WATER RECLAMATION
SOLID WASTE MANAGEMENT

COUNTY SANITATION DISTRICTS
OF LOS ANGELES COUNTY

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GRACE ROBINSON HYDE
Chief Engineer and General Manager

October 13, 2016

Via Electronic Mail
Carole D'Elia, Executive Director
Milton Marks Commission on CA Government Organization and Economy
925 L Street, Suite 805
Sacramento, CA 95814

Dear Ms. D'Elia:

Commission Hearing on Special Districts and Climate Change Adaptation Efforts

Thank you for your invitation to participate in the upcoming public hearing on special districts and climate change adaptation efforts that the Commission has scheduled on October 27, 2016. On behalf of the Sanitation Districts of Los Angeles County, I greatly appreciate the opportunity to provide our perspective to the Commission on this topic. Unfortunately, I will be unable to attend the hearing, but Philip L. Friess, the head of our Technical Services Department, will be there to present our testimony on my behalf. Additionally, I am attaching our written testimony per your request.

We would be happy to answer any questions that you or the Commission members may have, and we look forward to seeing your report in 2017.

Very truly yours,

Grace R. Hyde

Grace Robinson Hyde

GRH:SNG:ep

Enclosure

3901296

Special Districts' Climate Change Adaptation Efforts
Testimony to the Little Hoover Commission
October 27, 2016

Philip L. Friess, Head
Technical Services Department
Sanitation Districts of Los Angeles County

Thank you for the opportunity to testify before the Commission on the emerging challenges facing special districts in the area of climate change adaptation. This testimony provides background information about the Sanitation Districts of Los Angeles County and how we are funded, recycled water and how it contributes to regional climate change resiliency, the challenges of adapting to a changing climate, and our recommendations to the Commission. In accordance with the interests of the Commission for this review, this testimony primarily focuses on the Sanitation Districts' wastewater system and services.

Background About the Sanitation Districts

Overview of Governance & Facilities

The mission of the Sanitation Districts of Los Angeles County ("Sanitation Districts") is to protect public health and the environment through innovative and cost-effective wastewater and solid waste management and, in doing so, convert waste into resources such as recycled water, energy and recycled materials. By way of background, the Sanitation Districts consist of 24 independent special districts serving about 5.6 million people in Los Angeles County, or roughly 55% of the County's population. Our service area covers approximately 850 square miles and encompasses 78 cities and unincorporated territory within Los Angeles County (Exhibit 1 – map of Sanitation Districts). The Sanitation Districts were created in 1923 to construct, operate, and maintain facilities that collect, treat, and dispose of domestic and industrial wastewater. At that time, a significant number of cities were forming, and it was clear that managing wastewater on a regional scale made sense. Individual Districts operate and maintain the District-owned collection systems.

In the 1950s, it became apparent that solid waste management would also benefit from a regional approach, and at that time, the Sanitation Districts were given the responsibility to provide for the management of collected solid waste, including disposal/transfer operations and materials/energy recovery. In 2015, SB 485 (Hernandez) was enacted, which gives the Sanitation Districts the authority to assist local jurisdictions with stormwater and urban runoff projects. Under this new authority, which was approved by the Los Angeles County Local Area Formation Commission in July 2016, the Sanitation Districts now have the authority to acquire, construct, operate, and maintain facilities to divert, manage, discharge, and beneficially use stormwater and dry weather runoff from the stormwater drainage system.

As noted in our mission statement, the Sanitation Districts emphasize converting waste to useful resources, including recycled water, energy and recycled materials. These activities also help mitigate climate change by avoiding or reducing greenhouse gas emissions that might otherwise occur, and, in the case of recycled water in particular, also help make communities more resilient in the face of climate change impacts on water supplies (see below). With respect to energy produced from waste, the Sanitation Districts are a statewide leader and produce 105 megawatts of electricity at our wastewater and solid waste facilities, including 20 megawatts

produced from digester gas and 40 megawatts produced from landfill gas. Some of this energy is used onsite and the rest is sold to Southern California Edison or other parties. In the future, the Sanitation Districts plan to invest in facilities and equipment to accept up to 560 tons per day of diverted food waste for processing and anaerobic digestion, and the additional digester gas produced will be used to create low carbon fuel and/or turned into biomethane and injected into the common carrier natural gas pipelines for use as fuel or to generate power. This project will reduce greenhouse gases by avoiding methane emissions at landfills and through the replacement of fossil fuel-based energy with low carbon energy.

