
Appendix A

Alternatives Summary

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Appendix A.1

RWSP Change Matrix

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King County 2012 Combined Sewer Overflow Control Program Review
 RWSP Change Matrix: Summary of Review for Change in Uncontrolled CSO Basins

CSO Discharge Serial Number	CSO Facility Name	RWSP Alternative Description	RWSP Year of Control	Alternative Information From RWSP				Regulations	CSO Control Performance	Size of Facility Based on Hydraulic Modeling	Type of Facility Based on Hydraulic Modeling	CSO Treatment Process	Green Stormwater Infrastructure Opportunities	Site Availability	Environmental and Habitat Priorities	Receiving Water Quality	Public Opinion	Coordination with KC or Other Agency Projects	RWSP Change	Comments
				RWSP CSO Control Volume (MG)	RWSP CSO Peak Flow Rate (MGD)	2010 Modeling Results - CSO Control Volume (MG)	2010 Modeling Results - CSO Peak Flow Rate (MGD)													
004	11th Ave NW	2.0-MG storage tank West Point Peak Flow Set Point: 440 MGD Potential Sites: Underneath NW 45th Street or adjacent private property	2030	1.7	20.0	1.85	32.20	No	No	No	Yes	N/A	Yes	Yes	No	No	No	Yes	Yes	Reasons for Change from RWSP Alternative and Re-evaluation: -Hydraulic modeling determined that the CSO control volume at 11th Ave NW can be eliminated by increasing conveyance capacity from the 11th Ave NW overflow structure to the Ballard Siphon. -Potential GSI opportunities are available in the basin (high potential). -Storage tank located underneath 45th Street would be located adjacent to a building that could increase construction risks. -Coordination with the Ballard Siphon project may have reduced the CSO control volume at 11th Ave NW even without upgrading conveyance capacity. Notes: Control volume and peak flow rate presented assume no increase in capacity of the downstream conveyance system to the Ballard Siphon.
008	3rd Ave W	5.5-MG storage tank West Point Peak Flow Set Point: 440 MGD Potential Sites: Underneath the extension of W Ewing St east of 3rd Ave W adjacent to Ship Canal - possible Burke-Gilman Trail extension	2029	5.5	37.0	4.18	29.3	No	No	Yes	No	N/A	Yes	Yes	No	No	No	Yes	Yes	Reasons for Change from RWSP Alternative and Re-evaluation: -Size of proposed CSO control facility has decreased by more than 10% since RWSP based on hydraulic modeling. -Potential GSI opportunities are available in the basin (low potential). -RWSP site may not be feasible due to irregular shape and small size of site. -Collaborative opportunities with SPU may be available, which may require the schedule to be modified.
014	Montlake	7.5-MG storage tank to control University and Montlake CSOs at University. West Point Peak Flow Set Point: 440 MGD Potential Sites: 1 to 6 potential sites have been identified in University of Washington campus area	2015	0.8	27.0	6.6	93.5	No	No	Yes	No	N/A	Yes	No	Yes	No	No	Yes	Yes	Reasons for Change from RWSP Alternative and Re-evaluation: -Hydraulic modeling determined that there is not enough capacity in the Montlake Siphon to convey flows from Montlake to University to control Montlake CSOs. A smaller storage tank at Montlake, a new siphon, or GSI opportunities will need to be evaluated with the joint University/Montlake storage tank to control Montlake and University CSOs. -Size of proposed CSO control facility has increased by more than 10% since RWSP based on hydraulic modeling. -Potential GSI opportunities are available in the basin (high potential). -Prioritizing control of CSOs in the Duwamish River and Elliott Bay could be more beneficial to ecological and human health when compared to control of CSOs in Lake Washington Ship Canal, Lake Union, and the Montlake Cut. -Collaborative opportunities with SPU may be available, which may require the schedule to be modified.
015	University	7.5-MG storage tank to control University and Montlake CSOs at University. West Point Peak Flow Set Point: 440 MGD Potential Sites: 1 to 6 potential sites have been identified in University of Washington campus area	2015	6.6	124.0	2.94	74.90	No	No	Yes	No	N/A	Yes	No	Yes	No	No	Yes	Yes	Reasons for Change from RWSP Alternative and Re-evaluation: -Hydraulic modeling determined that there is not enough capacity in the Montlake Siphon to convey flows from Montlake to University to control Montlake CSOs. A smaller storage tank at Montlake, a new siphon, or GSI opportunities will need to be evaluated with the joint University/Montlake storage tank to control Montlake and University CSOs. -Size of proposed CSO control facility has decreased by more than 10% since RWSP based on hydraulic modeling. -Potential GSI opportunities are available in the basin (high potential). -Prioritizing control of CSOs in the Duwamish River and Elliott Bay could be more beneficial to ecological and human health when compared to control of CSOs in Lake Washington Ship Canal, Lake Union, and the Montlake Cut. -Collaborative opportunities with SPU may be available, which may require the schedule to be modified. -Severe construction conflicts are predicted in the area at time of construction.
028	King St	Conveyance to 2.1-MG storage/treatment tank to control King Street and Kingdome CSOs at Kingdome (primary treatment). West Point Peak Flow Set Point: 400 MGD Potential Site: On the Kingdome site beneath a parking area north of S Royal Brougham Way	2026	2.2	24.2	2.63	29.6	Yes	No	Yes	No	Yes	No	Yes	Yes	No	No	Yes	Yes	Reasons for Change from RWSP Alternative and Re-evaluation: -King County is evaluating the possibility of consolidating King Street, Kingdome, Lander, and Hanford #2 into one wet-weather treatment facility using existing infrastructure (e.g., backflow in EB). This alternative will need to be evaluated with the RWSP alternative. -King County's existing and new treatment facilities have changed regulatory targets related to disinfection. Also, the change from classification-based water quality standards to use-based has made the water quality standard targets more stringent. -Size of proposed CSO control facility has increased by more than 10% since RWSP based on hydraulic modeling. -Update of current treatment technologies has resulted in revisiting footprint requirements and cost estimates for treatment options. -A building is now located on the proposed storage/treatment tank location, Parcel 7666204876 (Qwest Exhibition Hall), so new potential sites need to be identified. -Prioritizing control of CSOs in the Duwamish River and Elliott Bay could be more beneficial to ecological and human health when compared to control of CSOs in Lake Washington Ship Canal, Lake Union, and the Montlake Cut. -Collaborative opportunities with SPU may be available, which may require the schedule to be modified.
029	Kingdome	2.1-MG storage/treatment tank to control King Street and Kingdome CSOs at Kingdome (primary treatment). West Point Peak Flow Set Point: 400 MGD Potential Site: On the Kingdome site beneath a parking area north of S Royal Brougham Way	2026	9.2	55.1	34.22	87.00	Yes	No	Yes	No	Yes	No	Yes	Yes	No	No	No	Yes	Reasons for Change from RWSP Alternative and Re-evaluation: -King County is evaluating the possibility of consolidating King Street, Kingdome, Lander, and Hanford #2 into one wet-weather treatment facility using existing infrastructure (e.g., backflow in EB). This alternative will need to be evaluated with the RWSP alternative. -King County's existing and new treatment facilities have changed regulatory targets related to disinfection. Also, the change from classification-based water quality standards to use-based has made the water quality standard targets more stringent. -Size of proposed CSO control facility has increased by more than 10% since RWSP based on hydraulic modeling. -Update of current treatment technologies has resulted in revisiting footprint requirements and cost estimates for treatment options. -A building is now located on the proposed storage/treatment tank location, Parcel 7666204876 (Qwest Exhibition Hall), so new potential sites need to be identified. -Prioritizing control of CSOs in the Duwamish River and Elliott Bay could be more beneficial to ecological and human health when compared to control of CSOs in Lake Washington Ship Canal, Lake Union, and the Montlake Cut.
030	Lander St	1.5-MG storage/treatment tank to control Lander Street CSOs at Hanford #2. West Point Peak Flow Set Point: 400 MGD Potential Sites: Industrial private property, corner of Occidental Ave S and Lander St.	2019	15.2	54.0	17.69	47.90	Yes	No	Yes	No	Yes	No	Yes	Yes	No	No	No	Yes	Reasons for Change from RWSP Alternative and Re-evaluation: -King County is evaluating the possibility of consolidating King Street, Kingdome, Lander, and Hanford #2 into one wet-weather treatment facility using existing infrastructure (e.g., backflow in EB). This alternative will need to be evaluated with the RWSP alternative. -King County's existing and new treatment facilities have changed regulatory targets related to disinfection. Also, the change from classification-based water quality standards to use-based has made the water quality standard targets more stringent. -Update of current treatment technologies has resulted in revisiting footprint requirements and cost estimates for treatment options. -Prioritizing control of CSOs in the Duwamish River and Elliott Bay could be more beneficial to ecological and human health when compared to control of CSOs in Lake Washington Ship Canal, Lake Union, and the Montlake Cut.
031	Hanford #1 (Hanford@Rainier) and Bayview North	0.6-MG storage tank West Point Peak Flow Set Point: 400 MGD Potential Sites: Ballfield adjacent to Rainier Ave S and S Winthrop St, one block north of S Hanford St or pipe storage in Rainier Ave from S Hanford St to S Bayview St.	2026	0.6	16.0	Hanford #1 1.13 Bayview North 0.77	Hanford #1 17.8 Bayview North 28.9	No	No	Yes	No	N/A	Yes	Yes	Yes	Yes	No	Yes	Yes	Reasons for Change from RWSP Alternative and Re-evaluation: -Modeling has identified possibility of Bayview North overflows occurring, changing volume and location needs for Hanford #1 and Bayview North. -Size of proposed CSO control facility has increased by more than 10% since RWSP based on hydraulic modeling. -Potential GSI opportunities are available in the basin (medium to high potential). -Potential site identified (Parcels 0003600026 and 0003600059) is used as a football field and track for Franklin High School. -Remediation activities have changed the conditions of the CSO discharge location; sediment quality has become a driver at this location. -Collaborative opportunities with SPU may be available, which may require the schedule to be modified.

