

Appendix B: Basin Plans

- Basin Plans produced as part of 2014 Wastewater Comprehensive Plan Update.

DRAFT

Anderson Cove Basin					
BASIN DESCRIPTION					
Area (acres)	385				
Land Use	Residential and Business Park				
Location	West Bremerton area, bordered by the Puget Sound Port Washington Narrows, Chester Avenue, 11th Street, and North Lafayette Avenue.				
Description	There are four pump stations (CW-1 through CW-4) along the collection system. Flows from the Anderson Cove Basin are conveyed from CW-1 to the WWTP via the Naval Avenue Force Main to the CTP. A capacity upgrade was constructed for CW-2 and CW-1 in 1999 and 2007, respectively. Both of these upgrades are for CSO reduction. A force main was installed in 1999 from CW-4 to 13th Street. The pipe is 8-inch ductile iron, and is capped at both ends. There is currently no plan to upgrade CW-4; therefore, this pipe may be used for other purposes.				
SEWER FLOWS					
Existing GPD (2013)	360,000				
Future GPD (2033)	470,000				
Percent Developed ¹ (%)	97%				
Percent Sewered ² (%)	98%				
EXISTING SYSTEM					
Combined/Separated	Combined				
Receiving Facilities	Naval Avenue Force Main to Crosstown Pipeline				
Existing Pump Stations	CW-1, CW-2, CW-3, and CW-4				
Combined Sewer Outfall	OF-8, OF-9, OF-10A, OF-11, and OF-12				
PUMP STATIONS					
Pump Station	Capacity (gpm)	2013 Peak Flow (gpm)	2033 Peak Flow (gpm)	Percent Developed ¹	Percent of Developed Sewered ²
CW-1 ⁽³⁾	3,500	5,360	5,450	97%	98%
CW-2	1,050	2,280	2,340	95%	100%
CW-3	50	390	400	95%	100%
CW-4	450	780	870	98%	99%
CIP					
CIP ID	Timeline	Funding Source	Purpose	Related Projects	Cost (\$1,000)
CIP Year 2015-2020					
F-7	Odor Control System Upgrade, OCS 1 & 3				
	2016 - 2017	UFA/G	Repair	n/a	\$ 400
	Replace the undersized odor control systems.				
CIP Year 2020+					
NOTES					
1) Total area of developed parcels divided by the total of developed and undeveloped parcel area excluding parcels designated as right of way or water bodies.					
2) Total area of developed parcels with available sewer service divided by the total developed parcel area.					
3) Flow in exceeding the pump station capacity discharges through OF-9, 10, 11, and 12					

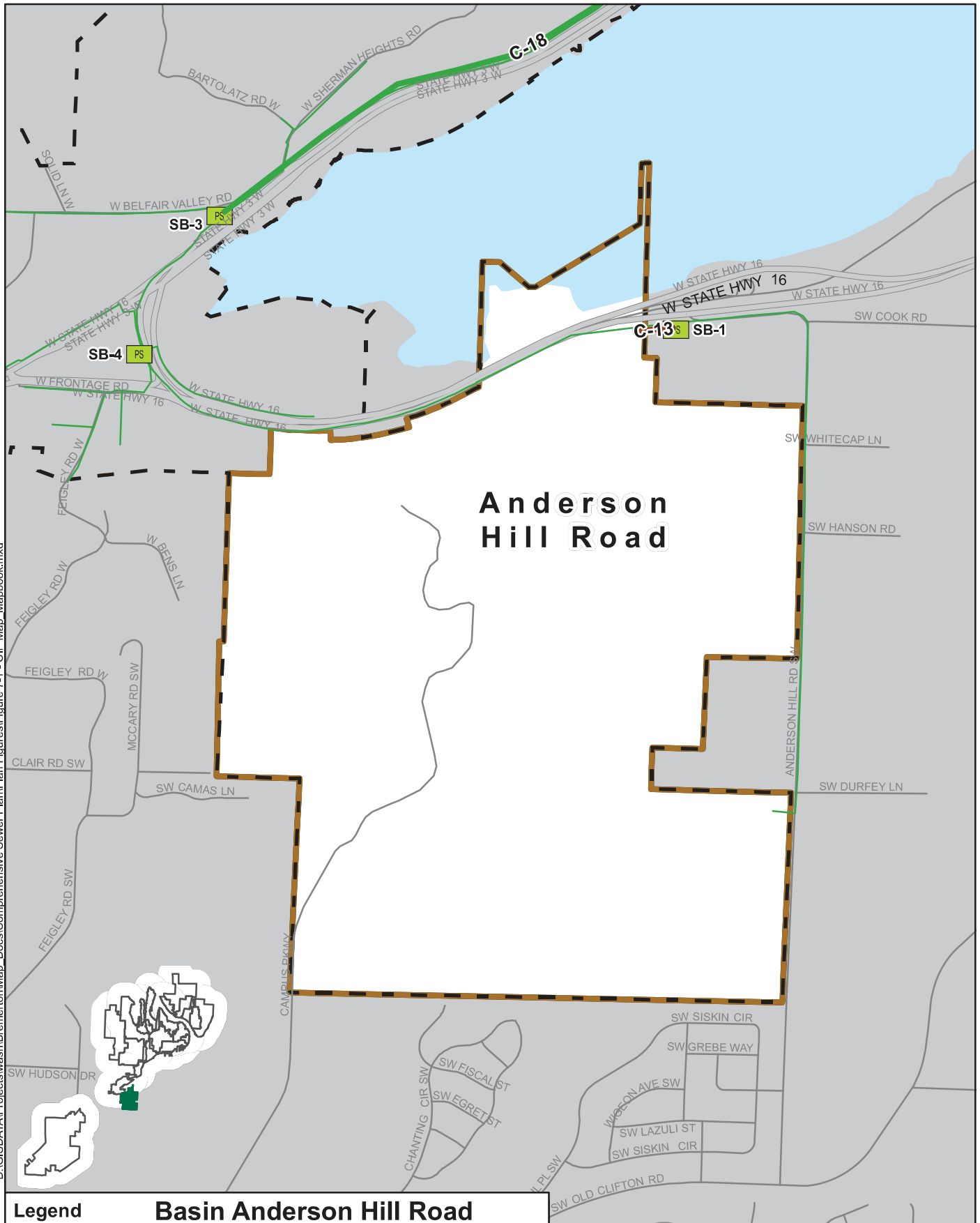
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Anderson Hill Road Basin					
BASIN DESCRIPTION					
Area (acres)	470				
Land Use	Undeveloped area with low-density residential.				
Location	South Bremerton area, bordered by the southern tip of the Puget Sound Sinclair Inlet, Anderson Hill Road, SW. Grebe Way, and McCary Road.				
Description	The Anderson Hill Road Basin is served by a gravity system that discharges to pump station SB-1. There is currently only one development which is served by this system so the flows in the basin are extremely low. Flows are conveyed via the Southwest Bremerton Sewer Force Main to the WWTP.				
SEWER FLOWS					
Existing GPD (2013)	6,000				
Future GPD (2033)	8,000				
Percent Developed¹ (%)	67%				
Percent Sewered² (%)	18%				
EXISTING SYSTEM					
Combined/Separated	Separate				
Receiving Facilities	Southwest Bremerton Sewer Force Main				
Existing Pump Stations	SB-1				
Combined Sewer Outfall					
PUMP STATIONS					
Pump Station	Capacity (gpm)	2013 Peak Flow (gpm)	2033 Peak Flow (gpm)	Percent Developed¹	Percent of Developed Sewered²
SB-1	1,652	900	910	67%	18%
CIP					
CIP ID	Timeline	Funding Source	Purpose	Related Projects	Cost (\$1,000)
CIP Year 2015-2020					
C-13	WSDOT Culvert Replacement - Sewer Main Relocation				
	2015	UFA	Deficiency	n/a	\$ 20
	A sewer line over the existing culvert for Anderson Creek will be relayed through a sleeve in a new box culvert WSDOT is planning to install as part of a fish passage improvement project.				
CIP Year 2020+					
NOTES					
1) Total area of developed parcels divided by the total of developed and undeveloped parcel area excluding parcels designated as right of way or water bodies.					
2) Total area of developed parcels with available sewer service divided by the total developed parcel area.					

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Legend

Basin Anderson Hill Road

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|---------------------------|--------------------------|-------------------|
| Odor Control Upgrade | Beach Sewer | PS Lift Station |
| MBR | Force Main | Sewer Mains |
| PS New Pump Station | Gravity Sewer | Streets |
| PS Pump Station Upgrade | Low Pressure Sewer | Highway |
| PS Reclaimed Pump Station | Outfall | New Service Area |
| | Reclaimed Main | City of Bremerton |
| | Force Main Less Than 24" | Bremerton UGA |
| | CSO Outfall | |



1 inch = 1,060 feet



BASIN PLAN

City of Bremerton



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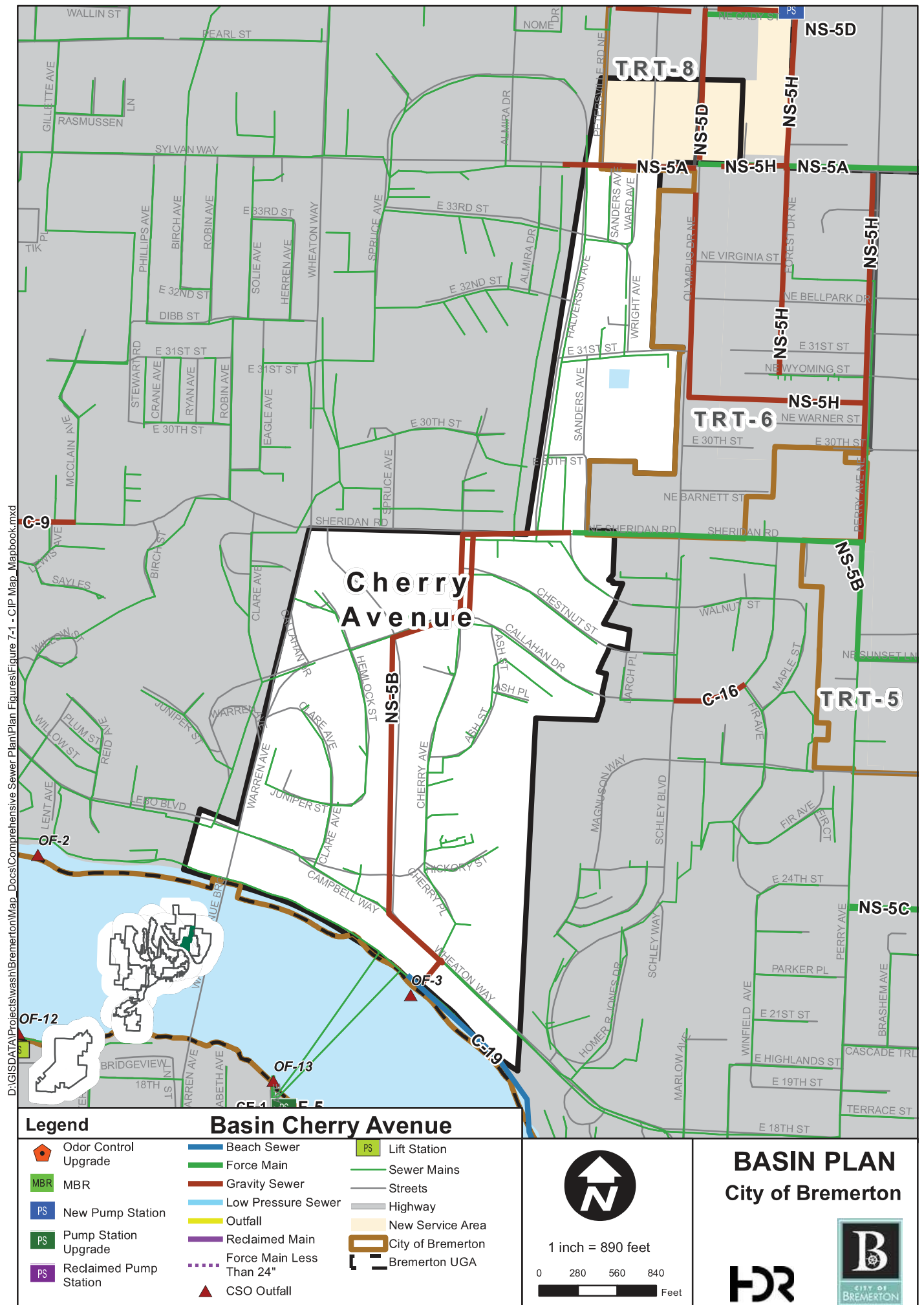
Callow Avenue Basin					
BASIN DESCRIPTION					
Area (acres)	644				
Land Use	Residential and Commercial				
Location	West Bremerton area, bordered by Kitsap Way, S. Constitution Avenue, High Avenue, and the Puget Sound Naval Shipyard.				
Description	The Callow Avenue Basin, the City's largest basin, receives flow from the Phinney Bay Basin continuously, and also from the Anderson Cove Basin (pump station CW-2) during wet weather. There are six pump stations (WB-1 through WB-6) along the collection system. WB-1 and 2 are part of the KCSD No. 1 system. WB-5 is not addressed in this WWCP. In 2003, Bremerton constructed WB-6, and at the same time upgraded WB-3. WB-6 is a true CSO pump station in that it operates only during surcharge in the collection system during peak flows. The WB-3 upgrade was required to address the increased discharge head due to the added surcharge in the CTP from WB-6, and to maximize flow out of the basin. In the Callow Avenue Basin, combined sewer flows and those from the PSNS flow to pump station WB-3, which discharges to the Crosstown Pipeline.				
SEWER FLOWS					
Existing GPD (2013)	456,000				
Future GPD (2033)	630,000				
Percent Developed¹ (%)	95%				
Percent Sewered² (%)	93%				
EXISTING SYSTEM					
Combined/Separated	Combined				
Receiving Facilities	Crosstown Pipeline				
Existing Pump Stations	WB-3, WB-4, and WB-6				
Combined Sewer Outfall	OF-17				
PUMP STATIONS					
Pump Station³	Capacity (gpm)	2013 Peak Flow (gpm)	2033 Peak Flow (gpm)	Percent Developed¹	Percent of Developed Sewered²
WB-3	10,000	8,100	9,710	94%	98%
WB-6	7,500	same as WB-3	same as WB-3	same as WB-3	same as WB-3
WB-4	100	20	20	86%	100%
CIP					
CIP ID	Timeline	Funding Source	Purpose	Related Projects	Cost (\$1,000)
CIP Year 2015-2020					
CIP Year 2020+					
C-3	Replace Crosstown Pipeline				
	>2020	UFA	Deficiency	n/a	\$ 8,600
	Install approximately 10,000 LF of 36-inch HDPE pressure-gravity line from Montgomery Avenue and Burwell Street to the WWTP to provide redundancy for the CTP. The CTP is critical infrastructure for the combined sewer system. Currently, there is no bypass or redundancy if the pipeline is shut down for maintenance or repairs. This project would install a redundant pipeline to increase reliability of the existing pipeline.				
C-4	Central Bremerton Force Main				
	>2020	UFA	Deficiency	n/a	\$ 500
	Replace or rehabilitate the existing 8,000 LF Central Bremerton force main from North Montgomery Avenue to the surge chamber, install cleaning ports and isolation valves, and replace the surge chamber with a HDPE manhole. The force main will be inspected and evaluated to determine if any section or all of the force main needs replacement or rehabilitation. The purpose of this project is to address hydrogen sulfide corrosion and issues with the surge chamber and vents on the pipeline.				

NOTES
1) Total area of developed parcels divided by the total of developed and undeveloped parcel area excluding parcels designated as right of way or water bodies.
2) Total area of developed parcels with available sewer service divided by the total developed parcel area.
3) Kitsap County Sewer District No. 1 owns and operates pump stations WB-1 and WB-2, no flow or demographic data was generated for these pump stations.

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Cherry Avenue Basin					
BASIN DESCRIPTION					
Area (acres)	214				
Land Use	Residential with some Commercial				
Location	East Bremerton area, bordered by the Puget Sound Port Washington Narrows, Warren Avenue, Sheridan Road, and the East Park Nature area.				
Description	Sanitary sewer flows from the Cherry Avenue Basin are conveyed via the East Bremerton Beach Main to the CTP. The sewers in Cherry Avenue from Ash Street to Cherry Place become overloaded during large storms, resulting in flooding of commercial businesses. Backwater valves have been installed at the right-of-way for businesses on Cherry Avenue in this vicinity.				
SEWER FLOWS					
Existing GPD (2013)	172,000				
Future GPD (2033)	273,000				
Percent Developed ¹ (%)	95%				
Percent Sewered ² (%)	82%				
EXISTING SYSTEM					
Combined/Separated	Combined				
Receiving Facilities	East Bremerton Beach Main to the Crosstown Pipeline				
Existing Pump Stations					
Combined Sewer Outfall	OF-3				
PUMP STATIONS					
Pump Station	Capacity (gpm)	2013 Peak Flow (gpm)	2033 Peak Flow (gpm)	Percent Developed ¹	Percent of Developed Sewered ²
CIP					
CIP ID	Timeline	Funding Source	Purpose	Related Projects	Cost (\$1,000)
CIP Year 2015-2020					
C-15	Cherry Ave Sanitary Sewer				
	2016	UFA	Deficiency	n/a	\$ 25
	The City just installed CIPP in 2014 along all of Cherry Avenue from Callahan to Wheaton Way. This project would CIPP a last remaining segment.				
CIP Year 2020+					
NOTES					
1) Total area of developed parcels divided by the total of developed and undeveloped parcel area excluding parcels designated as right of way or water bodies.					
2) Total area of developed parcels with available sewer service divided by the total developed parcel area.					