To maximize efficiency and reduce costs, the 24 Districts work cooperatively under a Joint Administration Agreement with one staff. Each District has a Board of Directors consisting of the mayor of each city and the Chair of the Board of Supervisors for unincorporated territory. Each District pays its proportionate share of joint administrative costs. Over time, this has proven to be a very efficient and cost-effective approach to wastewater management within our service area, and has allowed us to have rates that compare very favorably with other utilities within our industry.

In terms of facilities, the Sanitation Districts' wastewater management system treats about half of the wastewater in Los Angeles County, and consists of approximately 1,400 miles of main trunk sewers, 48 active pumping plants, 11 wastewater treatment plants (of which 10 are water reclamation plants), and participation in the operation of two biosolids co-composting facilities. In general, individual cities and unincorporated areas within each District own and are responsible for their smaller local collection systems, which are satellite to the main trunk sewers.

Overview of Funding Sources

Operating a large regional wastewater management system is an expensive undertaking, and is funded with local revenues. The Sanitation Districts' revenue program is predicated on the objectives of meeting all current on-going operational and financial obligations; maximizing the Districts' credit rating to optimize financial terms for funding future capital improvements; and maintaining financial stability of the organization through the establishment of prudent reserves. The Sanitation Districts receive revenues primarily from service charges (close to 90%) and ad valorem taxes (up to 10%), and connection fees, contract revenues and revenues from the sale of recycled water, biosolids, electricity or other byproducts make up the remainder. Residential users are charged a flat rate based on the burden on the system as measured by a typical residential single family home which is known as a "sewage unit." Commercial and industrial users are classified into user categories and charged according to flow and loading characteristics of that category. Some types of industrial users are more variable and are required to meter their discharged flow and take periodic samples to characterize the loadings of their discharge. Their charges are calculated based on their facility-specific flow and loadings. Connection fees are charged when a new user wants to connect to the wastewater system, and those funds are used for system expansion projects. The philosophy behind this program is that existing users should not subsidize new users of the wastewater system, so the cost of expanding the conveyance and treatment facilities to accommodate increased flows should be borne by the growth that caused the increase.

The wastewater management budget for 2016-17 is $598 million. This includes funds for operating facilities and capital improvement projects. The Sanitation Districts' estimated cost of

its 10-year Capital Improvement Program is $1.8 billion. Capital projects are financed in several ways, including "pay-as-you-go," funds from connection fees, private bonds or loans, and state/federal low-interest loans. As noted above, the Sanitation Districts strive to maintain a high credit rating in order to achieve the most favorable terms for financing capital projects with bonds, and currently are rated Aa1 (Moody's) and AA+ (S&P). The Sanitation Districts' reserve policy sets a targeted level of reserves at six months of operations and maintenance costs plus one year of debt service.

Public Outreach and Engagement in Planning & Rate-Setting
In addition to the Sanitation Districts' broader public outreach and information program, specific outreach is done in compliance with the California Constitution (Proposition 218) and the California Environmental Quality Act (CEQA), which relate to funding and planning, respectively. Article 13D, added to the Constitution as a result of Proposition 218, requires individual mailed notification and balloting requirements for implementation of new fees or increasing existing fees. Sewer services are exempt from the voting requirements, so mailed notice with a protest hearing is the process followed. Additionally, Sanitation Districts' staff hold public information meetings regarding proposed fee increases to provide an overview of the proposal and answer questions. Fee increases are implemented via ordinance, and public hearings are held by the board of directors of each District prior to adoption of any proposed fee increase.

Facility plans are developed periodically to address growth, new regulatory requirements, or the need to manage assets. When a new facility plan is prepared, a CEQA analysis is also required. Numerous public meetings are typically held during the CEQA process, leading up to a public hearing for certification of the environmental document (e.g. Environmental Impact Report, Negative Declaration or Mitigated Negative Declaration) and approval of the facility plan. The facility plan will describe the program or project objectives and problems to be solved. The CEQA analysis will describe and analyze the alternatives and recommend an alternative. Depending on the type of project and degree of anticipated public interest, the Sanitation Districts may hold 1 or 2 public information meetings, or many public meetings. During the development of a recent major facilities plan known as the Clearwater Program, literally hundreds of meetings with individuals, groups and the general public were held to explain the program and elicit public input.

