Murray Basin Combined Sewer Overflow Project
Community Advisory Group

Meeting 4 Summary

Prepared for
King County Wastewater Treatment Division

August 3, 2010

Prepared by

EnviroIssues

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Meeting Information

Meeting #4
Tuesday, August 3, 2010
5:30 – 8:00 p.m.
Fauntleroy Community Services Agency Building (Old Fauntleroy School)
9131 California Ave SW

Attendance

CAG members
- Cindi Barker (alternate)
- William Beyers
- Sharon Best (alternate)
- John Comick
- Linda Cox (alternate)
- Cheryl Eastberg
- Patrick Gordon
- Scott Gunderson
- Chris Jansen
- Vlad Oustimovitch (Fauntleroy Community Association)
- Chas Redmond (Morgan Community Association)
- Donna Sandstrom
- Don Stark
- Ron Sterling
- Tracy Tackett
- Linda J. Sullivan (King County WTD)

Facilitation Team
- Penny Mabie (EnviroIssues)
- Amy Meyer (EnviroIssues)

WTD Staff and Consultants
- Kevin Dour (Tetra Tech)
- Jeff Lykken (Tetra Tech)
- Shahrzad Namini (King County WTD)
- John Phillips (King County WTD)
- Peg Staehle (SvR)
- Kevin Stoops (Seattle Parks Department)
- Martha Tuttle (King County WTD)

Also in attendance
- Brian Matson (Carollo Engineers)
- Janet Murphy
- Ken Wilkins (Carollo Engineers)

Welcome and Introductions

Penny Mabie, meeting facilitator, welcomed participants to the fourth Community Advisory Group (CAG) meeting and thanked everyone for their attendance. Penny led a round of introductions and noted the importance of keeping to the agenda and ground rules considering the additional half hour to which participants committed. Sharon Best, a neighbor and alternate for Kate Dee, and Tracy Tackett from

Seattle Public Utilities (SPU) were introduced and welcomed to the CAG. Penny asked members to please complete any missing information on the contact/sign-in sheets.

Martha Tuttle, King County Wastewater Treatment Division (WTD), announced a meeting with the Barton basin community at the Hall at Fauntleroy on Thursday, August 5th from 6:00 – 8:00 p.m. This meeting will cover more information on green stormwater alternatives specific to the Barton community, and all Murray CAG members are welcome to attend.

Linda Sullivan, King County WTD, announced that Christie True has been promoted by the County Executive and will now serve as the Director of Natural Resources and Parks. In the meantime, the interim Director for WTD is Pam Elardo. Pam attended the Technical Information Session with the CAG on June 19th.

Penny announced that King County's 2009 Annual CSO Report is available on the web (http://www.kingcounty.gov/environment/wastewater/CSO/Library/AnnualReports.aspx), and urged CAG members to read through it to find many of their earlier questions answered. Penny also reminded CAG members to continue using the Google group page, and to please direct other interested parties to that site and the King County page: http://www.kingcounty.gov/environment/wtd/Construction/Seattle/BeachCSO/Basins/Murray/CAG.aspx)

John Phillips announced that the Technical Memo 207.1 had been updated on the King County website as well: http://www.kingcounty.gov/environment/wtd/Construction/Seattle/BeachCSO/Library/TechInfo.aspx

Meeting 3 and Agenda Review

There were no questions or comments regarding the Meeting 3 Summary, so the document was finalized and will be posted to the King County website. Penny reviewed the agenda, and reminded members that tonight's goal is to begin transitioning into the development of guiding principles in order to discuss alternatives. Meeting goals and objectives are listed below:

- Finalize meeting #3 summary
- Understand Seattle Parks approach and response to siting infrastructure in public parks
- Review goals and development of guiding principles
- Understand green stormwater infrastructure, its potential in the Murray and Barton basins, and what is required for its implementation
- Hear King County's assessment of the community-suggested alternatives

Seattle Parks Policies

Kevin Stoops, Seattle Parks and Recreation, explained the historical background of Seattle Parks and Recreation and their development of an internal policy that discourages the use of park land for non-park uses. In 1997, this policy was signed into law as Ordinance 118477 but is still referred to as Initiative 42. This law ensures that park land would not be sold or divested without support from Seattle citizens unless there is no other feasible alternative, in which case compensation and mitigation for said park land is required. The Seattle City Council is responsible for determining whether or not there are other feasible alternatives. The City Council's decision regarding park land use can also be appealed to the King County Superior Court at that point.