CSO Discharge Serial Number	CSO Facility Name	RWSP Alternative Description	RWSP Year of Control	RWSP CSO Control Volume (MG)	RWSP CSO Peak Flow Rate (MGD)	2010 Modeling Results - CSO Control Volume (MG)	2010 Modeling Results - CSO Peak Flow Rate (MGD)	Do regulatory changes require a change in control target?	Has the performance of existing CSO controls indicated a need for improvements of future facilities?	Has the size of CSO control facility changed significantly (>10%) based on hydraulic modeling?	Has the type of CSO control facility (e.g., storage, treatment, etc.) changed based on new model control volume needs?	Has the CSO treatment process changed based on review?	Have green stormwater infrastructure opportunities been identified in the CSO basin? Can these reduce the size of CSO control facilities needed for the CSO basin?	Are the sites proposed in the RWSP unavailable or impractical? Have any new sites become available?	Have environmental factors (climate change, habitat restoration projects, human health considerations) changed CSO control priority or schedule for the CSO basin?	Are there any changes in the water quality of the receiving water body?	Has public opinion changed in the area?	Have opportunities for coordination with other King County projects or other agency projects (e.g., SPU control needs) been identified?	Change from RWSP Alternative and Re-evaluation Required?	Comments
032	Hanford #2	3.3-MG storage/treatment tank (primary treatment) West Point Peak Flow Set Point: 400 MGD Potential Sites: Industrial private property, corner of Occidental Ave S and Lander St.	2017	18.8	89.0	43.78	94.90	Yes	No	No	No	Yes	Yes	No	Yes	No	No	No	Yes	<p>Reasons for Change from RWSP Alternative and Re-evaluation:</p> <ul style="list-style-type: none"> -King County is evaluating the possibility of consolidating King Street, Kingdome, Lander, and Hanford #2 into one wet-weather treatment facility using existing infrastructure (e.g., backflow the EB). This alternative will need to be evaluated with the RWSP alternative. -King County's existing and new treatment facilities have changed regulatory targets related to disinfection. Also, the change from classification-based water quality standards to use-based has made the water quality standard targets more stringent. -Update of current treatment technologies has resulted in revisiting footprint requirements and cost estimates for treatment options. -Potential GSI opportunities are available in the basin (low potential). -Prioritizing control of CSOs in the Duwamish River and Elliott Bay could be more beneficial to ecological and human health when compared to control of CSOs in Lake Washington Ship Canal, Lake Union, and the Montlake Cut.
036	Chelan Ave	4.0-MG storage tank West Point Peak Flow Set Point: 400 MGD Potential Site: Site of existing West Seattle Pump Station.	2024	4.0	33.0	3.85	25.70	No	No	No	Yes	N/A	Yes	No	Yes	No	No	No	Yes	<p>Reasons for Change from RWSP Alternative and Re-evaluation:</p> <ul style="list-style-type: none"> -King County is evaluating the possibility of transferring flows to the West Seattle Tunnel and Alki Wet Weather Treatment Plant to control Chelan Ave CSOs. This alternative will need to be evaluated with the RWSP alternative. -Potential GSI opportunities are available in the basin (high potential). -Prioritizing control of CSOs in the Duwamish River and Elliott Bay could be more beneficial to ecological and human health when compared to control of CSOs in Lake Washington Ship Canal, Lake Union, and the Montlake Cut.
038	Terminal 115	0.5-MG storage tank West Point Peak Flow Set Point: 400 MGD Potential Site: 2 potential sites located on Glacier NW property	2027	0.5	N/A	0.05	3.80	No	No	Yes	No	N/A	Yes	No	Yes	No	No	No	Yes	<p>Reasons for Change from RWSP Alternative and Re-evaluation:</p> <ul style="list-style-type: none"> -Size of proposed CSO control facility has decreased by more than 10% since RWSP based on hydraulic modeling. -Potential GSI opportunities are available; however, they are located in an upstream basin. -Prioritizing control of CSOs in the Duwamish River and Elliott Bay could be more beneficial to ecological and human health when compared to control of CSOs in Lake Washington Ship Canal, Lake Union, and the Montlake Cut.
039	S Michigan St	2.2-MG storage/treatment tank (primary treatment) West Point Peak Flow Set Point: 400 MGD Potential Site: 1 potential site located on private property that is currently a parking lot.	2022	13.1	75.1	18.60	66.10	Yes	No	Yes	No	Yes	Yes	No	Yes	No	No	Yes	Yes	<p>Reasons for Change from RWSP Alternative and Re-evaluation:</p> <ul style="list-style-type: none"> -King County is evaluating the possibility of consolidating South Michigan St and Brandon St into one wet-weather treatment facility. This alternative will need to be evaluated with the RWSP alternative. -King County's existing and new treatment facilities have changed regulatory targets related to disinfection. Also, the change from classification-based water quality standards to use-based has made the water quality standard targets more stringent. -Size of proposed CSO control facility has decreased by more than 10% since RWSP based on hydraulic modeling. -Update of current treatment technologies has resulted in revisiting footprint requirements and cost estimates for treatment options. -Potential GSI opportunities are available in the basin (high potential). -Prioritizing control of CSOs in the Duwamish River and Elliott Bay could be more beneficial to ecological and human health when compared to control of CSOs in Lake Washington Ship Canal, Lake Union, and the Montlake Cut. -Collaborative opportunities with SPU may be available, which may require the schedule to be modified.
041	Brandon St	0.8-MG storage/treatment tank (primary treatment) West Point Peak Flow Set Point: 400 MGD Potential Site: 1 potential site located on private property that is partially a parking lot for equipment rental.	2022	4.5	25.1	6.52	35.20	Yes	No	Yes	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes	<p>Reasons for Change from RWSP Alternative and Re-evaluation:</p> <ul style="list-style-type: none"> -An interim project to upsize the Brandon Street Regulator pipe may have decreased the frequency and volume of CSO discharges. -King County's existing and new treatment facilities have changed regulatory targets related to disinfection. Also, the change from classification-based water quality standards to use-based has made the water quality standard targets more stringent. -Size of proposed CSO control facility has increased by more than 10% since RWSP based on hydraulic modeling. -King County is evaluating the possibility of consolidating South Michigan and Brandon into one wet weather treatment facility and evaluating sewer separation in Brandon. These alternatives will need to be evaluated with the RWSP alternative. -Update of current treatment technologies has resulted in revisiting footprint requirements for treatment options. -Potential GSI opportunities are available in the basin (high potential). -Prioritizing control of CSOs in the Duwamish River and Elliott Bay could be more beneficial to ecological and human health when compared to control of CSOs in Lake Washington Ship Canal, Lake Union, and the Montlake Cut. -Collaborative opportunities with SPU may be available, which may require the schedule to be modified.
042	W Michigan St	Conveyance Upgrade: Decommission existing 24-inch-diameter outfall gate. Upgrade diversion pipe that routes flows to the West Duwamish Interceptor (Section 2) from 10 inches to 30 inches in diameter. Construct a new junction chamber prior to station and rebuild existing diversion manhole. West Point Peak Flow Set Point: 400 MGD	2027	0.1	2.0	0.27	3.00	No	No	Yes	No	N/A	Yes	No	Yes	No	No	No	Yes	<p>Reasons for Change from RWSP Alternative and Re-evaluation:</p> <ul style="list-style-type: none"> -Size of proposed CSO control facility has increased by more than 10% since RWSP based on hydraulic modeling. -Potential GSI opportunities are available in the basin (high potential). -Habitat improvements were constructed next to CSO discharge location since RWSP.

Note: The following CSO basins have been controlled since RWSP based on hydraulic modeling and CSO monitoring or are anticipated to be controlled with project(s) in design or construction.

- Ballard (003)
- Dexter Ave (009)
- 8th Avenue S/West Marginal Way (040)
- North Beach (048)
- SW Alaska Street (055)
- Murray Street (056)
- Barton Street (057)

Appendix A.2

Summary Table of Alternatives

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Alternative Name Convention: [DSN###]-[Type of Control]-[Number Identifier] ([Participating Agency or Agencies])

Legend:

Recommended Preferred Alternative	Final Alternative	Inactive Alternative
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Line Number	Lead Agency in Development of Alternative	Basin(s) Controlled	Type of Control	Ballasted Sedimentation			CEPT with Lamella Plates			Alternative Descriptions			Stages Evaluated			
				Design Volume (MG) or Design Peak Flow (MGD)	Equalized Peak Flow Rate (MGD)	Equalization Volume (MG)	Equalized Peak Flow Rate (MGD)	Equalization Volume (MG)	Alternative Name	Preliminary Alternative Description	Final Alternative Description	Status	Explanation of Why Alternative Was Screened Out or Why Alternative Description Changed	Evaluated as Preliminary Alternative?	Evaluated as Final Alternative?	Recommended Preferred Alternative?
Ship Canal - 11th Ave NW, 3rd Ave W, University, and Montlake																
1	KC	11th Ave NW	Storage	1.85 MG	N/A	N/A	N/A	N/A	DSN004-STOR-1 (KC)	RWSP Alternative. Storage tank to control 11th Ave NW CSOs only, located underneath NW 45th Street. Potential for GSI is being evaluated in basin (high priority in GSI evaluations). It may be possible to combine GSI with this alternative to control CSOs. GSI being considered includes: RainWise with assumed participation rate of 40%, roadside rain gardens at 8th and 3rd north of 65th, and green alleys.	RWSP Alternative. Storage tank to control 11th Ave NW CSOs only. Potential for GSI is being evaluated in basin (high priority in GSI evaluations). It may be possible to combine GSI with this alternative to control CSOs. GSI being considered includes: RainWise with assumed participation rate of 40%, Green Streets at 8th Avenue NE and 3rd Avenue NE north of NE 65th Street, and green alleys.	Active	Per 9/23/10 and 10/13/10 meeting at King County, King County decided not to evaluate specific sites for alternatives. Thus, the description was revised between Preliminary and Final Alternatives not to indicate specific sites.	Yes	Yes	No
2	KC	11th Ave NW	Storage	1.85 MG	N/A	N/A	N/A	N/A	DSN004-STOR-2 (KC)	RWSP Alternative. Storage tank to control 11th Ave NW CSOs only, located on private property. Storage tank is located on Seattle Housing Authority property; this potential private property was not identified in the RWSP. Potential for GSI is being evaluated in basin (high priority in GSI evaluations). It may be possible to combine GSI with this alternative to control CSOs. GSI being considered includes: RainWise with assumed participation rate of 40%, roadside rain gardens at 8th and 3rd north of 65th, and green alleys.	N/A	Inactive	Per 9/23/10 and 10/13/10 meeting at King County, King County decided not to evaluate specific sites for alternatives. Thus, this alternative would be the same as Alternative DSN004-STOR-1 (KC).	Yes	No	No
3	KC	11th Ave NW	Increased Conveyance	N/A	N/A	N/A	N/A	N/A	DSN004-CON-1 (KC)	Increase conveyance to Ballard Siphon and construct smaller storage tank than that required in Alternative DSN004-STOR-1 (KC) and DSN004-STOR-2 (KC). Potential for GSI is being evaluated in basin (high priority in GSI evaluations). It may be possible to combine GSI with this alternative to control CSOs. GSI being considered includes: RainWise with assumed participation rate of 40%, roadside rain gardens at 8th and 3rd north of 65th, and green alleys.	Increase conveyance to Ballard Siphon. Potential for GSI is being evaluated in basin (high priority in GSI evaluations). It may be possible to combine GSI with this alternative to control CSOs and reduce the size of the new pipe. GSI being considered includes: RainWise with assumed participation rate of 40%, Green Streets at 8th Avenue NE and 3rd Avenue NE north of NE 65th Street, and green alleys.	Active	Per 10/13/10 modeling meeting, October modeling numbers indicate that storage is no longer needed with increased conveyance. Final Alternative description was revised not to include a storage tank.	Yes	Yes	Yes
3A	KC	11th Ave NW	Increased Conveyance	N/A	N/A	N/A	N/A	N/A	DSN004-CON-2 (KC)	Increase conveyance to Ballard Siphon. Potential for GSI is being evaluated in basin (high priority in GSI evaluations). This alternative assumes that GSI would eliminate the need for storage.	N/A	Inactive	Per 10/13/10 modeling meeting, potential GSI opportunities will be included as part of Alternative DSN004-CON-1 (KC); GSI opportunities could reduce the size of the new pipe required.	Yes	No	No
4	KC	3rd Ave W	Storage	4.18 MG	N/A	N/A	N/A	N/A	DSN008-STOR-1 (KC)	RWSP Alternative. Storage tank to control 3rd Ave W CSOs only, located underneath extension of W Ewing St east of 3rd Ave W (south of Ship Canal). Potential for GSI is being evaluated in basin (low priority in GSI evaluations due to predominantly steep slopes). The small amount of GSI feasible is not expected to significantly reduce the ~3 MG control volume needed. GSI being considered includes: 1) demonstration projects on the SPU campus, 2) residential cisterns (RainWise), and 3) rain gardens and permeable pavements in parking lots and alleyways. It may be possible to combine GSI with this alternative to control CSOs.	RWSP Alternative. Storage tank to control 3rd Ave W CSOs only. Potential for GSI is being evaluated in basin (low priority in GSI evaluations due to predominantly steep slopes). The small amount of GSI feasible is not expected to significantly reduce the CSO Control Volume needed. GSI being considered includes: 1) demonstration projects on the SPU campus, 2) residential practices under SPU's Residential RainWise Program, and 3) rain gardens and permeable pavements in parking lots and alleyways. It may be possible to combine GSI with this alternative to control CSOs.	Active	Per 9/23/10 and 10/13/10 meeting at King County, King County decided not to evaluate specific sites for alternatives. Thus, the description was revised between Preliminary and Final Alternatives not to indicate specific sites.	Yes	Yes	No
5	SPU	3rd Ave W	Storage	7.226 MG	N/A	N/A	N/A	N/A	DSN008-STOR-2 (KC & SPU)	Distributed or joint storage upstream of the Fremont Siphon for King County 3rd Ave W and SPU CSO Basins 147 and 174 Alternative is referred to as Alternative N-13 in King County/SPU Collaborative Alternative List (April 27, 2010). Potential for GSI is being evaluated in basin (low priority in GSI evaluations due to predominantly steep slopes). The small amount of GSI feasible is not expected to significantly reduce the ~3 MG control volume needed. GSI being considered includes: demonstration projects on the SPU campus, residential cisterns (RainWise), and rain gardens and permeable pavements in parking lots and alleyways. It may be possible to combine GSI with this alternative to control CSOs.	Distributed or joint storage upstream of the Fremont Siphon for King County 3rd Ave W and SPU CSO Basins 147 and 174 Alternative is referred to as Alternative N-13 in King County/SPU Collaborative Alternative List (April 27, 2010). Potential for GSI is being evaluated in basin (low priority in GSI evaluations due to predominantly steep slopes). The small amount of GSI feasible is not expected to significantly reduce the CSO Control Volume needed. GSI being considered includes: 1) demonstration projects on the SPU campus, 2) residential practices under SPU's Residential RainWise Program, and 3) rain gardens and permeable pavements in parking lots and alleyways. It may be possible to combine GSI with this alternative to control CSOs.	Active		Yes	Yes	Yes

Alternative Name Convention: [DSN###]-[Type of Control]-[Number Identifier] ([Participating Agency or Agencies])

Legend:	Recommended Preferred Alternative	Final Alternative	Inactive Alternative
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Line Number	Lead Agency in Development of Alternative	Basin(s) Controlled	Type of Control	Ballasted Sedimentation			CEPT with Lamella Plates			Alternative Descriptions			Stages Evaluated			
				Design Volume (MG) or Design Peak Flow (MGD)	Equalized Peak Flow Rate (MGD)	Equalization Volume (MG)	Equalized Peak Flow Rate (MGD)	Equalization Volume (MG)	Alternative Name	Preliminary Alternative Description	Final Alternative Description	Status	Explanation of Why Alternative Was Screened Out or Why Alternative Description Changed	Evaluated as Preliminary Alternative?	Evaluated as Final Alternative?	Recommended Preferred Alternative?
6	KC	3rd Ave W	Storage	N/A	N/A	N/A	N/A	N/A	DSN008-STOR-3 (KC & SPU)	King County increases Fremont Siphon capacity and transfers increased flows downstream of siphon and constructs joint King County/SPU storage on south side of Ship Canal. Alternative is referred to as Alternative N-15 in King County/SPU Collaborative Alternative List (April 27, 2010). Potential for GSI is being evaluated in basin (low priority in GSI evaluations due to predominantly steep slopes). The small amount of GSI feasible is not expected to significantly reduce the ~3 MG control volume needed. GSI being considered includes: demonstration projects on the SPU campus, residential cisterns (RainWise), and rain gardens and permeable pavements in parking lots and alleyways. It may be possible to combine GSI with this alternative to control CSOs.	N/A	Inactive	Per 7/9/10 e-mail from Karen Huber: SPU has informed her that they will not be upsizing King County's Fremont Siphon to convey their flows to 3rd Ave W storage. They are evaluating drilling their own siphon to a joint 3rd Ave W tank location in the SPU sports field. See new storage alternative, DSN008-STOR-5 (KC & SPU).	No	No	No
7	KC	3rd Ave W	Storage	N/A	N/A	N/A	N/A	N/A	DSN008-STOR-4 (KC & SPU)	SPU constructs storage upstream of the Fremont Siphon (north of Ship Canal) to control SPU CSO Basins 147 and 174. New storage reduces storage requirements for King County at 3rd Ave W (reduction of storage volume associated with Alternative DSN008-STOR-1 (KC)). Potential for GSI is being evaluated in basin (low priority in GSI evaluations due to predominantly steep slopes). The small amount of GSI feasible is not expected to significantly reduce the ~3 MG control volume needed. GSI being considered includes: demonstration projects on the SPU campus, residential cisterns (RainWise), and rain gardens and permeable pavements in parking lots and alleyways. It may be possible to combine GSI with this alternative to control CSOs.	N/A	Inactive	Per 11/10/10 meeting with SPU, SPU will either take all of King County flows upstream of the Fremont Siphon or send flows to the 3rd Ave W storage facility located south of the Ship Canal.	Yes	No	No
7A	KC	3rd Ave W	Storage	7.226 MG	N/A	N/A	N/A	N/A	DSN008-STOR-5 (KC & SPU)	SPU conveys flows in new siphon to 3rd Ave W and joint King County/SPU storage on south side of Ship Canal. Potential for GSI is being evaluated in basin (low priority in GSI evaluations due to predominantly steep slopes). The small amount of GSI feasible is not expected to significantly reduce the ~3 MG control volume needed. GSI being considered includes: demonstration projects on the SPU campus, residential cisterns (RainWise), and rain gardens and permeable pavements in parking lots and alleyways. It may be possible to combine GSI with this alternative to control CSOs.	SPU conveys flows in new siphon to 3rd Ave W and joint King County/SPU storage on south side of Ship Canal. Storage facility controls King County 3rd Ave W CSO Basin and SPU CSO Basins 60, 147, and 174. Potential for GSI is being evaluated in basin (low priority in GSI evaluations due to predominantly steep slopes). The small amount of GSI feasible is not expected to significantly reduce the CSO Control Volume needed. GSI being considered includes: 1) demonstration projects on the SPU campus, 2) residential practices under SPU's Residential RainWise Program, and 3) rain gardens and permeable pavements in parking lots and alleyways. It may be possible to combine GSI with this alternative to control CSOs.	Inactive	Per 1/19/11 meeting with SPU, King County and SPU agreed that a collaborative storage tank on the south side of the Ship Canal will no longer be considered or evaluated due to the limited siting opportunities when compared to the collaborative storage tank on the north side of the Ship Canal.	Yes	No	No
12	KC	University	Storage	2.94 MG	N/A	N/A	N/A	N/A	DSN015-STOR-1 (KC)	Storage tank to control University CSOs only, located in one site in the University of Washington area that were identified in the RWSP. The Sound Transit University Link Project may impact some of the potential sites identified in the RWSP (e.g., parking lot of Husky Stadium). Potential for GSI is being evaluated in basin. It may be possible to combine GSI with this alternative to control CSOs.	Storage tank to control University CSOs only. Potential for GSI is high in basin. It may be possible to combine GSI with this alternative to control CSOs. GSI being considered includes: Residential RainWise with assumed participation rate of 40%, Green Schools, Green Streets, and green alleys.	Active	Per 9/23/10 and 10/13/10 meeting at King County, King County decided not to evaluate specific sites for alternatives. Thus, the description was revised between Preliminary and Final Alternatives not to indicate specific sites.	Yes	Yes	No
13	KC	University	Storage	2.94 MG	N/A	N/A	N/A	N/A	DSN015-STOR-2 (KC)	Storage tank to control University CSOs only, located in Ravenna Park (near intersection of Laurel Hurst and Greenlake King County trunks). Storage tank may offload enough flows in North Interceptor to allow capacity for additional flows from Montlake CSO Basin. Potential for GSI is being evaluated in basin. It may be possible to combine GSI with this alternative to control CSOs.	N/A	Inactive	Per 9/23/10 and 10/13/10 meeting at King County, King County decided not to evaluate specific sites for alternatives. Thus, this alternative would be the same as Alternative DSN015-STOR-1 (KC).	Yes	No	No
14	KC	University	Storage	N/A	N/A	N/A	N/A	N/A	DSN015-STOR-3 (KC & SPU)	Storage tank to control University CSOs only, but the storage size would be reduced by SPU's CSO control projects. SPU's potential CSO control projects could include: -Storage for SPU CSO Basin 18, which is referred to as Alternative N-2 in King County/SPU Collaborative Alternative List (April 27, 2010). Potential for GSI is being evaluated in basin. It may be possible to combine GSI with this alternative to control CSOs.	Storage tank to control University CSOs only, but the storage size would be reduced by SPU increasing the size of their CSO control project. SPU's potential CSO control project could include: -Storage for SPU CSO Basin 18, which is referred to as Alternative N-2 in King County/SPU Collaborative Alternative List (April 27, 2010). Potential for GSI is being evaluated in basin. It may be possible to combine GSI with this alternative to control CSOs.	Inactive	Per 11/29/10 weekly conference call, Karen indicated that SPU is sizing their storage (upstream of the University Regulator Station) to control University CSOs. Thus, there is no longer a reduced size for the King County storage facility.	Yes	No	No