Recycled Water Program
The Sanitation Districts' recycled water supply program is worthy of mention due to its relevance to climate change adaptation. The Sanitation Districts were pioneers in using recycled water beneficially and are strong proponents of expanding regional reuse options. The water reclamation plants currently supply about 100,000 acre-feet per year of high-quality recycled water that is used at more than 800 sites throughout the county. Uses of recycled water include industrial, commercial, and recreational applications; indirect potable use through groundwater recharge; and agricultural, landscape, park, and golf course irrigation. Today the Sanitation Districts are one of the top producers of beneficially reused recycled water in California and the United States. Recycled water projects are typically done in partnership with water wholesalers and retailers (which may be special districts, or city or county agencies), and the Sanitation Districts currently work with 34 different recycled water purveyors throughout our service area.

Recycled water is known as a "drought-proof" water supply, because it is available consistently, whether it rains or not. This makes it reliable and, as one of the few sources of "new" water

available in California, it can play an important role in augmenting local water supplies, thus making local communities more resilient to the effects of climate change.

The Sanitation Districts built its first water reclamation plant in 1962, which was designed specifically for the purpose of supplementing water replenished in local groundwater basins, which were suffering from overdraft due to rapidly increasing water demand to supply the growing population in the post-war period in metropolitan Los Angeles. This facility, known as the Whittier Narrows Water Reclamation Plant, has supplied approximately 600 billion gallons of recycled water to the Montebello Forebay Groundwater Recharge Project during its 54 year history. This project is carried out through a partnership with the Water Replenishment District of Southern California, which is charged with managing the groundwater basins known as the Central and West Coast Groundwater Basins, and the Los Angeles County Flood Control District, which owns and operates the groundwater replenishment facilities, or spreading grounds. These spreading grounds are also used to recharge rainwater captured in the watershed.

Traditionally, the Central Groundwater Basin was replenished with a combination of local rainwater, imported water, and recycled water. However, due to the reduced reliability and availability of imported water in recent years, the Water Replenishment District has set a goal of replenishing the groundwater basin with 100% local water supplies consisting of recycled water along with local rainfall. This led the Water Replenishment District to design the Groundwater Reliability Improvement Project, or GRIP, which recently broke ground on a new $110 million advanced treatment facility. As Water Replenishment District Board of Directors President Willard H. Murray, Jr. described it, "The Los Angeles region has a long and sometimes colorful history of importing water to quench our thirst. With this project WRD will be turning a corner in our water history. WRD's future will be built on water recycling, drought-proofing our water supplies and ending our reliance on imported water. All these new developments will be great for rate-payers and for the environment."[1]

Consistent with our goal to maximize reuse of the wastewater we treat, the Sanitation Districts currently are working with the Metropolitan Water District of Southern California on the development of a large regional water recycling project to beneficially reuse water currently discharged to the Pacific Ocean from the Joint Water Pollution Control Plant (JWPCP) in Carson, CA for recharge of several regional groundwater basins in Los Angeles and Orange Counties (Exhibit 2 – Regional Recycled Water Supply Program Fact Sheet). Traditionally, wastewater from JWPCP has not been recycled, largely because the high level of salinity in the wastewater would necessitate advanced treatment, which is expensive, and because of a lack of demand in the local area. If approved, Metropolitan Water District would build a new purification plant and up to 60 miles of distribution lines to distribute the water and facilities to infiltrate or inject the water into the groundwater basins. At buildout, this project would produce up to 168,000 acre-feet per year of purified water (equivalent to 150 million gallons per day). Currently, feasibility studies and a financing plan are being prepared, and a 500,000 gallon/day demonstration facility is in design.

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[1] "Water Replenishment District of Southern California to Build $110 Million Treatment Plant," WaterWorld magazine, dated June 16, 2016, accessed at: http://www.waterworld.com/articles/2016/06/water-replenishment-district-of-southern-california-to-build-110m-water-treatment-plant.html

With extended droughts, restrictions on imported water supplies and other challenges, including climate change, water managers in Southern California are increasingly turning to projects like this one in order to obtain reliable, drought-proof, and climate resilient water supplies.

Overview of Emerging Challenges Due to Climate Change

The types of effects of climate change have been well documented by others, including the Little Hoover Commission in its 2014 Report, Governing California Through Climate Change. They include increased temperatures, modifications to precipitation, sea level rise, and increased wildfires. Droughts have been documented to occur cyclically in California, and the severity and frequency may increase due to climate change. The Sanitation Districts' facilities and services, as well as those of other wastewater utilities, will be affected by these changes in a number of ways.

