

CITY OF LOS ANGELES
INTER-DEPARTMENTAL CORRESPONDENCE

DATE: February 17, 2015

TO: The Honorable City Council
Attention: Honorable Felipe Fuentes, Chairperson
Energy and Environment Committee (E&E Committee)

FROM: Enrique C. Zaldivar, Director
LA Sanitation (LASAN)



SUBJECT: MOTION (CF 14-0749): LA SANITATION METRICS ON STORMWATER CAPTURE, GROUNDWATER INFILTRATION, POLLUTION ABATEMENT, RECYCLED WATER REUSE AND STORMWATER AND WASTEWATER SYSTEM INTEGRITY

On June 6, 2014, you introduced the attached motion instructing LASAN to report to the Energy and Environment Committee on new performance metrics to measure its operational activities in the following areas:

1. Stormwater capture / groundwater infiltration / storage;
2. Water quality / pollution abatement;
3. Recycled water treatment and reuse; and
4. Stormwater / wastewater system integrity.

The following sections provide a background and describe the metrics that LASAN is recommending in response to this motion.

Background

The City's Municipal Separate Storm Sewer System (MS4) is comprised of 1,200 miles of storm drain pipes, 35 miles of open channels, 39,388 catch basins, 3,374 culverts, 1,078 low flow drains, 162 debris basins, and 18 stormwater pumping plants that are spread throughout the City's 465 square miles. Operation of this system is regulated by a National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater Permit (MS4 Permit). The federal NPDES stormwater program came about as the result of the 1987 amendments to Clean Water Act (CWA). The City's current 5-year MS4 Permit was adopted by the Los Angeles Regional Water Quality Control Board (RWQCB) on November 8, 2012 for the County of Los Angeles and the 84 incorporated cities.

The current Permit contains the most extensive provisions to date. They include increased permittee responsibilities for inspections, monitoring, and the implementation of programs to satisfy Total Maximum Daily Load (TMDL) regulations. Whereas the previous MS4 Permit had incorporated only 2 TMDLs impacting the City, the current MS4 Permit includes all of the 22

TMDLs that are now in effect within the City. The MS4 Permit provides for the development of Enhanced Watershed Management Program (EWMP) plans and the implementation of these plans to meet MS4 Permit requirements and the TMDLs. While the primary purpose of the EWMPs is water quality compliance, the implementation strategy that will be proposed in the EWMPs will have additional benefits to meet goals for a sustainable City, including:

- Capture of stormwater for infiltration, for groundwater recharge, and to offset potable water use (e.g., for landscape irrigation);
- Improved flood protection and public health and safety in areas of the City that are prone to flooding;
- Implementation of multi-benefit projects that provide greening of neighborhoods and more sustainable communities; and
- Leveraging of limited resources through coordination with other planning efforts, such as revitalization of the Los Angeles River.

Water quality compliance requires significant capital investment in stormwater capture projects and green-blue infrastructure in general, but the City has already made great progress in developing legislation to reduce pollutants at the source. An example is the Low Impact Development ordinance, which became effective May 2012 to ensure that development and redevelopment projects in the City mitigate stormwater runoff in a manner that captures rainwater at its source. On June 25, 2013, the City Council passed an ordinance to ban single-use carryout bags provided by larger grocery stores (effective as of January 1, 2014) and smaller markets and groceries (effective July 1, 2014). At the State level, the City supported the Brake Pad Partnership, a coalition of environmental organizations, stormwater agencies, and the vehicle and brake manufacturing industries, resulting in the signing of Assembly Bill 346 in 2010 by then-governor Schwarzenegger to phase out the use of copper in vehicle brake pads.