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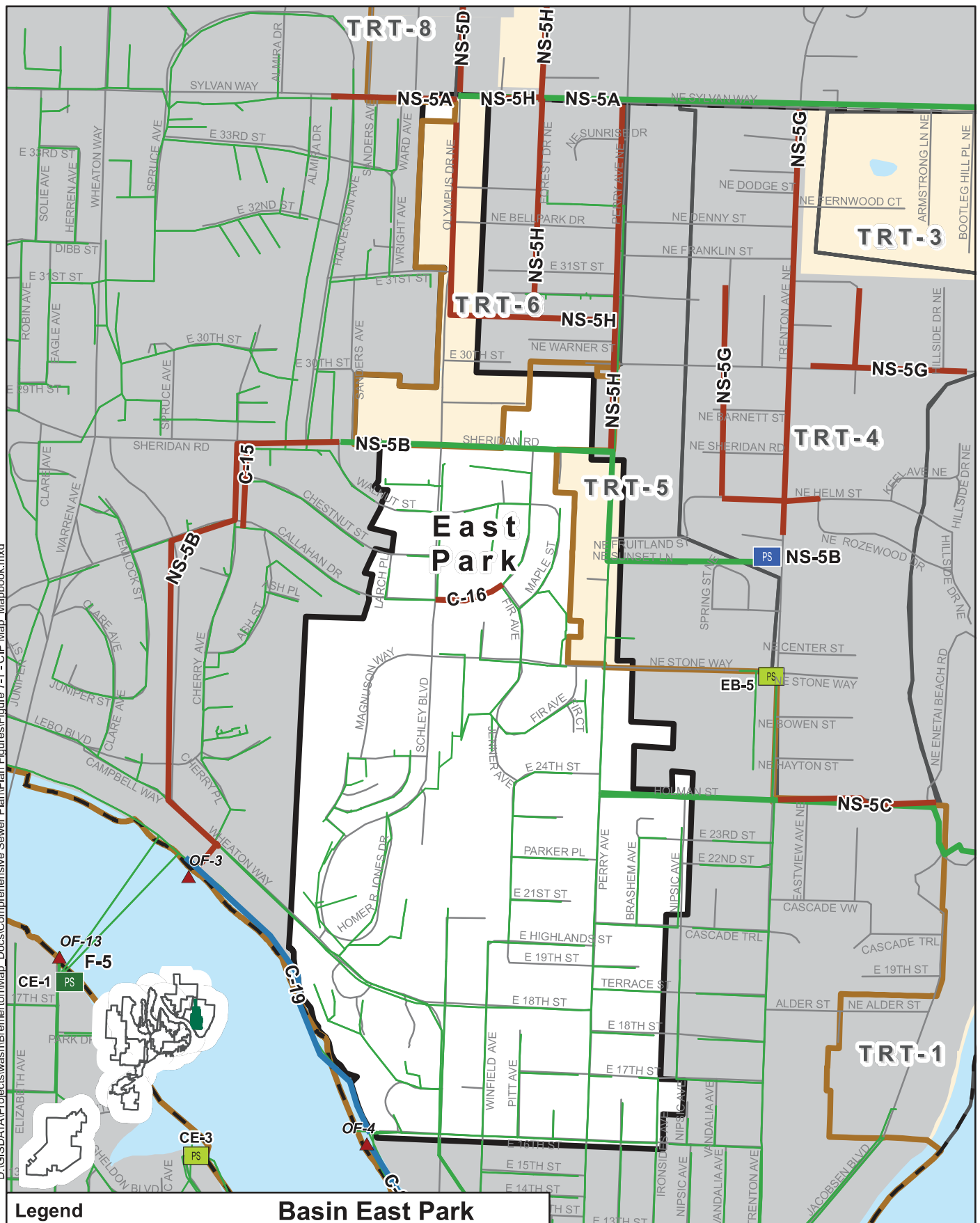


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East Park Basin					
BASIN DESCRIPTION					
Area (acres)	346				
Land Use	Residential				
Location	East Bremerton area, bordered by E 116th Street, the Puget Sound Port Washington Narrows, Sylvan Way, and Perry Ave.				
Description	Sanitary sewer flows from the East Park Basin are conveyed via gravity sewer mains to the East Bremerton Beach Main. The collection sewers within the East Park service area are known to have high rates of infiltration.				
SEWER FLOWS					
Existing GPD (2013)	249,000				
Future GPD (2033)	370,000				
Percent Developed ¹ (%)	81%				
Percent Sewered ² (%)	88%				
EXISTING SYSTEM					
Combined/Separated	Combined				
Receiving Facilities	East Bremerton Beach Main to the Crosstown Pipeline				
Existing Pump Stations					
Combined Sewer Outfall					
PUMP STATIONS					
Pump Station	Capacity (gpm)	2013 Peak Flow (gpm)	2033 Peak Flow (gpm)	Percent Developed ¹	Percent of Developed Sewered ²
CIP					
CIP ID	Timeline	Funding Source	Purpose	Related Projects	Cost (\$1,000)
CIP Year 2015-2020					
C-16	CIPP repair of failing sewers				
	2015	UFA	Deficiency	n/a	\$ 525
	CIPP construction of laterals and installation of cleanouts where needed. CIPP sewer mains. The scope will be determined based on maintenance inspections of gravity sewers. This project will also include the following improvements: 1) Improvement between Schley and Fir Street: Replace gravity sewer line in the gully between Schley and Fir Streets to eliminate a belly in the line. This project is in response to extensive root intrusion. This project would be funded by the User Fee Assessment fund. 2) Improvement on Homer Jones: CIPP Installation of approximately 500-feet of pipe to eliminate root intrusion.				
CIP Year 2020+					
C-19	East Bremerton Beach Main Replacment				
	>2020	UFA	Deficiency	n/a	\$ 1,250
	This project would replace a segment of the East Bremerton Beach Main. Approximately 2,700 linear feet of 16-inch ductile iron piping would be replaced with 18-inch HDPE pipe from OF-4 to the Port Washington Narrows Siphons.				
NOTES					
1) Total area of developed parcels divided by the total of developed and undeveloped parcel area excluding parcels designated as right of way or water bodies.					
2) Total area of developed parcels with available sewer service divided by the total developed parcel area.					

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Legend

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|------------------------|--------------------------|-------------------|
| Odor Control Upgrade | Beach Sewer | Lift Station |
| MBR | Force Main | Sewer Mains |
| New Pump Station | Gravity Sewer | Streets |
| Pump Station Upgrade | Low Pressure Sewer | Highway |
| Reclaimed Pump Station | Reclaimed Main | Outfall |
| | Force Main Less Than 24" | City of Bremerton |
| | CSO Outfall | Bremerton UGA |

Basin East Park



1 inch = 1,020 feet



BASIN PLAN City of Bremerton

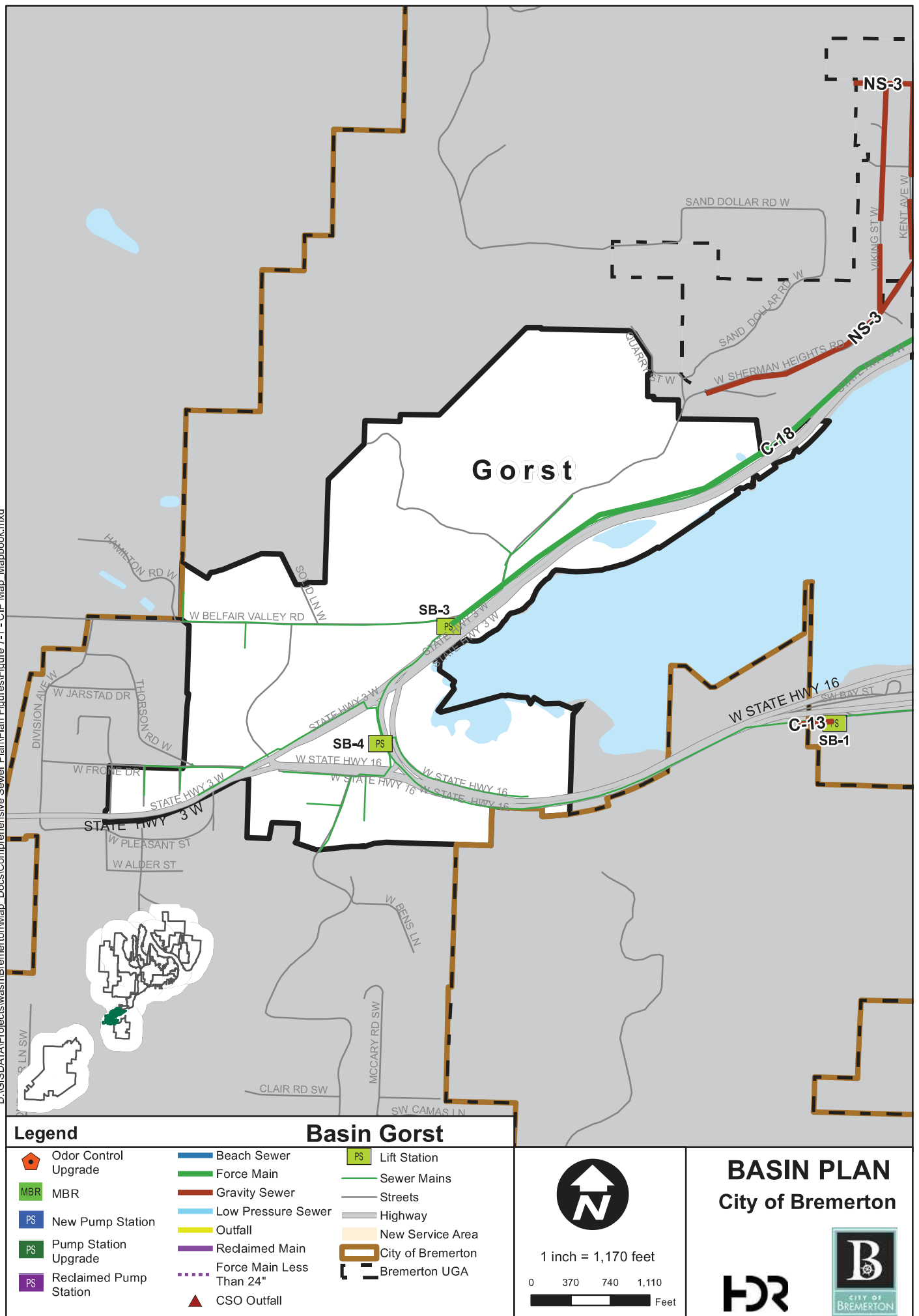


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Gorst Basin					
BASIN DESCRIPTION					
Area (acres)	333				
Land Use	Undeveloped area with low-density residential.				
Location	South Bremerton area, bordered by the southern tip of the Puget Sound Sinclair Inlet, W. Frontage Road, and Hamilton Road.				
Description	The Gorst Basin is within Bremerton's UGA and is served by a combination of gravity mains and low pressure sewer mains. There are two pump stations, SB-3 and SB-4, which discharge into the Southwest Bremerton Sewer Force Main. Flows are conveyed directly to the WWTP.				
SEWER FLOWS					
Existing GPD (2013)	12,000				
Future GPD (2033)	18,000				
Percent Developed¹ (%)	48%				
Percent Sewered² (%)	57%				
EXISTING SYSTEM					
Combined/Separated	Separate				
Receiving Facilities	Southwest Bremerton Sewer Force Main				
Existing Pump Stations	SB-3, and SB-4				
Combined Sewer Outfall					
PUMP STATIONS					
Pump Station	Capacity (gpm)	2013 Peak Flow (gpm)	2033 Peak Flow (gpm)	Percent Developed¹	Percent of Developed Sewered²
SB-3	500	500	510	43%	54%
SB-4	500	580	590	94%	62%
CIP					
CIP ID	Timeline	Funding Source	Purpose	Related Projects	Cost (\$1,000)
CIP Year 2015-2020					
CIP Year 2020+					
NOTES					
1) Total area of developed parcels divided by the total of developed and undeveloped parcel area excluding parcels designated as right of way or water bodies.					
2) Total area of developed parcels with available sewer service divided by the total developed parcel area.					

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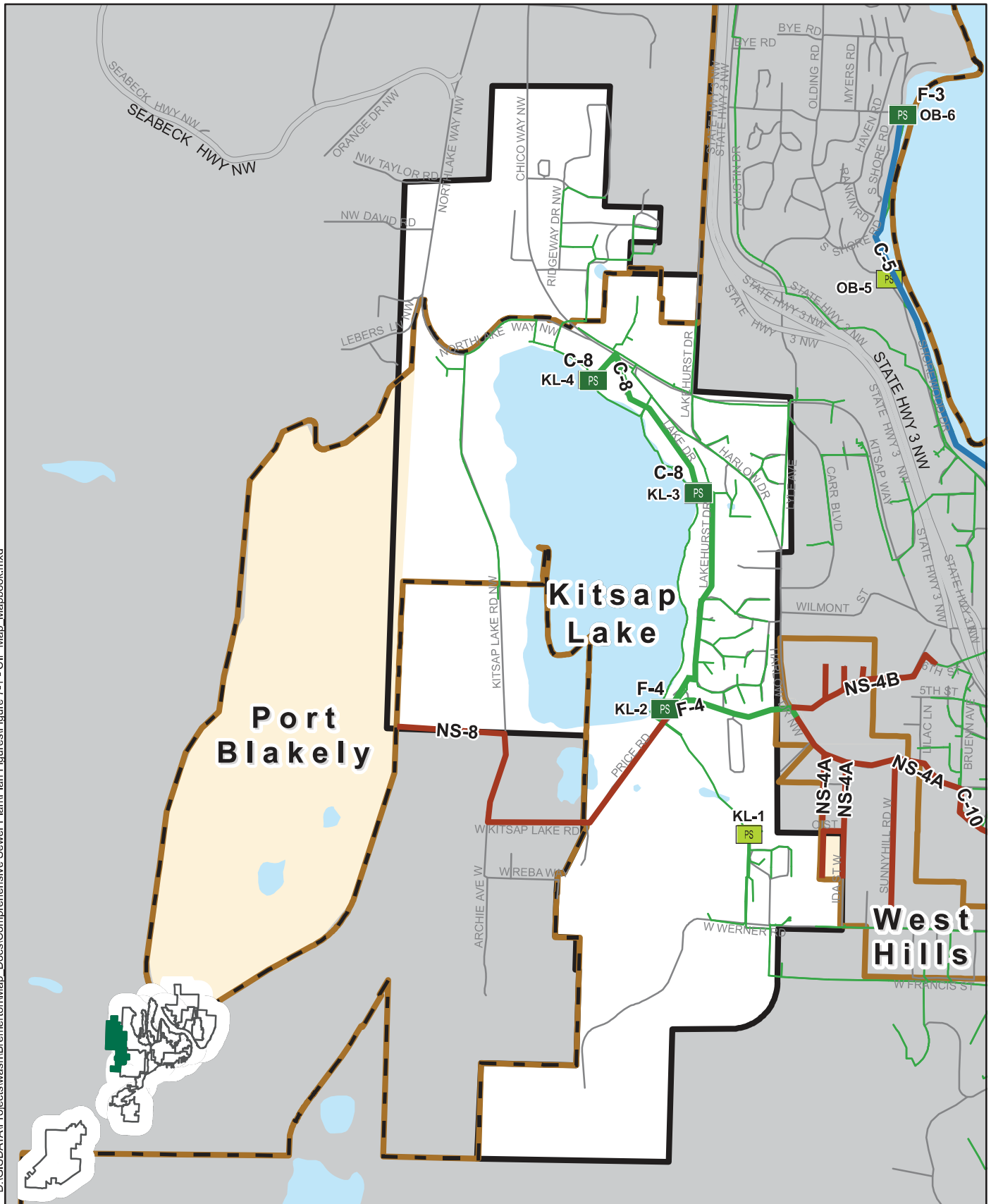