Increased Temperatures and Changes in Precipitation

Climate change is often described as a range of increasing global average surface temperatures which are caused by the emission of greenhouse gases that are trapped within the atmosphere. However important broad global trends may be, they are not always actionable at the local level. What is important to local agencies is to understand how these trends are likely to play out at the local level. Alexander Hall, Professor of Atmospheric and Oceanic Sciences at the University of California, Los Angeles, provided the Commission with testimony on October 24, 2013 that described his research, which is an ongoing study to downscale global climate models to provide climate change projections specific to the Los Angeles region. For example, Dr. Hall and his colleagues have found that, even with mitigation activities, temperatures in the Los Angeles region are projected to climb by an average of 4.6 degrees Fahrenheit, snowfall in local mountains is likely to be reduced by 58-69%, and annual average precipitation will stay about the same in the Los Angeles Basin but the natural year-to-year variability that is common here will continue.[2]

Extended Drought

Extended droughts result in reductions in available water supplies, leading to increased water conservation in order to stretch available water supplies as far as possible. In turn, indoor water conservation leads to reduced flows to the wastewater system. Potential effects wastewater systems can experience include less dilution of raw sewage, increased biological activity in wastewater collection systems which result in increased odor levels and corrosion rates, increased time for flows to travel to treatment facilities, unused capacity at treatment facilities due to lower flows, and the possible need to modify treatment process operations to maintain treatment efficacy of the more concentrated wastewater. In turn, droughts and reduced water supplies create greater demand for recycled water, which in turn may drive the need for flow equalization and other recycled water storage facilities to as to maximize the availability and use of local recycled water supplies. To the extent that water agencies seek to implement potable reuse recycled water projects utilizing advanced treatment technologies such as reverse osmosis

[2] Alexander Hall, PhD, Professor, Department of Atmospheric and Oceanic Sciences and Institute of the Environment and Sustainability, University of California, Los Angeles, "Climate Change Impacts in Los Angeles and Their Implications for Policymakers," Testimony to the Little Hoover Commission, October 24, 2013; "The Climate Change in the Los Angeles Region Project – Precipitation Findings," accessed at: http://research.atmos.ucla.edu/csrl//LA_project_summary.html#Precipitation.

(similar to desalinization), there is also a greater need for options to dispose of brine, a concentrated salty byproduct of the reverse osmosis process that is often difficult and expensive to manage. On the other hand, less use of existing wastewater collection and treatment capacity may mean that existing infrastructure does not need to be expanded as quickly as anticipated, even as the population served continues to grow.

Another ancillary effect of extended droughts is that freshwater streams may have less water, and may even be dry, except for treated wastewater that is discharged from community wastewater facilities. With lower flows, receiving waters are more likely to exceed water quality standards such as temperature and to experience adverse conditions such as algal blooms. As aquatic species experience greater stress, the need to maintain minimum flows to sustain them is garnering increased attention from state agencies such as the State Water Resources Control Board and Department of Fish and Wildlife. These trends may reduce the availability of recycled water that can be used for water supply purposes, at the same time that drought conditions are contributing to increasing demand for recycled water.

Sea Level Rise

Wastewater treatment plants are generally located at the low point in each watershed and make use of gravity for conveyance purposes. This means that in coastal areas, wastewater facilities are often located along the coast or river in low lying locations. Sea level is projected to rise from 0.6 to 1.4 meters along the California coast, which may create flooding problems during storm surges. In addition, coastal facility outfalls may require pumping be initiated or may require increased levels of pumping in order to maintain current levels of discharge. JWPCP, the Sanitation Districts' ocean-discharging treatment plant, is actually located approximately 7 miles from the coast, and effluent is discharged through two tunnels to an ocean outfall system. Because of this distance from the coast, JWPCP is not at risk from flooding due to sea level rise. However, there may be hydraulic impacts to the Sanitation Districts' wastewater system due to sea level rise. The Sanitation Districts plan to build a new tunnel to replace the existing tunnels, which have been in operation since 1937 and 1958, respectively, and have not been inspected or maintained because they run full every day. In addition to renewing the Sanitation Districts' infrastructure, the new tunnel will be designed to provide adequate hydraulic capacity to accommodate the high flows associated with severe weather conditions and the high pressures of the projected increased sea levels, together with improved energy efficiency since the new tunnel will have a lower head loss and can rely more often on gravity flow. The Sanitation Districts also have recently reballasted the offshore ocean outfall system to protect it against storm surges and severe weather, which can also be exacerbated due to climate change.

