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2006-025

The Honorable Larry Phillips
Chair, King County Council
Room 1200
COURTHOUSE

December 29, 2005

Dear Councilmember Phillips:

Enclosed is a motion that would approve my Recommended Regional Infiltration/Inflow (I/I) Control Program. I/I is clean storm or groundwater that enters the wastewater collection system through defects and improper storm drain connections. Excessive I/I flows in parts of the regional collection system are taking up capacity, necessitating expensive capital improvements to provide additional capacity. If nothing is done to reduce I/I flows, more money will need to be spent to provide adequate capacity needed to avoid wastewater backups and overflows. The overall goal of the I/I Control Program will be to maximize savings in capital costs for sewer conveyance system improvements by reducing peak I/I flows when it is cost-effective, thereby reducing, delaying or eliminating the need for otherwise planned capacity-related conveyance system improvement projects. The program also aims to enact measures for long-term control, to manage future increases in I/I throughout the system.

Emerging and current federal and state regulations, King County Code, and agreements between King County and local agencies recognize the importance of controlling I/I in wastewater systems. Other agencies around the country share King County's challenges and have implemented I/I control programs-either through regulatory actions or voluntarily. Their experiences were similar to those accumulated during the County's 6-year I/I control study. King County's I/I Control study was the largest voluntary effort to locate and quantify I/I ever undertaken.

Policy Direction for I/I Control

Development of this program recommendation was guided by the Regional Wastewater Services Plan (RWSP) adopted in December 1999 under Ordinance 13680, which identified the need to control I/I within the regional wastewater collection and treatment system. I/I takes up capacity in pipes and affects the sizing of King County conveyance and treatment systems, and ultimately has an impact on the sewer rate. Reduction of I/I in the system has the potential to lower the risk of sanitary sewer overflows and decrease the costs of conveying and treating wastewater.

Per RWSP I/I Policies, a cooperative process was undertaken from 2000 through 2005 between King County and the local sewer agencies to study the methods, costs and effectiveness of identifying and reducing I/I in local sewage collection systems. The RWSP policies that set forth

development of a King County I/I control program are listed below. Completion dates for elements in the regional I/I control program deviated from the original RWSP schedule by one year because regional flow monitoring took place over two winter seasons due to drought in 2000-01.

Below are the adopted RWSP policies that guided development of the Regional I/I Control Program.

I/IP-1: King County is committed to controlling I/I within its regional conveyance system and shall rehabilitate portions of its regional conveyance system to reduce I/I whenever the cost of rehabilitation is less than the costs of conveying and treating that flow or when rehabilitation provides significant environmental benefits to water quantity, water quality, stream flows, wetlands, or habitat for species listed under the Endangered Species Act (ESA).

I/IP-2: King County shall work with component agencies to reduce I/I in local conveyance systems by the following:

1. By July 1, 2001, the King County Executive shall propose for County Council review and approval an initial list of pilot rehabilitation projects dealing with the most serious and readily identified I/I problem areas in local sewer systems.

2. By July 1, 2002, the King County Executive shall propose an additional list of pilot projects. The pilot rehabilitation projects shall be used to demonstrate the effectiveness of I/I controls in local sewer systems tributary to the regional system.

3. By December 31, 2002, the county, in coordination with component agencies, shall develop model local conveyance system design standards, including inspection and enforcement standards, for use by component agencies to reduce I/I within their systems.

4. By December 31, 2003 (March 2005), the King County Executive shall submit to the County Council a report defining I/I levels in each of the local sewer systems, based on assessments of those systems, and identifying options and the associated cost of removing I/I and preventing future increases. The options should be informed by the results of the pilot rehabilitation projects described in I/IP-2.1. The report shall present an analysis of options on cost-effectiveness and environmental costs and benefits, including, but not limited to those related to water quality, groundwater interception, stream flows and wetlands, and habitat of species listed under the ESA.

   The report shall include information on public opinion, obtained through surveys and other appropriate methods, on the role of individual property owners in implementing solutions to reducing I/I, voluntary and mandatory property owner actions, willingness to pay for reducing I/I, and acceptable community options for reducing I/I.