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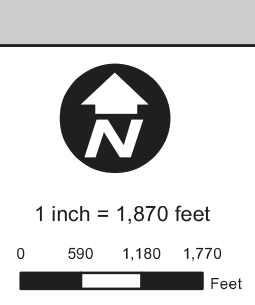
Kitsap Lake Basin					
BASIN DESCRIPTION					
Area (acres)	996				
Land Use	Rural, Residential, Commercial, and Industrial Park				
Location	West Bremerton area surrounding Lake Kitsap, bordered by Northlake Way, Lyle Avenue, and the Kitsap Golf and Country Club.				
Description	Sanitary sewer flows in the Kitsap Lake Basins are conveyed through a series of pump stations that ultimately flow into the Sinclair Park Basin, and then to the WWTP by gravity. Kitsap Lake Basin currently has four pump stations (KL-1, KL-2, KL-3, and KL-4) along the collection system. A potential development at Port Blakely, located on the west side of Kitsap Lake in the Kitsap Lake Basin, would require additional sewer conveyance facilities including pump stations and gravity and pressure mains. It is assumed that sewer facilities within the development would be installed by a developer. The current plan is to construct the development in several stages and progressively amend the conveyance and sewer system. Flows are currently within the capacity of the existing sewer, although pump station KL-1 discharges to overloaded sewers in the Sinclair Park Basin.				
SEWER FLOWS					
Existing GPD (2013)	107,000				
Future GPD (2033)	139,000				
Percent Developed ¹ (%)	57%				
Percent Sewered ² (%)	71%				
EXISTING SYSTEM					
Combined/Separated	Separate				
Receiving Facilities	16-inch Conveyance Line to WWTP				
Existing Pump Stations	KL-1, KL-2, KL-3, and KL-4				
Combined Sewer Outfall					
PUMP STATIONS					
Pump Station ⁽³⁾	Capacity (gpm)	2013 Peak Flow (gpm)	2033 Peak Flow (gpm)	Percent Developed ¹	Percent of Developed Sewered ²
KL-1	950	1,090	1,200	55%	72%
KL-2	1,150	1,030	1,150	71%	73%
KL-3	500	660	700	72%	69%
KL-4	450	280	300	65%	55%
CIP					
CIP ID	Timeline	Funding Source	Purpose	Related Projects	Cost (\$1,000)
CIP Year 2015-2020					

CIP Year 2020+					
C-8	Kitsap Lake Main Replacement				
	>2020	UFA	Deficiency	n/a	\$ 4,310
	Construct approximately 6,200 LF of new force main to replace the existing lake main. The force main alignment would be moved outside of the lake and the gravity connections into the beach main would be either routed with new gravity sewers to KL-2, KL-3, or KL-4 or utilize grinder pumps. KL-3 and KL-4 would be upgraded based on the design of the force main. The existing lake main is inaccessible for maintenance between KL-2 and KL-4 due to its location in Kitsap Lake. During extreme high lake levels, the water surface exceeds the rim elevations and contributes to excessive inflow. Also, the gravity sewer north of KL-4 is deteriorating and needs replacement.				
NS-8	Port Blakely Connection				
	>2020	UFA / G	UGA	C-8	\$ 2,730
	A proposed development in the Port Blakely service area would require additional sewer conveyance facilities to provide sewer service. A pump station within the development and force main would be installed to convey flow south of Kitsap Lake to KL-2. The capacity of the Kitsap Lake main is limited in capacity and pumping flow directly to KL-2 would avoid upgrades to KL-3, KL-4, and the lake main. This project would be developer funded. No cost estimate is developed at this time because there is no defined plan for development at the property. This project is a placeholder.				
F-4	KL-2 Pump Station Upgrade				
	>2020	UFA	Deficiency	n/a	\$ 4,500
	Convert the KL-2 dry pit/wet well pump station into a wet well pump station. Replace pumps to increase the pump station capacity to approximately 2,000 gpm in order to accommodate increased flow from a development in the new Port Blakely service area. Install approximately 3,700 LF of force main along Price Road and Harlow Drive to Sunnyhill Road. This project would be partially contingent on development in the Port Blakely service area.				
NOTES					
1) Total area of developed parcels divided by the total of developed and undeveloped parcel area excluding parcels designated as right of way or water bodies.					
2) Total area of developed parcels with available sewer service divided by the total developed parcel area.					
3) Each pump station contains two pumps that are capable of pumping during peak flow conditions.					

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Legend		
	Odor Control Upgrade	PS
	MBR	
	New Pump Station	
	Pump Station Upgrade	
	Reclaimed Pump Station	
	Beach Sewer	
	Force Main	
	Gravity Sewer	
	Low Pressure Sewer	
	Outfall	
	Reclaimed Main	
	Force Main Less Than 24"	
	CSO Outfall	



BASIN PLAN


City of Bremerton

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Marine Drive Basin					
BASIN DESCRIPTION					
Area (acres)	244				
Land Use	Residential with some Commercial				
Location	West Bremerton peninsula, bordered by the Puget Sound Ostrich, Oyster, and Mud Bay, as well as Kitsap Way and Bertha Avenue.				
Description	The Marine Drive Basin currently has one pump station, MD-1. With the exception of the southern portion of the basin, the Marine Drive Basin is predominantly unsewered. The southern portion of the basin is served by gravity mains which discharge to pump station MD-1, which conveys flows to pump station OB-1 in the Oyster Bay Basin. A plan for extending sewer service was developed and described in <i>Sewer Planning – Marine Drive Area</i> (Sep, 2008). The improvements described in the plan are sub-divided into two projects described below.				
SEWER FLOWS					
Existing GPD (2013)	11,000				
Future GPD (2033)	15,000				
Percent Developed ¹ (%)	92%				
Percent Sewered ² (%)	22%				
EXISTING SYSTEM					
Combined/Separated	Separate				
Receiving Facilities	OB-1 Pump Station				
Existing Pump Stations	MD-1				
Combined Sewer Outfall					
PUMP STATIONS					
Pump Station	Capacity (gpm)	2013 Peak Flow (gpm)	2033 Peak Flow (gpm)	Percent Developed ¹	Percent of Developed Sewered ²
MD-1	475	100	110	94%	71%
CIP					
CIP ID	Timeline	Funding Source	Purpose	Related Projects	Cost (\$1,000)
CIP Year 2015-2020					
CIP Year 2020+					
NS-1A	Sewer Collection - Sub Basin MD-1				
	>2020	UFA / G	UGA	NS-2C	\$ 2,550
	Install approximately 6,450 LF of 6-inch low pressure main along Marine Drive and approximately 1,200 LF of 3-inch low-pressure main along South Marine Drive. Both mains would connect to approximately 450 LF of 8-inch gravity sewer to convey flow to the proposed pump station MD-2 (project NS-2C "Pump Station MD-3").				
NS-1B	Sewer Collection - Sub Basin MD-2				
	>2020	UFA / G	UGA	NS-2C	\$ 1,320
	Install approximately 2,420 LF of 8-inch gravity sewer along Marine Drive from Dora Avenue to the proposed pump station MD-2 (project NS-2C "Pump Station MD-3"). Install approximately 1,380 of 3-inch low-pressure main along Lower Marine Drive to the 8-inch gravity sewer.				
NOTES					
1) Total area of developed parcels divided by the total of developed and undeveloped parcel area excluding parcels designated as right of way or water bodies.					
2) Total area of developed parcels with available sewer service divided by the total developed parcel area.					

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Basin Marine Drive

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|---|------------------------|---|--------------------------|---|----|-------------------|
|  | Odor Control Upgrade |  | Beach Sewer |  | PS | Lift Station |
|  | MBR |  | Force Main |  | | Sewer Mains |
|  | New Pump Station |  | Gravity Sewer |  | | Streets |
|  | Pump Station Upgrade |  | Low Pressure Sewer |  | | Highway |
|  | Reclaimed Pump Station |  | Outfall |  | | New Service Area |
| | |  | Reclaimed Main |  | | City of Bremerton |
| | |  | Force Main Less Than 24" |  | | Bremerton UGA |
| | |  | CSO Outfall | | | |



0 380 760 1,140 Feet

BASIN PLAN

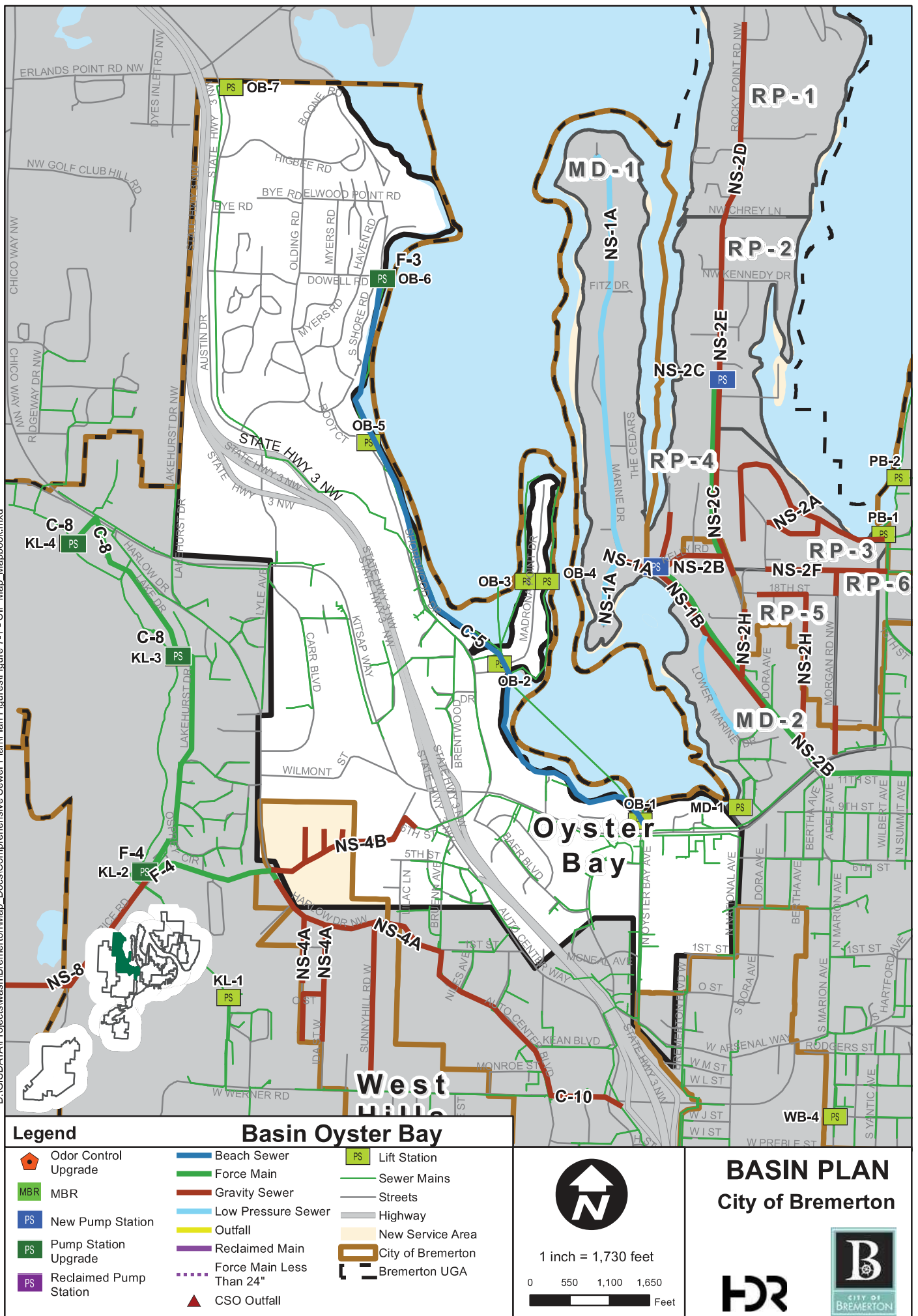
City of Bremerton



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Oyster Bay Basin					
BASIN DESCRIPTION					
Area (acres)	958				
Land Use	Residential, Commercial, General Industrial, Industrial Park				
Location	West Bremerton area, bordered by Harlow Drive, SR 3, the Puget Sound Dyes Inlet, and National Avenue.				
Description	The Oyster Bay Basin has seven pump stations (OB-1 through OB-7) along the collection system. Current and projected flows are within the capacity of the current sewer system. OB-7 and the force main were constructed so the military reservation sewer system in this area would not have to support the new development. Undeveloped areas currently include the southwest portion of the military reservation, which can be served in the future by the new gravity sewer conveyed to OB-7.				
SEWER FLOWS					
Existing GPD (2013)	318,000				
Future GPD (2033)	503,000				
Percent Developed ¹ (%)	90%				
Percent Sewered ² (%)	86%				
EXISTING SYSTEM					
Combined/Separated	Separate				
Receiving Facilities	Gravity Sewer at Bremerton Blvd. and Arsenal Way / Oyster Bay Force Main				
Existing Pump Stations	OB-1, OB-2, OB-3, OB-4, OB-5, OB-6, and OB-7				
Combined Sewer Outfall					
PUMP STATIONS					
Pump Station	Capacity (gpm)	2013 Peak Flow (gpm)	2033 Peak Flow (gpm)	Percent Developed ¹	Percent of Developed Sewered ²
OB-1	1,900	1,880	2,290	90%	89%
OB-2	750	570	660	90%	84%
OB-3	400	20	20	94%	99%
OB-4	150	20	20	96%	100%
OB-5	550	180	200	100%	96%
OB-6	490	690	780	100%	97%
OB-7	375	190	220	100%	100%
CIP					
CIP ID	Timeline	Funding Source	Purpose	Related Projects	Cost (\$1,000)
CIP Year 2015-2020					
C-5	Oyster Bay - Beach Sewer between OB-6 and OB-1				
	2015 - 2016	UFA	Deficiency	n/a	\$ 2,250
	Design low pressure sewer conversion from the OB-6 to OB-1 pump stations. Install individual grinder pump stations on private properties which would pump to upland gravity sewers. Modify beach main to serve as force main and evaluate upstream hydraulics. This project would be funded by the User Fee Assessment fund.				
F-3	Emergency Generator Installation at OB-6				
	2015	UFA	Deficiency	n/a	\$ 50
	Install an emergency generator at the OB-6 pump station located on Shore Road. This project would be funded by the User Fee Assessment fund.				
CIP Year 2020+					

NOTES
1) Total area of developed parcels divided by the total of developed and undeveloped parcel area excluding parcels designated as right-of-way or water bodies.
2) Total area of developed parcels with available sewer service divided by the total developed parcel area.