Another type of impact that may be intensified in Southern California due to sea level rise is seawater intrusion into coastal groundwater basins. Due to overpumping of several local groundwater basins in the mid-20th Century, seawater intrusion threatened to make these basins unusable. As a result, seawater intrusion barriers were developed by injecting high quality imported potable water into the basins. The subsurface freshwater mounds created by the injection wells staved off the brackish ocean water. Later, desalinated recycled water was substituted for this purpose, and now several barriers exclusively use recycled water for this purpose. So, while this problem has been around a long time, climate change may exacerbate it and more resources will be required to address its impacts.

More High-Intensity Storms
Wastewater collection systems may already be stressed when managing wet weather flows. In a changing climate, there may be increased occurrences of extreme storm events (i.e. El Nino weather patterns, etc.), and increases in peak wet weather flows, which can stress this critical infrastructure. These extreme storms can result in water inflows that exceed the current capacity of existing wastewater infrastructure, meaning local agencies will need to invest significantly to increase the capacity of their collection systems to prevent wastewater overflows that could adversely impact public health and the environment. Wastewater agencies may also need to bolster their preparations for emergencies so as to minimize the damage when record-setting storms do occur. Being prepared with backup generators, backup telemetry systems, and "smart covers" on manholes to alert operators when and where overflows occur all make it more likely that local agencies can respond effectively and efficiently when necessary. It is unclear whether there will be increased frequency or intensity of large storms in the Los Angeles region, and given reduced base flows and the fact that we have made major investments in improving our collection system infrastructure over the last 15 years, the Sanitation Districts feel we are prepared for this eventuality. Having said that, as new and improved flow and level monitoring and telemetry technologies are developed, we and other local agencies will need to incorporate them into our planning for future infrastructure needs.

<u>Information Sources Used to Plan for Climate Change</u>
One area the Commission requested that we provide information on is where we obtain information on regional climate change threats to inform our planning and adaptation responses. As the Commission is undoubtedly aware, the science and modeling regarding climate change impacts is an area of much scientific inquiry, and new reports, studies, models and other tools are being published all the time. Examples of useful sources of information and tools that already are available for use by local agencies include the following national, state and local organizations:

- Industry associations – state and national associations such as the California Association of Sanitation Agencies, National Association of Clean Water Agencies, the American Academy of Environmental Scientists and Engineers, and others provide wastewater utilities with updates and information about new tools and information to use in local planning for climate change impacts.
- U.S. Environmental Protection Agency – Climate Resilience Evaluation and Awareness Tool (CREAT), a tool to assist water, wastewater and stormwater utilities in preparing climate change risk assessments.
- U.S. Bureau of Reclamation & Los Angeles County Flood Control District – Los Angeles Basin Stormwater Conservation Study, a study that is examining potential changes to the operation of stormwater capture systems, modifications to existing facilities, and development of new facilities that could help resolve future flood control and water supply issues.
- California Natural Resources Agency – Safeguarding California: Implementation Action Plans – Water Sector Plan, a state plan to shape climate adaptation strategies to achieve well-coordinated, resilience-building regional actions through state and local activities.
- California Emergency Management Agency & California Natural Resources Agency – California Adaptation Planning Guide.
- California Energy Commission – Cal-adapt website – tools and information for local governments and others to use for planning adaptation activities.

- Climate Change in the Los Angeles Region project – UCLA researcher Dr. Alexander Hall's research program to downscale global climate change models to the Los Angeles region.
- Los Angeles Regional Collaborative for Climate Action and Sustainability – a regional coordinating body for cross-jurisdictional collaboration in the Los Angeles Region for climate resiliency.

These and many other sources of information are available to local wastewater agencies as they look for state-of-the-art information to address the challenges associated with climate change.

