

**Meeting Agenda**  
**Barton, Murray, Magnolia, North Beach CSO Facilities Project**  
**E00022E06**  
**King County Department of Natural Resources and Parks**  
**Wastewater Treatment Division**

**Date of Meeting:** September 16, 2009                      **Work Order No.:** 7562A.10  
**Time:** 1 pm  
**Location:** 8th Floor Conference Center  
**Purpose:** Barton Non-Technical Criteria Review  
**Meeting #** 100-51

**Anticipated Attendees**

**County**

**Consultants**

John Cameron  
 Betsy Cooper  
 Hien Dung  
 Pam Erstad  
 Karen Huber  
 Ron Kohler  
 Kathy Mathena  
 Sue Meyer  
 Lee Miller  
 Ukwenga Oleru  
 Shaun O'Neil

Sekhar Palepu  
 John Phillips  
 Kevin Sandquist  
 Mike Sand  
 Kevin Schock  
 Bob Swarner  
 Martha Tuttle  
 Jim Weber  
 Mary Wohleb  
 Monica Van Der Vieren  
 Karl Zimmer

Jennifer Corrigan  
 Ellen Blair  
 Kevin Dour  
 Karl Hadler  
 Jeff Lykken  
 Brian Matson  
 Lloyd Skinner

**SPU**

Martha Burke

**Meeting Purpose:**

1. Review response to Barton Basin alternative comments.
2. Present revisions to Barton Basin alternatives.
3. Review informational needs for non-technical criteria associated with Murray Basin alternatives.

Topic	Time	By
Introduction	TBD	S. Namini
Response to Barton Basin Alternatives	10 min	J. Lykken
Revisions to Barton Basin Alternatives	20 min	J. Lykken
Criteria Information Needs	90 min	J. Lykken

## Meeting Notes

### Barton, Murray, Magnolia, North Beach CSO Facilities Project

**E00022E06**

**King County Department of Natural Resources and Parks  
Wastewater Treatment Division**

**Date of Meeting:** September 16, 2009      **Date of Notes:** September 22, 2009      **Work Order No:** 7562A.10

**Time:** 1:00 pm

**Location:** King Street Center 8th Floor

**Purpose:**

1. Review response to Barton Basin alternative comments.
2. Present revisions to Barton Basin alternatives.
3. Review Informational needs for non-technical criteria associated with Barton Basin alternatives.

**Meeting #** 100-51 - Barton Non-technical Criteria Review

**Attendees:**

<u>County</u>	<u>Consultants</u>
Chris Okuda	Bob Eimstad
Hien Dung	Brian Matson
Pam Erstad	Karl Hadler
Sue Meyer	Jeff Lykken
Ron Kohler	Kevin Dour
Kathy Mathena	Jennifer Corrigan
Ukwenga Oleru	Lisa Adolfson
	Ellen Blair

SPU  
Sahba Mohandessi

**Distribution:** Attendees, John Cameron, Betsy Cooper, Karen Huber, Sekhar Palepu, Mary Wohleb, Kevin Sandquist, Lee Miller, Bob Swarner, Shaun O'Neil, Mike Sand, Karl Zimmer, Allen de Steiguer

**ACTION ITEMS**

Item #	Action	Action By	Due By
1	Schedule meeting to discuss the approach to evaluating stormwater treatment requirements.	Brian Matson	9/30/09
2	New or modified comment sheets will be provided so the County can comment on revisions to basin alternatives.	Allen de Steiguer	9/25/09

## DISCUSSION

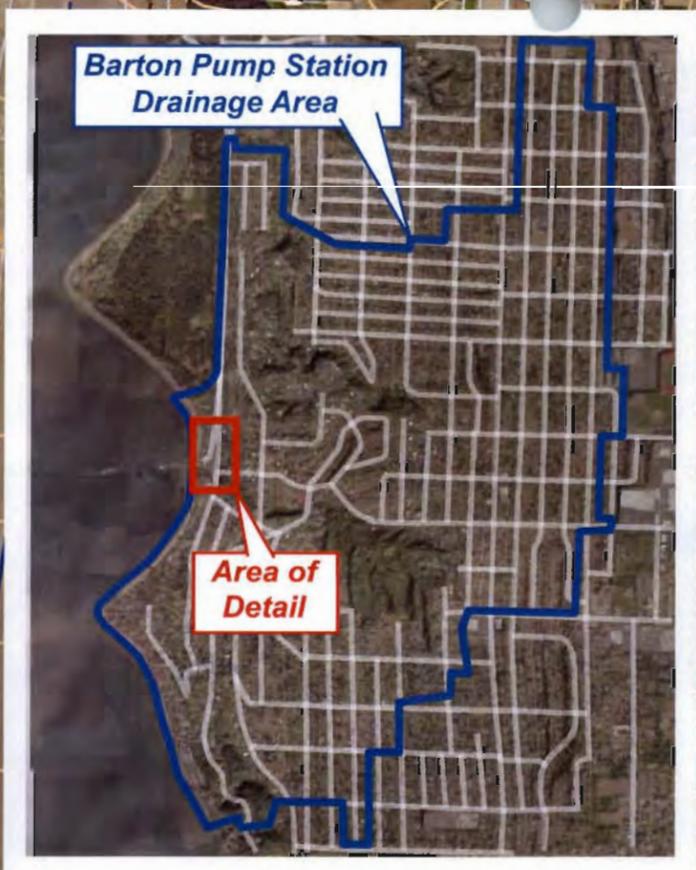
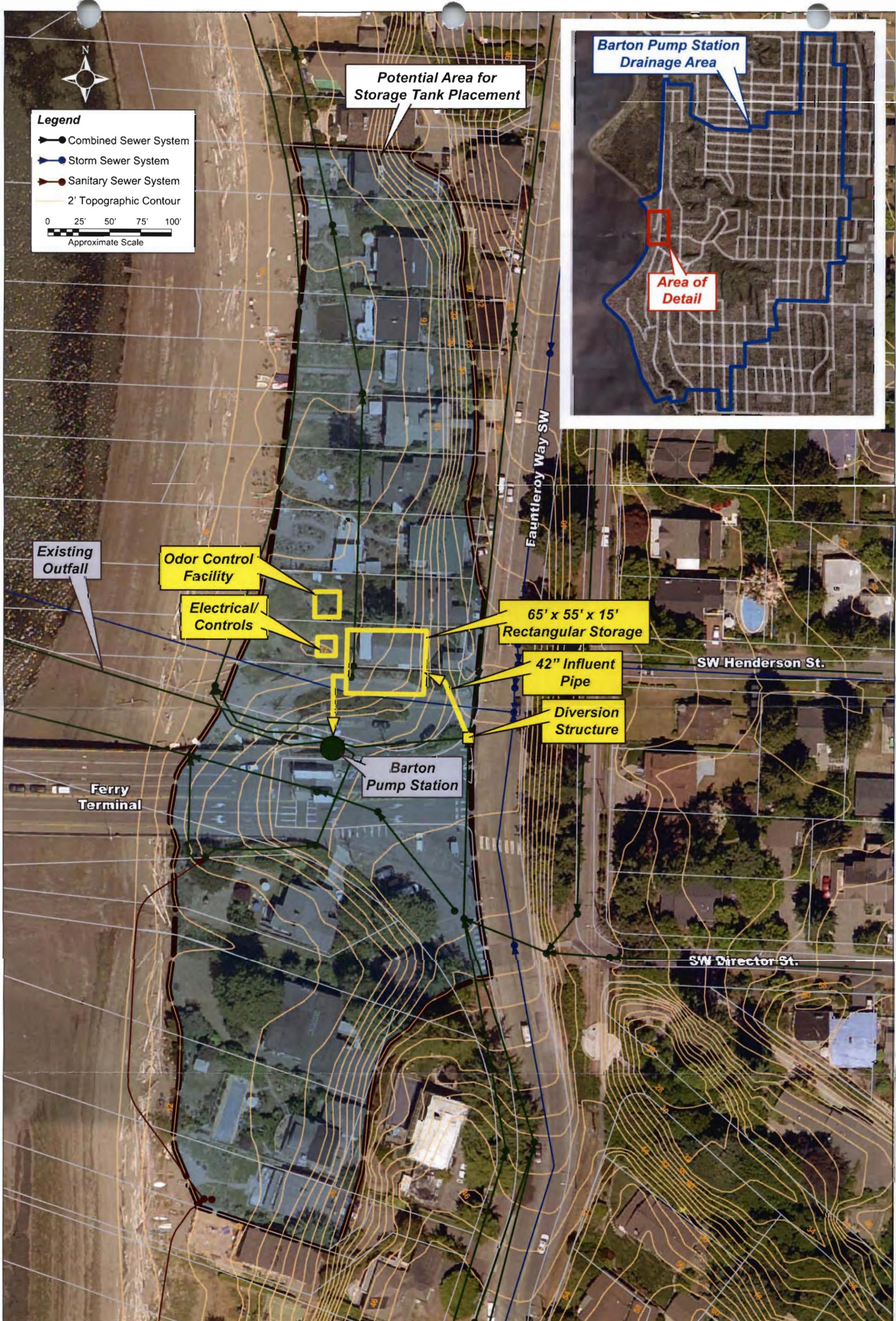
1. Response to Barton Basin Alternative Comments
  - a. Need to discuss approach to evaluating stormwater treatment requirements.
  - b. Copy of responses to comments are on the project web site.
2. Revisions to Barton Basin Alternatives
  - a. New or modified comment sheets will need to be provided so the County can comment on revisions to basin alternatives.
  - b. Concerned about showing ancillary facilities such as odor control on a separate (adjacent) property from the storage facility.
  - c. Preferred parcels will need to be determined in January for detailed evaluation of three alternatives.
  - d. For Alternative 1D, extend blue outline north and do not consider traffic at this point.
3. Criteria Information Needs
  - a. Criteria leads are responsible for completing the evaluation criteria sheets for all alternatives. The leads are also responsible for assembling information and data necessary to complete the ratings. Leads should also evaluate whether additional questions/information is needed. The information to complete the matrix is needed by November.
  - b. The leads can add or modify criteria and evaluation questions. The criteria, questions and evaluation ratings should be complete by the middle of October. Try to keep questions focused and prioritize to 5 or so key issues.