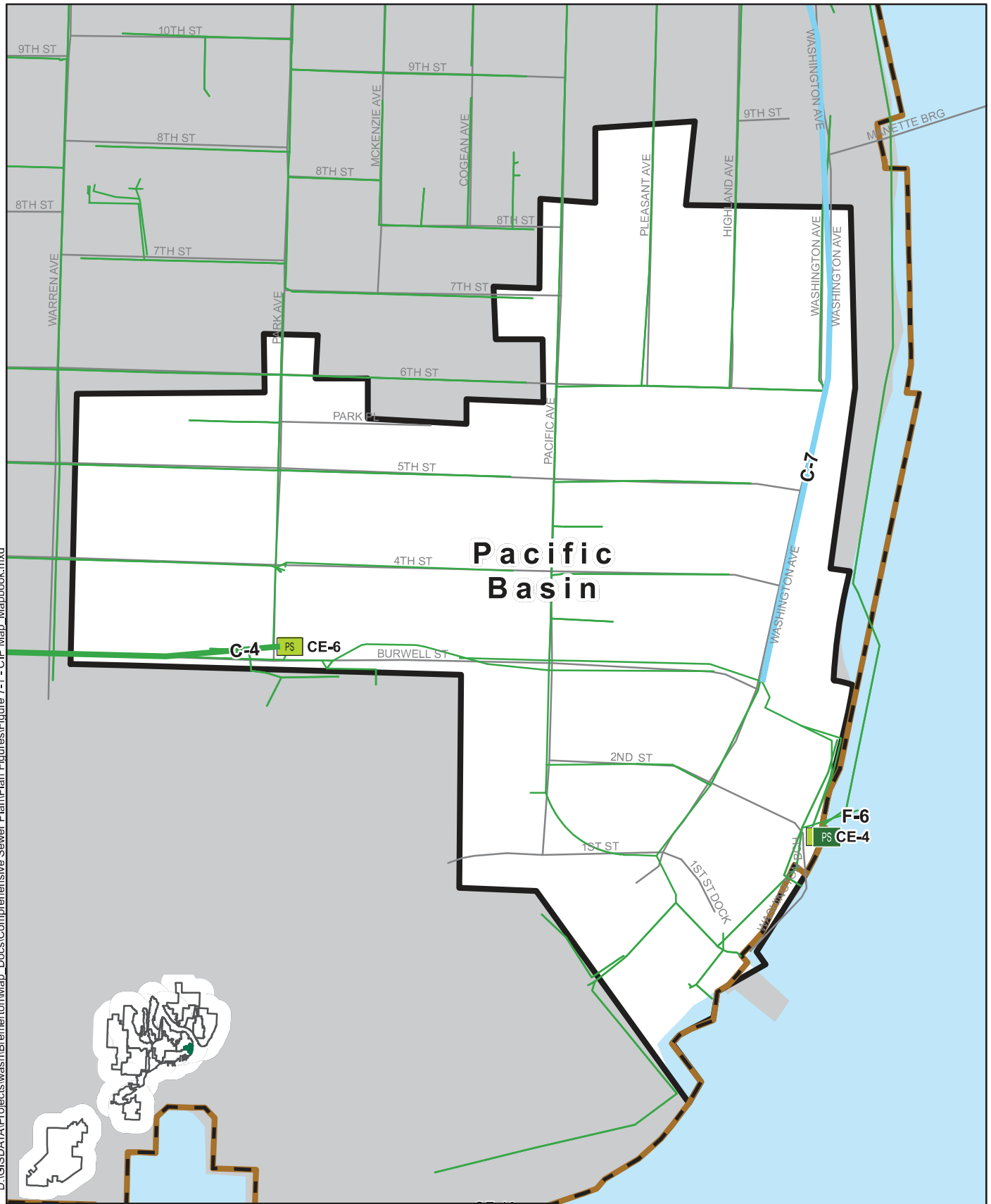


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Pacific Avenue Basin					
BASIN DESCRIPTION					
Area (acres)	78				
Land Use	Commercial with Some Residential				
Location	West Bremerton area, bordered by the Puget Sound Naval Shipyard, Warren Avenue, 7th Street, and the Puget Sound Port Washington Narrows.				
Description	Pacific Avenue Basin combined sewer flows are directed to pump stations CE-4 and CE-6. CE-4 discharges into the 14-inch-diameter Central Bremerton Force Main, which discharges to the CTP. Pump station CE-6 discharges into the Warren Avenue Basin on Park Avenue and the flow is conveyed to pump station CE-1. CSO reduction improvements in the Pacific Avenue Basin were completed between 2004 and 2006. These system improvements include an upgrade to pump station CE-6, construction of a large-diameter trunk storm drain from CE-6 to the ferry terminal, construction of various collector sewers, and inflow & infiltration reduction through rehabilitation of specific facilities.				
SEWER FLOWS					
Existing GPD (2013)	120,000				
Future GPD (2033)	263,000				
Percent Developed ¹ (%)	93%				
Percent Sewered ² (%)	83%				
EXISTING SYSTEM					
Combined/Separated	Combined				
Receiving Facilities	Central Bremerton Force Main to Crosstown Pipeline and CE-1				
Existing Pump Stations	CE-4 and CE-6				
Combined Sewer Outfall	OF-16				
PUMP STATIONS					
Pump Station	Capacity (gpm)	2013 Peak Flow (gpm)	2033 Peak Flow (gpm)	Percent Developed ¹	Percent of Developed Sewered ²
CE-4	1,940	1,480	1,790	91%	87%
CE-6	1,600	1,300	1,430	97%	77%
CIP					
CIP ID	Timeline	Funding Source	Purpose	Related Projects	Cost (\$1,000)
CIP Year 2015-2020					
F-6	Pump Station CE-4 Pumps 1 & 2 Replacement				
	2017	UFA/G	Repair	n/a	\$ 400
	Replace the 30+ year old pumps, motors and VFDs with dry-pit submersible pumps and upgraded VFDs. This project may be partially funded by PSE or DES grants.				
CIP Year 2020+					
NOTES					
1) Total area of developed parcels divided by the total of developed and undeveloped parcel area excluding parcels designated as right of way or water bodies.					
2) Total area of developed parcels with available sewer service divided by the total developed parcel area.					

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Legend

- | | | |
|---------------------------|--------------------------|-------------------|
| Odor Control Upgrade | Beach Sewer | PS Lift Station |
| MBR | Force Main | Sewer Mains |
| PS New Pump Station | Gravity Sewer | Streets |
| PS Pump Station Upgrade | Low Pressure Sewer | Highway |
| PS Reclaimed Pump Station | Outfall | New Service Area |
| | Reclaimed Main | City of Bremerton |
| | Force Main Less Than 24" | Bremerton UGA |
| | CSO Outfall | |

Basin Pacific Basin



1 inch = 400 feet



BASIN PLAN

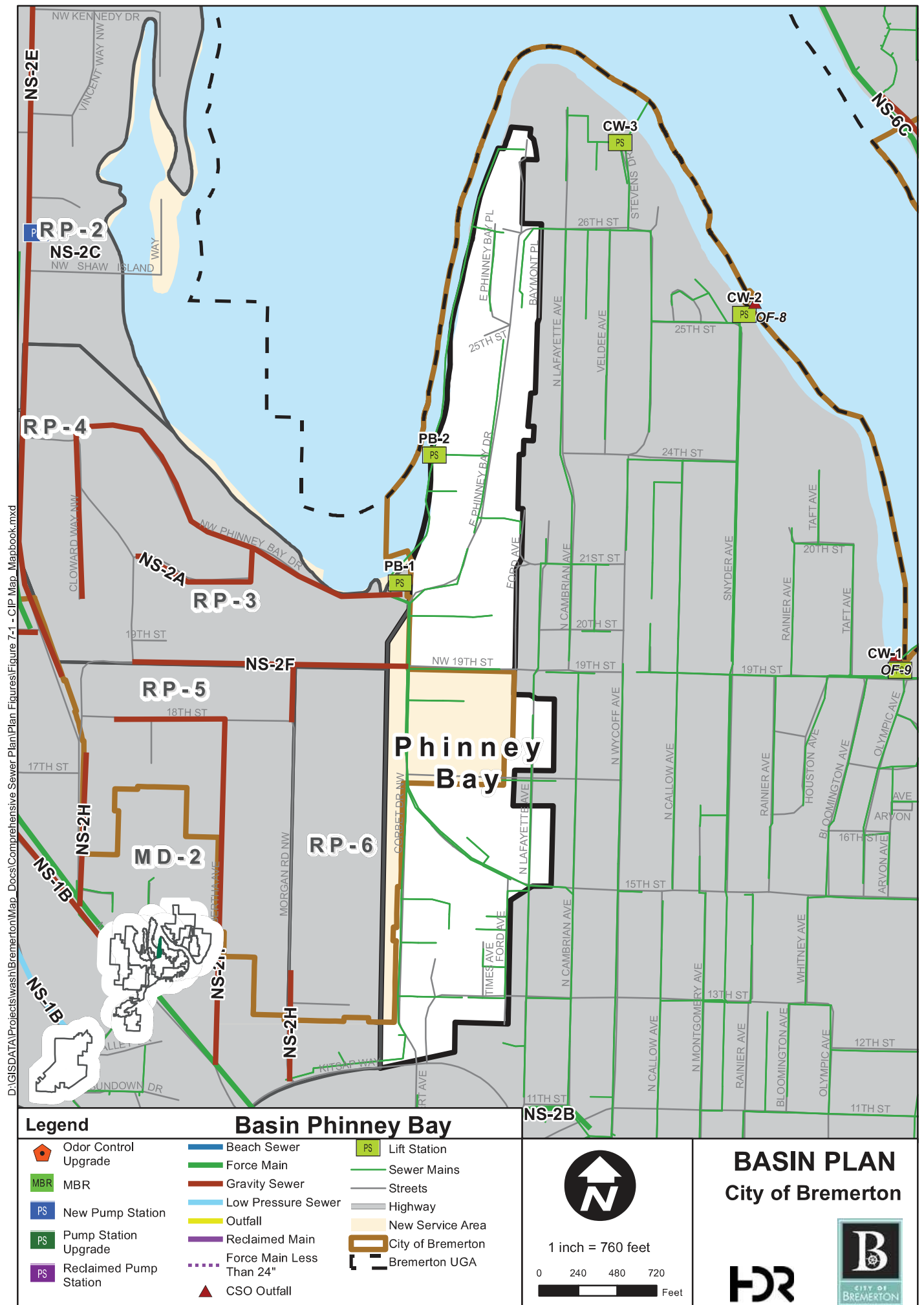
City of Bremerton



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Phinney Bay Basin					
BASIN DESCRIPTION					
Area (acres)	86				
Land Use	Commercial and Residential				
Location	West Bremerton area, bordered by Kitsap Way, Corbet Drive, the Puget Sound, and Lafayette Avenue.				
Description	Phinney Bay Basin has two pump stations (PB-1 and PB-2) along the collection system. Sanitary sewer flows are conveyed from PB-2 to PB-1 and then discharged to the Callow Avenue Basin Pipeline. Phinney Bay is adjacent to the Rocky Point basin. A plan to extend sewer service to the Rocky Point basin would convey a portion of the service area to the PB-1 pump station. A capacity upgrade at the pump station may be necessary in the future. A strategy for providing sewer service to the Rocky Point area was developed and described in <i>Sewer Urban Growth Area Planning</i> (Feb, 2008).				
SEWER FLOWS					
Existing GPD (2013)	52,000				
Future GPD (2033)	69,000				
Percent Developed ¹ (%)	90%				
Percent Sewered ² (%)	94%				
EXISTING SYSTEM					
Combined/Separated	Separate				
Receiving Facilities	Callow Ave Basin Pipeline				
Existing Pump Stations	PB-1 and PB-2				
Combined Sewer Outfall					
PUMP STATIONS					
Pump Station	Capacity (gpm)	2013 Peak Flow (gpm)	2033 Peak Flow (gpm)	Percent Developed ¹	Percent of Developed Sewered ²
PB-1	150	170	220	91%	93%
PB-2	100	90	100	97%	100%
CIP					
CIP ID	Timeline	Funding Source	Purpose	Related Projects	Cost (\$1,000)
CIP Year 2015-2020					
CIP Year 2020+					
NOTES					
1) Total area of developed parcels divided by the total of developed and undeveloped parcel area excluding parcels designated as right of way or water bodies.					
2) Total area of developed parcels with available sewer service divided by the total developed parcel area.					

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Pine Road Basin					
BASIN DESCRIPTION					
Area (acres)	871				
Land Use	Residential with some Commercial				
Location	East Bremerton area, bordered by Pine Road, Riddle Road, Forest Drive, and the Lions Community Playfield.				
Description	The Pine Road Basin has two pump stations (EB-8 and EB-9). Sanitary sewer flows from this basin are conveyed by the East Bremerton Beach Main to the CTP. Flows from Tracyton Beach Basin are conveyed to overflow station OF-1 in the Pine Road Basin. Bremerton constructed a CSO storage facility in this basin in 2000, and a trunk sanitary sewer/in-line storage facility as well as the Eastside Treatment Plant (ETP) in 2001. The trunk sanitary sewer connects the downstream end of the Stephenson Canyon Basin to the inlet and to the ETP. During peak flow conditions, the beach main downstream of overflow station OF-2 in the Stephenson Canyon Basin will surcharge and reverse flow in the trunk sewer to convey it to the ETP.				
SEWER FLOWS					
Existing GPD (2013)	419,000				
Future GPD (2033)	742,000				
Percent Developed ¹ (%)	86%				
Percent Sewered ² (%)	82%				
EXISTING SYSTEM					
Combined/Separated	Combined				
Receiving Facilities	East Bremerton Beach Main				
Existing Pump Stations	EB-8 and EB-9				
Combined Sewer Outfall	OF-1				
PUMP STATIONS					
Pump Station	Capacity (gpm)	2013 Peak Flow (gpm)	2033 Peak Flow (gpm)	Percent Developed ¹	Percent of Developed Sewered ²
EB-8	200	30	40	62%	62%
EB-9	100	60	70	89%	65%
CIP					
CIP ID	Timeline	Funding Source	Purpose	Related Projects	Cost (\$1,000)
CIP Year 2015-2020					
CIP Year 2020+					
C-9	McClain Improvements				
	>2020	UFA	Deficiency	n/a	\$ 1,400
	Construct approximately 2,200 LF of 10-inch sanitary sewer line following an alignment from McClain Avenue and Sheridan Avenue, along Sheridan Avenue, Elm Street, and Hefner Street to Lebo Boulevard. This diverted route will eliminate a downstream surcharge and address blockages in the area due to root intrusions.				
NOTES					
1) Total area of developed parcels divided by the total of developed and undeveloped parcel area excluding parcels designated as right of way or water bodies.					
2) Total area of developed parcels with available sewer service divided by the total developed parcel area.					

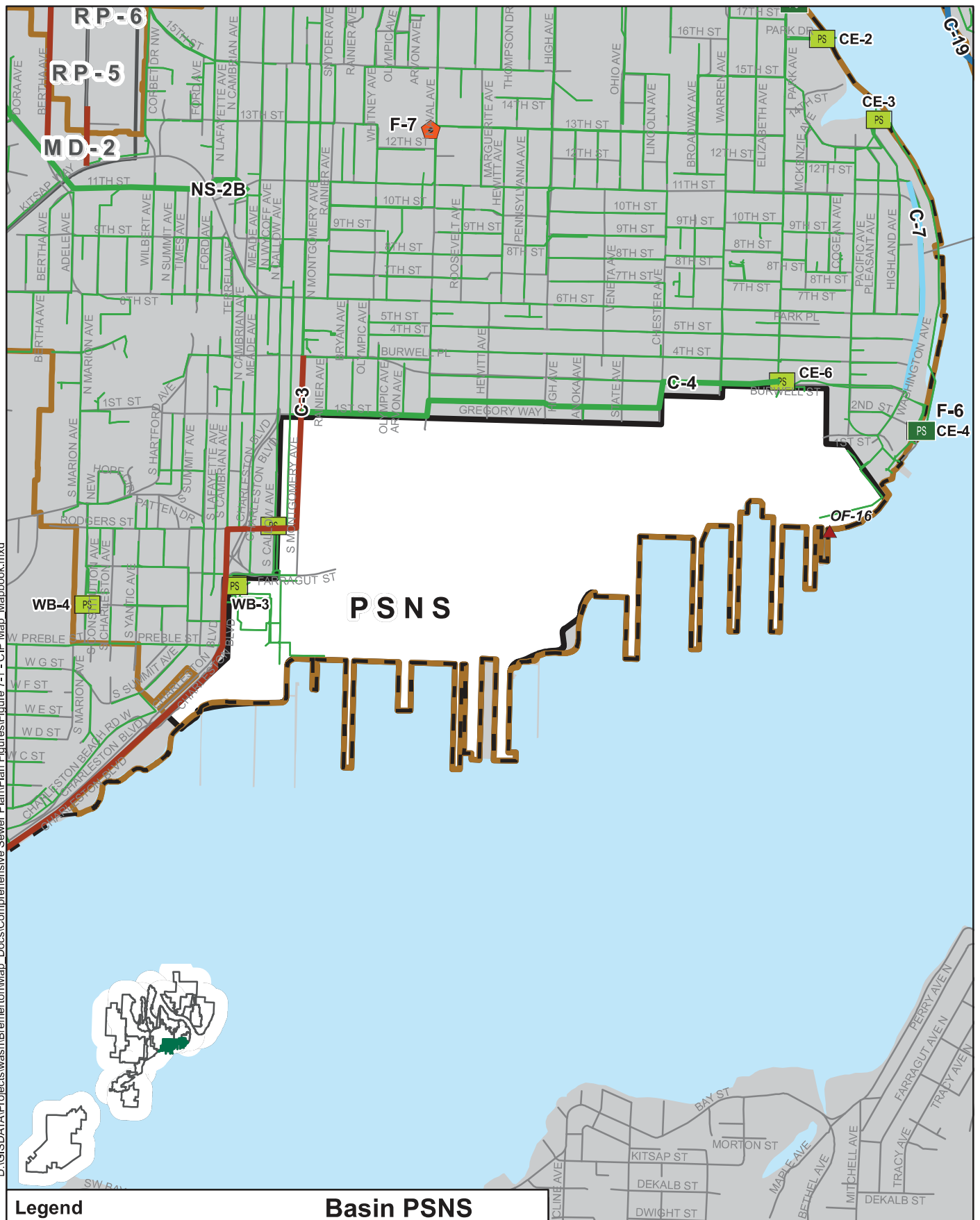
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PSNS Basin					
BASIN DESCRIPTION					
Area (acres)	385				
Land Use	Industrial area, Naval Station and Shipyard.				
Location	West Bremerton area, bordered by the Puget Sound Sinclair Inlet, Charleston Boulevard, 1st Street, and Terminal Way.				
Description	Sewage discharges from the Puget Sound Naval Shipyard (PSNS) are conveyed, treated, and disposed of by the City as agreed in the U.S. Navy Contract. The U.S. Navy owns and maintains an onsite sewage collection system for its facilities and discharges to the City's system at designated locations. Combined sewer from the PSNS area flow to pump station WB-3, which discharges to the CTP and on to the WWTP.				
SEWER FLOWS					
Existing GPD (2013)	635,000				
Future GPD (2033)	815,000				
Percent Developed ¹ (%)	100%				
Percent Sewered ² (%)	98%				
EXISTING SYSTEM					
Combined/Separated	Contract				
Receiving Facilities	Crosstown Pipeline				
Existing Pump Stations					
Combined Sewer Outfall					
PUMP STATIONS					
Pump Station	Capacity (gpm)	2013 Peak Flow (gpm)	2033 Peak Flow (gpm)	Percent Developed ¹	Percent of Developed Sewered ²
CIP					
CIP ID	Timeline	Funding Source	Purpose	Related Projects	Cost (\$1,000)
CIP Year 2015-2020					
CIP Year 2020+					
NOTES					
1) Total area of developed parcels divided by the total of developed and undeveloped parcel area excluding parcels designated as right of way or water bodies.					
2) Total area of developed parcels with available sewer service divided by the total developed parcel area.					