Questions and Discussion

- Sharon Best asked how non-park operations, i.e. the current CSO outfall, are in use at Lowman Beach if Seattle Parks and Recreation does not support these uses.
    - Kevin explained that the Lowman Beach CSO infrastructure was built about 1959, before the Seattle Parks ordinance was created.

- Ron Sterling asked if there are any terms that control whether or not park land can revert back to whoever provided the park land to the city.
    - Kevin explained that Lowman Beach Park is owned outright; King County does own facilities in the park.

- Sharon Best asked what Seattle Parks' view is on installing infrastructure in the park and then restoring the park afterwards to where it is a park again.
    - Kevin explained that if it is determined that the infrastructure devalues the park, Seattle Parks would require there be full compensation and replacement of said park, of equal size and access to Puget Sound, which would serve the same community.

- Scott Gunderson asked where land that meets those requirements is located. He also asked about the status of Lincoln Park.
    - Kevin explained Lincoln Park is protected by Initiative 42 as well.

- Sharon Best asked if King County's work at Lowman Beach Park in response to a broken beach interceptor line is considered dual-use of park land.
    - Kevin explained that maintenance of a system that was built before the current Seattle Parks ordinance took effect does not qualify as dual-park use. Also, the ordinance allows for utility lines.

- Chas Redmond asked the feasibility of receiving mitigation for use of Lowman Park as the site for this project considering the recession.
    - Kevin said this would be better answered by King County.
    - Penny moved this issue to a "parking lot" question that will be addressed at a later date.

- Donna Sandstrom said that Lowman Beach Park is irreplaceable and that no replacement land would be acceptable, and therefore a conversation about mitigation is moot. Chas Redmond added that purchasing the land via eminent domain would be cost prohibitive.
    - Penny reminded CAG members that the CAG was not discussing feasibility of particular alternatives at this point in the process, and Seattle Parks need not answer questions about the feasibility of particular alternatives.

- Ron Sterling asked what non-park uses are located in Lincoln Park currently, and the history of any of those facilities.
    - Kevin explained that there is a Seattle Public Utilities (SPU) pump station and a sewage line from Barton pump station which runs along the shoreline into Lincoln Park and continues onto Beach Drive. There is also a District Maintenance Building for Parks' crews that maintain Lincoln Park and other parks in West Seattle. He said the original building was constructed in the 1930's when the park was built, and that another building was added in about 1980.

- John Comick asked if there have been any preceding cases of park land, especially waterfront park land, being used for utility purposes.

- Kevin explained that currently, Seattle Parks and Recreation is amidst conversations with Washington State Department of Transportation (WSDOT) about the SR-520 Bridge Replacement and HOV Program, during which several City parks will be affected wholly or in part. In those cases, Seattle Parks expects full compensation and mitigation for those park lands.

- Linda Cox asked if the current language in the Initiative 42 precludes placing additional pipe underneath Lincoln Park.
  - Kevin explained that the Seattle City Council would need to determine that there is no feasible alternative. Then, there would need to be compensation for that use. He noted that compensation does not always signify money.

- Patrick Gordon asked if the appeal process can go through any other step than King County Superior Court, and if so, how long that process takes.
  - Kevin explained that since the Seattle City Council would make the determination that there is no feasible alternative; any appeal would therefore be challenging the City Council's decision, which requires that it go through King County Superior Court. Kevin confirmed that the process could take several years.

- Don Stark asked Linda Sullivan for King County WTD's county-wide rate base.
  - Linda said the county-wide rate base is $31.90 per month currently, and it will increase to $36.10 in January. She also provided King County's 2010 capital budget which is $220 million, a large portion of which is dedicated to the Brightwater Project. King County expects to spend $2.8-3 billion on capital projects through 2030. Linda reminded CAG members that these CSO projects are not being designed to specific budgets, but rather the County is looking for the best, most cost-effective solution.

- John Comick asked Linda if the projected cost of alternatives has included compensation and mitigation, and if an alternative might actually cost more than originally thought because of compensation for the park.
  - Linda confirmed that any costs shared as of yet have not included compensation and mitigation costs.