Alternative Name Convention: [DSN###]-[Type of Control]-[Number Identifier] ([Participating Agency or Agencies])

Legend:

Recommended Preferred Alternative	Final Alternative	Inactive Alternative
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Line Number	Lead Agency in Development of Alternative	Basin(s) Controlled	Type of Control	Ballasted Sedimentation			CEPT with Lamella Plates			Alternative Descriptions			Stages Evaluated			
				Design Volume (MG) or Design Peak Flow (MGD)	Equalized Peak Flow Rate (MGD)	Equalization Volume (MG)	Equalized Peak Flow Rate (MGD)	Equalization Volume (MG)	Alternative Name	Preliminary Alternative Description	Final Alternative Description	Status	Explanation of Why Alternative Was Screened Out or Why Alternative Description Changed	Evaluated as Preliminary Alternative?	Evaluated as Final Alternative?	Recommended Preferred Alternative?
15	KC	University	Storage	5.23 MG	N/A	N/A	N/A	N/A	DSN015-STOR-4 (KC & SPU)	<p>Joint King County/SPU storage tank to control King County University CSOs and SPU CSOs.</p> <p>SPU's flows to the facility could include: -North Union Bay CSO basin flows, which is referred to as Alternative N-1 in King County/SPU Collaborative Alternative List (April 27, 2010). -CSO Basin 140 and 20 flows, which is referred to as Alternative N-17 in King County/SPU Collaborative Alternative List (April 27, 2010).</p> <p>Potential for GSI is being evaluated in basin. It may be possible to combine GSI with this alternative to control CSOs.</p>	<p>Joint King County/SPU storage tank to control King County University CSOs and SPU CSOs, and King County is leading the evaluation.</p> <p>SPU's flows to the facility would include: -North Union Bay CSO basin flows, which is referred to as Alternative N-1 in King County/SPU Collaborative Alternative List (April 27, 2010). -CSO Basin 140 and 20 flows, which is referred to as Alternative N-17 in King County/SPU Collaborative Alternative List (April 27, 2010).</p> <p>Potential for GSI is high in basin. It may be possible to combine GSI with this alternative to control CSOs. GSI being considered includes: Residential RainWise with assumed participation rate of 40%, Green Schools, Green Streets, and green alleys.</p>	Active		Yes	Yes	Yes
12A	KC	University	Storage	2.94 MG	N/A	N/A	N/A	N/A	DSN015-STOR-5 (KC)	<p>Storage tank to control University CSOs only, located in a combination of multiple sites in the University of Washington area (potential sites were identified in the RWSP). The Sound Transit University Link Project may impact some of the potential sites identified in the RWSP (e.g., parking lot of Husky Stadium).</p> <p>Potential for GSI is being evaluated in basin. It may be possible to combine GSI with this alternative to control CSOs.</p>	N/A	Inactive	Per 9/23/10 and 10/13/10 meeting at King County, King County decided not to evaluate specific sites for alternatives. Thus, this alternative would be the same as Alternative DSN015-STOR-1 (KC).	Yes	No	No
14A	SPU	University	Storage	5.23 MG	N/A	N/A	N/A	N/A	DSN015-STOR-6 (KC & SPU)	<p>Joint King County/SPU storage tank to control King County University CSOs and SPU CSOs. This storage tank is located upstream of the University Regulator Station, and SPU is leading the evaluation.</p> <p>SPU's flows to the facility would include: -North Union Bay CSO basin flows, which is referred to as Alternative N-1 in King County/SPU Collaborative Alternative List (April 27, 2010).</p> <p>Potential for GSI is being evaluated in basin. It may be possible to combine GSI with this alternative to control CSOs.</p>	<p>Joint King County/SPU storage tank to control King County University CSOs and SPU CSOs. This storage tank is located upstream of the University Regulator Station, and SPU is leading the evaluation.</p> <p>SPU's flows to the facility would include: -North Union Bay CSO basin flows, which is referred to as Alternative N-1 in King County/SPU Collaborative Alternative List (April 27, 2010).</p> <p>Potential for GSI is being evaluated in basin. It may be possible to combine GSI with this alternative to control CSOs.</p>	Inactive	Per 12/16/10 collaborative meeting, this alternative is similar to Alternative DSN015-STOR-4 (KC & SPU), and it was decided that King County will lead the evaluation.	No	No	No
16	KC	University	Wet-Weather Treatment	74.9 MGD	N/A	N/A	N/A	N/A	DSN015-WWT-1 (KC)	<p>Potential joint treatment facility with King County Reclaimed Water group to control University CSOs only. The Reclaimed Water group is considering a reclaimed water facility in the area that would provide additional flows for operation of the Ballard locks.</p> <p>Potential for GSI is being evaluated in basin. It may be possible to combine GSI with this alternative to control CSOs.</p>	N/A	Inactive	Per 8/19/10 e-mail from Karen Huber: The wet weather treatment alternatives for University and Montlake will not be evaluated until the reclaimed water strategy is further developed.	No	No	No
17	KC	University	Wet-Weather Treatment	74.9 MGD	N/A	N/A	N/A	N/A	DSN015-WWT-2 (KC & SPU)	<p>Potential joint treatment facility with King County Reclaimed Water group to control University CSOs only, but the size of the facility would be reduced by SPU's CSO control projects. The Reclaimed Water group is considering a reclaimed water facility in the area that would provide additional flows for operation of the Ballard locks.</p> <p>SPU's potential CSO control projects could include: -Storage for SPU CSO Basin 18, which is referred to as Alternative N-2 in King County/SPU Collaborative Alternative List (April 27, 2010).</p> <p>Potential for GSI is being evaluated in basin. It may be possible to combine GSI with this alternative to control CSOs.</p>	N/A	Inactive	Per 8/19/10 e-mail from Karen Huber: The wet weather treatment alternatives for University and Montlake will not be evaluated until the reclaimed water strategy is further developed.	No	No	No
18	KC	University	Wet-Weather Treatment	74.9 MGD	N/A	N/A	N/A	N/A	DSN015-WWT-3 (KC & SPU)	<p>Potential joint treatment facility with King County Reclaimed Water group and SPU to control King County University CSOs and SPU CSOs. The Reclaimed Water group is considering a reclaimed water facility in the area that would provide additional flows for operation of the Ballard locks.</p> <p>SPU's flows to the facility could include: -North Union Bay CSO basin flows, which is a variation of Alternative N-1 in King County/SPU Collaborative Alternative List (April 27, 2010). -CSO Basin 140 flows, which is a variation of Alternative N-17 in King County/SPU Collaborative Alternative List (April 27, 2010).</p> <p>Potential for GSI is being evaluated in basin. It may be possible to combine GSI with this alternative to control CSOs.</p>	N/A	Inactive	Per 8/19/10 e-mail from Karen Huber: The wet weather treatment alternatives for University and Montlake will not be evaluated until the reclaimed water strategy is further developed.	No	No	No
10	KC	Montlake	Storage	6.60 MG	N/A	N/A	N/A	N/A	DSN014-STOR-1 (KC)	<p>Storage tank to control Montlake CSOs only</p> <p>Potential for GSI is being evaluated in basin (SPU is leading evaluation). It may be possible to combine GSI with this alternative to control CSOs.</p>	<p>Storage tank to control Montlake CSOs only</p> <p>Potential for GSI is high in basin. It may be possible to combine GSI with this alternative to control CSOs. GSI being considered includes: Residential RainWise with assumed participation rate of 40%, Green Schools, Green Streets, and green alleys.</p>	Active		Yes	Yes	No

King County 2012 Combined Sewer Overflow Control Program Review

CSO Control Alternatives List

DRAFT - For Discussion Purposes Only. Not Intended for Review.