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Legend

- Odor Control Upgrade
- MBR
- PS New Pump Station
- Pump Station Upgrade
- Reclaimed Pump Station

- Beach Sewer
- Force Main
- Gravity Sewer
- Low Pressure Sewer
- Outfall
- Reclaimed Main
- Force Main Less Than 24"
- CSO Outfall

Basin PSNS

- PS Lift Station
- Sewer Mains
- Streets
- Highway
- New Service Area
- City of Bremerton
- Bremerton UGA



1 inch = 1,520 feet



BASIN PLAN City of Bremerton



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Rocky Point Basin					
BASIN DESCRIPTION					
Area (acres)	423				
Land Use	Low-density residential with some commercial.				
Location	West Bremerton area, bordered by Kelly Road, the Puget Sound Dyes Inlet, Corbet Drive, and Morgan Lane.				
Description	The Rocky Point service area (currently unincorporated) is an unsewered peninsula north of the City, and is part of the West Bremerton UGA. Ultimately this basin will be served by a combination of low pressure sewer systems, gravity mains, and a new pump station, MD-3, that would direct the flow to pump station OB-1 in the Oyster Bay Basin. The development of Rocky Point Basins would also require improvements to the conveyance system in Kitsap Way and upgrades to OB-1 to accommodate additional flows. A strategy for providing sewer service to the area was developed and described in <i>Sewer Urban Growth Area Planning</i> (Feb, 2008). The improvements described in the plan are sub-divided into eight projects described below.				
SEWER FLOWS					
Existing GPD (2013)	0				
Future GPD (2033)	0				
Percent Developed ¹ (%)	86%				
Percent Sewered ² (%)	0%				
EXISTING SYSTEM					
Combined/Separated	Separate				
Receiving Facilities					
Existing Pump Stations					
Combined Sewer Outfall					
PUMP STATIONS					
Pump Station	Capacity (gpm)	2013 Peak Flow (gpm)	2033 Peak Flow (gpm)	Percent Developed ¹	Percent of Developed Sewered ²
CIP					
CIP ID	Timeline	Funding Source	Purpose	Related Projects	Cost (\$1,000)
CIP Year 2015-2020					
NS-2A	Phinney Bay Extension (Sub Basin RP-3)				
	2016 - 2020 Grant Dependent	UFA / G	UGA	NS-2F	\$ 1,960
	Install approximately 4,600 LF of 8-inch sewer main along NW Phinney Bay Drive, Jackson Drive, Cloward Way, and Cartier Drive. This project would extend sewer service and eliminate failing septic systems to meet total maximum daily load (TMDL) compliance. The PB-1 pump station capacity should be evaluated based on the additional flows from this project and project NS-2F "Jackson Drive to Corbet Drive (Sub-Basin RP-3)".				
NS-2F	Jackson to Corbet Drive (Sub Basin RP-3)				
	2017 - 2018 Grant Dependent	UFA / G	UGA	NS-2A & NS-2D	\$ 830
	Install approximately 2,200 LF of 8-inch gravity sewer from Jackson Drive to Corbet Drive along an easement. The central part of sub-basin RP-6 will flow by low pressure sewer (LPS) to the City's existing sewers along Corbet Drive or proposed gravity sewers along Morgan Road to pump station PB-1.				

NS-2H	Sewer Collection - Sub Basin RP-5				
	2018 - 2020 Grant Dependent	UFA / G	UGA	NS-1B	\$ 1,910
	Approximately 4,500 LF of 8-inch gravity sewers would be installed along 18th Street, Bertha Avenue, and Rocky Point Road to the 8-inch gravity sewer along Marine Drive that would be installed in project NS-1B "Sewer Collection – Sub-Basin MD-2".				
CIP Year 2020+					
NS-2B	Pump Station MD-2				
	>2020	UFA / G	UGA	n/a	\$ 4,730
	Construct pump station MD-2 near Marine Drive and Kelly Road to convey flows from the Marine Drive and Rocky Point service areas east to the Callow Basin via approximately 6,000 LF of 12-inch force main. One potential discharge location is into an existing 30-inch sewer main at 11th Street and Meade Avenue. A preliminary estimate of the pump station capacity is 1,620 gpm based on projected flows in the service area. An estimated 6,100 gallon wet well volume would be needed.				
NS-2C	Pump Station MD-3				
	>2020	UFA / G	UGA	n/a	\$ 2,830
	Construct pump station MD-3 along Rocky Point Road near Holly Beach Court to convey sewer flow from sub-basins RP-1 and RP-2 south to MD-2 via approximately 2,400 LF of 10-inch force main. A preliminary estimate for the pump station capacity is 1,050 gpm at 120-feet of TDH based on projected flows in the sub-basins. An estimated 4,000 gallon wet well volume would be needed.				
NS-2D	Sewer Collection - Sub Basin RP-1				
	>2020	UFA / G	UGA	NS-2F	\$ 1,220
	Install approximately 2,800 LF of 10-inch gravity main along Rocky Point Road from Brygman Street to Chrey Lane to collect sewer flows from sub-basin RP-1. This project would connect to a proposed gravity main installed in project NS-2F "Jackson Drive to Corbet Drive (Sub-Basin RP-3)".				
NS-2E	Sewer Collection - Sub Basin RP-2				
	>2020	UFA / G	UGA	NS-2C	\$ 2,180
	Install approximately 2,200 LF of 12-inch gravity main along Rocky Point Road from Chrey Lane to proposed pump station MD-3 and approximately 2,800 LF of 8-inch gravity sewer along Rocky Point Road from 19th Street to MD-3 to convey sewer flows from sub-basins RP-1 and RP-2. Construct in conjunction with project NS-2C "Pump Station MD-3".				
NS-2G	Sewer Collection - Sub Basin RP-4				
	>2020	UFA / G	UGA	NS-2B	\$ 820
	Install approximately 900 LF of 8-inch gravity sewer along Shamrock Road and 1,000 LF of 12-inch gravity sewer along Kelly Road to the proposed pump station MD-2 to convey sewer flow from sub-basins RP-3 and RP-4. Pump station MD-3 pumps through a 10-inch force main which discharges to a 12-inch gravity sewer conveying flow to the proposed pump station MD-2. Construct in conjunction with project NS-2B "Pump Station MD-2".				
NOTES					
1) Total area of developed parcels divided by the total of developed and undeveloped parcel area excluding parcels designated as right-of-way or water bodies.					
2) Total area of developed parcels with available sewer service divided by the total developed parcel area.					

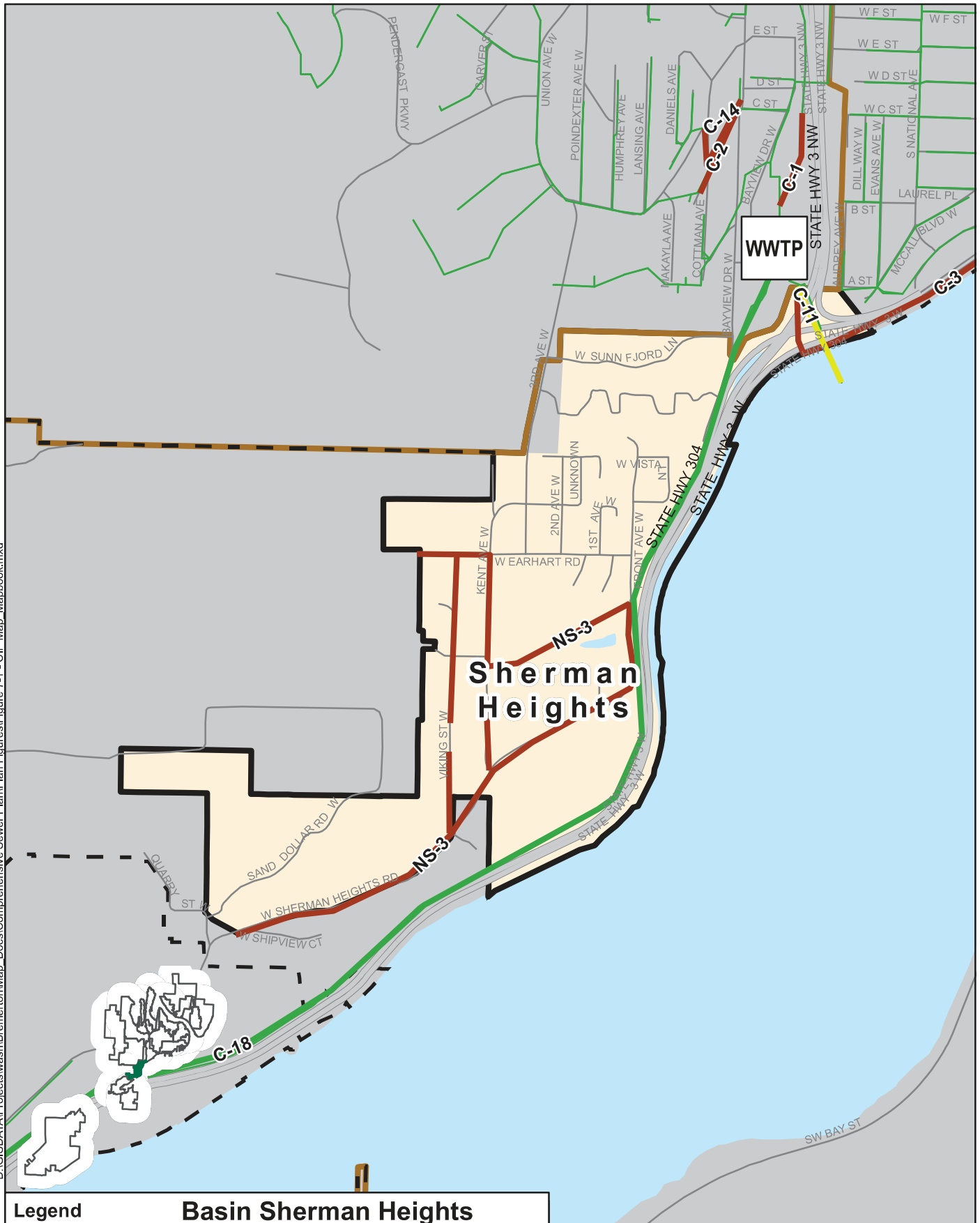






















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Sherman Heights Basin					
BASIN DESCRIPTION					
Area (acres)	209				
Land Use	Undeveloped area with low-density residential.				
Location	West Bremerton area, bordered by the Puget Sound Sinclair Inlet, W. Sherman Heights Road, Viking Street, and W. Sunnfjord Lane.				
Description	The Sherman Heights Basin is located within Bremerton's UGA. The northern portion of the basin is located within the Kitsap County Sewer District 1 boundary. The southern portion of the basin is unsewered. The southern portion of the basin would be served by gravity sewers that direct flow to the Sewer District 1 system, through pump station WB-1, and then to the WWTP via the Southwest Bremerton Sewer Force Main.				
SEWER FLOWS					
Existing GPD (2013)	37,000				
Future GPD (2033)	54,000				
Percent Developed ¹ (%)	54%				
Percent Sewered ² (%)	44%				
EXISTING SYSTEM					
Combined/Separated	Separate				
Receiving Facilities	Southwest Bremerton Sewer Force Main				
Existing Pump Stations					
Combined Sewer Outfall					
PUMP STATIONS					
Pump Station	Capacity (gpm)	2013 Peak Flow (gpm)	2033 Peak Flow (gpm)	Percent Developed ¹	Percent of Developed Sewered ²
CIP					
CIP ID	Timeline	Funding Source	Purpose	Related Projects	Cost (\$1,000)
CIP Year 2015-2020					
C-18	Grout Annular Space of SW Bremerton Force Main				
	2020	UFA	Deficiency	n/a	\$ 200
	This project would grout the annular space of the southwest Bremerton forcemain that contains three slip-lined force mains from pump stations SB-1, SB-3, and SB-4.				
CIP Year 2020+					
NS-3	SR 304 Sewer Collection				
	>2020	UFA / G	UGA	n/a	\$ 4,280
	A portion of the SR 304 service area is currently sewered and referred to as Sewer District 1. This project would expand sewer service to the remainder of the SR 304 service area utilizing the existing 12-inch gravity sewer main parallel to SR 3. Approximately 9,420 LF of 8-inch gravity sewer would be installed along Sherman Heights Road, Kent Avenue, and Viking Street to extend sewer service. Grinder pumps and low-pressure sewer mains could be implemented where gravity conveyance is not possible. The sewer system improvements that would extend service in the SR 304 service area are described in detail in Sewer Urban Growth Area Planning (Feb, 2008).				
NOTES					
1) Total area of developed parcels divided by the total of developed and undeveloped parcel area excluding parcels designated as right of way or water bodies.					
2) Total area of developed parcels with available sewer service divided by the total developed parcel area.					

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Legend		Basin Sherman Heights			
	Odor Control Upgrade		Beach Sewer		Lift Station
	MBR		Force Main		Sewer Mains
	New Pump Station		Gravity Sewer		Streets
	Pump Station Upgrade		Low Pressure Sewer		Highway
	Reclaimed Pump Station		Outfall		New Service Area
			Reclaimed Main		City of Bremerton
			Force Main Less Than 24"		Bremerton UGA
			CSO Outfall		