END OF NOTE

Barton Non-technical Criteria Review Regular Team Meeting  
9/16/09

**BARTON BASIN  
INITIAL ALTERNATIVES MATRIX**

Control Approach		Alternatives								
		1A	1B	1C	1D	1E	1F	1G	3A	4A
		Rectangular Storage at Bottom of Basin	Circular Storage at Bottom of Basin	Pipe Storage at Bottom of Basin	Pipe Storage in Right-of-Way at Bottom of Basin	Pipe Storage in Upper Fauntleroy Way SW	Rectangular Storage in Vicinity of Fauntleroy School	Rectangular Storage in Upper Basin 416	End of Pipe Treatment at Bottom of Basin	Peak Flow Reduction
	Location	Bottom of Basin	Bottom of Basin	Bottom of Basin	Bottom of Basin/ROW	Mid-Basin	Mid-Basin	Up-Basin	Bottom of Basin	
1. Peak Flow Storage										
"Rectangular Storage"		X					X	X		
"Circular Storage"			X							
"Pipe Storage"				X	X	X				
2. Convey and Treat										
3. End of Pipe Treatment									X	
4. Stormwater Flow Reduction										X



**Legend**

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

0 25' 50' 75' 100'

Approximate Scale

Existing Outfall

Odor Control Facility

Electrical/Controls

65' x 55' x 15' Rectangular Storage

42" Influent Pipe

Diversion Structure

Barton Pump Station

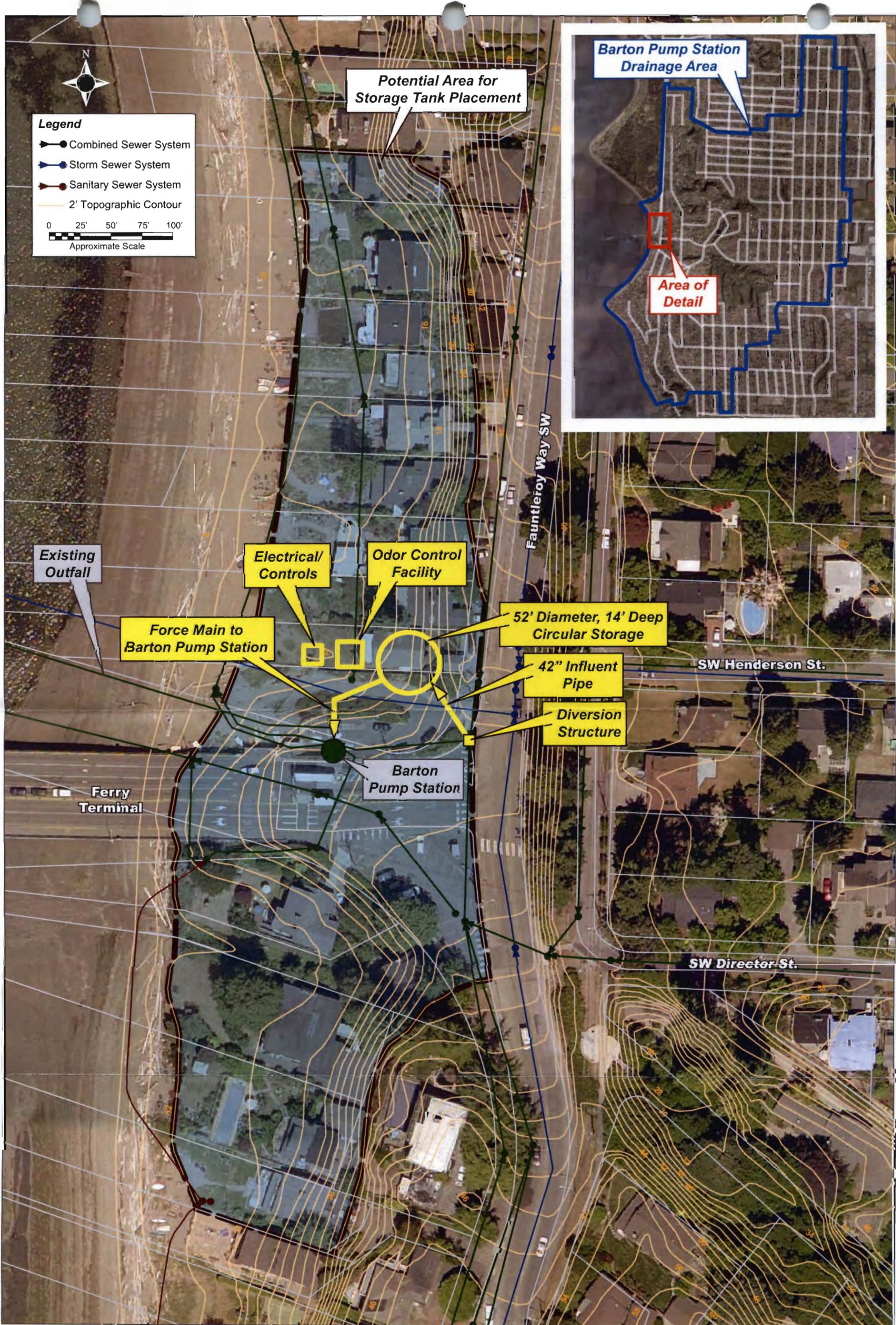
Ferry Terminal

SW Henderson St.

SW Director St.