Issues Tracking and Guiding Principles

Penny noted that the Issues Tracking document had been revised per some feedback from Cindi Barker. She emphasized that this document could be used as a checklist as the CAG discusses outstanding issues and asked that CAG members please read through it to determine if they can begin moving toward the development of guiding principles. She also asked that they review and edit any of the guiding principles that are currently listed.

ACTION: CAG Members should review the Issues Tracking document to determine if they can begin moving toward the development of guiding principles.

Penny also reviewed a new document that lists potential concepts for guiding principles. She asked that the CAG use this preliminary list as a brainstorming tool to create its own guiding principles.

ACTION: CAG members should review the Guiding Principles Concepts document and use it to brainstorm their own guiding principles.

Penny reviewed some key goals of the CAG Charter which are relevant at this time:

- [To] provide advice, as community representatives, on guiding principles to consider in potential solutions and ways to address community concerns; and
- partner with King County to find the best alternative for CSO solutions in the Murray basin within the timeframe dictated by the County's regulatory requirements.

Green Stormwater Infrastructure

John Phillips, King County WTD, introduced his presentation regarding green stormwater infrastructure (GSI) and the County's CSO program. John explained that when looking at a hydrograph, a graph illustrating flow rate versus time, the significant feature is the peak flow event indicated by any area above the pump station capacity line. There are several ways to manage such events, including conveyance and treatment, storage, and reduction of the peak itself.

In order to achieve a green alternative, John explained that an analysis of separation of storm and sewer pipes in Murray basin was performed. Based on City of Seattle's protocol for the RainWise program, disconnecting CSO systems would reduce storage by 150,000 gallons. John explained that due to the small size of this decrease the County did not choose separation alone as an alternative.

With regard to GSI, the County has communicated with other cities who have implemented GSI plans. The County understands that there is a strong interest in the evaluation of GSI locally, but it must consider a number of challenges along the way. Challenges include uncertainty of regulatory support, functionality, time required for implementation, and feasibility of infrastructure construction. In addition, the design of these systems requires that storage capacity is high enough to control peak flow plus any continuous flow prior to the peak.

In order to determine where flows begin and end, the County used geographic information systems (GIS) to reference data and locations together. Their program is able to look at interactions between layers of data and give outputs. Data included in these programs includes but is not limited to: catch basins, downspouts, pervious and impervious surface areas, rain-barrels, splash-blocks, et cetera. Much of this data was verified by King County crews who are trained in inflow and infiltration investigations. During field surveys, these crews recorded their observations about connections in order to verify the data against the computers' data. This resulted in approximately 35% accuracy from computer to field observation data.

With this information, the County has a good sense of feasibility for GSI. In places like Ballard and Barton, where large areas of public roads are connected, GSI is an effective strategy.

Peg Staeheli, SvR, described some design details of GSI. She explained that it is difficult to grade specific sites and to predict flow behavior during peak storms. The purpose of GSI is to hold water during peak storms and release it slowly. Peg illustrated some techniques currently in practice such as curb-bulb treatments. Many factors must be considered in designing treatments such as these, though, such as parking, walkability, landscaping, private property, maintenance, and homeowners' reactions to bringing stormwater back onto their properties.

Peg explained that 66 blocks in Barton basin are under consideration for GSI treatment. The goal in Barton is to eliminate the CSO storage requirement, with GSI having been chosen as the vehicle to

accomplish that goal. They must prove to the Department of Ecology that GSI technology will work, however, so far there are no built applications to monitor effectiveness except for modeling.

Questions and Discussion

- Chris Jansen asked how the crews could see disconnections from the street. He also suggested that Seattle Public Utilities improve their community outreach to gather locations of neighbors who have already disconnected and emphasize that making this change will not negatively impact yards.
    - John explained that crews look for identifying features such as splash-blocks, which would indicate that roof drains are not connected. If crews saw a pipe entering the ground, they made two assumptions: 1) the pipe is connected to the combined sewer system, or 2) the pipe is not connected to the combined sewer system. Both scenarios were accounted for in the final analysis. Many of these assumptions are also noted in the Technical Memo 207.1. John also noted that there is a program using web-based GIS to track implementation of GSI on residential areas: https://rainwise.seattle.gov/. Chris noted that providing web accessibility so residents could enter information about their connection status was what he was recommending.