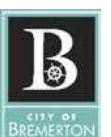


1 inch = 1,020 feet



BASIN PLAN

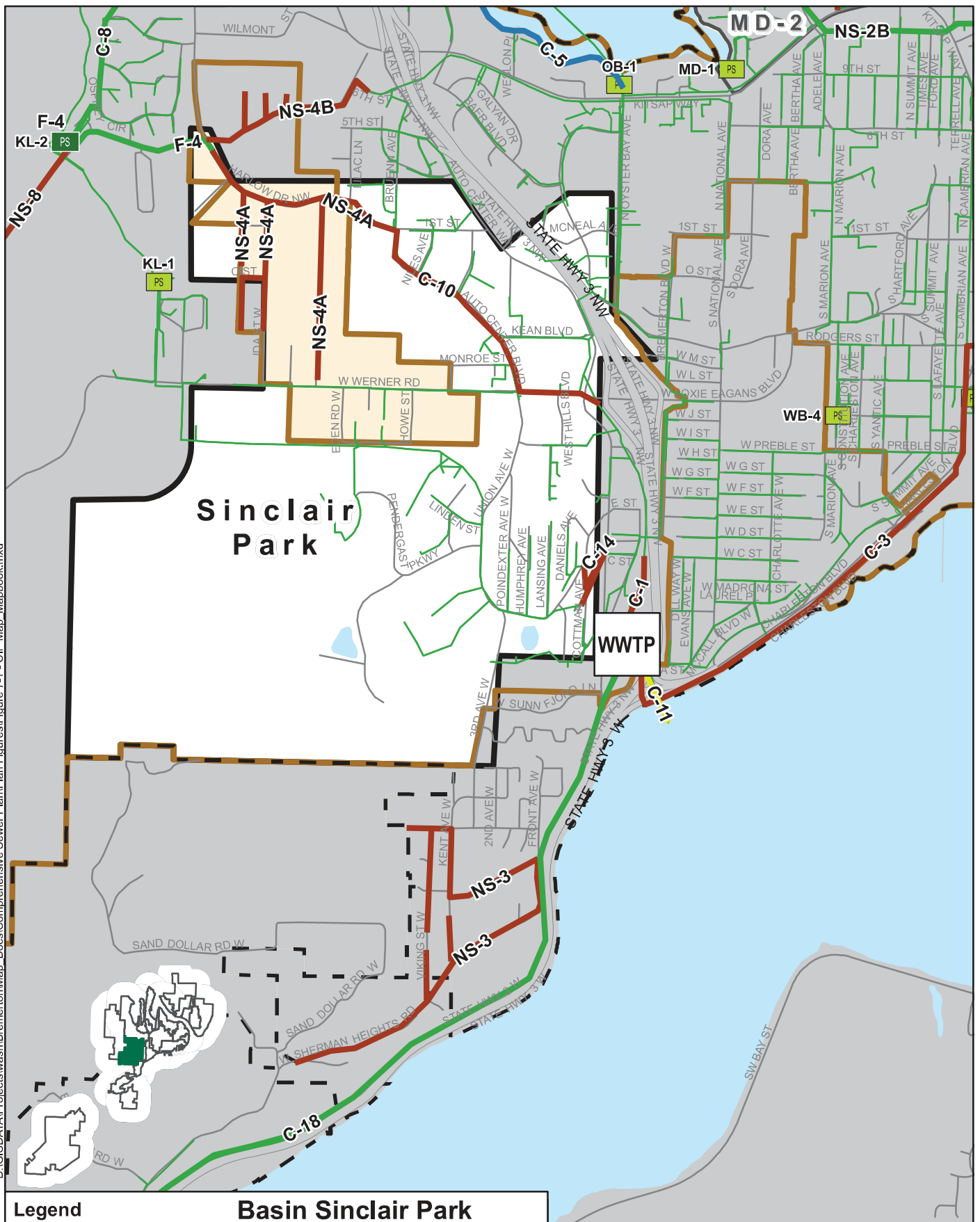
City of Bremerton

















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Sinclair Park Basin					
BASIN DESCRIPTION					
Area (acres)	875				
Land Use	Residential with commercial and light Industrial				
Location	West Bremerton area, bordered by W. Harbor Drive, Ida Street, Harlow Drive, and Oyster Bay Ave.				
Description	Sanitary sewer flows in Oyster Bay and Kitsap Lake Basins are conveyed through a series of pump stations that ultimately flow into the Sinclair Park Basin, and then to the WWTP by gravity. Kitsap Lake pump station KL-1 currently discharges to overloaded sewers in the Sinclair Park Basin. Projects to address overloaded sewers are discussed below. Extending sewer service to the West Hills service area would add to flows in the Sinclair Park Basin. The West Hills service area (currently unincorporated) is located in the West Bremerton UGA, just west of Navy Yard City between Dyes and Sinclair Inlet, primarily in the Sinclair Park Basin. West Hills is predominantly urban low-density residential with some industrial. The City's current sewer system has a few gravity sewer pipes that are located in a small southern section of the service area. Sewer flows generated from the West Hills service area will be collected in a series of 8-inch gravity sewer mains and will be conveyed to the existing sewer system. A plan developed to extend sewer service to the area is described in <i>New Service Area Plans – East Bremerton and West Hills</i> (Feb, 2014).				
SEWER FLOWS					
Existing GPD (2013)	88,000				
Future GPD (2033)	165,000				
Percent Developed ¹ (%)	54%				
Percent Sewered ² (%)	75%				
EXISTING SYSTEM					
Combined/Separated	Separate				
Receiving Facilities	Pipeline from KL-1 to WWTP				
Existing Pump Stations	PP-1				
Combined Sewer Outfall					
PUMP STATIONS					
Pump Station	Capacity (gpm)	2013 Peak Flow (gpm)	2033 Peak Flow (gpm)	Percent Developed ¹	Percent of Developed Sewered ²
PP-1	143	100	110	100%	100%
CIP					
CIP ID	Timeline	Funding Source	Purpose	Related Projects	Cost (\$1,000)
CIP Year 2015-2020					
C-1	Replace or rehabilitate 10-inch Sanitary Sewer under Secondary Clarifier				
	2016 - 2017	UFA	Deficiency	C-11	\$ 650
	Replace 1,500 LF of 10-inch gravity sewer under secondary clarifier. This project is located in Southwest Bremerton within the WWTP. This line creates a system bottleneck which is causing a collection system surcharge. This project relates to project C-11 "WWTP Outfall". This project would be funded by the User Fee Assessment fund.				
C-2	Jones Street Main Replacement				
	2017	UFA	Deficiency	n/a	\$ 300
	Install approximately 700 LF of 12-inch gravity sewer to replace the existing 8-inch gravity sewer along Jones Street between Cottman Avenue and Oyster Bay Road. In January 2012, an overflow on private property occurred from the existing gravity sewer. This project would increase the capacity of the gravity sewer to reduce the risk of flooding.				
C-14	Cottman/Jones Sewers				
	2015	UFA	Deficiency	n/a	\$ 15
	Evaluation to determine project scope. The project will need to look at replacing a storm drain from Roosevelt to Bayview.				

NS-4A	Ostrich Bay Extension				
	2018 - 2020 Grant Dependent	UFA / G	UGA	n/a	\$ 3,720
	The Ostrich Bay Extension project would extend sewer service to an area within West Hills between Harlow Drive and Werner Road and would eliminate failing septic systems to meet TMDL compliance. This project would allow for sewer conveyance, as described in the West Hills service area plan, by installing approximately 2,900 LF of 18-inch gravity sewer along Harlow Drive from Price Road to Sunnyhill Road and 5,800 LF of 8-inch gravity sewer south of Harlow Drive along Sunnyhill Road, Ida Street, and Broad Street.				
CIP Year 2020+					
C-10	Kean Street Trunk Sewer				
	>2020	UFA	Deficiency	F-4	\$ 3,100
	Install approximately 3,700 LF of 24-inch gravity sewer along Harlow Drive from Sunnyhill Road to Kean Street, along Kean Street from Harlow Drive to Werner Road, and along Werner Road from Kean Street to Auto Center Way. This project would increase the capacity along Kean Street to convey flow from the proposed force main from KL-2 that would discharge at Sunnyhill Road and Harlow Drive . This project would be required with the implementation of project F-4 "KL-2 pump station upgrade".				
NS-4B	North Extension				
	>2020	UFA / G	UGA	n/a	\$ 1,450
	This project would allow for sewer conveyance, as described in the West Hills service area plan, by installing approximately 3,350 LF of 8-inch sewer along Price Road to connect to the existing sewer main on 6th Street.				
NOTES					
1) Total area of developed parcels divided by the total of developed and undeveloped parcel area excluding parcels designated as right of way or water bodies.					
2) Total area of developed parcels with available sewer service divided by the total developed parcel area.					



Legend

- | | | | | | |
|---|------------------------|---|--------------------------|---|-------------------|
|  | Odor Control Upgrade |  | Beach Sewer |  | Lift Station |
|  | MBR |  | Force Main |  | Sewer Mains |
|  | New Pump Station |  | Gravity Sewer |  | Streets |
|  | Pump Station Upgrade |  | Low Pressure Sewer |  | Highway |
|  | Reclaimed Pump Station |  | Outfall |  | New Service Area |
| | |  | Reclaimed Main |  | City of Bremerton |
| | |  | Force Main Less Than 24" |  | Bremerton UGA |
| | |  | CSO Outfall | | |



1 inch = 1,650 feet

 Feet

BASIN PLAN

City of Bremerton

City of Bremerton









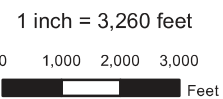
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PSIC Basin					
BASIN DESCRIPTION					
Area (acres)	3430				
Land Use	Undeveloped area with low-density residential and some industrial.				
Location	South Bremerton area, bordered by SW. Lake Flora Road, State Highway 3, Sunnyslope Road, and SW. Old Clifton Road.				
Description	The Puget Sound Industrial Center (PSIC), currently unincorporated, is projected to be a major industrial growth area. Ultimately, this area will be served by a combination of gravity sewers and force mains that will convey flows north through the Gorst and Sherman Heights Basins to the WWTP via the Southwest Bremerton Force Main. A strategy for providing sewer service to the area was developed and is described in Sewer Planning – South Kitsap Industrial Area (Sept, 2008). An updated plan for service was presented in the South Kitsap Industrial Area Subarea Plan (Aug 2012). The improvements described in the plan have been sub-divided into 5 project groups that are described below.				
SEWER FLOWS					
Existing GPD (2013)	28,000				
Future GPD (2033)	38,000				
Percent Developed ¹ (%)	52%				
Percent Sewered ² (%)	97%				
EXISTING SYSTEM					
Combined/Separated	Separate				
Receiving Facilities	Southwest Bremerton Force Main				
Existing Pump Stations					
Combined Sewer Outfall					
PUMP STATIONS					
Pump Station	Capacity (gpm)	2013 Peak Flow (gpm)	2033 Peak Flow (gpm)	Percent Developed ¹	Percent of Developed Sewered ²
CIP					
CIP ID	Timeline	Funding Source	Purpose	Related Projects	Cost (\$1,000)
CIP Year 2015-2020					
NS-9 A-E	PSIC Sewer Design & Construction - ULID Dgn & Const				
	2016 - 2017				
	Grant Dependent	UFA / G	UGA	n/a	\$ 5,475
ULID funding would be used for the expansion of sewer service to PSIC as development occurs. This funding would support the infrastructure improvements described in the following five projects. A portion of this work will occur between 2015 and 2020. The remainder will occur after 2020.					
CIP Year 2020+					
NS-9 A-E	PSIC Sewer Design & Construction - ULID Dgn & Const				
	>2020	UFA / G	UGA	n/a	\$ 29,849
	ULID funding would be used for the expansion of sewer service to PSIC as development occurs. This funding would support the infrastructure improvements described in the following five projects. A portion of this work will occur between 2015 and 2020. The remainder will occur after 2020.				
NS-9A	Secondary 8" and 10" gravity sewer				
	>2020	UFA / G	UGA	n/a	\$ 2,080
	Install secondary 8-inch and 10-inch gravity sewer along local access roads.				

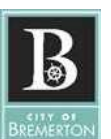
NS-9B	Sewer Service for Northeast PSIC				
	>2020	UFA / G	UGA	n/a	\$ 4,921
	NS-9B.1 - Pump Station 1 (Sanitary sewer)				
	NS-9B.2 - 4" Force Main (PS 1 to NS-4B.3 gravity main at SR 3 and Barney White Rd)				
NS-9B.3 - 8" – 10" Gravity Sewer					
NS-9C	MBR No. 1, Re-Use and Sewer Service for Central PSIC				
	>2020	UFA / G	UGA	n/a	\$ 13,499
	NS-9C.1 - MBR Plant				
	NS-9C.2 - Pump Station 2 (Reclaimed water)				
	NS-9C.3 - 6" Force Main (PS 2 to NS-4C.4 groundwater recharge site along SR 3)				
	NS-9C.4 - Winter Sewage Disposal / Groundwater Recharge				
	NS-9C.5 - Re-Use ex. 8" AC Water for Reclaimed Water Effluent to Golf Course				
NS-9C.6 - 8" – 10" Gravity Sewer					
NS-9D	MBR No. 2 with Re-Use				
	>2020	UFA / G	UGA	n/a	\$ 12,391
	NS-9D.2 - Pump Station 3 (Reclaimed water)				
	NS-9D.3 - 6" Force Main (PS 3 to PS 2 force main along Lake Flora Rd and SR 3)				
	NS-9D.4 - 8" – 10" Gravity Sewer				
NS-9D.5 - Winter Sewage Disposal / Groundwater Recharge					
NS-9E	Sewer Service for South PSIC				
	>2020	UFA / G	UGA	n/a	\$ 2,433
	NS-9E.1 - Pump Station 4 (Sanitary sewer)				
	NS-9E.2 - 4" Force Main (PS 4 to NS-4E.3 gravity main along Lake Flora Rd)				
NS-9E.3 - 8" – 10" Gravity Sewer					
NOTES					
1) Total area of developed parcels divided by the total of developed and undeveloped parcel area excluding parcels designated as right of way or water bodies.					
2) Total area of developed parcels with available sewer service divided by the total developed parcel area.					

Basin PSIC

-  Lift Station
 Sewer Mains
 Streets
 Highway
 New Service
 City of Bremerton
 Bremerton University



H2R

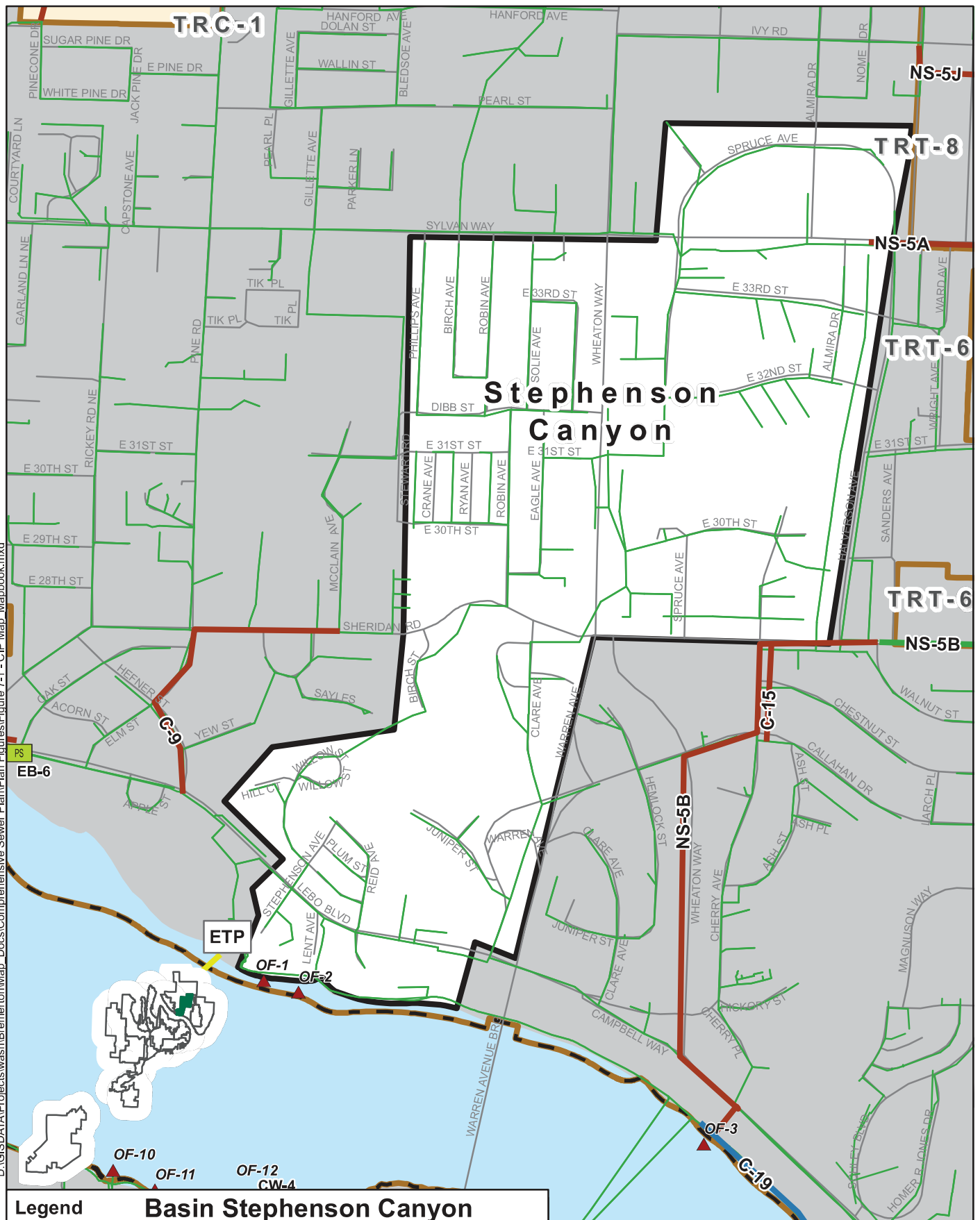


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Stephenson Canyon Basin					
BASIN DESCRIPTION					
Area (acres)	299				
Land Use	Residential with Some Commercial				
Location	East Bremerton area, bordered by the Puget Sound Port Washington Narrows, Phillips Avenue, Sylvan Way, Halverson Avenue, and Warren Avenue.				
Description	Sanitary sewer flows from the Stephenson Canyon Basin are conveyed via the East Bremerton Beach Main to the CTP. The City constructed a truck sanitary sewer/in-line storage facility that connects the Stephenson Canyon Basin to the ETP in the Pine Road Basin. During peak flow conditions, the beach main downstream of overflow structure OF-2 will surcharge and reverse flow in the trunk sewer and convey flow to the ETP.				
SEWER FLOWS					
Existing GPD (2013)	209,000				
Future GPD (2033)	403,000				
Percent Developed ¹ (%)	98%				
Percent Sewered ² (%)	96%				
EXISTING SYSTEM					
Combined/Separated	Combined				
Receiving Facilities	East Bremerton Beach Main				
Existing Pump Stations					
Combined Sewer Outfall	OF-2				
PUMP STATIONS					
Pump Station	Capacity (gpm)	2013 Peak Flow (gpm)	2033 Peak Flow (gpm)	Percent Developed ¹	Percent of Developed Sewered ²
CIP					
CIP ID	Timeline	Funding Source	Purpose	Related Projects	Cost (\$1,000)
CIP Year 2015-2020					
CIP Year 2020+					
NOTES					
1) Total area of developed parcels divided by the total of developed and undeveloped parcel area excluding parcels designated as right of way or water bodies.					
2) Total area of developed parcels with available sewer service divided by the total developed parcel area.					