The total cost to comply with the various TMDLs is estimated at approximately \$8 billion over the next 20 years, primarily to fund stormwater capture capital projects and the operation and maintenance of these projects. Capital funding for water quality improvement projects has been provided by Proposition O, a series of general obligation bonds of \$500 million, which was overwhelmingly passed by 76% of the City's voters on November 2, 2004. This was a much needed financial boost to the City's Stormwater Program as it helped the City, for example, to install approximately 30,000 catch basin screens and 10,000 catch basin inserts at a total cost of approximately \$82 million to comply with the trash TMDLs. Proposition O also provided about \$60 million towards upgrading the low-flow-diversion facilities (LFDs) along Santa Monica Bay to divert polluted runoff from the ocean and into the City's sewage system during dry weather conditions. This investment has resulted in the City consistently receiving beach grades of "A" during dry weather as determined by the non-profit organization Heal the Bay from water quality data that for the most part originate from LASAN's Environmental Monitoring Division. The diverted runoff is treated at the Hyperion Treatment Plant and the recycled water is put to beneficial use.

While significant water quality improvements have been achieved over the past 10-15 years, Proposition O funding is now winding down and funding for the City's Stormwater Program, primarily derived from the Stormwater Pollution Abatement Charge (SPAC) paid by property owners, is essentially fixed at approximately \$28 million annually. These current SPAC revenues are sufficient only for the administration of the Stormwater Program and compliance with certain programmatic core requirements of the MS4 Permit. Therefore, there is a need for new funding sources to provide for capital projects for stormwater capture, to ensure that the City will continue to meet its obligations under the MS4 Permit, and to prevent enforcement action by the Regional Water Quality Control Board and third party lawsuits.

Metrics

Metrics: Stormwater capture / groundwater infiltration / storage

The City currently imports more than 85 percent of its water supply. Due to the persistent drought and in accordance with Executive Directive #5, it is imperative to identify opportunities to implement projects that capture rainwater to alleviate the environmental impacts and costs associated with the importation and conveyance of water. LASAN in cooperation with LADWP and other partners are making a concerted effort to leverage our resources and implement as many rainwater harvesting projects as possible throughout the City. Implementation of regional as well as distributed green/blue projects that capture rainwater for groundwater recharge will provide a local source of potable water and reduce the City's reliance on imported water.

LASAN recommends the following metrics:

1. Stormwater capture / groundwater infiltration / storage
 - a) The number of stormwater capture projects implemented (overall metric);
 - b) The amount of stormwater captured for groundwater recharge; and
 - c) The number of greened acres ("greened acreage") draining to stormwater capture projects.

Implementation of stormwater capture projects may be regarded as an overall metric for LASAN's Stormwater Program as these projects have multiple benefits, such as: groundwater recharge and the offsetting of potable water use, compliance with water quality regulations for the City's receiving waters, greening of neighborhoods, job creation, and habitat restoration. Stormwater capture projects wetlands projects such as the South LA Wetlands, as well as regional diversion and detention projects for infiltration of stormwater. Thus far, the City has implemented more than fifty regional and distributed green/blue projects as funded by Prop O and State bond proceeds.

Greened acreage and the amount of stormwater captured for infiltration will increase with the number of stormwater projects implemented. Greened acreage is the total acreage of land draining to projects that capture stormwater for beneficial use, and at the same time is an indicator of implementation of multi-benefit projects in the City that provides greening of the

City. The current greened acreage is over 47,000 acres. The amount of rainwater captured for infiltration and for the off-set of potable water use depends on the greened acreage and the actual amount of rainfall over a given year. In order to account for annual variability in rainfall, LASAN proposes to standardize the amount of rainwater captured for infiltration to approximately 15” of rain annually. Currently, it is estimated that the implemented projects augment the City’s local water supply by approximately 3,580 MG/yr for a year with average rainfall. Implementation of new projects has the potential of capturing an additional 8,472 MG/yr by 2035 for a total of 12,056 MG/yr for an average year. This captured rainwater will help the City to reduce its dependence on imported water and be a more sustainable and resilient City.