Fauntleroy Way SW

<b>ALTERNATIVE TITLE</b>		1-A - RECTANGULAR STORAGE AT BOTTOM OF BASIN
<b>TECHNICAL SUMMARY</b>		
LOCATION	Bottom of Basin	
CSO BASIN	BARTON	
DESCRIPTION	110,000 gallon, 65 x 55 x 15 feet, buried, rectangular, single-channel, self cleaning, cast-in-place concrete tank. Flushing chamber with automated flushing gates and drain chamber with submersible pumps. New diversion structure upstream of Barton Pump Station.	
ANCILLARY FACILITIES	20' x 20' carbon scrubber type Odor Control Facility and 15' x 15' Electrical/Controls Structure with electrical equipment and controls. Surface access structures or hatches for regular maintenance and fencing around surface structures.	
OPERATIONAL FEATURES	Gravity flow into tank, pumped flow out of tank to Barton Pump Station.	
<b>SELECTION CRITERIA NOTES</b>		
LAND USE	Zoning	Residential (SFR). Conditional use permit required.
	Ownership/acquisition	May need to acquire land from residential property owners. Easement required.
	Critical Areas	Near shore line. Requires shoreline permit.
ENVIRONMENT	Shorelines Zone	Yes
	Endangered Species	TBD
TECHNICAL	Complexity and Startup	Routing of flows using overflow weirs, automatic gates, and drain pumps. Facility would be located near to the Barton Pump Station. The weir would be used for flow measurement and drain pump would be single speed "on/off". All controls and infrastructure would be located within the site or adjacent to existing rights-of-way.
	Compatibility w/WW system	A new diversion structure would be constructed to divert flow to the new storage tank. New telemetry and controls for monitoring and operation. The alternative may also require modifications to the operational methods for existing Barton Pump Station.
	Flexibility	Minimal opportunity to expand.
	Constructability	Geotechnical and construction constraints due to close proximity of shore line. Requires existing 8" combined sewer line relocation. Potential sites would be constrained. Careful construction sequencing would be required, with several move-in, move-out stages to accommodate specialty contractors as well as conventional construction. Contractor would likely need to provide offsite staging and operations. Area has low to medium slopes and requires dewatering because excavation would be near to the shore line. Special construction and permanent measures may be needed to stabilize the site such as slurry walls, tiebacks, etc.
O&M	Staffing	Facility can be automatically started and remotely monitored/operated. Drain pump start and shut down would be through county telemetry and control system. Periodic access would be required for equipment exercising and cleaning. The facility may require operator attention during storage events (e.g. monitoring and control, etc.). An operator may need to be present periodically for sampling, carbon delivery or other discrete tasks. Peak staff times require 1-2 operators. The facility can be shut down with minimal staff time. Cleanup work would generally be automated; however, 1-2 personnel may be required. Some procedures of shutdown may need to be conducted immediately; however, most work can be scheduled to be integrated with other staff duties.
	Training	Routine training would be required in accordance with County's standards.
	Access	On Site
	Process Effects	None anticipated.
COST	Project Cost Factors	Mitigation for local traffic disruption during construction, difficult shoring conditions.
	Operation Cost Factors	Carbon for odor control.
	O&M	Carbon replacement, site checks, electricity, equipment and pump replacements and regular maintenance and cleaning.
	External Agency	TBD
	External Costs	Easement acquisition, site mitigation. Replacement of existing improvements required.
COMMUNITY	Location	Site is highly visible to surrounding residences.
	Long Term Risk	Minimal impacts to community from ongoing O & M: staff would be present infrequently (intermittent or only during/after storms).
	Construction	Project would be located near heavy use roadway resulting in area closure or significant use impact, with construction duration an entire dry weather season or longer. Construction would be located near residences and businesses, and it would be difficult to mitigate impacts such as noise, after hours work, light, vibration, and access.