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1 inch = 880 feet



BASIN PLAN
City of Bremerton

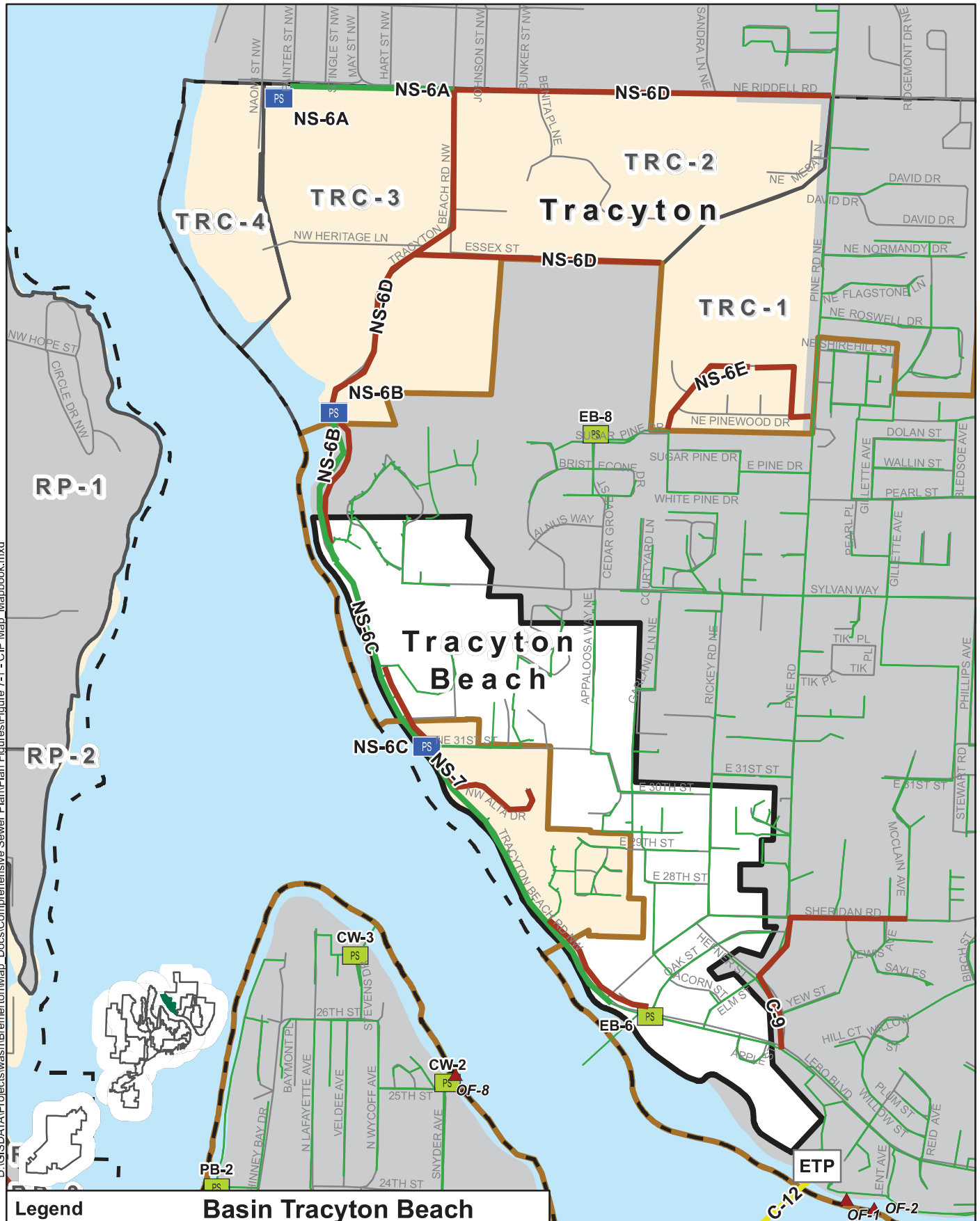


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Tracyton Beach Basin					
BASIN DESCRIPTION					
Area (acres)	187				
Land Use	Urban low-density residential				
Location	East Bremerton area, bordered by the Puget Sound Port Washington Narrows, Sylvan Way, E. 30th Street, Pine Road, and Hefner Street.				
Description	The Tracyton Beach basin (currently unincorporated) is located in the East Bremerton UGA on the east bank of the Port Washington Narrows. Combined sewers in the Tracyton Beach Basin discharge through overflow structure OF-6 to pump station EB-6. EB-6 delivers flows through an 8-inch-diameter force main to overflow structure OF-1 in the Pine Road Basin. The Tracyton service area (currently unincorporated) is located just north of Tracyton Beach in the East Bremerton UGA. The City's current sewer system has gravity sewer pipes that handle sewer demand in the eastern portion of this service area. A plan developed to extend sewer service in the service area is described in <i>New Service Area Plans – East Bremerton and West Hills</i> (Feb, 2014).				
SEWER FLOWS					
Existing GPD (2013)	57,000				
Future GPD (2033)	74,000				
Percent Developed ¹ (%)	76%				
Percent Sewered ² (%)	80%				
EXISTING SYSTEM					
Combined/Separated	Combined				
Receiving Facilities	East Bremerton Beach Main				
Existing Pump Stations	EB-6				
Combined Sewer Outfall	OF-6				
PUMP STATIONS					
Pump Station	Capacity (gpm)	2013 Peak Flow (gpm)	2033 Peak Flow (gpm)	Percent Developed ¹	Percent of Developed Sewered ²
EB-6	1,200	710	750	67%	79%
CIP					
CIP ID	Timeline	Funding Source	Purpose	Related Projects	Cost (\$1,000)
CIP Year 2015-2020					
C-12	Eastside Treatment Plant Outfall				
	2016 - 2017	UFA	Deficiency	n/a	\$ 600
	Replace approximately 250 LF of 20-inch concrete line between two sections of 36-inch lines in the outfall to eliminate a bottle neck. This project would be funded by the User Fee Assessment fund.				
NS-6B	Pump Station TB-2				
	2016 - 2018 Grant Dependent	UFA / G	UGA	n/a	\$ 3,020
	Construct pump station TB-2 along Tracyton Beach Road to convey sewer flow from sub-basins TRC-2, 3 and 4. A preliminary estimate of the pump station capacity would be 700 gpm at 95-feet of TDH based on the projected flows in the sub-basins. An estimated 2,650 gallons wet well volume would be needed. Install approximately 1,200 LF of 8-inch force main from the proposed pump station to the existing 8-inch ductile iron pressure gravity main on Tracyton Beach Road that would be converted into a force main. The additional flows from TB-2 are projected to exceed the capacity of pump station EB-6 and pumping upgrades to the pump station may be considered if and when needed.				

NS-6C	Tracyton Beach Rd Main Conversion				
	2016 - 2020	UFA / G	UGA	n/a	\$ 1,580
	for the TB-2 pump station. Gravity connections to the existing main would be disconnected. A small package pump station would be installed to convey flow from services along Sulphur Springs Lane to pump station TB-2 and from services north of Sheridan Road to EB-6. Grinder pump stations for private properties may also be installed once the existing sewer main is converted to a force main.				
CIP Year 2020+					
NS-6A	Pump Station TB-1				
	>2020	UFA / G	UGA	NS-6D	\$ 3,620
	Construct pump station TB-1 in the vicinity of Riddell Road and Naomi Avenue to convey sewer flow from sub-basins TRC-3 and TRC-4. TRC-4 is a low pressure sewer area that would utilize grinder pumps to convey flow into the proposed pump station TB-1. Install approximately 1,400 LF of 6-inch force main along Riddell Road from Naomi Avenue to Tracyton Beach Road and connect to a proposed 10-inch gravity sewer as part of project NS-6D "Sewer Collection- Sub-Basin TRC-2". A preliminary estimate of the pump station capacity is 350 gpm at 130-feet of TDH based on the projected flows in the sub-basins. An estimated 1,350 gallon wet well volume would be needed.				
NS-6B	Pump Station TB-2				
	2016 - 2018 Grant Dependent	UFA / G	UGA	n/a	\$ 1,670
	Construct pump station TB-2 along Tracyton Beach Road to convey sewer flow from sub-basins TRC-2, 3 and 4. A preliminary estimate of the pump station capacity would be 700 gpm at 95-feet of TDH based on the projected flows in the sub-basins. An estimated 2,650 gallons wet well volume would be needed. Install approximately 1,200 LF of 8-inch force main from the proposed pump station to the existing 8-inch ductile iron pressure gravity main on Tracyton Beach Road that would be converted into a force main. The additional flows from TB-2 are projected to exceed the capacity of pump station EB-6 and pumping upgrades to the pump station may be considered if and when needed.				
NS-6D	Sewer Collection - Sub Basin TRC-2				
	>2020	UFA / G	UGA	NS-6B	\$ 3,500
	Install approximately 3,100 LF of 10-inch gravity sewer along Tracyton Beach Road from Riddell Road to the proposed pump station TB-2 (project NS-6B "Pump Station TB-2"). Install approximately 5,200 LF of 8-inch gravity sewer along Riddell Road from Pine Road to Tracyton Beach Road and along Essex Road to Tracyton Beach Road. This project would extend gravity sewer to sub-basin TRC-2.				
NS-6E	Sewer Collection - Sub Basin TRC-4				
	>2020	UFA / G	UGA	n/a	\$ 740
	Approximately 1,900 LF of 8-inch gravity sewer would be installed along Pinecone Drive to extend gravity sewer to a residential area that is not currently sewered.				
NS-7	Tracyton Beach Sewer Collection				
	>2020	UFA / G	UGA	n/a	\$ 580
	The Tracyton Beach service area is within the East Bremerton UGA. A plan developed to extend sewer service in the service area is described in New Service Area Plans – East Bremerton and West Hills (Feb, 2014). Sewer service would be extended to the remaining unsewered portion of the service area by installing approximately 1,200 LF of 8-inch gravity sewer along Alta Drive.				
NOTES					
1) Total area of developed parcels divided by the total of developed and undeveloped parcel area excluding parcels designated as right of way or water bodies.					
2) Total area of developed parcels with available sewer service divided by the total developed parcel area.					

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Legend

- Odor Control Upgrade
- MBR
- New Pump Station
- Pump Station Upgrade
- Reclaimed Pump Station
- Beach Sewer
- Force Main
- Gravity Sewer
- Low Pressure Sewer
- Outfall
- Reclaimed Main
- Force Main Less Than 24"
- CSO Outfall
- Lift Station
- Sewer Mains
- Streets
- Highway
- New Service Area
- City of Bremerton
- Bremerton UGA

Basin Tracyton Beach

1 inch = 1,100 feet

0 340 680 1,020 Feet

BASIN PLAN

City of Bremerton

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Trenton Avenue Basin					
BASIN DESCRIPTION					
Area (acres)	728				
Land Use	Low-density residential and commercial				
Location	East Bremerton area, bordered by the Puget Sound Port Orchard Bay, Perry Ave, Sylvan Way, and Ridgeview Drive.				
Description	There are four existing pump stations (EB-2, EB-3, EB-4, and EB-5) within the Trenton Avenue Basin. Combined flow transits through overflow station OF-7 to pump station EB-3 and to pump station EB-2. These pump stations discharge to the beach main. Pump station EB-2 is two separate pump stations: EB-2 Local (DW) and EB-2 High Flow (WW). EB-2 DW collects inflow from beach sewers and conveys flows to the 18-inch EB-2 force main installed on the beach. This force main typically conveys flow as a gravity-pressure main; however, during high flow conditions the beach sewer will surcharge and divert flows to EB-2 WW. At this point, the force main operates as a true force main, conveying the flow from EB-2 WW to the beach sewer and on to either pump station CE-1 or to the ETP. Similarly, when sanitary sewer influent to pump station EB-3 begin to surcharge flows are diverted to EB-2 WW. When EB-2 WW becomes overloaded flows are diverted to overflow station OF-7B. The eastern portion of the service area is in the East Bremerton UGA and mostly undeveloped. Ultimately this area will be served by a combination of gravity sewer pipes, force mains, and three new pump stations (TA-1, TA-2, and TA-3). A plan to extend sewer service to this service area is described in <i>New Service Area Plans – East Bremerton and West Hills</i> (Feb, 2014).				
SEWER FLOWS					
Existing GPD (2013)	191,000				
Future GPD (2033)	307,000				
Percent Developed¹ (%)	82%				
Percent Sewered² (%)	39%				
EXISTING SYSTEM					
Combined/Separated	Combined				
Receiving Facilities	East Bremerton Beach Main				
Existing Pump Stations	EB-2, EB-3, EB-4, and EB-5				
Combined Sewer Outfall	OF-7				
PUMP STATIONS					
Pump Station	Capacity (gpm)	2013 Peak Flow (gpm)	2033 Peak Flow (gpm)	Percent Developed¹	Percent of Developed Sewered²
EB-2 DW	450	180	340	93%	96%
EB-2 WW	4,100	2,690	3,060	91%	88%
EB-3	750	760	890	92%	82%
EB-4	100	20	20	95%	91%
EB-5	245	90	100	100%	100%
CIP					
CIP ID	Timeline	Funding Source	Purpose	Related Projects	Cost (\$1,000)
CIP Year 2015-2020					
C-6	Abandon beach sewer north of Manette Bridge				
	2016 - 2017	UFA	Deficiency	n/a	\$ 2,200
	Install package pump station at the end of East 16th Street to Wheaton Way. Install grinder pumps on all residences (20+/-) tributary to the gravity beach main and pump to Marlow Avenue and Wheaton Way. Some low pressure sewer main construction may be required. Upon completion the beach main will be abandoned.				
F-2	Emergency Generator Installation at EB-3				
	2015	UFA	Deficiency	n/a	\$ 50
	Install an emergency generator at the EB-3 pump station on Shore Drive. This project would be funded by the User Fee Assessment fund.				

CIP Year 2015-2020					
C-6	Abandon beach sewer north of Manette Bridge				
	2016 - 2017	UFA	Deficiency	n/a	\$ 2,200
	Install package pump station at the end of East 16th Street to Wheaton Way. Install grinder pumps on all residences (20+/-) tributary to the gravity beach main and pump to Marlow Avenue and Wheaton Way. Some low pressure sewer main construction may be required. Upon completion the beach main will be abandoned.				
F-2	Emergency Generator Installation at EB-3				
	2015	UFA	Deficiency	n/a	\$ 50
	Install an emergency generator at the EB-3 pump station on Shore Drive. This project would be funded by the User Fee Assessment fund.				
CIP Year 2020+					
NS-5A	Pump Station TA-1				
	>2020	UFA / G	UGA	n/a	\$ 6,100
	Construct pump station TA-1 at the northern end of Bahia Vista Drive to convey sewer flow from sub-basin TRT-2 to Sylvan Way and Olympus Drive via approximately 6,400 LF of 6-inch force main. A preliminary estimate of the pump station capacity is 350 gpm at 500-feet of TDH based on projected flows in the sub-basins. An estimated 1,350 gallon wet well volume would be needed.				
NS-5B	Pump Station TA-2				
	>2020	UFA / G	UGA	n/a	\$ 9,480
	Construct pump station TA-2 in the vicinity of Helm Street and Trenton Avenue to convey sewer flow from sub-basin TRT-4, 5, and 6. A preliminary estimate of the pump station capacity is 1,350 gpm at 210-feet of TDH based on the projected flows in the sub-basins. An estimated 5,000 gallon wet well volume would be needed. Install approximately 3,900 LF of 10-inch force main along Sheridan Road to discharge into the Cherry Avenue Basin in the vicinity of Schley Boulevard and Sheridan Road. Install a new gravity sewer along Sheridan Avenue, Cherry Avenue, Callahan Drive, and Wheaton Way with approximately 4,800 LF of 18-inch gravity main to provide conveyance for flows from TA-2 through the Cherry Avenue Basin to the East Bremerton beach main.				
NS-5C	Pump Station TA-3				
	>2020	UFA / G	UGA	n/a	\$ 6,000
	Construct pump station TA-3 along Enetai Beach Drive to convey sewer flow from sub-basin TRT-1. A preliminary estimate of the pump station capacity is 900 gpm at 230-feet of TDH based on the projected flows in the sub-basins. An estimated 3,300 gallon wet well volume would be needed. Install approximately 3,900 LF of 8-inch force main along Enetai Beach Road and Holman Street to convey flow to Perry Avenue.				
NS-5D	Pump Station TA-4				
	>2020	UFA / G	UGA	n/a	\$ 2,760
	Construct pump station TA-4 in the vicinity of Forest Drive and Ivy Road to convey sewer flow from sub-basin TRT-7. A preliminary estimate of the pump station capacity is 350 gpm at 35-feet of TDH based on the projected flows in the sub-basins. An estimated 500 gallon wet well volume would be needed. Install approximately 700 LF of 4-inch force main along Ivy Road to convey flow to a new gravity main on Olympus Drive.				
NS-5E	Sewer Collection - Sub Basin TRT-1				
	>2020	UFA / G	UGA	NS-5C	\$ 1,630
	Install approximately 4,200 LF of 8-inch gravity sewer from 30th Street along Enetai Beach Drive to proposed pump station TA-3 and along Holman from Trenton Avenue to Enetai Beach Road. Construct in conjunction with project NS-5C "Pump Station TA-3".				
NS-5F	Sewer Collection - Sub Basin TRT-2				
	>2020	UFA / G	UGA	NS-5A	\$ 3,290
	Install approximately 8,200 LF of 8-inch gravity sewer in sub-basin TRT-2 along 30th Street, Ridgeview Drive, and Bahia Vista Drive to convey flow to proposed pump station TA-1. Construct in conjunction with project NS-5A "Pump Station TA-1".				

NS-5G	Sewer Collection - Sub Basin TRT-4				
	>2020	UFA / G	UGA	NS-5B	\$ 3,370
	Install approximately 4,400 LF of 8-inch gravity sewer along 30th Street from Hillside Drive to Trenton Avenue and between Trenton Avenue and Perry Avenue from Franklin Street to Helms Street. Install approximately 3,400 LF of 10-inch gravity sewer along Trenton Avenue from Sylvan Way to the proposed pump station TA-2. Construct in conjunction with project NS-5B "Pump Station TA-2".				
NS-5H	Sewer Collection - Sub Basin TRT-6				
	>2020	UFA / G	UGA	n/a	\$ 4,200
	Install approximately 5,400 LF of 8-inch gravity sewer along Forest Drive from Ivy Road to Warner Street and along Olympus Drive from Ivy Road to Warner Street. Install approximately 4,500 LF of 10-inch gravity sewer along Perry Avenue from Sylvan Way to TA-2.				
NS-5I	Sewer Collection - Sub Basin TRT-7				
	>2020	UFA / G	UGA	NS-5D	\$ 1,520
	Install approximately 3,900 LF of 8-inch gravity sewer along Olympus Drive and Clemens Street to Forest Drive and along Forest Drive from Riddell Road to Ivy Road and connect to TA-4. Construct in conjunction with project NS-5D "Pump Station TA-4".				
NS-5J	Sewer Collection - Sub Basin TRT-8				
	>2020	UFA / G	UGA	n/a	\$ 1,840
	Install approximately 4,500 LF of 8-inch gravity sewer along Windermere Drive, Clemens Street, and Ivy Road to convey flow into the existing sewer collection system west of Petersville Road and along Olympus Drive to convey flow to a new gravity sewer along Sylvan Way.				
NOTES					
1) Total area of developed parcels divided by the total of developed and undeveloped parcel area excluding parcels designated as right of way or water bodies.					
2) Total area of developed parcels with available sewer service divided by the total developed parcel area.					