Revised: 4/7/2011

Alternative Name Convention: [DSN###]-[Type of Control]-[Number Identifier] ([Participating Agency or Agencies])

Legend:

Recommended Preferred Alternative	Final Alternative	Inactive Alternative
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Line Number	Lead Agency in Development of Alternative	Basin(s) Controlled	Type of Control	Ballasted Sedimentation			CEPT with Lamella Plates			Alternative Name	Alternative Descriptions		Status	Explanation of Why Alternative Was Screened Out or Why Alternative Description Changed	Stages Evaluated		
				Design Volume (MG) or Design Peak Flow (MGD)	Equalized Peak Flow Rate (MGD)	Equalization Volume (MG)	Equalized Peak Flow Rate (MGD)	Equalization Volume (MG)	Preliminary Alternative Description		Final Alternative Description	Evaluated as Preliminary Alternative?			Evaluated as Final Alternative?	Recommended Preferred Alternative?	
11	KC	Montlake	Storage	7.87 MG	N/A	N/A	N/A	N/A	DSN014-STOR-2 (KC & SPU)	Transfer SPU Leschi, Madison Park, Montlake CSO storage needs to joint facility for King County Montlake CSOs, located on south side of Ship Canal. Alternative is referred to as Alternative N-18 in King County/SPU Collaborative Alternative List (April 27, 2010). Potential for GSI is being evaluated in basin (SPU is leading evaluation). It may be possible to combine GSI with this alternative to control CSOs.	Transfer SPU Leschi, Madison Park, Montlake CSO storage needs to joint facility for King County Montlake CSOs, located on south side of Ship Canal. Alternative is referred to as Alternative N-18 in King County/SPU Collaborative Alternative List (April 27, 2010). Potential for GSI is high in basin. It may be possible to combine GSI with this alternative to control CSOs. GSI being considered includes: Residential RainWise with assumed participation rate of 40%, Green Schools, Green Streets, and green alleys.	Active		Yes	Yes	Yes	
36	KC	University/Montlake	Storage	9.54 MG	N/A	N/A	N/A	N/A	DSN014/015-STOR-1 (KC)	RWSP Alternative. Convey Montlake flows to University/Montlake storage tank located on north side of Ship Canal, located in one site in the University of Washington area that were identified in the RWSP. The Sound Transit University Link Project may impact some of the potential sites identified in the RWSP (e.g., parking lot of Husky Stadium). Pipe that conveys Montlake flows from siphon to storage tank will be large to maintain same head on siphon. Potential for GSI is being evaluated in these basins. It may be possible to combine GSI with this alternative to control CSOs.	RWSP Alternative. Convey Montlake flows to University/Montlake storage tank located on north side of Ship Canal. Potential for GSI is being evaluated in these basins. It may be possible to combine GSI with this alternative to control CSOs.	Inactive	Per 9/23/10 and 10/13/10 meeting at King County, King County decided not to evaluate specific sites for alternatives. Thus, the description was revised between Preliminary and Final Alternatives not to indicate specific sites. Per 11/10/10 meeting with SPU, King County indicated that due to the flow and volume increase at Montlake, King County is not able to convey flows to University via the Montlake Siphon, and a new siphon will not be evaluated.	Yes	No	No	
37	KC	University/Montlake	Storage	N/A	N/A	N/A	N/A	N/A	DSN014/015-STOR-2 (KC & SPU)	Storage tank to control University and Montlake CSOs, but the storage size would be reduced by SPU's CSO control projects. SPU's potential CSO control projects could include: -Storage for SPU CSO Basin 18, which is a variation of Alternative N-2 in King County/SPU Collaborative Alternative List (April 27, 2010). Potential for GSI is being evaluated in these basins. It may be possible to combine GSI with this alternative to control CSOs.	N/A	Inactive	Per 11/10/10 meeting with SPU, King County indicated that due to the flow and volume increase at Montlake, King County is not able to convey flows to University via the Montlake Siphon, and a new siphon will not be evaluated.	Yes	No	No	
38	KC	University/Montlake	Storage	N/A	N/A	N/A	N/A	N/A	DSN014/015-STOR-3 (KC & SPU)	Joint King County/SPU storage tank to control King County University and Montlake CSOs and SPU CSOs. SPU's flows to the facility could include: -North Union Bay CSO basin flows, which is a variation of Alternative N-1 in King County/SPU Collaborative Alternative List (April 27, 2010). -CSO Basin 140 flows, which is a variation of Alternative N-17 in King County/SPU Collaborative Alternative List (April 27, 2010). Potential for GSI is being evaluated in these basins. It may be possible to combine GSI with this alternative to control CSOs.	N/A	Inactive	Per 11/10/10 meeting with SPU, King County indicated that due to the flow and volume increase at Montlake, King County is not able to convey flows to University via the Montlake Siphon, and a new siphon will not be evaluated.	Yes	No	No	
36A	KC	University/Montlake	Storage	9.54	N/A	N/A	N/A	N/A	DSN014/015-STOR-4 (KC)	RWSP Alternative. Convey Montlake flows to University/Montlake storage tank located on north side of Ship Canal, located in a combination of multiple sites in the University of Washington area that were identified in the RWSP. The Sound Transit University Link Project may impact some of the potential sites identified in the RWSP (e.g., parking lot of Husky Stadium). Pipe that conveys Montlake flows from siphon to storage tank will be large to maintain same head on siphon. Potential for GSI is being evaluated in these basins. It may be possible to combine GSI with this alternative to control CSOs.	N/A	Inactive	Per 9/23/10 and 10/13/10 meeting at King County, King County decided not to evaluate specific sites for alternatives. Thus, this alternative would be the same as Alternative DSN014/015-STOR-1 (KC).	Yes	No	No	
39	KC	University/Montlake	Wet-Weather Treatment	N/A	N/A	N/A	N/A	N/A	DSN014/015-WWT-1 (KC)	Potential joint treatment facility with King County Reclaimed Water group to control University and Montlake CSOs only. The Reclaimed Water group is considering a reclaimed water facility in the area that would provide additional flows for operation of the Ballard locks. Potential for GSI is being evaluated in these basins. It may be possible to combine GSI with this alternative to control CSOs.	N/A	Inactive	Per 8/19/10 e-mail from Karen Huber: The wet weather treatment alternatives for University and Montlake will not be evaluated until the reclaimed water strategy is further developed.	No	No	No	

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Legend:

Recommended Preferred Alternative	Final Alternative	Inactive Alternative
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Line Number	Lead Agency in Development of Alternative	Basin(s) Controlled	Type of Control	Ballasted Sedimentation			CEPT with Lamella Plates			Alternative Descriptions			Stages Evaluated			
				Design Volume (MG) or Design Peak Flow (MGD)	Equalized Peak Flow Rate (MGD)	Equalization Volume (MG)	Equalized Peak Flow Rate (MGD)	Equalization Volume (MG)	Alternative Name	Preliminary Alternative Description	Final Alternative Description	Status	Explanation of Why Alternative Was Screened Out or Why Alternative Description Changed	Evaluated as Preliminary Alternative?	Evaluated as Final Alternative?	Recommended Preferred Alternative?
40	KC	University/Montlake	Wet-Weather Treatment	N/A	N/A	N/A	N/A	N/A	DSN014/015-WWT-2 (KC & SPU)	<p>Potential joint treatment facility with King County Reclaimed Water group to control University and Montlake CSOs, but the size of the facility would be reduced by SPU's CSO control projects. The Reclaimed Water group is considering a reclaimed water facility in the area that would provide additional flows for operation of the Ballard locks.</p> <p>SPU's potential CSO control projects could include: -Storage for SPU CSO Basin 18, which is a variation of Alternative N-2 in King County/SPU Collaborative Alternative List (April 27, 2010).</p> <p>Potential for GSI is being evaluated in these basins. It may be possible to combine GSI with this alternative to control CSOs.</p>	N/A	Inactive	Per 8/19/10 e-mail from Karen Huber: The wet weather treatment alternatives for University and Montlake will not be evaluated until the reclaimed water strategy is further developed.	No	No	No
41	KC	University/Montlake	Wet-Weather Treatment	N/A	N/A	N/A	N/A	N/A	DSN014/015-WWT-3 (KC & SPU)	<p>Potential joint treatment facility with King County Reclaimed Water group and SPU to control King County University and Montlake CSOs and SPU CSOs. The Reclaimed Water group is considering a reclaimed water facility in the area that would provide additional flows for operation of the Ballard locks.</p> <p>SPU's flows to the facility could include: -North Union Bay CSO basin flows, which is a variation of Alternative N-1 in King County/SPU Collaborative Alternative List (April 27, 2010). -CSO Basin 140 flows, which is a variation of Alternative N-17 in King County/SPU Collaborative Alternative List (April 27, 2010).</p> <p>Potential for GSI is being evaluated in these basins. It may be possible to combine GSI with this alternative to control CSOs.</p>	N/A	Inactive	Per 8/19/10 e-mail from Karen Huber: The wet weather treatment alternatives for University and Montlake will not be evaluated until the reclaimed water strategy is further developed.	No	No	No
35a	SPU	3rd Ave W/ Montlake/University	Storage	13.72 MG	N/A	N/A	N/A	N/A	DSN008/014/015-STOR-1 (KC & SPU)	<p>Joint King County/SPU storage and conveyance tunnel from University Regulator to 3rd Ave W Regulator</p> <p>Alternative is referred to as Alternative N-3 in King County/SPU Collaborative Alternative List (April 27, 2010).</p> <p>Potential for GSI is being evaluated in these basins. It may be possible to combine GSI with this alternative to control CSOs.</p>		Inactive	SPU has included 11th Ave NW in their alternative evaluations.	No	No	No
35	SPU	11th Ave NW/3rd Ave W/Montlake/University	Storage	15.57 MG	N/A	N/A	N/A	N/A	DSN004/008/014/015-STOR-1 (KC & SPU)	<p>Joint King County/SPU storage and conveyance tunnel from University Regulator to 3rd Ave W Regulator</p> <p>Alternative is referred to as Alternative N-3 in King County/SPU Collaborative Alternative List (April 27, 2010).</p> <p>Potential for GSI is being evaluated in these basins. It may be possible to combine GSI with this alternative to control CSOs.</p>	<p>Joint King County/SPU storage and conveyance tunnel from University Regulator to 3rd Ave W Regulator</p> <p>Alternative is referred to as Alternative N-3 in King County/SPU Collaborative Alternative List (April 27, 2010).</p> <p>Potential for GSI is high in basins. It may be possible to combine GSI with this alternative to control CSOs. GSI being considered includes: Residential RainWise with assumed participation rate of 40%, Green Schools, Green Streets, and green alleys.</p>	Active		Yes	Yes	No