Metrics: Water quality / pollution abatement

LASAN is currently leading the development of four watershed-wide EWMPs in conjunction with 26 other municipalities in the City’s watersheds to satisfy the requirements of the new MS4 Permit. The EWMPs will be the City’s road map to improve water quality in the City’s lakes, rivers, streams, and, ultimately, the Pacific Ocean. LASAN’s approach is to utilize green/blue infrastructure multi-benefit projects in order to comply with water quality regulations (i.e., the CWA, the MS4 Permit, as well as the 22 Total Maximum Daily Load water quality regulations that are currently in effect within the City’s four watersheds). Each EWMP will propose to implement a combination of large regional stormwater capture projects and as well as smaller distributed green street projects in the watershed. Most regional projects will be designed to capture the runoff volume of the 85th percentile storm event for either recharging groundwater aquifers or retaining the rainwater on site for other beneficial uses such as landscape irrigation.

LASAN recommends the following metrics:

2. Water quality / pollution abatement
 - a) Heal the Bay’s grades for the City’s beaches (overall metric);
 - b) The number of stormwater capture projects implemented;
 - c) The number of catch basin cleaned; and
 - d) The number of LID projects approved;
 - e) The number of industrial establishment inspections; and
 - f) The ratio of compliance with TMDLs.

The water quality of California beaches is evaluated and assigned a grade by Heal the Bay (HtB), a local environmental advocacy group, on an annual basis using the results of bacteria water quality monitoring conducted by multiple agencies along the coastline. The grades for the City’s beaches are a measure of compliance with water quality regulations and the TMDLs for Santa Monica Bay but, indirectly, they also reflect compliance with water quality regulations for inland waters such as Los Angeles River and Ballona Creek as those waters ultimately discharge into the sea.

The number of stormwater capture projects measures the progress towards improving water quality in the City’s rivers, lakes, streams, and the Pacific Ocean. Upon RWQCB approval of the EWMPs and pending a sustainable source of funding for EWMP implementation, we anticipate

to initially implement ten (10) projects per year, but increasing this number by additional 2-3 projects per year in order to comply with the requirements of the new MS4 Permit. It should be noted that this metric is the same as the number of stormwater capture projects under “Stormwater capture / groundwater infiltration / storage”, as these projects are multi-benefit in nature and serve both objectives.

Catch basin cleaning is a MS4 Permit requirement and the number of cleanings is a measure of MS4 Permit compliance and pollution abatement. Catch basin cleaning reduces the amount of trash being discharged into receiving waters and reduces flooding during storm events. The number of catch basin cleanings in the City is approximately 65,000-70,000 per year. Likewise, implementation of the Low Impact Ordinance is an MS4 Permit requirement, and LASAN proposes to measure the number of LID projects approved at the counter as a metric for MS4 Permit compliance.

The industrialization of the United States brought a level of pollution which resulted in environmental impacts. The Clean Water Act (CWA) of 1972 provided regulations to restore and maintain the integrity of the nation’s waters. The CWA’s National Pollutant Discharge Elimination Systems (NPDES) Permit Program requires point source dischargers and indirect dischargers to use a permit based system to reduce or eliminate pollutants released to waters of the United States or to publicly owned treatment works (POTW). This NPDES Permit Program is a key component in achieving beneficial uses and water quality improvements for the City’s waters.

LASAN implements a Pretreatment Program for the control of industrial waste discharges. This Program requires industrial and commercial dischargers, called industrial users (IU), to obtain permits to discharge. The number of industrial establishment inspections IWMD conducts per fiscal year is over 30,000 and this number includes: Significant Industrial Users, Local Industrial Users, Food Service Establishments and Dental offices. Each category of dischargers has a unique set of requirements and best management practices. The IUs are regulated by a permit and controlled using an inspection system. Inspections are made to ascertain proper compliance with the conditions of the permit including effluent specifications. If the IU falls out of compliance with permit conditions, progressive enforcement actions are taken to get the IU back into compliance. With inspections and control, the City has achieved a 90% compliance rate of all the industrial permits.