As noted above, the Sanitation Districts prepare facility plans periodically to address capacity needs, the need to modify facilities to comply with regulatory requirements and other issues such as aging infrastructure. As these are iterative processes, new information and planning assumptions about factors that may influence wastewater system infrastructure and operations, such as projections related to climate (e.g. temperature, precipitation, sea level rise) or per capita water use (which has been dropping due to implementation of water conservation measures), are incorporated by our engineers and planners into our analyses of the changes to our system that are needed. Incorporating climate change adaptation analysis into regularly occurring local infrastructure planning processes, rather than applying mandates for climate change analysis in isolation (e.g. mandating that every local agency prepare a particular type of plan on a set schedule), is in our opinion the most cost-effective and efficient way to achieve the goal of better planning for climate change.

Ways for the Wastewater Industry to Adapt to These Climate Change-Related Impacts

In summary, some of the ways that the Sanitation Districts and other wastewater agencies will need to adapt (and in many cases are already adapting) to climate change include the following:

- Ensuring they have sufficient capacity in their pump stations, force mains, gravity sewer systems and treatment facilities to address peak storm events;
- Producing more recycled water, which may necessitate adding flow equalization (i.e. storage tanks at the beginning of the treatment process to store some incoming wastewater flow during diurnal high flow periods for treatment during daily low flow periods, which increases the throughput capacity of the plant) and other forms of storage;
- Installing protective berms and/or seawalls and raising vulnerable portions of and/or relocating low lying treatment facilities to protect against sea level rise (e.g. as has been done in Boston, where the new Deer Island Wastewater Treatment Plant was built in the 1990s with extra protections in anticipation of sea level rise and in Pensacola, Florida, where an aging wastewater plant was replaced in 2010 with a new plant located above the Category 5 flood elevation that also could resist hurricane force winds[3]);
- Installing system redundancies and new technologies that help prevent overflow events and facilitate rapid response to emergencies when they do occur;

[3] Brett Walton, "Climate Change Alters the Calculus for Water Infrastructure Planning," Circle of Blue, March 21, 2012, accessed at: http://www.circleofblue.org/2012/world/climate-change-alters-the-calculus-for-water-infrastructure-planning/; "Emerald Coast Utilities Authority Central Water Reclamation Facility, United States of America," accessed at: http://www.water-technology.net/projects/emeraldwaterreclamat/.

- Entering into mutual aid agreements with neighboring agencies; and
- Collaborating with a wide array of local agencies and other stakeholders to plan jointly for climate change impacts, such as through the Integrated Regional Water Management (IRWM) Planning groups that exist throughout much of the State.

Conclusions Regarding State Actions to Support Local/Regional Climate Change Adaptation Efforts

Each region in California may experience different impacts from climate change, necessitating tailored strategies for the local situation. In some areas, extended or more frequent droughts may be the most critical impact, while in other areas extreme precipitation events may cause flooding. Some areas will have to respond to the full spectrum of impacts. Regardless, responses must be tailored regionally and cannot be one-size-fits-all. The State can play an important role by providing tools and up-to-date scientific information that will assist local entities with risk assessment and planning. Importantly, the State can also play a critical role in supporting regional collaborative planning efforts such as IRWM planning and development of robust regional-scale modeling to support local decision-making. By support we mean provision of both technical and financial support. Moreover, clearly many, if not all, wastewater agencies will need to invest in infrastructure improvements to respond to climate change, and the State must provide support for those efforts as well.

It appears that climate-related trends (e.g. temperature, rainfall, etc.) can give rise to, or intensify, conflicts between water supply and in-stream uses, and sometimes wastewater agencies become caught between these competing issues. One aspect that we would like to highlight is the need for the State to explore how the regulatory framework that guides how water quality and water quantity is regulated – and related areas such as protection of sensitive species – can adapt to climate change as well. The issue is that regulations to protect water quality, and plants, fish and wildlife, all are based on preserving or restoring what "is" or "was" at some point in time. However, it can be expected that, even with reductions of emissions of greenhouse gases, some or even a lot of the impacts of climate change will occur anyway. And therefore the question that must be wrestled with is whether the status quo can be preserved or attained, or whether an adaptive approach must be taken to setting the baseline for what it is we are trying to protect. This would require a new approach by regulatory agencies, one that is even more difficult because of the lack of "bright lines" to determine when it is appropriate to move to a new baseline, or "new normal." But if we do not, the danger is that a lot of resources will be spent on trying to maintain the old normal, even when that baseline is no longer tenable.

Thank you very much for the opportunity to participate in this hearing. We stand ready to provide the Commission with any additional information that would be helpful, and we look forward to seeing the Commission's final report in 2017.

