

DRAFT TEAM MEMORANDUM

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Subject:	Alternative Development and Screening Process Overview		
Distribution:	Team		

Introduction:

This memorandum describes the process used to develop, evaluate, screen, and recommend preferred CSO control alternatives for the Barton, Murray, South Magnolia, and North Beach basins. The memorandum summarizes several documents, included herein, that were produced to guide the process. The following documents are included in this Binder:

Binder Tab	Document
1	TM 202.1 – CSO Control Approaches and Planning Boundaries
2	TM 203.1 – Barton, Murray, Magnolia, and North Beach Facility Selection Criteria
3	Memorandum – Developing Criteria for Evaluating CSO Alternatives Memorandum – Team Input Through Alternative Development and Evaluation Memorandum – Selecting Candidate Sites for CSO Control Approaches Memorandum – Technical Considerations for Alternatives Development Memorandum – CSO Control Alternatives Review and Comment Procedure Memorandum – Alternative Narrowing Process
4	Alternative Analysis Draft Criteria (V1.0 – V6.0)
5	CSO Control Facility Component Figures and Basic Design Criteria
6	CSO Team Review Comments (Criteria and Alternatives)
7	CSO Team Meeting and Workshop Notes

Decision Making Process Overview:

A five step process is used to develop, evaluate, and screen potential CSO control alternatives. Information made available to the Project Team throughout this process is documented in the enclosed Technical and Project Memoranda. The process is illustrated in the attached figure, and includes the following steps:

Step 1: Define Basin Approaches

During this step, CSO control approaches were identified based on technical work (basis of design) and initial criteria developed by the Project Team. Agency briefings and informal public meetings were used to gain input into the process, which included the following three steps:

1. Basis of Design Documentation. Flow data were collected and analyzed by the King County and Consultant Team. Historical and new flow data were used to define the magnitude and frequency of peak flows in each basin. Additional flow monitoring and hydraulic modeling began in December 2007 and was concluded in July 2009. The results were used to refine and confirm basis of design information and more accurately define peak flow contributions from discrete sub basin areas within each basin. The results were used to establish the final basis of design for each basin, including the peak flow and volume, that would need to be addressed to control CSOs per regulatory requirements. Final basis of design data are presented in Binder 2 – Basins Hydrologic/Hydraulic Model.

2. Criteria Development and Refinement. Initial evaluation criteria were developed by the team to establish a basis for selecting CSO control approaches, as documented in TM 203.1. These criteria were then refined and used to evaluate CSO control alternatives. During this process, criteria were grouped into "Categories". "Category Leads" were given responsibility to develop specific criteria and rating scales describing how the criteria would be used to assess the impact associated of a given alternative. The seven initial criteria categories were refined during August and September 2009. Some criteria categories were combined and renamed, while others (e.g. "Flexibility" and "Compatibility with other Programs and Initiatives") were included into other categories. The "Land Use/ Acquisition/ Permitting" category was subdivided into two categories to recognize the differences between land acquisition and project permitting activities. Once the categories and criteria were defined, up to two (2) questions were developed for each criterion. These questions were used to test the impact of a particular alternative on the criteria being considered. Category Leads also developed a description of how the criterion would be measured using a rating scale (i.e. Low, Moderate, and High impact). The resulting criteria matrices are detailed in Tab 4 of this Binder.

3. CSO Control Approaches. Four CSO control approaches were developed and documented in TM202.1. These approaches are considered to be effective in controlling CSOs to the required level, based on flow monitoring and modeling information prepared by King County and the Consultant Team. The process of developing CSO control approaches was initiated in 2007 based existing King County documentation, modeling data, and basin-specific field work by the Consultant Team. The Project Team participated in Workshop No. 1 (May, 2007) to identify constraints and opportunities for applying CSO control approaches in each basin. In Workshop No. 2 (June, 2007), the Consultant Team presented preliminary evaluation results for various CSO control approaches. During these early workshops it was recognized that implementing "centralized" facilities (e.g. at the bottom of each CSO basin) presented significant siting challenges, and that better information relating to how peak flows were distributed within each "sub-basin" was needed to fully evaluate the range of potential approaches.

Following Workshop No. 2, the Project Team implemented a flow monitoring and modeling program to obtain flow information for smaller areas within each basin, and confirm the basis of design. These data were then used to confirm the following CSO control approaches:

Convey and Treat. Peak flows are conveyed out of the basins to existing facilities for treatment prior to discharge. This approach requires an increase in pumping/conveyance capacity as well as an increase in treatment/outfall capacity at existing facilities.