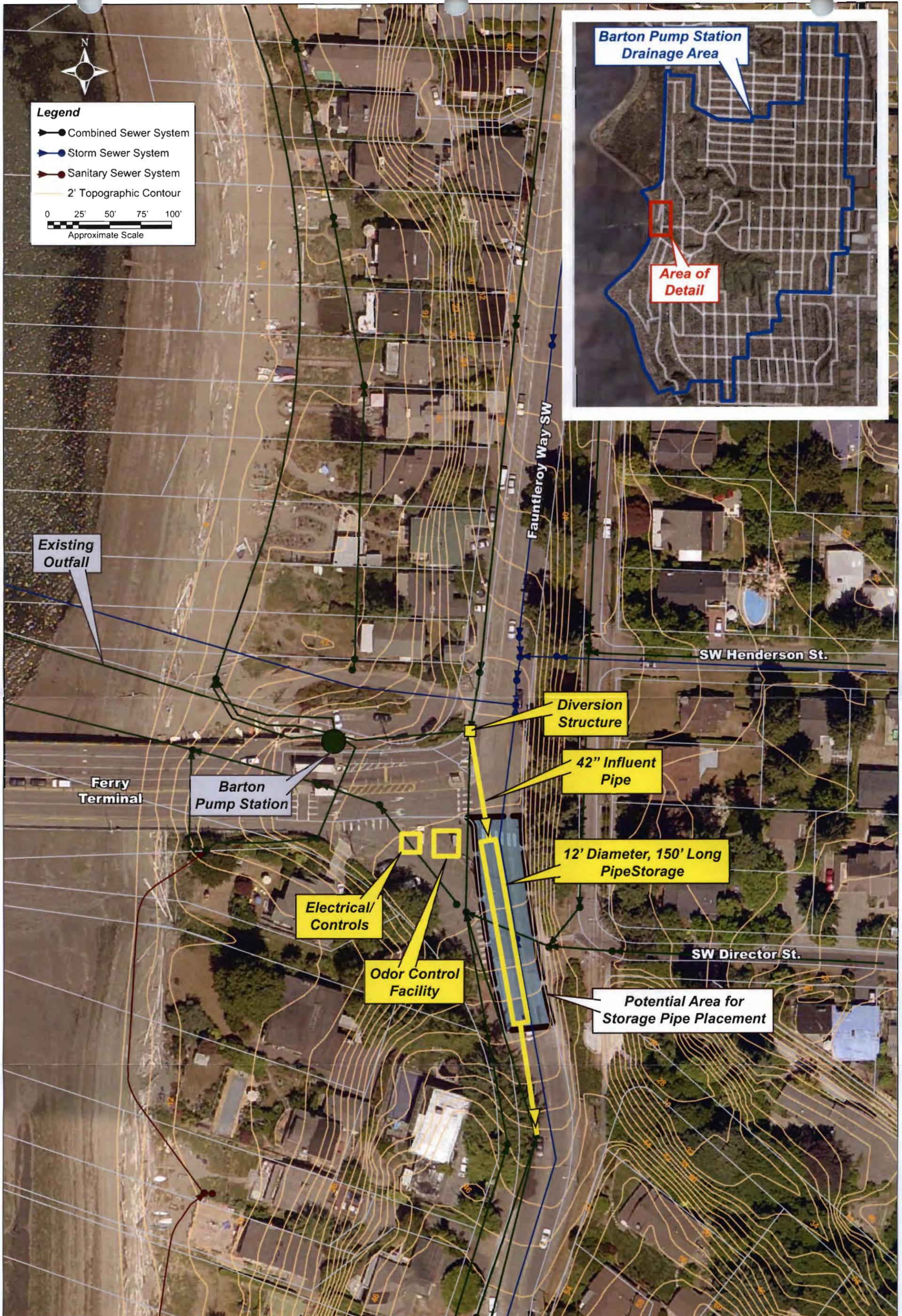


**Legend**

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

0 25' 50' 75' 100'  
Approximate Scale

ALTERNATIVE TITLE		1- B - CIRCULAR STORAGE AT BOTTOM OF BASIN
TECHNICAL SUMMARY		
LOCATION	Bottom of Basin	
CSO BASIN	BARTON	
DESCRIPTION	110,000 gallon, 52' diameter, 14' deep buried circular, self cleaning, caisson storage tank. Flushing chamber with automated flushing gates and drain chamber with submersible pumps. New diversion structure upstream of Barton Pump Station.	
ANCILLARY FACILITIES	20' x 20' carbon scrubber type Odor Control Facility and 15' x 15' Electrical/Controls Structure with electrical equipment and controls. Surface access structures or hatches for regular maintenance and fencing around surface structures.	
OPERATIONAL FEATURES	Gravity flow into tank, pumped flow out of tank to Barton Pump Station.	
SELECTION CRITERIA NOTES		
LAND USE	Zoning	Residential (SFR). Conditional use permit required.
	Ownership/acquisition	Acquire from residential property owners. Easement required.
	Critical Areas	Near to shore line. Requires shoreline permit.
ENVIRONMENT	Shorelines Zone	Yes
	Endangered Species	TBD.
TECHNICAL	Complexity and Startup	Routing of flows using overflow weirs, automatic gates, and drain pumps. Facility would be located near to the Barton Pump Station. The weir would be used for flow measurement and drain pump would be single speed "on/off". All controls and infrastructure would be located within the site or adjacent to existing rights-of-way.
	Compatibility w/WW system	A new diversion structure would be constructed to divert flow to the new storage tank. New telemetry and controls for monitoring and operation. The alternative may also require modifications to the operational methods for existing Barton Pump Station.
	Flexibility	Minimal opportunity to expand.
	Constructability	Geotechnical and construction constraints due to close proximity to shore line. Careful construction sequencing would be required, with several move-in, move-out stages to accommodate specialty contractors as well as conventional construction. Contractor must provide offsite staging and operations. Site has low to medium slopes and might require dewatering because excavation is near to the shore line. Special construction and permanent measures may be needed to stabilize the site such as caissons, slurry walls, tiebacks, and permanent dewatering. Limited Contractor staging area. Requires existing combined sewer line relocations.
O&M	Staffing	Facility can be automatically started and remotely monitored/operated. Drain pump start and shut down would be through county telemetry and control system. Periodic access would be required for equipment exercising and cleaning. The facility requires operator attention during design conditions (e.g. monitoring, sampling, chemical control, etc.). An operator may need to be present periodically for sampling, carbon delivery or other discrete tasks. Peak staff times require 1-2 operators. The facility can be shut down with minimal staff time. Cleanup work would generally be automated; however, 1-2 personnel may be required. Some procedures of shutdown may need to be conducted immediately; however, most work can be scheduled to be integrated with other staff duties.
	Training	Routine training would be required in accordance with County's standards.
	Access	On Site
	Process Effects	None anticipated.
COST	Project Cost Factors	Mitigation for local traffic disruption during construction, WSDOT permanent easement.
	Operation Cost Factors	Carbon for odor control unit.
	O&M	Carbon replacement, site checks, electricity, equipment and pump replacements and regular maintenance and cleaning.
	External Agency	TBD
	External Costs	Easement acquisition and site mitigation. Replacement of existing improvements required.
COMMUNITY	Location	Site is highly visible to surrounding residences.
	Long Term Risk	Minimal impacts to community from ongoing O & M: staff would be present infrequently (intermittent or only during/after storms).
	Construction	Project would be located near heavy use roadway resulting in area closure or significant use impact, with construction duration an entire dry weather season or longer. Construction would be located near residences and businesses, and it would be difficult or impossible to mitigate impacts such as noise, after hours work, light, vibration, and access. Fautleroy Ferry Traffic Disruption during construction

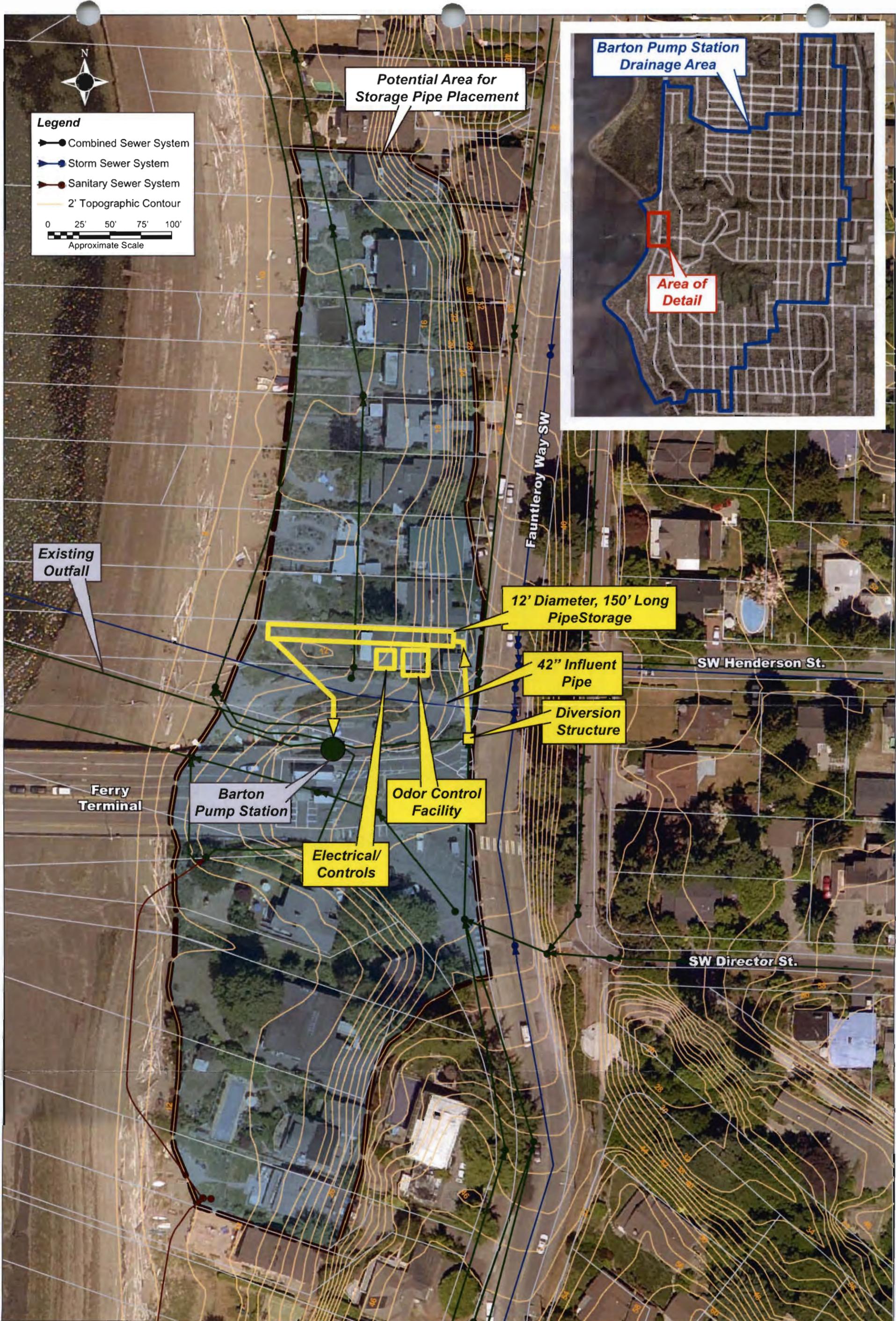


**Legend**

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

0 25' 50' 75' 100'  
Approximate Scale

ALTERNATIVE TITLE		1- D - PIPE STORAGE IN RIGHT-OF-WAY AT BOTTOM OF BASIN
<b>TECHNICAL SUMMARY</b>		
LOCATION	FAUNTLEROY WAY SW	
CSO BASIN	BARTON	
DESCRIPTION	Requires 150 LF of 144" (12-foot) diameter reinforced concrete pipe for storage of 110,000 gallons. Major components include: A new diversion structure, flow control sensors and instrumentation, flushing gates and submersible pumps.	
ANCILLARY FACILITIES	20' x 20' carbon scrubber type Odor Control Facility and 15' x 15' Electrical/Controls Structure with electrical equipment and controls. Surface access structures or manholes for regular operation and maintenance.	
OPERATIONAL FEATURES	Gravity flow into the storage pipe and pumped flow out of the pipe.	
<b>SELECTION CRITERIA NOTES</b>		
LAND USE	Zoning	Street right-of-way.
	Ownership/acquisition	Seattle DOT
	Critical Areas	TBD
ENVIRONMENT	Shorelines Zone	No
	Endangered Species	TBD
TECHNICAL	Complexity and Startup	Routing of flows using overflow weirs, automatic gates, and drain pumps. The weir would be used for flow measurement and drain pump would be single speed "on/off". All controls and infrastructure would be located adjacent to existing rights-of-way or county-owned property.
	Compatibility w/WW system	A new diversion structure would be required to divert flows to the new storage pipe. New telemetry and controls for monitoring and operation. The alternative may require modifications to the operational methods for existing Barton Pump Station.
	Flexibility	Minimal opportunity for expansion.
	Constructability	Geotechnical and construction constraints. Careful construction sequencing, with several move-in, move-out stages to accommodate specialty contractors as well as conventional construction. Limited staging area on road right-of-way. Tight shoring limits. Require existing 48" storm sewer relocation. Requires detour of traffic on Fauntleroy Way SW. Deep pipeline and structure excavation required. Requires detour of traffic on Fauntleroy Way.
O&M	Staffing	Facility can be automatically started and remotely monitored/operated. Drain pump start and shut down would be through county telemetry and control system. Periodic access would be required for equipment exercising and cleaning. The facility may require operator attention during storage events (e.g. monitoring and control, etc.). An operator may need to be present periodically for sampling, carbon delivery or other discrete tasks. Peak staff times require 1-2 operators. The facility can be shut down with minimal staff time. Cleanup work would generally be automated; however, 1-2 personnel may be required. Some procedures of shutdown may need to be conducted immediately; however, most work can be scheduled to be integrated with other staff duties.
	Training	Routine training would be required in accordance with County's standards.
	Access	Access from street or structure on easement out of roadway traffic.
	Process Effects	TBD
COST	Project Cost Factors	Mitigation for local traffic disruption during construction.
	Operation Cost Factors	Carbon for odor control unit.
	O&M	Carbon replacement, site checks, electricity, equipment and pump replacements and regular maintenance and cleaning.
	External Agency	TBD
	External Costs	Easement acquisition. Replacement of existing improvements required.
COMMUNITY	Location	Site is located on Fauntleroy Ave SW road right-of-way and is highly visible to all surrounding residences and people commuting on the road.
	Long Term Risk	Minimal impacts to community from ongoing O & M: staff would be present infrequently (intermittent or only during/after storms).
	Construction	Project located near heavy use roadway resulting in area closure or significant use impact, with construction duration an entire dry weather season or longer. Traffic Disruption to Fauntleroy Ferry during construction.
		Construction would be located near residences and businesses, and it would be difficult to mitigate impacts such as noise, after hours work, light, vibration, and access. Short term project conducted during dry weather (low flow) season, or longer term project that moves along an alignment.