SANITATION DISTRICTS OF LOS ANGELES COUNTY

VENTURA COUNTY
CALABASAS LANDFILL
Calabasas Gas-to-Energy Facility
CALABASAS
MISSION CANYON LANDFILL
SCHOLL CANYON LANDFILL
SANTA MONICA MOUNTAINS
SAN GABRIEL MOUNTAINS
SAN BERNARDINO COUNTY
ORANGE COUNTY
SANTA MONICA BAY
SAN PEDRO BAY
MALIBU
SANTA MONICA
BEVERLY HILLS
WEST HOLLYWOOD
LOS ANGELES
CULVER CITY
BURBANK
GLENDALE
LA CAÑADA FLINTRIDGE
LA CANADA WRP
PASADENA
SIERRA MADRE
MONROVIA
BRADBURY
ARCADIA
DUARTE
AZUSA
GLENDORA
SAN DIMAS
LA VERNE
CLAREMONT
SAN MARINO
SOUTH PASADENA
ALHAMBRA
SAN GABRIEL
ROSEMEAD
TEMPLE CITY
EL MONTE
S. EL MONTE
IRWINDALE
BALDWIN PARK
COVINA
WEST COVINA
POMONA
SAN GABRIEL VALLEY FIELD OFFICE
POMONA WRP
SPADRA LANDFILL
Spadra Landfill Gas-to-Energy Facility
SAN JOSE CREEK WRP
JOINT ADMINISTRATION OFFICE
Puente Hills Recycle Center
WHITTIER NARROWS WRP
MONTEREY PARK
MONTEBELLO
CITY OF COMMERCE
COMMERCE REFUSE-TO-ENERGY
PUENTE HILLS IMF
PUENTE HILLS FIELD OFFICE
PUENTE HILLS MR/TF
Puente Hills Gas-to-Energy Facility
PUENTE HILLS LANDFILL
LA PUENTE
WALNUT
CITY OF INDUSTRY
DIAMOND BAR
VERNON
MAYWOOD
HUNTINGTON PARK
BELL
CUDAHY
BELL GARDENS
PICO RIVERA
WHITTIER
LA HABRA HEIGHTS
SOUTH GATE TF
SOUTH GATE
SANTA FE SPRINGS
DOWNEY
LYNWOOD
NORWALK
DART
LA MIRADA
INGLEWOOD
EL SEGUNDO
HAWTHORNE
LAWNDALE
GARDENA
MANHATTAN BEACH
HERMOSA BEACH
REDONDO BEACH
SBC
COMPTON
COMPTON FIELD OFFICE
PARAMOUNT
BELLFLOWER
CERRITOS
ARTESIA
LOS COYOTES WRP
LAKEWOOD
CARSON
TORRANCE
LOMITA
HAWAIIAN GARDENS
CARSON FIELD OFFICE
JWPCP
JWPCP Total Energy
PALOS VERDES ESTATES
PALOS VERDES LANDFILL
ROLLING HILLS ESTATES
ROLLING HILLS
RANCHO PALOS VERDES
SIGNAL HILL
LONG BEACH WRP
LONG BEACH
SOUTHEAST RESOURCE RECOVERY FACILITY (SERRF)
Ocean Discharge System

LEGEND

- ACTIVE SOLID WASTE FACILITIES
- CLOSED SANITARY LANDFILLS
- WATER RECLAMATION PLANTS (WRP) and JOINT WATER POLLUTION CONTROL PLANT (JWPCP)
- TRUNK SEWERS
- OUTFALLS AND EFFLUENT LINES
- RECYCLED WATER LINES
- (14) SANITATION DISTRICT NUMBER or DESIGNATION
- ADMINISTRATION OFFICE AND FIELD OFFICES
- PUMPING PLANTS
- GAS-TO-ENERGY FACILITIES
- REFUSE-TO-ENERGY FACILITIES
- RECYCLE CENTERS
- INTERMODAL FACILITY (IMF) and MATERIALS RECOVERY (MR) / TRANSFER FACILITIES (TF)