King County 2012 Combined Sewer Overflow Control Program Review

CSO Control Alternatives List

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Alternative Name Convention: [DSN###]-[Type of Control]-[Number Identifier] ([Participating Agency or Agencies])

Legend:

Recommended Preferred Alternative	Final Alternative	Inactive Alternative
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Line Number	Lead Agency in Development of Alternative	Basin(s) Controlled	Type of Control	Ballasted Sedimentation			CEPT with Lamella Plates			Alternative Descriptions			Stages Evaluated			
				Design Volume (MG) or Design Peak Flow (MGD)	Equalized Peak Flow Rate (MGD)	Equalization Volume (MG)	Equalized Peak Flow Rate (MGD)	Equalization Volume (MG)	Alternative Name	Preliminary Alternative Description	Final Alternative Description	Status	Explanation of Why Alternative Was Screened Out or Why Alternative Description Changed	Evaluated as Preliminary Alternative?	Evaluated as Final Alternative?	Recommended Preferred Alternative?
Middle EBI - Hanford #2, Lander St, Kingdome, and King St																
19	KC	King St	Storage	2.63 MG	N/A	N/A	N/A	N/A	DSN028-STOR-1 (KC)	Storage for King Street CSOs only	Storage for King Street CSOs only	Active		Yes	Yes	No
20	KC	King St	Storage	3.28 MG	N/A	N/A	N/A	N/A	DSN028-STOR-2 (KC & SPU)	Joint King County/SPU storage tank to control King County King Street CSOs and SPU CSOs. Alternative is referred to as Alternative S-9A in King County/SPU Collaborative Alternative List (April 27, 2010).	Joint King County/SPU storage tank to control King County King Street CSOs and SPU CSOs. Alternative is referred to as Alternative S-9A in King County/SPU Collaborative Alternative List (April 27, 2010).	Active		Yes	Yes	No
21	KC	Kingdome	Wet-Weather Treatment	87.0 MGD	48	0.87	49	0.79	DSN029-WWT-1 (KC)	Wet-weather treatment facility to control Kingdome CSOs only.	Wet-weather treatment facility to control Kingdome CSOs only.	Active		Yes	Yes	No
22	KC	Lander St	Wet-Weather Treatment	47.9 MGD	23	0.79	24	0.71	DSN030-WWT-1 (KC)	Wet-weather treatment facility to control Lander St CSOs only	Wet-weather treatment facility to control Lander St CSOs only	Active		Yes	Yes	No
26	KC	Hanford #2	Wet-Weather Treatment	94.9 MGD	68	0.94	70.00	0.77	DSN032-WWT-1 (KC)	Wet-weather treatment facility to control Hanford #2 CSOs only	Wet-weather treatment facility to control Hanford #2 CSOs only	Active		Yes	Yes	No
42	KC	King St/Kingdome	Wet-Weather Treatment	116.6 MGD	56	1.45	58	1.28	DSN028/029-WWT-1 (KC)	RWSP Alternative. Wet-weather treatment facility to control King Street and Kingdome CSOs, located at Kingdome.	RWSP Alternative. Wet-weather treatment facility to control King Street and Kingdome CSOs, located at Kingdome.	Active		Yes	Yes	No
44	KC	Hanford #2/Lander St	Wet-Weather Treatment	142.8 MGD	94	0.97	96	0.82	DSN030/032-WWT-1 (KC)	Wet-weather treatment facility to control Lander St and Hanford #2 CSOs	Wet-weather treatment facility to control Lander St and Hanford #2 CSOs	Active		Yes	Yes	No
43A	KC	Hanford #2 /Lander St/Kingdome	Wet-Weather Treatment	229.8 MGD	139	1.57	142	1.36	DSN029/030/032-WWT-1 (KC)	Wet-weather treatment facility to control Hanford #2, Lander St, and Kingdome CSOs.	Wet-weather treatment facility to control Hanford #2, Lander St, and Kingdome CSOs.	Active		No	Yes	No
43	KC	Hanford #2/Lander St/Kingdome/King St	Wet-Weather Treatment	259.4 MGD	151	1.71	155	1.43	DSN028/029/030/032-WWT-1 (KC) (New Conveyance)	Wet-weather treatment facility to control Hanford #2, Lander St, Kingdome, and King Street CSOs.	Wet-weather treatment facility to control Hanford #2, Lander St, Kingdome, and King Street CSOs. This alternative includes new conveyance to convey flows from the King St, Kingdome, Lander St, and Hanford St Regulator Stations to the WWTF.	Active		Yes	Yes	No
43B	KC	Hanford #2/Lander St/Kingdome/King St	Wet-Weather Treatment	259.4 MGD	151	1.71	155	1.43	DSN028/029/030/032-WWT-1 (KC) (EBI Modifications)	Wet-weather treatment facility to control Hanford #2, Lander St, Kingdome, and King Street CSOs.	Wet-weather treatment facility to control Hanford #2, Lander St, Kingdome, and King Street CSOs. This alternative includes modifying the Elliott Bay Interceptor (EBI) with new structures to route flows from the EBI to the WWTF	Active		No	Yes	Yes
Middle EBI - Hanford #1 (Hanford @ Rainier)																
23	KC	Hanford #1 (Hanford @ Rainier)	Storage	1.79 MG	N/A	N/A	N/A	N/A	DSN031-STOR-1 (KC)	One storage tank (4.3 MG) to control Hanford #1 (Hanford @ Rainier) and Bayview N CSOs only Potential for GSI is being evaluated in this basin. Seattle University and Yesler Terrace are prime candidates for GSI. Much of this basin is comprised of residential parcels with a few small parks. GSI being considered includes: Residential and roadside rain gardens and permeable alleyways, and RainWise solutions (may be restricted to cisterns on many of the residential properties in subbasins 223 and 225). It may be possible to combine GSI with this alternative to control CSOs.	One storage tank to control Hanford #1 (Hanford @ Rainier) and Bayview N CSOs only Potential for GSI is high in this basin. Seattle University and Yesler Terrace are prime candidates for GSI. Much of this basin is comprised of residential parcels with a few small parks. GSI being considered includes: Residential RainWise, Green Streets, Green Schools, and green alleys. RainWise solutions may be restricted to cisterns on many of the residential properties in Subbasins 223 and 225. It may be possible to combine GSI with this alternative to control CSOs.	Active	Per 10/13/10 meeting, description was revised from Preliminary Alternative to Final Alternative not to specify CSO control volume since volume has changed.	Yes	Yes	No
24	KC	Hanford #1 (Hanford @ Rainier)	Storage	N/A	N/A	N/A	N/A	N/A	DSN031-STOR-2 (KC & SPU)	Storage for Hanford #1 (Hanford @ Rainier) CSOs only. Size is reduced by upstream SPU storage. Potential for GSI is being evaluated in this basin. Seattle University and Yesler Terrace are prime candidates for GSI. Much of this basin is comprised of residential parcels with a few small parks. GSI being considered includes: Residential and roadside rain gardens and permeable alleyways, and RainWise solutions (may be restricted to cisterns on many of the residential properties in subbasins 223 and 225). It may be possible to combine GSI with this alternative to control CSOs.	N/A	Inactive	Per 7/28/10 meeting with King County, King County indicated that SPU is no longer considering this alternative.	No	No	No

King County 2012 Combined Sewer Overflow Control Program Review

CSO Control Alternatives List

DRAFT - For Discussion Purposes Only. Not Intended for Review.

Revised: 4/7/2011

Alternative Name Convention: [DSN###]-[Type of Control]-[Number Identifier] ([Participating Agency or Agencies])

Legend:

Recommended Preferred Alternative	Final Alternative	Inactive Alternative
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Line Number	Lead Agency in Development of Alternative	Basin(s) Controlled	Type of Control	Ballasted Sedimentation			CEPT with Lamella Plates			Alternative Descriptions			Stages Evaluated			
				Design Volume (MG) or Design Peak Flow (MGD)	Equalized Peak Flow Rate (MGD)	Equalization Volume (MG)	Equalized Peak Flow Rate (MGD)	Equalization Volume (MG)	Alternative Name	Preliminary Alternative Description	Final Alternative Description	Status	Explanation of Why Alternative Was Screened Out or Why Alternative Description Changed	Evaluated as Preliminary Alternative?	Evaluated as Final Alternative?	Recommended Preferred Alternative?
25	KC	Hanford #1 (Hanford @ Rainier)	Storage	N/A	N/A	N/A	N/A	N/A	DSN031-STOR-3 (KC & SPU)	<p>Joint King County/SPU storage downstream of Rainier Pump Station. to control King County's Hanford@Rainier and Bayview North CSO sites and to allow SPU to drain its CSO storage facilities to the King County conveyance system sooner following a wet-weather event.</p> <p>Alternative is referred to as Alternative S-1C in King County/SPU Collaborative Alternative List (April 27, 2010).</p> <p>Potential for GSI is being evaluated in this basin. Seattle University and Yesler Terrace are prime candidates for GSI. Much of this basin is comprised of residential parcels with a few small parks. GSI being considered includes: Residential and roadside rain gardens and permeable alleyways, and RainWise solutions (may be restricted to cisterns on many of the residential properties in subbasins 223 and 225). It may be possible to combine GSI with this alternative to control CSOs.</p>		Inactive	Per 1/25/11 e-mail from Bruce Crawford to Karen Huber, modeling determined that the SPU contribution to Hanford@Rainier alternatives is minimal; thus, separate alternatives will not be evaluated. Independent alternatives will indicate that alternative can be with or without SPU flows.	Yes	No	No
23A	KC	Hanford #1 (Hanford @ Rainier)	Storage	1.79 MG	N/A	N/A	N/A	N/A	DSN031-STOR-4 (KC)	<p>Two storage tanks (1.3 MG for Bayview, 3 MG for Hanford@Rainier) to control Hanford #1 (Hanford @ Rainier) and Bayview N CSOs only</p> <p>Potential for GSI is being evaluated in this basin. Seattle University and Yesler Terrace are prime candidates for GSI. Much of this basin is comprised of residential parcels with a few small parks. GSI being considered includes: Residential and roadside rain gardens and permeable alleyways, and RainWise solutions (may be restricted to cisterns on many of the residential properties in subbasins 223 and 225). It may be possible to combine GSI with this alternative to control CSOs.</p>	Two storage tanks to control Hanford #1 (Hanford @ Rainier) and Bayview N CSOs only	Active	Per 10/13/10 meeting, description was revised from Preliminary Alternative to Final Alternative not to specify CSO control volume since volume has changed.	Yes	Yes	No
25A	KC	Hanford #1 (Hanford @ Rainier)	Storage	N/A	N/A	N/A	N/A	N/A	DSN031-STOR-5 (KC & SPU)	<p>Joint King County/SPU storage downstream of Rainier Pump Station. Two storage tanks to control King County's Hanford@Rainier and Bayview North CSO sites and allow SPU to drain its CSO storage facilities to the King County conveyance system sooner following a wet-weather event.</p> <p>Alternative is referred to as Alternative S-1C in King County/SPU Collaborative Alternative List (April 27, 2010).</p> <p>Potential for GSI is being evaluated in this basin. Seattle University and Yesler Terrace are prime candidates for GSI. Much of this basin is comprised of residential parcels with a few small parks. GSI being considered includes: Residential and roadside rain gardens and permeable alleyways, and RainWise solutions (may be restricted to cisterns on many of the residential properties in subbasins 223 and 225). It may be possible to combine GSI with this alternative to control CSOs.</p>		Inactive	Per 1/25/11 e-mail from Bruce Crawford to Karen Huber, modeling determined that the SPU contribution to Hanford@Rainier alternatives is minimal; thus, separate alternatives will not be evaluated. Independent alternatives will indicate that alternative can be with or without SPU flows.	Yes	No	No
25B	KC	Hanford #1 (Hanford @ Rainier)	Increased Conveyance	N/A	N/A	N/A	N/A	N/A	DSN031-CON-1 (KC)	<p>Conveyance improvements to send more flow to Bayview Tunnel and reduced storage at Hanford@Rainier.</p> <p>Potential for GSI is high in this basin. Seattle University and Yesler Terrace are prime candidates for GSI. Much of this basin is comprised of residential parcels with a few small parks. GSI being considered includes: Residential RainWise, Green Streets, Green Schools, and green alleys. RainWise solutions may be restricted to cisterns on many of the residential properties in Subbasins 223 and 225. It may be possible to combine GSI with this alternative to control CSOs.</p>		Active		No	Yes	Yes