ALTERNATIVE TITLE		1-C - PIPE STORAGE AT BOTTOM OF BASIN
TECHNICAL SUMMARY		
LOCATION	Bottom of Basin	
CSO BASIN	BARTON	
DESCRIPTION	Requires 150 LF of 144" (12-foot) diameter reinforced concrete pipe for storage of 110,000 gallons. Major components include: flow control sensors and instrumentation, flushing gates and submersible pumps. A new diversion structure upstream of the Barton Pump Station.	
ANCILLARY FACILITIES	20' x 20' carbon scrubber type Odor Control Facility and 15' x 15' Electrical/Controls Structure with electrical equipment and controls. Surface access structures or hatches for regular maintenance and fencing around surface structures.	
OPERATIONAL FEATURES	Gravity flow into tank, pumped flow out of tank to Barton pump station.	
SELECTION CRITERIA NOTES		
LAND USE	Zoning	Residential (SFR). Conditional use permit required.
	Ownership/acquisition	Acquire from residential property owners. Easement required.
	Critical Areas	Yes, near to shore line. Requires shoreline permit.
ENVIRONMENT	Shorelines Zone	Yes
	Endangered Species	TBD
TECHNICAL	Complexity and Startup	Routing of flows using overflow weirs, automatic gates, and drain pumps. Facility would be located near to the Barton Pump Station. The weir would be used for flow measurement and pump would be single speed "on/off". All controls and infrastructure would be located within the site or adjacent to existing rights-of-way or county-owned property.
	Compatibility w/WW system	A new diversion structure would be constructed to divert flow to the new storage pipe. New telemetry and controls for monitoring and operation. The alternative may also require modifications to the operational methods for existing Barton Pump Station.
	Flexibility	Minimal opportunity to expand.
	Constructability	Geotechnical and construction constraints due to close proximity of shore line. Requires existing 8" combined sewer line relocation. Site is constrained. Careful construction sequencing would be required, with several move-in, move-out stages to accommodate specialty contractors as well as conventional construction. Contractor must provide offsite staging and operations. Site has low to medium slopes and requires dewatering because excavation would be near to the shore line. Special construction and permanent measures may be needed to stabilize the site such as slurry walls, tiebacks, and permanent dewatering.
O&M	Staffing	Facility can be automatically started and remotely monitored/operated. Drain pump start and shut down would be through county telemetry and control system. Periodic access would be required for equipment exercising and cleaning. The facility may require operator attention during storage events (e.g. monitoring and control, etc.). An operator may need to be present periodically for sampling, carbon delivery or other discrete tasks. Peak staff times require 1-2 operators. The facility can be shut down with minimal staff time. Cleanup work would generally be automated; however, 1-2 personnel may be required. Some procedures of shutdown may need to be conducted immediately; however, most work can be scheduled to be integrated with other staff duties.
	Training	Routine training would be required in accordance with County's standards.
	Access	On Site
	Process Effects	None anticipated.
COST	Project Cost Factors	Mitigation for local traffic disruption during construction, WSDOT permanent easement.
	Operation Cost Factors	Carbon for odor control unit.
	O&M	Carbon replacement, site checks, electricity, equipment and pump replacements and regular maintenance and cleaning.
	External Agency	TBD
	External Costs	Easement acquisition, site mitigation. Replacement of existing improvements required.
COMMUNITY		Fauntleroy Ferry Traffic Disruption during construction.
	Location	Site is highly visible to surrounding residences.
	Long Term Risk	Minimal impacts to community from ongoing O & M; staff would be present infrequently (intermittent or only during/after storms).
	Construction	Project located near heavy use roadway resulting in area closure or significant use impact, with construction duration an entire dry weather season or longer. Short term project conducted during dry weather (low flow) season, or longer term project that moves along an alignment.
		Construction will be located near residences and businesses, and it will be difficult to mitigate impacts such as noise, after hours work, light, vibration, and access.



**Barton Pump Station  
Drainage Area**

**Area of  
Detail**

**Legend**

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

0 25' 50' 75' 100'  
Approximate Scale

**Existing  
Outfall**

**Odor Control  
Facility**

**Electrical/  
Controls**

**Potential Area for  
Storage Pipe Placement**

**Ferry  
Terminal**

**Barton  
Pump Station**

**SW Henderson St.**

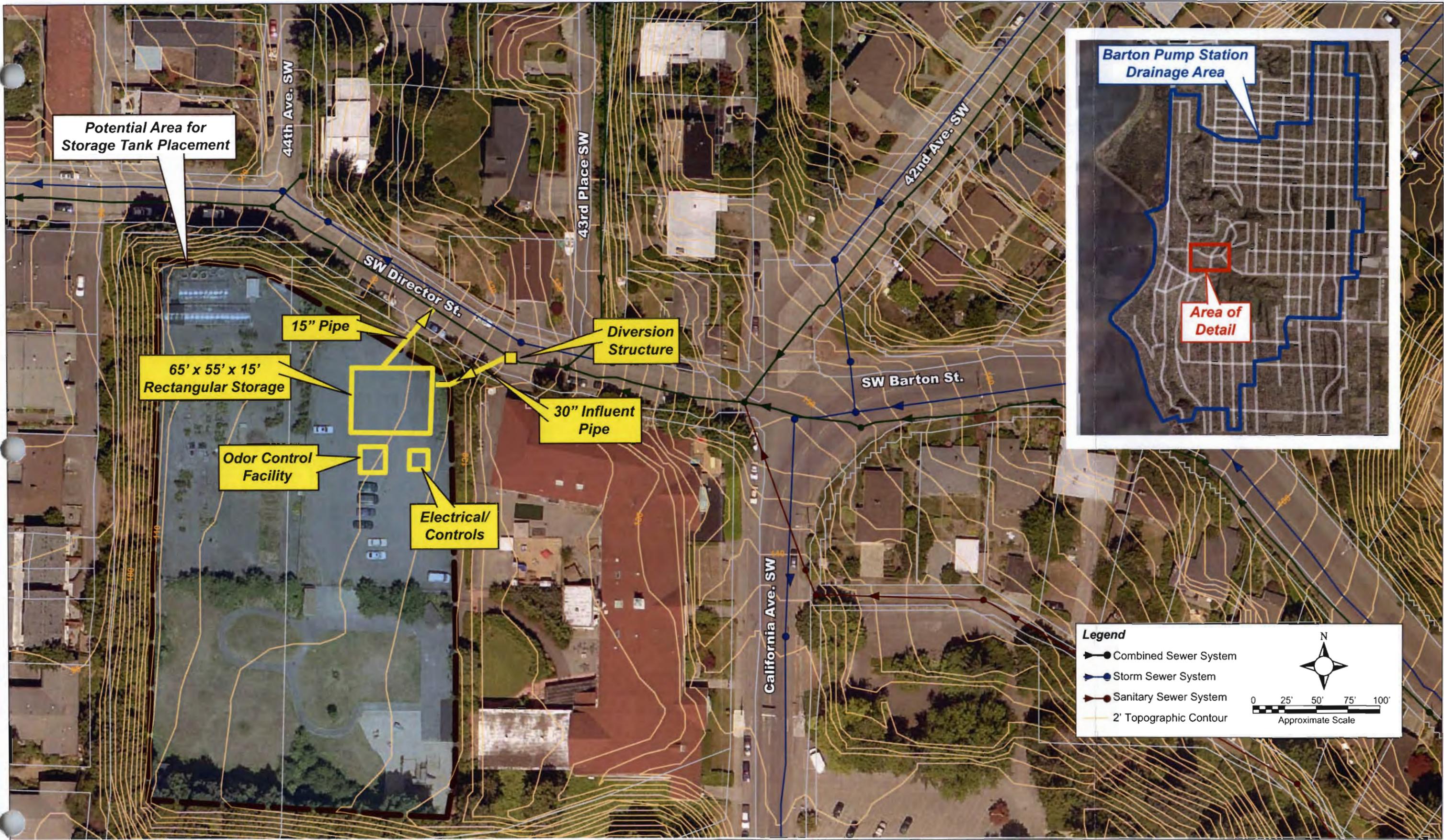
**12' Diameter, 150' Long  
Pipe Storage**