- Sharon Best was concerned that 35% accuracy is not high enough to move forward with planning.

- Donna Sandstrom said that many neighbors would be willing to fill in missing parcel data if they are told what to look for and how to report it.

- Chris Jansen and Chas Redmond asked for more explanation of the design of the curb-block treatments, and suggested that any curbs that are currently paved over with concrete should be re-designed by SPU.
    - Peg described three options considered in Barton sub-basin 416. The curb-bulb features act as ponds to retain water, and are typically filled with 18 inches of modified soil that allows storage of periodic rain. To accommodate a peak event, the design must include an additional "pond" underneath to capture that excess water. The soil is basically compost, or amended sandy, gravelly soil that drains well but holds and releases water slowly. She also noted that in Murray basin, sidewalks generally run east/west, which means more slope to manage in the design of GSI features, as opposed to north/south running sidewalks in Barton basin.

- Tracy Tackett added that there are many applications to study the effectiveness of GSI techniques regarding stormwater, but these techniques are not specific to CSOs yet.

- Chas Redmond asked how one predicts where water will flow considering West Seattle's various soil compositions and absorption rates, and if those determinations are site-specific by parcel. He also asked if there is a known soil infiltration capacity for West Seattle, and if these factors were considered when choosing Ballard for GSI treatment.
    - Peg explained that soil maps reflect that most of the West Seattle area is gravel till. This means it may hold water, but it does not go down quickly. The native soils drain relatively poorly, so this is all taken into account when determining the design of treatments such as curb-bulbs. Soil infiltration capacities can be estimated conservatively. Ballard's combined sewer system and flat topography made it a good candidate for GSI application.

- Bill Byers said if the County has the soil data, they should use GIS analysis to determine where to apply GSI.
    - Peg reminded the CAG members that the difficulty in designing for CSOs is determining where water is entering combined versus separated sewer systems. Soil information is well known around Seattle, but it is not as necessary for our purposes as the issue of connectivity.

- Patrick Gordon said if Barton basin's goal is to eliminate a need for storage by using GSI, what would we need to do to eliminate the need for storage in Murray basin? Also, Barton's goal should not be achieved by sending 50,000 gallons to Murray basin.
    - John replied that planning for GSI was implemented in Barton basin to reduce storage volume. The new hydrographs indicate a reduced storage need of 100,000 gallons there after GSI implementation. In Murray basin, we have run GSI analysis to understand levels of sewer separation, and we assumed 40% participation. With direction to be less conservative in our approach, we re-evaluated areas and ran new analyses. Places such as steep slopes were previously not considered as feasible locations for GSI, but with the use of rain cisterns, they can be considered to an extent. We also assumed 50% participation at this time, and separated non-residential properties by land use to determine participation in more areas. The resulting map from the newest analysis illustrates new potential areas for GSI and percent participation, and shows that we can reduce storage volume. However, we also must take into consideration the parcels that cannot participate due to various constraints such as size of the parcel, and how those parcels affect their neighbors' participation.

- Donna Sandstrom asked why stormwater is measurable but CSO is not.
    - Tracy responded that CSO is measurable, but what is more challenging is managing the timing of the flows.
    - Peg added that the rules indicate there is only one CSO event allowed per year. When we have rain, it typically rains for a week and then it pours. Stormwater is all of the constant flow – but for our CSO planning purposes, we care about the peak moment in time, which is difficult to predict.
    - Tracy added that each basin acts differently because of variation in pump stations and pipe sizes. The models are very solid, but we need to see the applied technology actually working out in the field to be certain.

- Scott Gunderson suggested that GSI be implemented in Murray in addition to any other solution in order to add to the level of data about the technology.

- In response to Patrick's comment, Scott Gunderson asked if Barton's solution to eliminate storage involved stormwater going to Murray, which would put Murray over capacity.

- Scott also asked: what is GSI's impact on West Seattle's critical landslide areas that are primarily composed of clay, and what is the estimated risk of flooding due to GSI treatment.
    - John responded that steep hilled areas are assigned buffer zones which indicate the safest place to apply GSI technology around those areas.