Storage. Peak flows (in excess of existing capacity) are stored during precipitation events. Stored flow is pumped back to the existing combined system following the event to receive treatment at existing facilities. This approach requires new storage facilities within the basins.

End-of-pipe Treatment. Peak flows (in excess of existing capacity) are treated and discharged during precipitation events. This approach requires new treatment facilities at or near existing CSO locations.

Peak Flow Reduction. Basin-wide flow response during precipitation events is reduced to a level that provides adequate CSO control. This is achieved through one or more of the following:

"Gray Infrastructure". Storm water from impervious areas is separated from the combined sewer system and re-routed to new or existing storm sewer pipes and outfalls. In the North Beach basin, infiltration and inflow (I/I) reduction is also considered.

Green Stormwater Infrastructure (GSI). Storm water is separated from the combined sewer system and re-routed to GSI (e.g. rain barrels, rain gardens, etc.). Storm water generated during precipitation events can also be reduced through implementing other GSI techniques (e.g. permeable pavement).

Step 2: Develop and Evaluate CSO Control Alternatives

Once feasible approaches were determined, the Project Team began developing CSO control alternatives. Schematic level information was prepared to describe the size, shape, and key characteristics of each approach, providing a common basis for evaluation and cost estimation. Approaches were then matched with potential areas to meet basic technical requirements, such as the ability to route flow to the CSO facility location (i.e. flow management), topographical and spatial constraints, hydraulics, and constructability. In each basin up to nine (9) alternatives were developed using one or more of the feasible CSO control approaches. Conceptual layouts for these alternatives were then prepared along with a table describing to how the alternative would generally meet each selection criteria.

A series of team workshops, team focus meetings, and public open house meetings were used to complete alternative development and evaluation. During the first workshop (August, 2009) the Project Team confirmed that criteria and ratings were being appropriately applied to each alternative in each basin. Through a series of non-technical meetings in September 2009, additional information relating to public, environmental, permitting, and land acquisition impacts was developed. In October 2009, technical meetings were used to add detail for relating to Operation and Maintenance (O&M). Also in October, public open houses were conducted in each of the four basins. Comments on alternatives and criteria collected from the Project Team are documented in Tab 6 of this Binder.

The information gathered during the meetings and workshops was used by the Project Team to apply selection criteria to each alternative for alternative screening. The alternatives resulting from this work are presented in Binders 4, 5, 6, and 7 – Alternatives Development.

Step 3: Preliminary Screening of Alternatives

At the conclusion of the alternatives development and evaluation process, planning level cost estimates were prepared for each alternative. Cost documentation was prepared by the Consultant Team to provide standardization for construction and other project costs. The basis of costs is presented and described in Binder 3 – Basis of Costs.

At workshops in November, 2009, evaluations completed by each Category Lead were presented and discussed, and any discrepancies across categories were resolved. After another level of alternative and criteria refinement, workshops were held in December 2009 to identify up to three (3) alternatives per basin for continued evaluation. During the December workshops the Project Team worked collectively to identify the alternatives that should be carried forward. Meeting notes from key workshops held during alternative development and screening are included in Tab 7 of this Binder.

Step 4: Obtain Input and Evaluate Screened Alternatives

Step 4 of the CSO Beach Project Alternatives Selection Process is ongoing, and will continue between January and May, 2010. During this step the three short-listed alternatives in each basin will be further refined and evaluated by the Project Team. An additional level of technical detail will be added for each alternative to refine alternative size, configuration, and control requirements. Existing geotechnical studies to characterize the geotechnical environment at each of the identified sites and existing property and utility information will be reviewed. Finally initial environmental condition assessments will be prepared as a basis for future SEPA documentation.

Focus meetings will be held with Category Leads to refine alternative evaluation criteria, and a second round of public meetings is planned to collect additional public input on the short-listed alternatives. Refined alternatives will be presented to the Project Team during a series of May, 2010 workshops.

Step 5: Select Preferred Alternatives

After further refinement of alternatives between January and May 2010, the Project Team will complete a final evaluation of alternatives and make a recommendation for a preferred alternative in each of the four basins. The recommendation will be forwarded to the county's Capital Systems Team (CST) for a final recommendation. Following this recommendation, facilities planning and environmental documentation will be prepared for submission to the Washington Department of Ecology.