Alternative Name Convention: [DSN###]-[Type of Control]-[Number Identifier] ([Participating Agency or Agencies])

Legend:

Recommended Preferred Alternative	Final Alternative	Inactive Alternative
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Line Number	Lead Agency in Development of Alternative	Basin(s) Controlled	Type of Control	Ballasted Sedimentation		CEPT with Lamella Plates			Alternative Descriptions			Stages Evaluated				
				Design Volume (MG) or Design Peak Flow (MGD)	Equalized Peak Flow Rate (MGD)	Equalization Volume (MG)	Equalized Peak Flow Rate (MGD)	Equalization Volume (MG)	Alternative Name	Preliminary Alternative Description	Final Alternative Description	Status	Explanation of Why Alternative Was Screened Out or Why Alternative Description Changed	Evaluated as Preliminary Alternative?	Evaluated as Final Alternative?	Recommended Preferred Alternative?
South EBI - S Michigan St and Brandon St																
31	KC	S Michigan St	Wet-Weather Treatment	66.1 MGD	40	0.86	41	0.77	DSN039-WWT-1 (KC)	RWSP Alternative. Wet-weather treatment facility to control S Michigan St CSOs only. Potential for GSI is being evaluated in this basin. It may be possible to combine GSI with this alternative to control CSOs. The community is very interested in RainWise and GSI for this basin. GSI being considered includes green alleys and bioswales along Airport Way S. Depth to groundwater could be an issue for infiltration techniques in some areas.	RWSP Alternative. Wet-weather treatment facility to control S Michigan St CSOs only. Potential for GSI is high in this basin. It may be possible to combine GSI with this alternative to control CSOs. The community is very interested in Commercial and Residential RainWise and GSI for this basin. GSI being considered includes green alleys and bioswales along Airport Way S. Depth to groundwater could be an issue for infiltration techniques in some areas. Potential partnerships with ECOSS and Lower Duwamish Working Group (LDWG) may be possible.	Active		Yes	Yes	No
32	KC	S Michigan St	Wet-Weather Treatment	66.8 MGD	40.7	0.86	41.70	0.77	DSN039-WWT-2 (KC & SPU)	Joint King County/SPU wet-weather treatment facility to control King County S Michigan St CSOs and SPU CSO Basin 111H CSOs. Alternative is referred to as Alternative S-12 in King County/SPU Collaborative Alternative List (April 27, 2010). Potential for GSI is being evaluated in this basin. It may be possible to combine GSI with this alternative to control CSOs. The community is very interested in RainWise and GSI for this basin. GSI being considered includes green alleys and bioswales along Airport Way S. Depth to groundwater could be an issue for infiltration techniques in some areas.	Joint King County/SPU wet-weather treatment facility to control King County S Michigan St CSOs and SPU CSO Basin 111H CSOs. Alternative is referred to as Alternative S-12 in King County/SPU Collaborative Alternative List (April 27, 2010). Potential for GSI is being evaluated in this basin. It may be possible to combine GSI with this alternative to control CSOs. The community is very interested in RainWise and GSI for this basin. GSI being considered includes green alleys and bioswales along Airport Way S. Depth to groundwater could be an issue for infiltration techniques in some areas.	Inactive	Per 12/16/10 meeting with SPU, SPU indicated that it would cost more to convey to the joint wet-weather treatment facility than to control their CSOs with an independent CSO control facility.	Yes	No	No
33	KC	Brandon St	Wet-Weather Treatment	35.2 MGD	24	0.41	25	0.33	DSN041-WWT-1 (KC)	RWSP Alternative. Wet-weather treatment to control Brandon St CSOs only. Potential for GSI is being evaluated in this basin (high priority for GSI evaluations). It may be possible to combine GSI with this alternative to control CSOs. KC owns large swath of property that lacks adequate drainage/flow control and can be used as a demonstration for GSI and habitat restoration. GSI could be implemented at the Seattle Design Center. A lot of the area is industrial and could be eligible for incentivised GSI construction (permeable pavement, green roofs, bioswales, etc).	RWSP Alternative. Wet-weather treatment to control Brandon St CSOs only. Potential for GSI is high in this basin. It may be possible to combine GSI with this alternative to control CSOs. The community is very interested in Commercial and Residential RainWise and GSI for this basin. GSI being considered includes green alleys and bioswales. Depth to groundwater and soil contamination could be an issue for infiltration techniques in some areas. Potential partnerships with ECOSS and Lower Duwamish Working Group (LDWG) may be possible.	Active		Yes	Yes	No
33A	KC	Brandon St	Separation	6.52 MG or 35.2 MGD	N/A	N/A	N/A	N/A	DSN041-SEP-1 (KC)	Evaluation of separating sanitary sewer and storm drainage in Brandon St CSO Basin.	Evaluation of separating sanitary sewer and storm drainage in Brandon St CSO Basin. Potential for GSI is high in this basin. It may be possible to combine GSI with this alternative to control CSOs. The community is very interested in Commercial and Residential RainWise and GSI for this basin. GSI being considered includes green alleys and bioswales. Depth to groundwater and soil contamination could be an issue for infiltration techniques in some areas. Potential partnerships with ECOSS and Lower Duwamish Working Group (LDWG) may be possible.	Active		Yes	Yes	No
46	KC	S Michigan St/Brandon St	Wet-Weather Treatment	101.3 MGD	66	0.89	68	0.72	DSN039/041-WWT-1 (KC) (New Conveyance)	Wet-weather treatment facility to control S Michigan St and Brandon St CSOs. Potential for GSI is being evaluated in these basins. It may be possible to combine GSI with this alternative to control CSOs.	Wet-weather treatment facility to control S Michigan St and Brandon St CSOs. This alternative includes new conveyance to convey flows from the Brandon St and S Michigan St Regulator Stations to the WWTF. Potential for GSI is high in these basins. It may be possible to combine GSI with this alternative to control CSOs.	Active		Yes	Yes	Yes
46B	KC	S Michigan St/Brandon St	Wet-Weather Treatment	101.3 MGD	66	0.89	68	0.72	DSN039/041-WWT-1 (KC) (EBI Modifications)	Wet-weather treatment facility to control S Michigan St and Brandon St CSOs. Potential for GSI is being evaluated in these basins. It may be possible to combine GSI with this alternative to control CSOs.	Wet-weather treatment facility to control S Michigan St and Brandon St CSOs. This alternative includes modifying the Elliott Bay Interceptor (EBI) with new structures to route flows from the EBI to the WWTF. Potential for GSI is high in these basins. It may be possible to combine GSI with this alternative to control CSOs.	Active		No	Yes	No
46A	KC	S Michigan St/Brandon St	Wet-Weather Treatment	102 MGD	66.7	0.89	68.7	0.72	DSN039/041-WWT-2 (KC & SPU)	Wet-weather treatment facility to control S Michigan St and Brandon St CSOs and SPU CSOs (Basin 111H). Potential for GSI is being evaluated in these basins. It may be possible to combine GSI with this alternative to control CSOs.	Wet-weather treatment facility to control S Michigan St and Brandon St CSOs and SPU CSOs (Basin 111H). Potential for GSI is being evaluated in these basins. It may be possible to combine GSI with this alternative to control CSOs.	Inactive	Per 12/16/10 meeting with SPU, SPU indicated that it would cost more to convey to the joint wet-weather treatment facility than to control their CSOs with an independent CSO control facility.	Yes	No	No
West Duwamish - W Michigan St and Terminal 115																
30	KC	W Michigan St	Storage	0.27 MG	N/A	N/A	N/A	N/A	DSN042-STOR-1 (KC)	Storage to control W Michigan St CSOs only. Potential for GSI is being evaluated in this basin. It may be possible to combine GSI with this alternative to reduce CSOs. Depth to groundwater could be an issue for infiltration techniques in some areas.	Storage to control W Michigan St CSOs only. Potential for GSI is low in this basin. It may be possible to combine GSI with this alternative to reduce CSOs. Commercial and Residential RainWise with 40% participation may be feasible.	Active		Yes	Yes	No

King County 2012 Combined Sewer Overflow Control Program Review

CSO Control Alternatives List

DRAFT - For Discussion Purposes Only. Not Intended for Review.