**42" Influent  
Pipe**

**SW Director St.**

**Diversion  
Structure**

ALTERNATIVE TITLE		1 - E - PIPE STORAGE IN UPPER FAUNTLEROY WAY SW
TECHNICAL SUMMARY		
LOCATION	UPPER FAUNTLEROY WAY SW	
CSO BASIN	BARTON	
DESCRIPTION	Requires 150 LF of 144" (12-foot) diameter reinforced concrete pipe for storage of 110,000 gallons. Major components include: A new diversion structure, flow control sensors and instrumentation, flushing gates and submersible pumps.	
ANCILLARY FACILITIES	20' x 20' carbon scrubber type Odor Control Facility and 15' x 15' Electrical/Controls Structure with electrical equipment and controls. Surface access structures or manholes for regular operation and maintenance.	
OPERATIONAL FEATURES	Gravity flow into the storage pipe and pumped flow out of the pipe.	
SELECTION CRITERIA NOTES		
LAND USE	Zoning	Street right-of-way.
	Ownership/acquisition	Seattle DOT
	Critical Areas	TBD
ENVIRONMENT	Shorelines Zone	No
	Endangered Species	TBD
TECHNICAL	Complexity and Startup	Routing of flows using overflow weirs, automatic gates, and drain pumps. Alternative would be located on Fauntleroy Ave SW near to the Barton Pump Station. The weir would be used for flow measurement and drain pump would be single speed "on/off". All controls and infrastructure would be located adjacent to existing rights-of-way.
	Compatibility w/WW system	A new diversion structure with automatic gates to divert flows to the new storage pipe.
	Flexibility	Minimal opportunity for expansion.
	Constructability	Geotechnical and construction constraints. Limited Contractor staging area on road right-of-way. Tight shoring limits. Special measures required. Requires existing 18" combined sewer relocation.
O&M	Staffing	Facility can be automatically started and remotely monitored/operated. Flows would be diverted using telemetry signal from pump station. Drain pumps start up and shut down would be through county telemetry and control system. Periodic access would be required for equipment exercising and cleaning. The facility may require operator attention during storage events (e.g. monitoring and control, etc.). An operator may need to be present periodically for sampling, carbon delivery or other discrete tasks. Peak staff times require 1-2 operators. The facility can be shut down with minimal staff time. Cleanup work would generally be automated; however, 1-2 personnel may be required. Some procedures of shutdown may need to be conducted immediately; however, most work can be scheduled to be integrated with other staff duties.
	Training	Routine training would be required in accordance with County's standards.
	Access	Access from street or structure on easement out of roadway traffic.
	Process Effects	TBD
COST	Project Cost Factors	Mitigation for local traffic disruption during construction.
	Operation Cost Factors	Carbon for odor control unit.
	O&M	Carbon replacement, site checks, electricity, equipment and pump replacements and regular maintenance and cleaning.
	External Agency	TBD
	External Costs	Easement acquisition. Replacement of existing improvements required.
COMMUNITY	Location	Site is located on Fauntleroy Ave SW road right-of-way and is highly visible to all surrounding residences and people commuting.
	Long Term Risk	Minimal impacts to community from ongoing O & M: staff would be present infrequently (intermittent or only during/after storms).
	Construction	Construction near residences resulting in difficulty mitigating impacts such as noise, after hours work, light, vibration, and access. Short term project conducted during dry weather (low flow) season, or longer term project that moves along an alignment.