- Vlad Oustimovitch asked Peg to confirm that the curb-bulb designs included a drainage pipe at the bottom, and should be thought of as a detention system which allows water to drain slowly after a rain event. He asked if these "sponge" designs become saturated during peak rain events when they are preceded by a week of rain. He noted that with footing drains around buildings,

water will enter the system regardless of CSO planning. Wherever footing drains drain, if not immediately hooked into combined sewer lines, you are still putting water in the system somewhere.
    - Peg responded that modeling takes those issues into account. Siting depends on proximity to adjacent properties, hills, et cetera. That is why we cannot get 100% participation in our basins. It is more typical to get 75% participation because the technology simply cannot be implemented in some areas.

- Ron Sterling asked what GSI requires in terms of maintenance.
    - John replied that each of these systems – be they curb-bulbs, cisterns, et cetera – is considered a CSO facility and would be treated as such. They would require professional maintenance, roughly every 10-15 years to replace the top 3-4 inches of soil. A complete replacement should be considered every 20-30 years.

Community-Suggested Alternatives

Kevin Dour, Tetra Tech, presented the technical analysis done on each of the eight community-suggested alternatives in order to report "what it would take" to implement each of the alternatives.

1. **Storage in Lincoln Park parking lot**
    - Locate a 1.26 MG buried storage tank in the mid-parking lot serving Lincoln Park (Fauntleroy Way SW and SW Rose Street).
    - Divert all flows from the Barton Pump Station (33 million gallons per day (MGD) once the conveyance capacity of the Murray Pump Station exceeds its conveyance capacity (31.5 MGD).
    - Would require significant expansion of Barton Pump Station to account for pressure increase (from elevation 20 ft. to elevation 120 ft.).
    - In order to provide control in the Murray basin (no more than 1-overflow event per year), some flow would need to be diverted from the Murray Pump Station to the storage facility. This would require a peak flow pump station (9.2 MGD) and force main to the storage facility.
    - Would require construction of a new 2,500 linear foot (LF), 30-inch force main between Barton and the storage facility and 4,600 LF of 20-inch force main from Murray to the storage facility.
    - This alternative assumes upstream storage or GSI is implemented in the Barton basin and flows from the Barton Pump Station do not exceed 33 MGD.

- Bill Beyers asked why GSI is not included in this alternative.
    - Kevin and Penny explained that these technical analyses stay true to the words of the suggestions themselves. Realistically, alternatives will likely be blended to identify the best solution.

2. **Storage in Lincoln Park Colman Pool**
    - Locate a 1.26 MG buried storage tank adjacent to Colman Pool.
    - Divert all flows from the Barton Pump Station (33 MGD) once the conveyance capacity of the Murray Pump Station exceeds its conveyance capacity (31.5 MGD).
    - In order to provide control in the Murray basin (no more than 1-overflow event per year), some flow would need to be diverted from the Murray Pump Station to

the storage facility. This would require a peak flow pump station (9.2 MGD) and force main to the storage facility.
- Would require construction of 3,800 LF of 20-inch force main from Murray to the storage facility (along shoreline within Lincoln Park).
- This alternative assumes upstream storage or GSI is implemented in the Barton basin and flows from the Barton Pump Station do not exceed 33 MGD.

- Cheryl Eastburg asked if there is enough flat land available for a storage structure at the pool.
  - Kevin said with a cursory look at the property there is enough available. However, a close look would have to be taken -at zoning, feasibility, and technical challenges.

3. Combine GSI with additional storage at Barton

- Implement roadside rain gardens in sub-basin 416 resulting in 26 acres of impervious surface reduction.
- Implement Residential RainWise basin wide for an additional 31 acres of impervious reduction.
- 0.5 MG storage tank at bottom of basin near Barton Pump Station would require property acquisition in vicinity of Barton Pump Station.
- Pumping capacity at the Barton Pump Station held at 22 MGD.
- 0.6 MG of storage at the Murray Pump Station.

- Bill Beyers indicated there is a typo the alternative title.

4. Separate all sewer and stormwater flows

Barton Basin
- 209 acres impervious area connected to Combined Sewer System (CSS).
- Impervious area connected is 19% of total basin area.
- 76% is parcel (private) and 24% is public right-of-way (ROW).

Murray Basin
- 111 acres impervious area connected to CSS.
- Impervious area connected is 10% of total basin area.
- 90% is parcel and 10% is public ROW.