Revised: 4/7/2011

Alternative Name Convention: [DSN###]-[Type of Control]-[Number Identifier] ([Participating Agency or Agencies])

Legend:

Recommended Preferred Alternative	Final Alternative	Inactive Alternative
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Line Number	Lead Agency in Development of Alternative	Basin(s) Controlled	Type of Control	Ballasted Sedimentation			CEPT with Lamella Plates			Alternative Descriptions			Stages Evaluated			
				Design Volume (MG) or Design Peak Flow (MGD)	Equalized Peak Flow Rate (MGD)	Equalization Volume (MG)	Equalized Peak Flow Rate (MGD)	Equalization Volume (MG)	Alternative Name	Preliminary Alternative Description	Final Alternative Description	Status	Explanation of Why Alternative Was Screened Out or Why Alternative Description Changed	Evaluated as Preliminary Alternative?	Evaluated as Final Alternative?	Recommended Preferred Alternative?
29	KC	Terminal 115	Storage	0.05 MG	N/A	N/A	N/A	N/A	DSN038-STOR-1 (KC)	RWSP Alternative. Storage to control Terminal 115 CSOs only.	RWSP Alternative. Storage to control Terminal 115 CSOs only.	Active		Yes	Yes	No
45	KC	W Michigan/Terminal 115	Storage	0.32 MG	N/A	N/A	N/A	N/A	DSN038/042-STOR-1 (KC)	Storage to control W Michigan St and Terminal 115 CSOs only. Potential for GSI is being evaluated in these basins. It may be possible to combine GSI with this alternative to control CSOs.	Storage to control W Michigan St and Terminal 115 CSOs only. Potential for GSI is low in this basin. It may be possible to combine GSI with this alternative to reduce CSOs. Commercial and Residential RainWise with 40% participation may be feasible.	Active		Yes	Yes	Yes
45A	KC	W Michigan/Terminal 115/S Michigan/Brandon	Increased Conveyance	N/A	N/A	N/A	N/A	N/A	DSN038/042-CON-1 (KC)	Conveyance of Terminal 115 CSOs to W Michigan St to proposed treatment facility at S Michigan. Potential for GSI is being evaluated. It may be possible to combine GSI with this alternative to control CSOs.	N/A	Inactive	Per 10/13/10 meeting, King County indicated that the flows are not large enough at Terminal 115 and W Michigan to justify conveyance to S Michigan and Brandon.	Yes	No	No
West Duwamish - Chelan Ave																
27	KC	Chelan	Storage	3.85 MG	N/A	N/A	N/A	N/A	DSN036-STOR-1 (KC)	RWSP Alternative. Storage to control Chelan Ave CSOs only. Potential for GSI is being evaluated in this basin. However, it appears unlikely that GSI would reduce the size of the grey infrastructure from this alternative.	RWSP Alternative. Storage to control Chelan Ave CSOs only. Potential for GSI is low in this basin. It may be possible to combine GSI with this alternative to reduce CSOs. Commercial and Residential RainWise may be feasible.	Active		Yes	Yes	Yes
27A	KC	Chelan	Storage	3.85 MG	N/A	N/A	N/A	N/A	DSN036-STOR-2 (KC)		Storage to control Chelan Ave CSOs only, located at West Seattle Pump Station site. Potential for GSI is low in this basin. It may be possible to combine GSI with this alternative to reduce CSOs. Commercial and Residential RainWise may be feasible.	Active		No	Yes	No
28	KC	Chelan	Increased Conveyance	3.85 MG or 25.7 MGD	N/A	N/A	N/A	N/A	DSN036-CON-1 (KC)	Transfer flows to Alki Tunnel and Wet Weather Treatment Plant. Determine if a new outfall would be required. Potential for GSI is being evaluated in this basin. However, it appears unlikely that GSI would reduce the size of the grey infrastructure from this alternative.	Transfer flows to Alki Tunnel and Wet Weather Treatment Plant. Determine if a new outfall would be required. Potential for GSI is low in this basin. It may be possible to combine GSI with this alternative to reduce CSOs. Commercial and Residential RainWise may be feasible.	Active		Yes	Yes	No

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Appendix A.3

Summary Table of RWSP Adopted Alternatives and Recommended Preferred Alternatives

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Planning-Level Total Project Cost Estimates Comparison¹
RWSP CSO Control Program Alternatives and WTD Staff-Recommended CSO Control Program Review Alternatives

AREA	RWSP Project	RWSP Estimate 1998 estimate inflated to 2010S ²	CSO Control Program Review Recommended Alternative	CSO Control Program Review Estimate 2010S	Difference
Puget Sound	SW Alaska St. 0.7 MG storage tank	\$6,000,000			Controlled
	<i>Subtotal</i>	<i>\$6,000,000</i>	<i>Subtotal</i>	<i>\$0</i>	
SHIP CANAL	11 th Ave NW 2.0 MG storage tank	\$18,500,000	11th Ave NW. conveyed to Ballard Siphon	\$23,700,000	Reduced volume due to new Ballard siphon capacity; conveyance works for remaining flow
	3rd Ave W 5.5 MG storage tank	\$40,400,000	3rd Ave W collaborative 7.23 MG (4.18 MG attrib to KC) storage on north side of Ship Canal	\$50,300,000	Collaborative with SPU; eliminates a small SPU project; updated model shows smaller KC storage volume; possible better siting opportunity with SPU and less community impacts
	Ballard collaborative 1.0 MG (0.4 MG attrib to KC) storage tank at Ballard Regulator	\$4,200,000			Not in 2012 Review because incorporated in Ballard Siphon replacement project
	Univ/Montlake 7.5 MG storage tank	\$74,100,000	Montlake-collaborative 7.87 MG (6.6 attrib to KC) storage on south side of Montlake cut	\$95,400,000	Montlake flows much higher so cannot be conveyed across siphon; larger storage volume for KC flows; Collaborative with SPU resulting in less community impact
			University collaborative 5.23 MG (2.94 MG attrib to KC) storage tank upstream of U-Reg	\$45,200,000	Does not include Montlake flows; smaller storage is required for KC component; recommended siting area avoids costly construction; collaborative alternative with SPU results in less community impact
		Possible 2.7 mile long, 21.4 MG, storage tunnel under Ship Canal to control 3 rd /University/Montlake and SPU Ship Canal overflows	\$237,100,000 ³	New	
	<i>Subtotal</i>	<i>\$137,200,000</i>	<i>Subtotal</i>	<i>\$214,600,000</i>	
MID-EBI	Connecticut 2.1 MG store/treat tank	\$45,400,000	Hanford-Lander-King-Kingdome 151 MGD Consolidated Treatment Plant, by EBI Backflow	\$270,800,000	Consolidates 2 RWSP treatment facilities; smaller size due to flow equalization; decreases staffing complexity; assumes high rate CSO treatment and UV disinfection instead of conventional primary w/hypochlorite to meet more stringent WQ needs & decrease land costs; includes small flow transfer from SPU eliminating a project for them
	King Street conveyance to Connecticut	\$4,500,000			
	Hanford #2 3.3 MG storage tank/treatment facility	\$39,800,000			
	Lander 1.5 MG storage tank/treatment facility	\$37,100,000			
	Hanford at Rainier 0.6 MG storage tank	\$4,700,000	Hanford@Rainier/Bayview 0.34 MG storage tank and conveyance to Bayview tunnel	\$19,200,000	Uses available Bayview tunnel capacity to reduce storage size needed; Include small flow transfer from SPU to reduce their project size
	<i>Subtotal</i>	<i>\$131,500,000</i>	<i>Subtotal</i>	<i>\$290,000,000</i>	
SOUTH EBI	Brandon 0.8 MG storage tank/treatment facility	\$18,600,000	Brandon-S Michigan 66 MGD Consolidated Treatment Plant	\$139,700,000	Consolidates 2 RWSP treatment facilities; smaller size due to flow equalization; decreases staffing complexity; assumes high rate CSO treatment and UV disinfection instead of conventional primary w/hypochlorite to meet more stringent WQ needs & decrease land costs
	Michigan 2.2 MG storage tank/treatment facility	\$46,200,000			
	<i>Subtotal</i>	<i>\$64,800,000</i>	<i>Subtotal</i>	<i>\$139,700,000</i>	
	8 th Ave S.1.0 MG storage tank	\$9,800,000			Appears to not be needed; additional verification under way
WEST DUWAMISH	Chelan 4.0 MG storage tank	\$26,200,000	Chelan 3.85 MG Storage Tank	\$51,700,000	Updated model showed smaller storage tank, and avoids difficult maintenance of the RWSP caisson storage; higher land costs as can't be built on County-owned property
	Terminal 115 0.5 MG storage tank	\$5,600,000	W Michigan-Term 115 Convey W Michigan to consolidated 0.32 MG storage pipe	\$14,800,000	Smaller storage tank
	W Michigan conveyance expansion	\$600,000			
	<i>Subtotal</i>	<i>\$42,200,000</i>	<i>Subtotal</i>	<i>\$66,500,000</i>	
West Point	West Point primary/secondary improvements	\$24,100,000			Controlled
	<i>Subtotal</i>	<i>\$24,100,000</i>	<i>Subtotal</i>	<i>\$0</i>	
	TOTAL	\$405,800,000	TOTAL	\$711,000,000	

¹Total Project Costs refer to construction, allied, and land acquisition costs.

²The RWSP project cost estimates reflect the 1998 planning-level estimates adjusted for inflation (3 percent per year). If the RWSP projects as defined were updated using the current cost estimating methodology that was used to develop cost estimates for the CSO Program Review alternatives, the total cost estimates would be much higher than the estimates for the staff-recommended CSO Program Review projects.

³Note – If there is a decision to further develop the tunnel option, the definition and cost estimates will need to be redone without 11th Ave. NW project.

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