LASAN applies the pretreatment system of regulations and inspections to food service establishments including Best Management Practices for Fats, Oils and Greases. This program has been successfully implemented and as a result the City has reduced its sewer sanitary overflow events by a significant number.

The objectives of the pretreatment program include: protecting the POTWs from harmful chemicals and pollutants that will upset treatment processes and operations; protecting the life, health, and safety of operations and maintenance personnel; ensuring the health, safety, and welfare of the public; meeting water quality standards for water reclamation and allowing the beneficial reuse of biosolids.

Metrics: Recycled water treatment and reuse

Wastewater generated within the City is processed at one of four treatment facilities operated by LASAN: the Hyperion Treatment Plant (HTP), Terminal Island Water Reclamation Plant (TIWRP), Donald C. Tillman Water Reclamation Plant (DCTWRP) and the Los Angeles-Glendale Water Reclamation Plant (LAGWRP).

Wastewater is treated to standards established in each of the respective NPDES permits for discharge or beneficial reuse. This treated water meets or exceeds established receiving water standards; however, this treated water can also be beneficially used for other purposes. Current in-plant uses that offset otherwise fresh water use includes process wash down, chemical make-up water and cooling water needs. Other beneficial uses include irrigation water for parks and golf courses, water supply for the Japanese Garden, Balboa Lake and Wildlife Lake (at DCTWRP), and Los Angeles River supply. Additionally, LASAN is working with the LA Department of Water and Power (LADWP) and the West Basin Municipal Water District (WBMWD) to supply treated water for groundwater recharge and barrier water injection. Most notably, in 1994 LASAN and LADWP partnered to design and construct an advanced treatment facility at the TIWRP to provide recycled water for reuse at the Dominguez Gap Barrier Project (DGP), and other applications including irrigation and Harbor area customers including those along the Harbor Refineries Pipeline Project. Currently, this project offsets the use of over 1,403 MG/yr of potable water in the DGP. Plans for future expansion will double this amount.

The sustainability of Los Angeles water supplies includes the City's ability to maximize water conservation and increase recycled water supply to offset LADWP imported water. Beneficial use of recycled water is a practical, proven way to increase the availability of a safe, reliable, and locally-controlled water supply. Once treated to NPDES standards, this water can be economically treated to higher quality standards (micro-filtration and reverse osmosis), which allows the use of this highly treated water for additional uses such as off-set of potable water for barrier water injection, as well as other uses.

LASAN recommends the following metrics:

3. Recycled water treatment and reuse

- a) The MG/yr of wastewater treated by LASAN (overall metric);
- b) The MG/yr of recycled water produced by HTP;
- c) The MG/yr of recycled water produced by TIWRP; and
- d) The MG/yr of recycled water produced by DCTWRP and LAGWRP.

In addition to potable water use offset, the use of recycled water supports the States beneficial uses designated for the Los Angeles River, supports habitat and improves aquatic waterway aesthetics and improves active and passive recreation in the Balboa and Wildlife Lakes, and is used for preventing seawater intrusion in the barrier project. LASAN is moving forward as an environmental steward by increasing the production of recycled water for beneficial use as an element of the sustainable water supply. By reducing our dependence on imported water, we

also realize savings in the energy costs to pump imported water and reduce pollutant emissions associated with the pumping and conveyance of water from distant locations.