5. No later than December 31, 2004 (now December 31, 2005 due to drought-related delay mentioned earlier), utilizing the report described in I/IP-2.3, the King County Executive shall recommend target levels for I/I reduction in local collection systems and propose long-term measures to meet the targets. These measures shall include, but not be limited to, establishing new local conveyance system design standards, implementing an enforcement program, developing an incentive-based cost-sharing program, and establishing a surcharge program. The overall goal for peak I/I reduction in the service area should be 30 percent from the 20-year level identified in the report. The county shall pay 100 percent of the cost of the assessments and pilot projects.

I/IP-3: King County shall consider an I/I surcharge, no later than June 30, 2005 (now June 30, 2006), on component agencies that do not meet the adopted target levels for I/I reduction in local collection systems. The I/I surcharge should be specifically designed to ensure the component agencies' compliance with the adopted target levels. King County shall pursue changes to component agency contracts if necessary or implement other strategies in order to levy an I/I surcharge.

Work Completed to Date

In response to the RWSP policies, WTD staff, working in a consensus-based approach with local agencies, conducted a comprehensive 6-year I/I control study. The study began in 2000 and culminates with this Executive's recommendation for a regional I/I control program. The following work was completed as part of this study:

- Defined current levels of I/I for each local agency tributary to the regional system through extensive flow monitoring and modeling program.
- Selected and constructed 10 pilot projects in 12 local agency jurisdictions to demonstrate the effectiveness of collection system rehabilitation projects and to test various technologies and gain cost information.
- Developed model standards, procedures, policies, and guidelines for use by local agencies to reduce I/I in their systems. These will remain draft pending completion of the recommended initial projects.
- Completed a thorough benefit-cost analysis to determine the cost-effectiveness of I/I reduction.
- Developed a long-term regional I/I control plan for review and approval by the King County Council.

Major reports that have contributed to the contents of this recommendation report include the 2000/2001 Wet Weather Flow Monitoring Technical Memorandum, 2001/2002 Wet Weather Flow Monitoring Technical Memorandum, Pilot Project Report, Alternatives/Options Report, Regional Needs Assessment Report, and Benefit-Cost Analysis Report. These reports and other information produced during the I/I control study can be found on the I/I program Web site at http://dnr.metrokc.gov/wtd/i-i.

Results of the Benefit/Cost Analysis

Nine cost-effective I/I reduction projects resulted from evaluating cost-effectiveness on a project-specific basis:

- The estimated cost of implementing the nine cost-effective I/I reduction projects is approximately $73 million.
- The anticipated I/I reduction achievable is estimated at 22 million gallons per day (mgd), or approximately 18 percent of the I/I present in the affected mini basins and approximately 5 percent of the I/I present in the entire regional service area.
- As a result of reducing I/I flows, the capital costs for associated CSI projects could be reduced from approximately $268 to $164 million, resulting in a regional CSI savings of nearly $104 million.
- The net overall savings realized from implementing the nine identified cost-effective I/I reduction projects is estimated at approximately $31 million.

No funds are budgeted in 2006 for I/I reduction projects. However, in the 2007 budget it is anticipated that budget authority will be proposed for Council consideration to fund a share of the nine potential I/I reduction projects.

Recommendations for I/I Reduction:

The results of the ten pilot projects and the benefit/cost analysis; and, the input of the local sewer agencies shaped the recommendations for I/I reduction listed below.

- Identify cost-effective I/I reduction projects on a project-specific basis, rather than on a regional basis or by the need to meet specific I/I reduction targets.
- Select two or three initial I/I reduction projects for implementation from the list of nine cost-effective projects identified in the benefit-cost analysis. King County and MWPAAC (through the E&P Subcommittee) would work cooperatively to select these projects.
- In the next 3 to 5 years, construct the selected initial projects to test planning assumptions and to gain more information about costs.
- Proceed with work on private property when a project calls for it. Experiences on initial projects would be documented in terms of public involvement activities, private property participation rates, costs, neighborhood impacts, groundwater effects, and special construction issues that arise.
- Fund initial projects through King County wastewater revenue that is dedicated to funding CSI projects in the regional conveyance system. For future I/I reduction projects, options to supplement King County funding may be considered. For example, local agencies could contribute funds to expand the project scope in order to take advantage of construction efficiencies, as was done in some pilot projects, or to move a project into the cost-effective category.