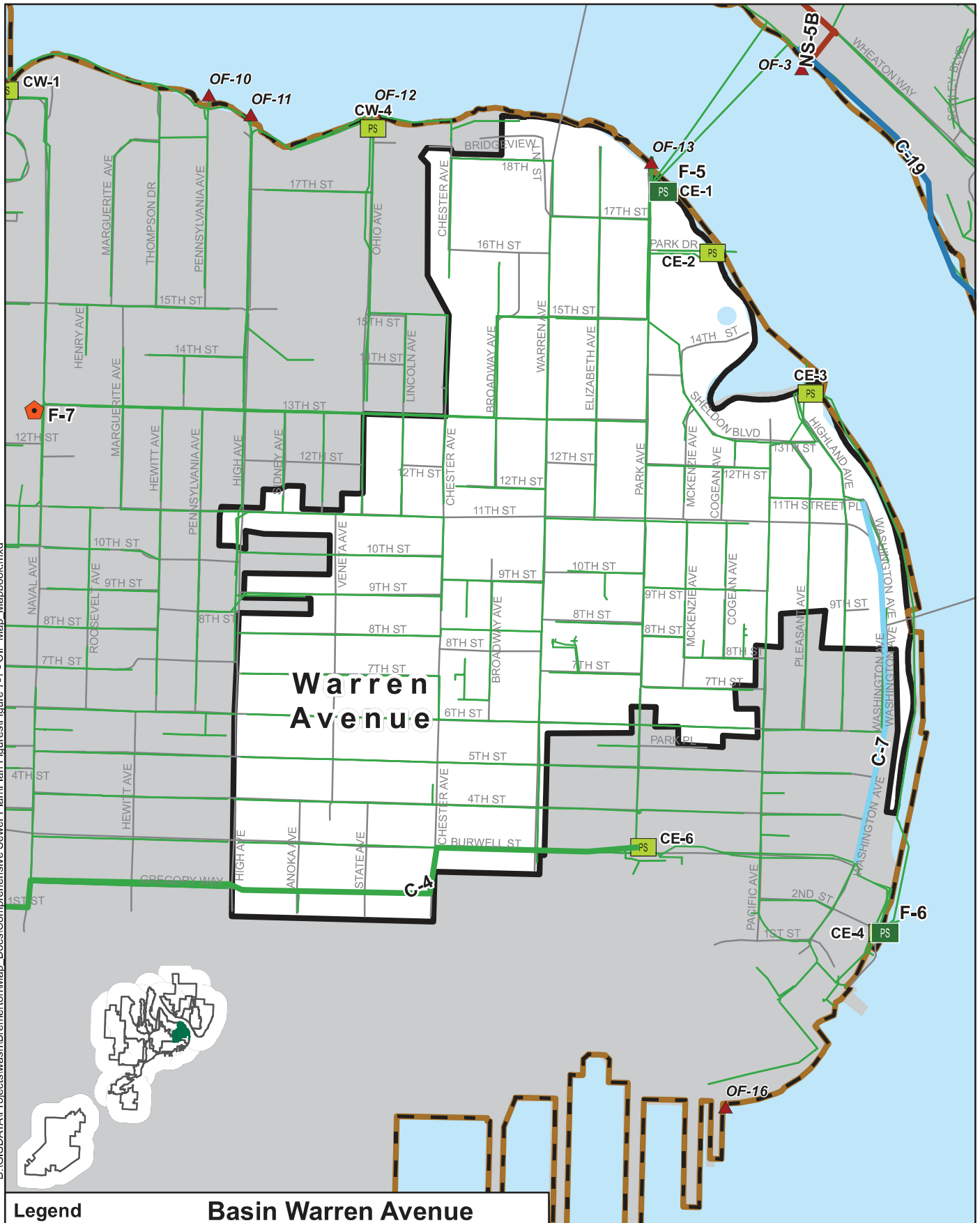
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Warren Avenue Basin					
BASIN DESCRIPTION					
Area (acres)	309				
Land Use	Residential with some Commercial and Park Lands				
Location	West Bremerton area, bordered by the Puget Sound Naval Shipyard, High Avenue, the Puget Sound Port Washington Narrows, and 7th Street.				
Description	There are three pump stations (CE-1, CE-2, and CE-3) within the Warren Avenue Basin. Pump stations CE-2 and CE-3 convey flows to CE-1. Pump station CE-6, located in the the Pacific Avenue Basin, also pumps to CE-1. CE-1 conveys dry weather flows from all of East Bremerton, as well as all flow from the Warren Avenue Basin to the WWTP via the CTP. Current and projected flows are within the capacity of the sewer system.				
SEWER FLOWS					
Existing GPD (2013)	373,000				
Future GPD (2033)	566,000				
Percent Developed ¹ (%)	96%				
Percent Sewered ² (%)	92%				
EXISTING SYSTEM					
Combined/Separated	Combined				
Receiving Facilities	Crosstown Pipeline				
Existing Pump Stations	CE-1, CE-2, and CE-3				
Combined Sewer Outfall	OF-13 and OF-14				
PUMP STATIONS					
Pump Station	Capacity (gpm)	2013 Peak Flow (gpm)	2033 Peak Flow (gpm)	Percent Developed ¹	Percent of Developed Sewered ²
CE-1 ⁽³⁾	10,000	11,230	12,640	86%	89%
CE-2	200	60	70	100%	100%
CE-3	200	130	240	88%	92%
CIP					
CIP ID	Timeline	Funding Source	Purpose	Related Projects	Cost (\$1,000)
CIP Year 2015-2020					
C-7	Washington Avenue Phase 2				
	2015	UFA	Deficiency	n/a	\$ 1,100
	Design and obtain access rights for low pressure sewer replacement along Washington Avenue. This project would be funded by the User Fee Assessment fund.				
F-5	Pump Station CE-1 Pumps 1 & 4 Replacement				
	2016	UFA/G	Repair	n/a	\$ 700
	Replace the 30+ year old 400 hp motors, pumps and eddy current drives, with dry-pit submersible pumps and VFDs. This project may be partially funded by PSE or DES grants.				
CIP Year 2020+					
NOTES					
1) Total area of developed parcels divided by the total of developed and undeveloped parcel area excluding parcels designated as right of way or water bodies.					
2) Total area of developed parcels with available sewer service divided by the total developed parcel area.					
3) Flow that exceeds the capacity of CE-1 is treated at the Eastside Treatment Plant.					

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Legend

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|------------------------|--------------------------|-------------------|
| Odor Control Upgrade | Beach Sewer | Lift Station |
| MBR | Force Main | Sewer Mains |
| New Pump Station | Gravity Sewer | Streets |
| Pump Station Upgrade | Low Pressure Sewer | Highway |
| Reclaimed Pump Station | Outfall | New Service Area |
| | Reclaimed Main | City of Bremerton |
| | Force Main Less Than 24" | Bremerton UGA |
| | CSO Outfall | |

Basin Warren Avenue



1 inch = 880 feet



BASIN PLAN City of Bremerton



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Treatment Plants					
TREATMENT DESCRIPTION					
Description	Bremerton currently operates two wastewater treatment facilities. The Westside Wastewater Treatment Plant (WWTP) in West Bremerton is the main treatment plant and provides secondary treatment for the entire wastewater system service area and discharges to Sinclair Inlet. The WWTP currently has a peak hydraulic capacity of 65 mgd, and operates as a conventional activated sludge secondary treatment process. Wastewater sludges are collected at the WWTP, anaerobically digested, treated to Class B standards, dewatered, and applied to Bremerton's silviculture site for reuse. The Eastside CSO Treatment Plant (ETP) was built to reduce the number of CSO discharges. The ETP provides treatment for wet weather combined sewer flows in East Bremerton. This facility discharges to Port Washington Narrows and has a maximum hydraulic capacity of 20 mgd. Processes at the ETP include high rate clarification followed by ultraviolet (UV) disinfection. A network of gravity combined and sanitary sewer pipelines, pump stations, and force mains delivers flows from the collection system to these treatment facilities.				
WWTP Projected Flows					
	Average Dry Weather Projected Flows (gpd)	Average Annual Projected Flows (gpd)	Maximum Monthly Projected Flows (gpd)	Maximum Day Projected Flows (gpd)	
Existing (2013)	3,990,000	5,133,000	9,947,000	25,450,000	
Future (2033)	6,038,000	7,181,000	11,995,000	27,871,000	
Future (2033 + New Service Area)	7,446,000	9,100,000	16,072,000	33,940,000	
WWTP CIP					
CIP ID	Timeline	Funding Source	Purpose	Related Projects	Cost (\$1,000)
CIP Year 2015-2020					
C-11	Westside WWTP Outfall				
	2019 - 2020	UFA	Deficiency	n/a	\$ 2,650
	This project would be coordinated with the Washington Department of Transportation (WSDOT) SR3/SR304 interchange remodel. There is a capacity bottle neck located under the SR3 overpass. This project is contingent on WSDOT modifying the SR3 overpass and lease renewal activities. This project would be funded by the User Fee Assessment fund.				
C-17	CIPP or other rehabilitation existing 54-inch SD under Secondary Clarifier				
	2016 - 2017	UFA	Deficiency	n/a	\$ 300
	Inspect the storm drain to confirm improvement need. This is a stormwater project.				
F-1	Storage Warehouse at WWTP				
	2016	UFA	None	n/a	\$ 500
	Construct storage warehouse for materials in the upper land north of the WWTP (next to Parr Ford). This project would be funded by the User Fee Assessment fund.				
T-1	Primary Clarifier #1 & 2 Drive Replacement				
	2016	UFA/G	Repair	n/a	\$ 150
	Replace primary clarifier drives 1 and 2. This project would be funded under the Wastewater Maintenance Budget.				
T-2	Secondary Clarifier #1 & 2 Drive Replacement				
	2017	UFA/G	Repair	n/a	\$ 150
	Replace the secondary clarifier drives 1 and 2. This project would be funded under the Wastewater Maintenance Budget.				

T-3	Biofilter Odor Control Fan Replacement				
	2015	UFA	Repair	n/a	\$ 50
	Replace the existing 25 horsepower biofilter with a 10 horsepower direct drive fan at the WWTP. This project may be partially funded by grants from PSE or DES.				
T-4	Primary Effluent Line Rehabilitation				
	2019 - 2020	UFA	Repair	n/a	\$ 450
	Replace the primary effluent line. Replacement will be needed due to reaching its service life in the future.				
T-5	Replace Drives on RAS Pumps				
	2015	UFA / G	Repair	n/a	\$ 100
	Install variable-frequency drives on RAS pumps. This project will replace aging equipment and improve efficiency. This project would be funded by the User Fee Assessment fund and other grants.				
T-6	Recoat Aluminum Covers on the Primary Clarifiers and Biofilter				
	2016	UFA	Repair	n/a	\$ 275
	Re-coat the aluminum covers on the underside of the primary clarifiers and biofilter.				
T-7	Biofilter Upgrade				
	2015	UFA/G	Repair	n/a	\$ 800
	Replace media and purchase and install two feed pumps.				
T-8	Replace RAS Pumps				
	2015	UFA/G	Repair	n/a	\$ 275
	Replace the three RAS pumps with dry pit submersible pumps.				
T-9	Surge Tank Repair and Hypo Tank Replacement				
	2015	UFA	Repair	n/a	\$ 100
	Repair existing surge tank and replace hypo tank at the WWTP.				
T-10	Wastewater Reuse				
	2020	UFA	None	n/a	\$ 250
	Pre-design developed for wastewater treatment and conveyance of reused wastewater to the gateway. Install approximately 140 feet HDD under SR3 and connect to "purple pipe" with a total pipe length of 500 feet. This project will be constructed with the WSDOT SR304 project.				
T-11	Headworks Odor Control Fan Replacement				
	2015	UFA/G	Repair	n/a	\$ 90
	Replace the existing 75 horse power headworks odor control fan with a 20 horse power direct drive fan and variable frequency drive (VFD). This project may be partially funded by grants from PSE or DES.				
T-12	Aeration Basin Turbo Blower				
	2015	UFA/G	Repair	n/a	\$ 230
	Replace the existing 200 horse power aeration basin turbo blower with a 100 horse power Neuros blower. This project may be partially funded by grants from PSE or DES.				
T-13	Digester Recirculation Pumps				
	2015	UFA/G	Repair	n/a	\$ 60
	Replace existing digester recirculation pumps by converting two sludge loading pumps into recirculation pumps. This project may be partially funded by grants from PSE or DES.				
T-14	RAS Pumps and VFDs				
	2015	UFA/G	Repair	n/a	\$ 1,000
	Replace the existing RAS pumps, eddy current drives, and valves with new Flygt pumps, VFDs, and new valves. This project may be partially funded by grants from PSE or DES.				

T-15	Chlorine Contact Chamber Upgrade				
	2017	UFA	Repair	n/a	\$ 100
	Sandblast, grout, and coat the chlorine contact chambers #1 & 2 walls.				
T-16	Aeration Basins 1 & 2 Membrane Diffuser Replacement				
	2016	UFA	Repair	n/a	\$ 100
	Replace of the diffuser membranes (288) in aeration basins #1 & 2				
T-17	Influent Fine Screen 1 & 2 Upgrade				
	2015	UFA	Repair	n/a	\$ 100
	Complete overhaul and upgrade to the influent fine screens at the WWTP				
T-18	Digester Domes 1 & 2 Replacement				
	2020	UFA	Repair	n/a	\$ 2,000
	Replacement of the 35+ year old steel digester domes. This project would be broken out into two successive years				
T-19	Westside WWTP Boiler Replacement				
	2020	UFA	Repair	n/a	\$ 500
	Purchase and installation of an additional methane/natural gas boiler. The current boiler is plagued with numerous mechanical issues, and would be kept as a back-up.				
M-4	SCADA Lifecycle Improvements				
	Annual	UFA	None	n/a	\$ 900
	Expand the fiber optic network and install blade servers to upgrade the SCADA system at the WWTP.				
CIP Year 2020+					

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Operations and Maintenance					
O&M DESCRIPTION					
Description		This section describes operation and maintenance improvement plans that are scheduled to occur throughout the City of Bremerton.			
CIP					
CIP ID	Timeline	Funding Source	Purpose	Related Projects	Cost (\$1,000)
CIP Year 2015-2020					
M-1	Substandard Main Replacement Program				
	Annual	UFA	Deficiency	n/a	\$ 2,700
	Replace substandard sewer mains. This is an annual program to fund cured-in-place pipe (CIPP) improvements to rehabilitate the condition of aging sewer mains in the collection system. This project would be funded by the User Fee Assessment fund.				
M-2	Beach main and Critical Force main Cleaning				
	Annual	UFA	Repair/None	n/a	\$ 1,075
	Clean the beach main and critical force main at pump station CE-1. This project would be funded by the User Fee Assessment fund.				
M-3	Machinery/Equipment - Utility Operations Manager				
	Annual	UFA	Repair	n/a	\$ 120
	This project would be funded by the User Fee Assessment fund.				
M-5	Metering System Upgrade				
	2015 - 2019	UFA	None	n/a	\$ 1,182
	Install new antenna based water meter reading hardware.				
M-6	WWTP and Pump Station Improvement Program				
	Annual	UFA	Deficiency	n/a	\$ 3,850
	Annual replacement and rehabilitation of infrastructure and equipment. This project would be funded by the User Fee Assessment fund. Additionally, Puget Sound Energy will provide a 50% funding match for energy efficiency upgrades.				
M-8	Oyster Bay Public Works Consolidation				
	2015	UFA	None	n/a	\$ 250
	Remodel and improve the Oyster Bay Public Works Building and upgrade parking facilities to support the relocation of the engineering department to the building.				
M-9	Sewer Main Replacement with Pavement Reconstruction				
	Annual	UFA	Deficiency	n/a	\$ 900
	This program supports sewer main upgrades associated with road improvements.				
CIP Year 2020+					
M-7	Model Calibration and Update				
	>2020	UFA	None	n/a	\$ 250
	This is a project to update and calibrate the City's sewer model. It will involve flow monitoring at selected sites throughout the sewer collection system and a validation of sewer main diameters and inverts, manhole dimensions, pump station and wet well dimensions, and regulator structures. An outside consultant would be contracted to update the model with GIS and flow monitoring data.				

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