

**King County**

Department of Natural Resources and Parks
Wastewater Treatment Division

Murray Basin CSO Alternatives (Narrowed List from Meeting 7 on September 15, 2010)

Alternative	Alternative Description	Key Components	Notes	Additional Facility Information	Short Term Community Impacts
CAG 2	Install storage in Lincoln Park	<ul style="list-style-type: none">• 1.25 mg storage in Lincoln Park at one of four potential locations<ul style="list-style-type: none">○ Tank near Colman pool (Point Williams)○ Tank under mid-park parking lot○ Tank under south parking lot○ Deep tunnel storage at foot of Lincoln bluff• 0.10 mg storage at bottom of Murray basin• Current pump station (ps) at Lowman Beach<ul style="list-style-type: none">○ PS option – retire Lowman Beach PS and install new PS in Murray triangle property	<ul style="list-style-type: none">• Option of retiring Lowman Park PS might be considered mitigation for use of Lincoln Park for storage• Options that locate the storage anywhere in Lincoln Park other than near Colman Pool also require a new pump station in the vicinity of Colman Pool.	<ul style="list-style-type: none">• Assumes .10 mg storage, open cut installation in street at bottom of basin• Potential private property acquisition for triangle location	<ul style="list-style-type: none">• Construction of storage in Beach Drive (open cut construction – traffic, lane closures, noise, dust)• Construction of forcemains (open cut construction) – traffic impacts on Beach drive; park user impacts along shoreline – detours, walking path closure• Construction of storage in Lincoln Park - noise, dust, limited park use around construction site, truck traffic, parking impacts
CAG 8	Install distributed storage at the following locations: 1. Seattle Parks property on California Ave (vacant lot across from dry cleaners, 6401 California Ave SW) 2. Gatewood Elementary School 3. Solstice Park 4. Vacant residential lot at 48 th Ave. SW and SW Holly St	<ul style="list-style-type: none">• Tanks located at 4 locations in upper basin• Telemetry and control required to monitor flow and anticipate a potential CSO event OR <u>size tanks large enough to manage all peak flow</u>• Additional storage required at bottom of Murray basin	<ul style="list-style-type: none">• Current facility sizing does not consider potential storage size reductions resulting from reducing Barton pump station flow, although are not anticipated to be major reductions	<ul style="list-style-type: none">• Assumes 1.0 mg of storage at 4 upper basin locations• Assumes minimum of 0.5 mgd storage in bottom of Murray Basin• Potential locations for Murray basin storage – street tunnel, private property, Lowman Park	<ul style="list-style-type: none">• Construction of storage in bottom of basin – private property demolition and/or park impact, traffic delays, noise, dust, loss of parking• Storage tanks construction at up-basin locations – traffic, parking, noise, dust, lane closures, truck traffic, simultaneous construction at four to five sites, temporary loss of playfield use
CAG 9 New from Sept. 9 th workshop Combo of CAG 3, CAG 7 and KC1B	<ul style="list-style-type: none">• Explore combination of green infrastructure and additional storage in Barton to reduce peak flows to Murray.• Implement green stormwater infrastructure in Murray Basin to provide additional CSO control reliability.• Provide remaining required Murray storage volume at intersection of Murray Ave SW and Lincoln Parkway SW	<ul style="list-style-type: none">• Implement roadside rain gardens in sub-basin 416 (Barton)• Implement residential RainWise in Barton basin• Storage at bottom of Barton basin Expanded storage at Old Fauntleroy School in Barton basin• Reduce Barton Pump Station pumping capacity from currently planned upgrade capacity of 33 mgd.• Build storage at the bottom of the Murray basin at intersection of Murray Ave SW and Lincoln Parkway SW• New peak flow pump station required near Murray Pump Station to pump Murray basin flows to storage• Implement GSI in Murray basins consisting of roadside rain gardens to remove up to 10 acres of stormwater from street runoff and implementation of public participation program installing GSI techniques such as residential rain	<ul style="list-style-type: none">• Assumes GSI not relied on to reduce storage in Murray but included to increase reliability of CSO system and provide data about reliability of GSI as CSO solution for future CSO projects	<ul style="list-style-type: none">• Bottom of basin storage in Barton in private property• Murray basin storage location at Murray Triangle (partial private property acquisition required)• Requires new pump station at bottom of Murray basin to pump up to storage if at Murray triangle (6 – 10 mgd) – located either at Lowman Park or across street on private property	<ul style="list-style-type: none">•

Alternative	Alternative Description	Key Components	Notes	Additional Facility Information	Short Term Community Impacts
		gardens and rainwater cisterns (Rainwise)			
KC 1B	1.0 mg circular storage at intersection of Murray Ave SW and Lincoln Parkway SW <ul style="list-style-type: none"> City of Seattle property (Real Estate Services) Minimum of four residential homes 	<ul style="list-style-type: none"> 1.0 mg storage tank New peak flow pump station required near Murray Pump Station to pump excess Barton PS and Murray basin flows to storage 	<ul style="list-style-type: none"> Option of partial storage tunnel combined with storage on city-owned portion of Murray Triangle Does not currently include any reduced flow measures from Barton 	<ul style="list-style-type: none"> Assumes new pump station located in Lowman Park or on private property across street from park Installation of pipes between Murray pump station and new storage 	<ul style="list-style-type: none"> Open cut street construction between Murray PS and new storage New pump station - private property demolition and/or park impact, traffic delays, noise, dust, loss of parking
KC 1F	Combined pipe and rectangular storage at bottom of Murray basin	<ul style="list-style-type: none"> 0.6 to 1.0 mg storage tank (on acquired property) 0.0 to 0.4 mg storage pipe (under Beach Drive) 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Assumes private property for storage tank 	<ul style="list-style-type: none"> Construction of storage on private property in bottom of basin – private property demolition, traffic delays, noise, dust, loss of parking Construction of storage in Beach Drive (open cut construction) – traffic, lane closures, noise, dust

Notes: 1. Tunnel storage kept alive as possible partial solution
 2. Storing some portion of Murray flow up basin kept as possible backup element
 3. Green Stormwater Infrastructure (GSI) as pilot and as means to increase reliability of solution should be included in all alternatives
 4. Although not recommended as part of an alternative; storm and sewer separation in both basins might be included as a non-CSO solution, but a good environmental action to pursue