Metrics: Stormwater system integrity

The flood control system is a complex system of storm drain pipes, open channels, catch basins, debris basins, culverts, and pumping plants and designed to protect residents and property from flood damage. Storm drain pipes vary in size, shape, and material and range in age from 20 to 100 years. The most recent condition assessment of the flood control system was done in 2010 as part of the Los Angeles County Infrastructure Report Card by the American Society of Civil Engineers (ASCE). In summary, 990 miles of the City's storm drain pipes have an A grade (in very good condition), while 10 miles of the City's storm drain pipes received a B grade. However, about 30 miles of corrugated metal storm drain pipes have exceeded their service life and received an F grade (in very poor condition). An F grade was also given to the 170 miles of pipes that have been identified in more than 400 proposed capital improvement projects that are yet to be built. These 400 projects, at an estimated cost of more than \$500 million, will address the hydraulic capacity and other limitations of the flood control system. Overall, the City's flood control system received a grade of B-.

The number of flood control projects constructed reflects LASAN's efforts to alleviate flooding due to failures or capacity limitations of the existing storm drain system. A co-benefit of this metric is the reduction of claims against the City due to flooding.

LASAN recommends the following metrics:

4. Stormwater System Integrity
 - a) The ASCE grade for the stormwater system (overall metric);
 - b) The number of flood control projects constructed per year;
 - c) Acreage identified for flood protection relief; and
 - d) Percentage of total City without flood protection.

Metric: Wastewater system integrity

The City owns and operates the largest wastewater collection system in the Nation. It is comprised of 6,700 miles of sewers, ranging from 6-inches to 12-feet in diameter and 42 pumping plants. LASAN conducts sewer condition assessments, and has inspected almost the entire sewer system and assigned each pipe a grade (A-excellent, B-good, C-fair, D-poor, and E-emergency repair required). Approximately 95% of the sewer system is in fair condition or better (grades A, B, or C) condition. The remaining pipes are being repaired through the Wastewater Capital Improvement Program (WCIP) which repairs about 40 to 60 miles annually. All pipes with an E grade or having severe structural defects are immediately addressed through LASAN's emergency repair procedures.

In addition to sewer condition assessments, LASAN performs capacity analyses of the entire City sewer pipe network. These assessments identify pipes that do not possess adequate

hydraulic conveyance/capacity. Sewers with such deficiencies are upsized via specific projects identified in the WCIP to better serve City residents and commercial users.

LASAN recommends the following metrics:

4. Wastewater System Integrity
 - e) Miles of sewer renewed; and
 - f) Dollars invested in sewer renewal.

Recommendations

In summary, the LASAN recommends the following metrics for areas mentioned in the motion.

Program Area	Overall goal	LASAN primary metric	LASAN performance metrics	Co-benefits
Stormwater capture, infiltration and storage	Reduce reliance on imported water through capture and use of local stormwater	# of stormwater capture projects	Stormwater captured MG/yr	Water quality, green jobs, neighborhood greening, quality of life
			Greened acreage	
Water Quality / pollution abatement	Improve water quality of receiving waters through compliance with stormwater and wastewater regulations	HtB beach grades (dry and wet weather)	# of stormwater capture projects	Compliance with NPDES permits, rainwater harvesting for infiltration and irrigation, green jobs, neighborhood greening, quality of life
			Number of catch basins cleaned	
			Number of LID projects approved	
			Number of industrial inspections	
			Ratio of Compliance with TMDLs	
Recycled water treatment & use	Reduce reliance on imported water through increase of recycled water use	Recycled water MGD	Total MG/yr of recycled water produced by HTP	Sustainable City, i.e., potable water use offset, habitat protection, improved active & passive recreation, preventing seawater intrusion
			Total MG/yr of recycled water produced by TIWRP	
			Total MG/yr of recycled water produced by DCT and LAG	
Stormwater and wastewater system integrity	Reduce system failures through continuous investment in system upgrades	ASCE grade for the stormwater system	Number of flood control projects	Protect public health and the environment, reduced flooding, less Sewer System Overflows, reduction in legal claims
			Miles of sewer renewed	
			Acreage identified for flood protection relief	
			Percentage of City without flood protection	
			Dollars invested in sewer renewal	

If you have any questions, comments, or inquire further information, please call me at 213-485-2210.

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