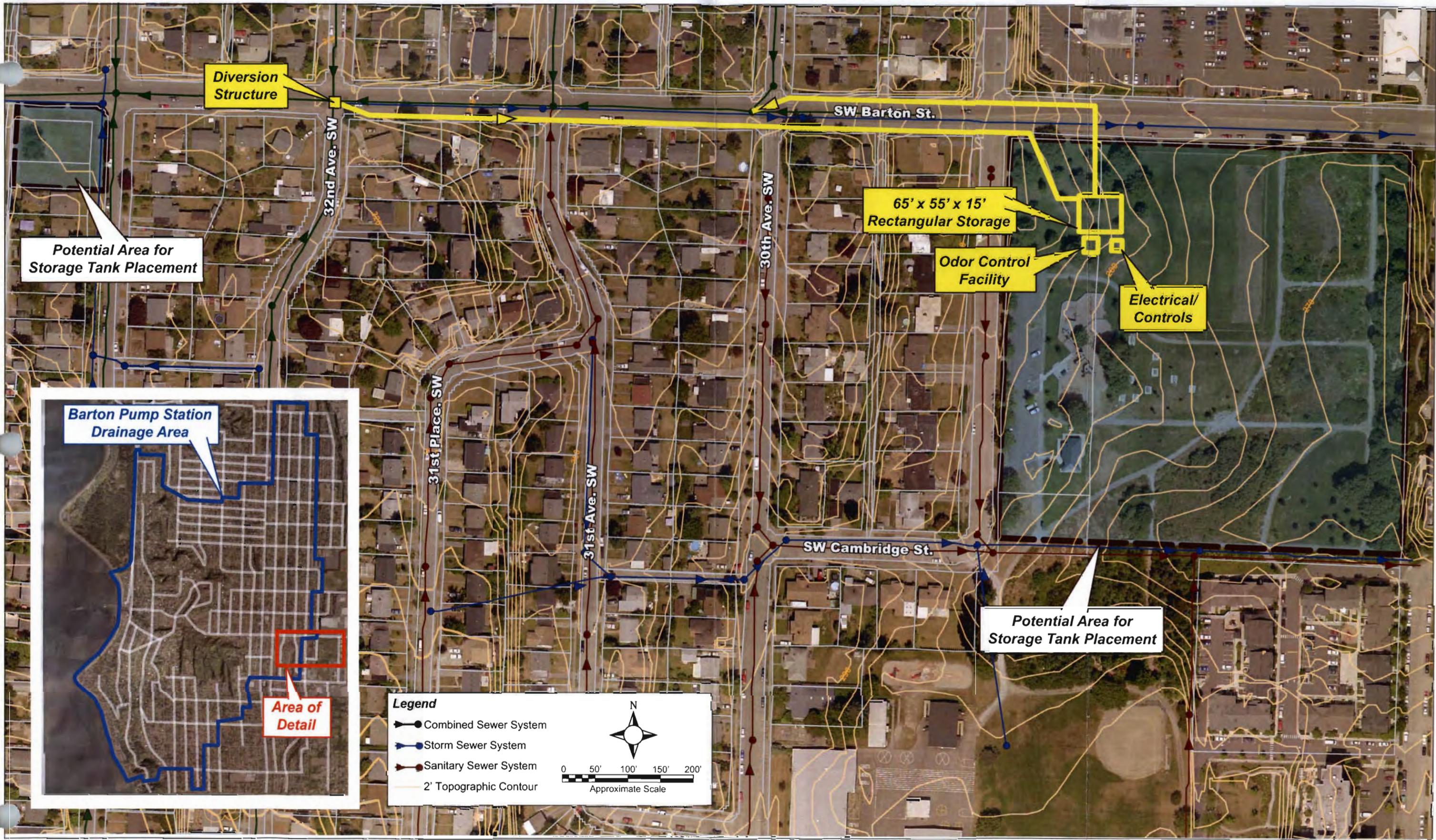


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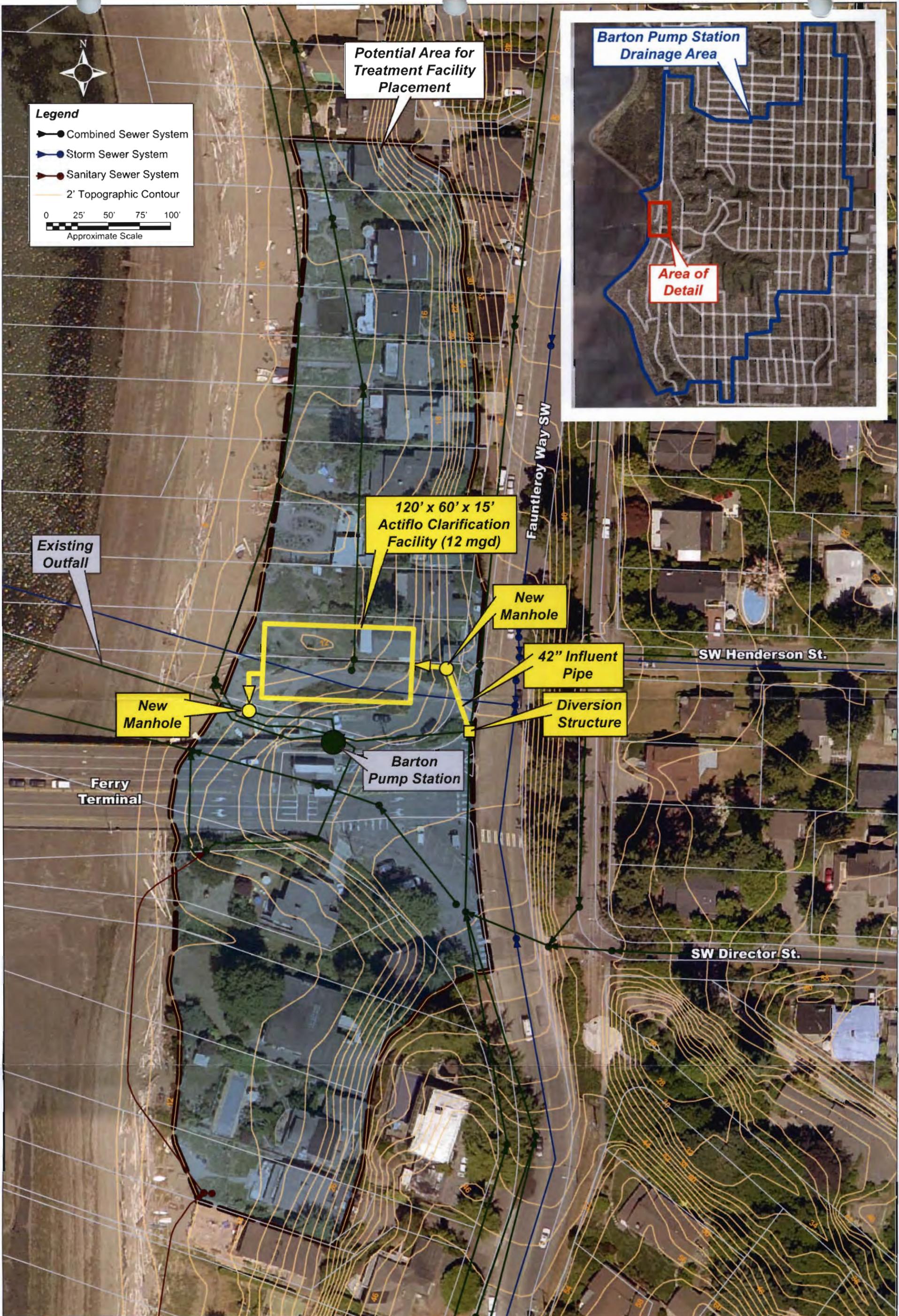
- Combined Sewer System
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- Sanitary Sewer System
- 2' Topographic Contour

0 25' 50' 75' 100'  
Approximate Scale

ALTERNATIVE TITLE		1-F - RECTANGULAR STORAGE IN VICINITY OF FAUNTLEROY SCHOOL
<b>TECHNICAL SUMMARY</b>		
LOCATION	Fauntleroy School Parking Lot and Adjacent Vacant Land	
CSO BASIN	BARTON	
DESCRIPTION	110,000 gallon, 65 x 55 x 15 feet, buried, rectangular, dual-channel, self cleaning, cast-in-place concrete tank. Flushing chamber with automated flushing gates and drain chamber. New diversion structure.	
ANCILLARY FACILITIES	20' x 20' carbon scrubber type Odor Control Facility and 15' x 15' Electrical/Controls Structure with electrical equipment and controls, Access roads and fencing around surface structures.	
OPERATIONAL FEATURES	Gravity flow into tank and gravity flow out of tank.	
<b>SELECTION CRITERIA NOTES</b>		
LAND USE	Zoning	Commercial.
	Ownership/acquisition	Acquire from Fauntleroy Community Service.
	Critical Areas	TBD
ENVIRONMENT	Shorelines Zone	No
	Endangered Species	TBD.
TECHNICAL	Complexity and Startup	Routing of flows using automatic gates. Facility would be within a single site. The storage site would be tributary to 50% of the total peak flows generated in the Barton basin. Implementation requires remote measurement of flows, measurement of flows in existing Barton Pump Station to coordinate and control routing of flows to the storage facility. Location of the storage facility would be remote and upstream from the measurement point at the existing Barton Pump Station. Storage volume will need to be confirmed through basin modeling.
	Compatibility w/WW system	A new diversion structure would be required on the SW Director Street near the Fauntleroy school to divert the flows to the new storage tank. New telemetry and controls for monitoring and operation would be remote at the existing Barton Pump Station and upstream tank / diversion structure. The alternative may require modifications to the county's infrastructure downstream of the new storage tank for implementation, e.g. modification of existing diversion structure or operational methods for existing Barton Pump Station.
	Flexibility	Has sufficient room for further expansion of the storage tank site. May divert more flow to storage to relieve demand at Barton Pump Station.
	Constructability	Alternative is on stable and low-slope area. Site is not constrained. Adequate area for access and staging and operation of special equipment. Adequate room on site for contractor staging and operations.
O&M	Staffing	Facility can be automatically started and remotely monitored/operated using county telemetry and control system. Periodic access would be required for equipment exercising and cleaning. The facility may require operator attention during storage events (e.g. monitoring and control, etc.). An operator may need to be present periodically for sampling, carbon delivery or other discrete tasks. Peak staff times require 1-2 operators. The facility can be shut down with minimal staff time. Cleanup work would generally be automated; however, 1-2 personnel may be required. Some procedures of shutdown may need to be conducted immediately; however, most work can be scheduled to be integrated with other staff duties.
	Training	Routine training would be required in accordance with County's standards.
	Access	On Site
	Process Effects	TBD
COST	Project Cost Factors	Mitigation for local traffic disruption during construction, easement or land purchase from school district.
	Operation Cost Factors	Carbon for odor control unit.
	O&M	Carbon replacement, site checks and regular maintenance and cleaning.
	External Agency	TBD
	External Costs	Land and/or easement acquisition, site mitigation.
COMMUNITY	Location	Site is located near to residences.
	Long Term Risk	Minimal impacts to community from ongoing O & M: staff would be present infrequently (intermittent or only during/after storms).
	Construction	Construction would be located near residences and businesses, but impacts would be minimal, or can be mitigated. Short term project that can be conducted during off season. Construction noise and vibrations.