-Stormwater flows from roads would require stormwater treatment. This would require construction, operation, and maintenance of a stormwater treatment facility.

- Bill Beyers asked how Seattle is managing the current stormwater system. If we are talking about adding up to 10% more volume, what are the City's requirements for treatment and facilities? Where would those facilities be located? How would their storage compare to a combined sewer treatment storage area.
  - Tracy explained that there are no regulations that require the City to retrofit the existing system which discharges to water bodies. New construction and remodels require stormwater permits, however if a building or roadway is already placed, there are no mandates to treat stormwater unless there are changes made to the system. Linda suggested that the City of Seattle's National Pollution Discharge Elimination System (NPDES) information be distributed to the CAG.

ACTION: Send link to Seattle's NPDES permit information.
http://www.ecy.wa.gov/programs/wq/stormwater/municipal/phaseIpermit/phipermit.html

5. **Storage at Gatewood Elementary School**
    - Locate a 1.26 MG buried storage tank in Gatewood Elementary School playground.
    - Divert all flows from the Barton Pump Station (33 MGD) once the conveyance capacity of the Murray Pump Station exceeds its conveyance capacity (31.5 MGD).
    - Would require significant expansion of Barton Pump Station to account for pressure increase (from elevation 20 ft. to elevation 190 ft.).
    - In order to provide control in the Murray basin (no more than 1-overflow event per year), some flow would need to be diverted from the Murray Pump Station to the storage facility. This would require a peak flow pump station (9.2 MGD) at Murray and a force main to the storage facility.
    - Would require construction of 6,550 LF 30-inch force main between Barton and the storage facility and 2,550 LF of 20-inch force main from Murray to the storage facility.
    - This alternative assumes upstream storage or GSI is implemented in the Barton basin and flows from the Barton Pump Station do not exceed 33 MGD.

- Scott Gunderson asked if it would be possible to pump the peak flows from the bottom of the Murray basin rather than the Barton basin.
    - Jeff Lykken explained that King County considered that alternative in one of its original nine alternatives.

- Chas Redmond asked if adding pipes requires cut and cover work.
    - Kevin responded that yes, the work would require trenching.

6. **Barton Pump Station pumps direction to Alki**
    - Route all flows from the Barton Pump Station (33 MGD) within a new dedicated force main starting at Lowman Beach Park, up Beach Drive, to the 63rd Avenue Pump Station (13,500 LF of 36-inch force main).
    - Would require significant expansion of Barton Pump Station to account for pressure increase.
    - In order to provide control in the Murray basin (no more than 1-overflow event per year), some flow would need to be stored (0.10 MG).
    - Locate a 0.10 MG buried storage tank at the bottom of the basin in Murray.
    - This alternative would require significant expansion of the Alki Wet Weather Treatment Plant to accommodate the additional 33 MGD of flow from Barton during peak events.
    - This alternative assumes upstream storage or GSI is implemented in the Barton Basin and flows from the Barton Pump Station do not exceed 33 MGD.

- Chas Redmond asked if pump station upgrades affect the engine and motor, and if the current facility allows for those upgrades.
    - Kevin responded that pump station upgrades require much more than that, in fact, it would require reconstruction of the entire facility. When you add additional pressure demands, the order of magnitude difference is substantial.
    - Linda explained that these facilities would not fit in the footprint of the existing structure, and that upgrades would require expansion into residential property.

- Scott Gunderson suggested that instead of building brand new pump stations, why not simply add a "booster" station where the 24-inch mains can be tied in and pumped.
    - Kevin explained that King County considered that alternative in one of the nine alternatives.

7. GSI in Murray to reduce storage volume

- Work is predominantly on private property; cooperation from land owners required.
- Property owners would implement a GSI technique or multiple techniques including permeable paving, rain gardens and rainwater cisterns.
- Participation is voluntary. Incentive would be offered.
- Percent participation is a combination of voluntary participation and feasibility of GSI on individual property based on landscaping, parcel layout, slopes, and soil conditions.
- Roadside rain gardens would mitigate approximately 10 acres of impervious area.
- Requires 0.85 MG of storage at bottom of basin in Murray.

8. Upper basin storage for Murray peak flows

- Tanks located at 4 locations as indicated in the figure.
- Telemetry and control required to monitor flows and anticipate a potential CSO event.
- Complete control would not be achieved; additional storage would be required at the bottom of the basin.