- Conduct pre- and post-project flow monitoring to test the ability of I/I reduction projects to reduce enough flow to delay, downsize, or eliminate the need for CSI projects.
- Reconvene the E&P Subcommittee when initial projects and post-project flow monitoring are completed to evaluate results of projects, adjust planning assumptions if appropriate, and further refine private property protocols or best practices to ensure that successful approaches are carried forward to future work.
- If the initial projects are deemed successful and future I/I reduction is approved, proceed programmatically to apply I/I reduction planning to all CSI project planning. Wherever an I/I reduction project is a cost-effective alternative to the planned CSI project, the county and local agencies would implement the I/I reduction project provided that it is environmentally and logistically feasible.

Recommendations for Long-Term I/I Control:

The long-term I/I control recommendations listed below are based on extensive research and discussions with the local sewerage agencies regarding how to manage I/I.

- Make use of existing local agency regulations to ensure that new development and redevelopment within the regional wastewater service area meet up-to-date construction standards for sewer conveyance lines and connections.
- Apply the standards, guidelines, procedures, and policies in final draft form to the initial I/I reduction projects (included as Appendix A). Once they have been tested on large-scale projects, the standards, guidelines, procedures, and policies would be reviewed and finalized by the local agencies and translated into King County policy in the form of an ordinance.
- Conduct a system flow audit of the regional and local systems every 10 years to track I/I levels. The county and local agencies would conduct the audits and use the information to cooperatively make decisions about how to adjust I/I control measures as may be necessary.
- Do not implement a surcharge on local agencies for flows that exceed targeted I/I reduction levels already established in the King County Code. The County and local agencies found that implementing a surcharge, as contemplated in the King County Code, would be costly to administer and would pose difficulties in verifying violations.

Recommendations for Program Administration and Policy:

Program administration requires continued cooperation between the County and local sewer agencies. The recommendations below support this requirement.

- Authorize King County to manage the I/I control program centrally, to develop public information materials for the overall program, and to serve as a central clearinghouse for program inquiries and training.
- Conduct flow monitoring to assess effectiveness of I/I reduction over time.
- After completion of the initial I/I reduction projects, develop recommendations regarding changes to local agency agreements and/or the King County Code.

In summary, extensive flow monitoring was done throughout the collection system to quantify I/I levels, various I/I reduction pilot projects were constructed, and a thorough benefit/cost analysis was completed to evaluate the cost-effectiveness of I/I reduction efforts. These analyses demonstrated that I/I can be quantified, located and effectively removed through targeted I/I reduction efforts, and is cost-effective in certain identified project areas. The Regional I/I Control Program recommendation reflects the results of these studies and the consensus reached between King County and the local agencies.

I recommend that the Council approve this motion.

Sincerely,

Ron Sims
King County Executive

Enclosure

cc: King County Councilmembers
ATTN: Scott White, Chief of Staff
Shelley Sutton, Policy Staff Director
Beth Mountsier, RWQC Lead Staff
Anne Noris, Clerk of the Council
Regional Water Quality Committee Members
MWPAAC Members
Bob Cowan, Director, Office of Management and Budget
Pam Bissonnette, Director, Department of Natural Resources and Parks (DNRP)
Don Theiler, Division Director, Wastewater Treatment Division (WTD), DNRP
Greg Bush, Manager, Planning and Compliance Section (P&C), WTD, DNRP
Laura Wharton, Supervisor, Comprehensive Planning and Technical Resources Group (CPTR), P&C, WTD, DNRP
Mark Buscher, Senior Program Manager, Regional I/I Control Program, CPTR, P&C, WTD, DNRP