<b>ALTERNATIVE TITLE</b>		1- G – RECTANGULAR STORAGE IN UPPER BASIN
<b>TECHNICAL SUMMARY</b>		
LOCATION	EAST OF BARTON SUB BASIN 416 AT ROXHILL PLAYGROUND (BASIN 416 FROM GIS REPORT)	
CSO BASIN	BARTON	
DESCRIPTION	Construction of an 110,000 gallon, 65 x 55 x15 feet, buried rectangular, multi-channel, self cleaning, cast-in-place concrete tank at Roxhill Playground (intersection of SW Barton Street and 29th Avenue SW). Flushing chamber with automated flushing gates and drain chamber with submersible pumps. Divert flows during peak flow events from the intersection of SW Barton Street and 32nd Avenue SW. This will include the eastern half of sub basin 416 which has a majority of the impervious connected acreage within the Barton Basin. This will be routed by gravity to a rectangular storage tank at the Roxhill Playground.	
ANCILLARY FACILITIES	20' x 20' carbon scrubber type Odor Control Facility and 15' x 15' Electrical/Controls Structure with electrical equipment and controls. Surface access structures or hatches for regular maintenance and fencing around surface structures.	
OPERATIONAL FEATURES	Diversion structure controlled by telemetry at Barton Pump Station. Flows are diverted by a signal controlled gate at the diversion structure. Flows are conveyed by gravity down a new pipeline along SW Barton Street into tank at Roxhill Playground. Stored flows are pumped out of tank through a new force main along Barton Street back to the existing sewer at the diversion structure where they will flow through the existing collection system to Barton P.S. Telemetry signal would close gate at diversion structure if tank becomes full, sending flows back towards the Barton Pump Station through the existing sewer system.	
<b>SELECTION CRITERIA NOTES</b>		
LAND USE	Zoning	Park and Street right-of-way.
ENVIRONMENT	Critical Areas	TBD
	Ownership/Acquisition	Seattle DOT and possibly Seattle Parks. Storage volume will need to be confirmed through basin modeling.
	Shorelines Zone	No
	Endangered Species	TBD
TECHNICAL	Complexity and Startup	Routing of flows using automatically operated diversion gates, and drain pumps. Facility would be remotely located from the Barton Pump Station. The drain pump would be single speed "on/off". Diversion structure and pipelines would be located within street right-of-way; storage facility would be located on Seattle Parks Property.
	Compatibility w/WW system	A new diversion structure would be constructed to divert flow to the new storage tank. New telemetry and controls for monitoring and operation. The alternative may also require modifications to the operational and control methods for existing Barton Pump Station.
	Constructability	Requires diversion structure in street right of way. Requires construction of gravity line and force main to-from the storage facility. Must coordinate construction with park use. Contractor may need to provide offsite staging and operations.
O&M	Staffing	Facility can be automatically started and remotely monitored/operated. Drain pump start and shut down would be through county telemetry and control system. Periodic access would be required for equipment exercising and cleaning. The facility may require operator attention during storage events (e.g. monitoring and control, etc.). An operator may need to be present periodically for sampling, carbon delivery or other discrete tasks. Peak staff times require 1-2 operators. The facility can be shut down with minimal staff time. Cleanup work would generally be automated; however, 1-2 personnel may be required. Some procedures of shutdown may need to be conducted immediately; however, most work can be scheduled to be integrated with other staff duties.
	Training	Routine training would be required in accordance with County's standards.
	Access	On Site
	Process Effects	None anticipated.
COST	Project Cost Factors	Mitigation for local traffic disruption during construction, roadway easement, and Seattle Parks easement & mitigation.
	Operation Cost Factors	Carbon for odor control.
	O&M	Carbon replacement, site checks, electricity, equipment and pump replacements and regular maintenance and cleaning.
	External Agency	SDOT and Seattle Parks
	External Costs	Easement acquisition, site mitigation. Replacement of existing improvements required.
COMMUNITY	Location	Potential impacts to park use
	Long Term Risk	Minimum
	Construction	Traffic Disruption on streets during construction. Disruption of park use/access during construction.



**Legend**

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

0 25' 50' 75' 100'

Approximate Scale



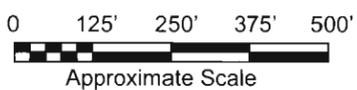
<b>ALTERNATIVE TITLE</b>		3 - A - END OF PIPE TREATMENT
<b>TECHNICAL SUMMARY</b>		
LOCATION	Bottom of Basin	
CSO BASIN	BARTON	
DESCRIPTION	12 mgd capacity, 120' x 60' x 15' buried rectangular Actiflo High Rate Clarification (HRC) system in cast-in-place concrete tank. HRC facilities include an Actiflo HRC unit, 10mm prescreening, odor control, electrical and chemical buildings and UV treatment.	
ANCILLARY FACILITIES	Surface access structures such as hatches for regular operation and maintenance. Access roads and fencing around surface structures.	
OPERATIONAL FEATURES	Gravity flow into tank. May require pumping to outfall depending upon treatment facility hydraulic profile.	
<b>SELECTION CRITERIA NOTES</b>		
LAND USE	Zoning	Residential. Conditional use permit required.
	Ownership/acquisition	Acquire from residential property owners.
	Critical Areas	Yes, near shoreline, requires shoreline permit.
ENVIRONMENT	Shorelines Zone	Yes
	Endangered Species	TBD
TECHNICAL	Complexity and Startup	More complex than typical county facilities.
	Compatibility w/WW system	A new diversion structure would be required upstream of the Barton pump station to divert flows to the new treatment facility. New telemetry and controls for monitoring and operation.
	Flexibility	Minimal opportunity for expansion.
	Constructability	Geotechnical and construction constraints due to close proximity of shore line. Structure will be located underground, partially under parking/driveway access. Limited Contractor staging area on site. Tight shoring limits. May require existing 72" storm sewer relocation.
O&M	Staffing	Remotely monitored, started, and shut down using county telemetry and control system. May require staff monitoring during operation. Periodic access for equipment exercising, solids removal and cleaning.
	Training	Training would be required for operation and maintenance of facility.
	Access	On Site
	Process Effects	TBD
COST	Project Cost Factors	Mitigation for local traffic disruption during construction.
	Operation Cost Factors	Carbon for odor control unit, polymer for high rate clarification and operational cost associated with disinfection.
	O&M	Carbon replacement, site checks, electricity, equipment and pump replacements and regular maintenance and cleaning.
	External Agency	TBD
	External Costs	Easement acquisition, site mitigation. Replacement of existing improvements required.
COMMUNITY	Location	Site is highly visible to surrounding residences.
	Long Term Risk	O & M impacts on surrounding community: moderate maintenance would be needed by staff and staff would be onsite to check during large storms.
	Construction	Traffic Disruption to Fautleroy Ferry during construction.
		Construction near residences resulting in difficulty mitigating impacts such as noise, after hours work, light, vibration, and access..
	Short term project conducted during dry weather (low flow) season, or longer term project that moves along an alignment.	



**Legend**

-  Roof to Be Disconnected from Combined Sewer System
-  New Storm Drain

26 acres of impervious roof and street right-of-way area disconnected from combined sewer system. No storage required.



<b>ALTERNATIVE TITLE</b>		4- A - IMPERVIOUS AREA DISCONNECTION
<b>TECHNICAL SUMMARY</b>		
LOCATION	NORTHEAST AREA OF SUBBASIN B-8 (BASIN 416 FROM GIS REPORT)	
CSO BASIN	BARTON	
DESCRIPTION	Disconnect 26 acres of roof and street storm water connections from combined sewer system (CSS). This would eliminate the need for 110,000 gallons of storage at the bottom of the basin.	
ANCILLARY FACILITIES	Construction of approximately 18,120 LF of 12-inch diameter storm sewer along 30 <sup>th</sup> Ave SW, 31 <sup>st</sup> Ave SW and 32 <sup>nd</sup> AVE SW between SW Myrtle and SW Henderson streets (see map)	
OPERATIONAL FEATURES	Impervious area disconnections and diversion of flows from roof drains and catch basins into new storm sewers. The existing CSS will be used as the sanitary sewer system.	
<b>SELECTION CRITERIA NOTES</b>		
LAND USE	Zoning	Residential and Street right-of-way.
ENVIRONMENT	Shorelines Zone	No
	Endangered Species	TBD
CAPACITY	<b>Storm System:</b> Pipeline Diameter Tie-in MS4 Diameter Capacity	12-inch diameter and greater (estimate only, TBD) 18 inches TBD
	<b>Sanitary System:</b> Pipeline Diameter Downstream SS Capacity	(Reuse existing CSS) 18 inches TBD
CONTROL VOLUME REDUCTION	Total Effective Impervious Area Disconnected	26.0 acres
	Total Control Volume Reduction	110,000 gallons
CONSTRUCTION IMPACTS	Lineal feet of pipe, ft	18,120 LF
O&M	Staffing	Not required.
	Training	Not required.
	Access	N/A
	Process Effects	TBD
COST	Project Cost Factors	Mitigation for local traffic disruption during construction. Concrete pavement panel replacement, side walk repairs, storm lateral connections.
	Operation Cost Factors	Minimum
	O&M	Minimum
	External Agency	Seattle Public Utilities
	External Costs	TBD
COMMUNITY	Location	Highly visible to residences.
	Long Term Risk	Minimum
	Construction	Traffic Disruption on streets during construction.