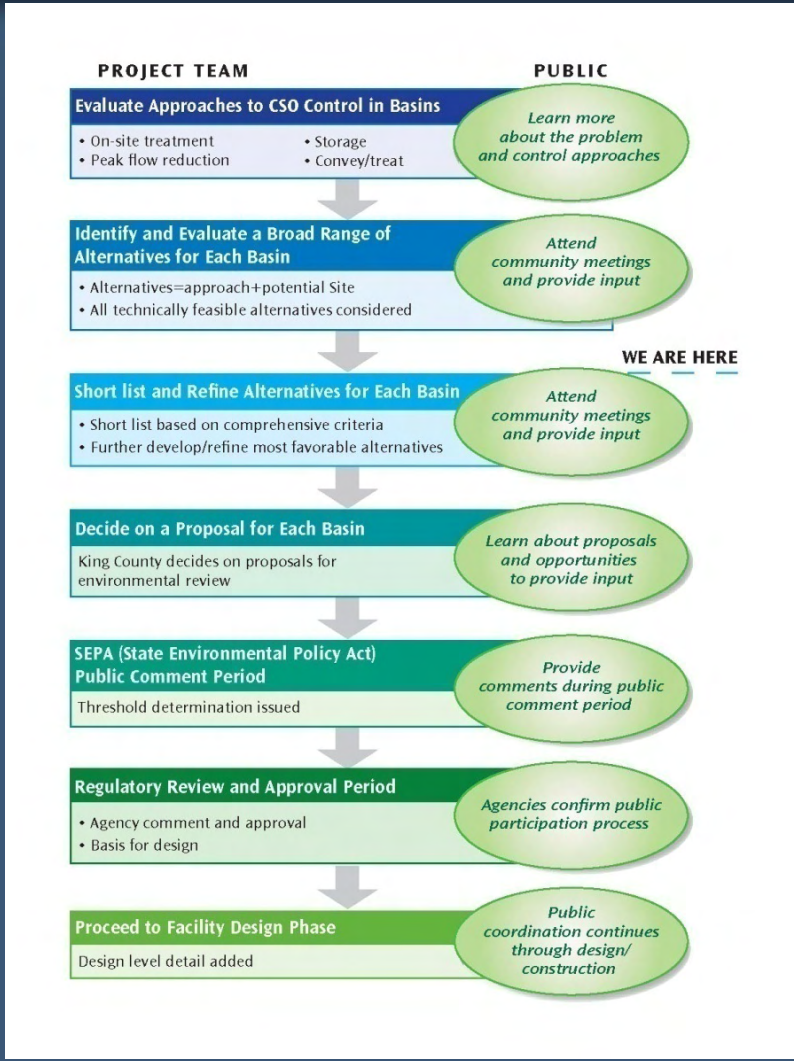


Upper Basin, East of 35th Ave SW (Green Stormwater Infrastructure)

Upper Basin, East of 35th Ave SW (Green Stormwater Infrastructure)

- **Benefits**
  - Strong interest in green alternatives from community and regulatory agencies
  - Reduces flows to existing wastewater facilities, saving operating costs
  - Consistent with Seattle Public Utilities Green Stormwater Infrastructure program
- **Challenges**
  - Large area required to achieve control (minimum of 26 acres)
  - Reliability of approach needs confirmation
  - Rain gardens reduce available parking

Next Steps


PROJECT TEAM
PUBLIC
Evaluate Approaches to CSO Control in Basins
• On-site treatment
• Peak flow reduction
• Storage
• Convey/treat
Learn more about the problem and control approaches
Identify and Evaluate a Broad Range of Alternatives for Each Basin
• Alternatives=approach+potential Site
• All technically feasible alternatives considered
Attend community meetings and provide input
WE ARE HERE
Short list and Refine Alternatives for Each Basin
• Short list based on comprehensive criteria
• Further develop/refine most favorable alternatives
Attend community meetings and provide input
Decide on a Proposal for Each Basin
King County decides on proposals for environmental review
Learn about proposals and opportunities to provide input
SEPA (State Environmental Policy Act) Public Comment Period
Threshold determination issued
Provide comments during public comment period
Regulatory Review and Approval Period
• Agency comment and approval
• Basis for design
Agencies confirm public participation process
Proceed to Facility Design Phase
Design level detail added
Public coordination continues through design/ construction

Questions, Responses, and Public Input