- Bill Beyers asked why adding storage tanks is not "a linear mathematical addition," since if capacity is distributed, the volumes required should be additive. He asked how much more storage is needed for tanks at higher elevations, and if the variation in flow to the different tank locations in this small geographic location is significant. He requested more technical information to explain this alternative. Chas Redmond asked if control systems for multiple-storage has been done anywhere in the country yet, and Bill asked if Seattle Public Utilities' presentation showed multiple storage options in the Lake Washington basin.
    - Jeff explained that more storage is required at tanks located at higher elevations. In order to deduce the required volumes at each tank, we would take the bottom-of-basin hydrograph and split it up into different portions of the basin. We would then have to look at the timing of when that storage is needed. The upper-basin tanks would need to be filled earlier, and the storage volumes of those tanks must be increased to handle that. John explained that the multiple storage facilities shown in the SPU presentation were associated with individual outfalls, not designed as a "distributed" system. Penny added that she recalled in the SPU presentation that one location might have included two different tanks, but believed that was because the two tanks covered two different sub-basins.

ACTION: Provide a more technical explanation of community-suggested alternative #8.

- Cindi located an error on the map that she requested be corrected. Where Kevin shows the location of the drycleaner is actually Morgan Park.

ACTION: Correct the location of the drycleaner on the map on community-suggested alternative #8.

Closing

Penny distributed a memo from the County describing storage sizing and modeling as a response to the CAG's questions from the third CAG meeting, as well as a map that illustrates conveyance capacities. She requested that members go over these documents before the next meeting, and to ask themselves if they have enough information to move towards development of guiding principles.

Action: CAG members should review the memo regarding storage sizing and modeling and the map illustrating conveyance capacities before the next meeting.

Dates of upcoming meetings were announced and are as follows:

Meeting #5 - Thursday, August 19th
Meeting #6 – Monday, August 30th
Meeting #7 – Wednesday, September 15th
Meeting #8 – Tuesday, September 28th

- Chas Redmond asked if these eight meetings conclude the CAG's process, and commented that some members of the CAG are already working on recommendations and may or may not need facilitation.
    - Linda Sullivan said that the County must know the CAG's recommendations by September 28th.

- Patrick Gordon requested that the County give the CAG an indication that they are on- or off-base with regards to guiding principles and a final recommendation.
    - Penny confirmed that part of the CAG process is to discuss the County's criteria and match it with the CAG's guiding principles to identify and address any disconnects.

- Shahrzad Namini asked how the group would receive updates on the technical analyses of alternatives.
    - Linda explained that each additional request must be considered carefully to see if the County should spend money and time addressing it. Penny reminded the CAG that some of their suggestions today have been addressed by King County's alternatives before.

- Scott Gunderson asked Tracy Tackett what is the status of the pipes along Beach Drive. The pipes from Barton to Murray recently failed and had to be replaced, so are the pipes from Murray to Alki next? Beach Drive needs to be repaved, and there is an opportunity for SDOT to join the conversation and incorporate some potential cost-savings by way of joint-project synergy.
    - Linda responded that the pipes Scott was referencing are King County pipes, not SPU's. Penny explained that it is still too early in the process to be talking about specifics of alternatives, but that we will hold that for the appropriate time.

Penny asked that CAG members please talk to their neighbors and other interested parties about these topics, and reminded them the Google group website is there for the CAG's use as well as for the CAG to involve their constituents and to hear from the community.

- Donna Sandstrom announced that she is planning on creating a Facebook page called "Go Green for Lowman" which would cross-reference the Google group and the King County websites.

Action Items

- CAG Members should review the Issues Tracking document to determine if they can begin moving toward the development of guiding principles.
- CAG members should review the Guiding Principles Concepts document and use it to brainstorm their own guiding principles.
- Send link to Seattle's NPDES permit information.
- Provide a more technical explanation of community-suggested alternative #8.
- Correct the location of the drycleaner on the map on community-suggested alternative #8.

Parking Lot Issues

- Where would money for park mitigation come from?
- What is the rate base of King County?
- CAG help the County extend its knowledge of specific parcel connections status by doing door-to-door information gathering in Murray basin.
- Determine current and future stormwater treatment standards.