0 0.5 1 2 3 4 5 Miles
0 5,000 10,000 15,000 20,000 25,000 Feet

December 2015

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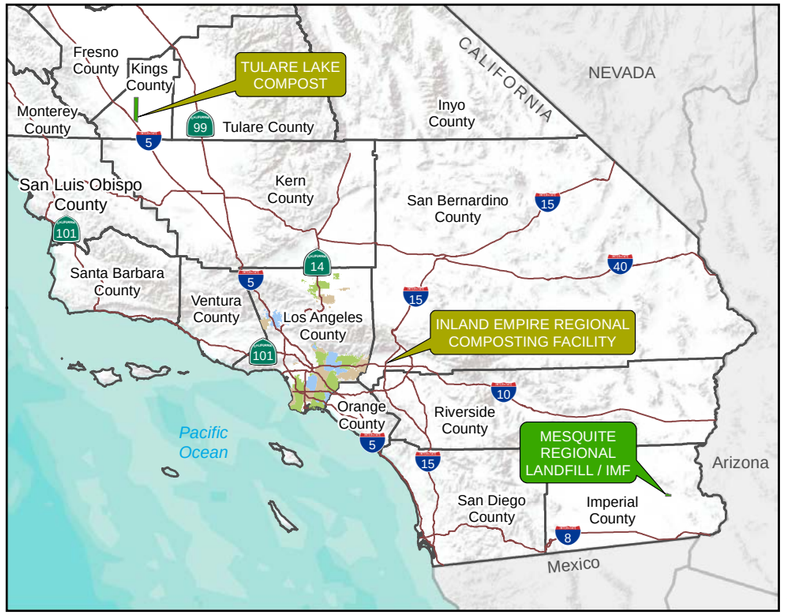
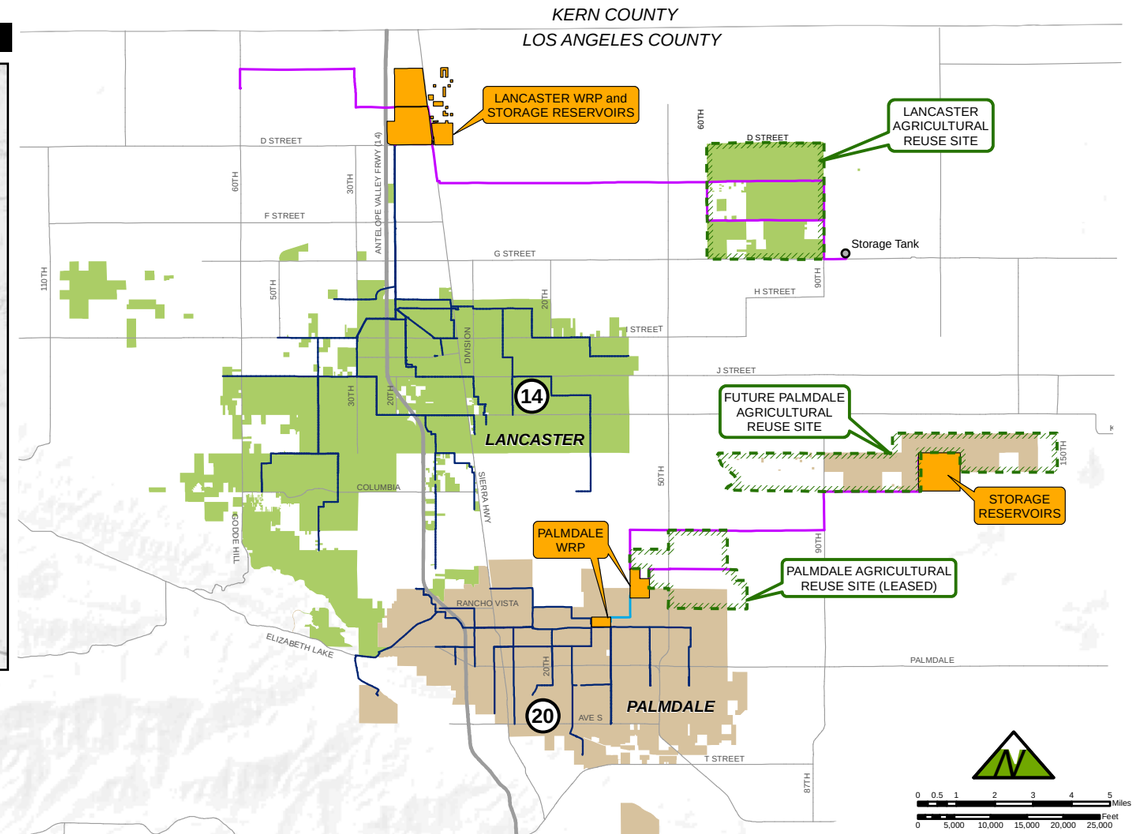
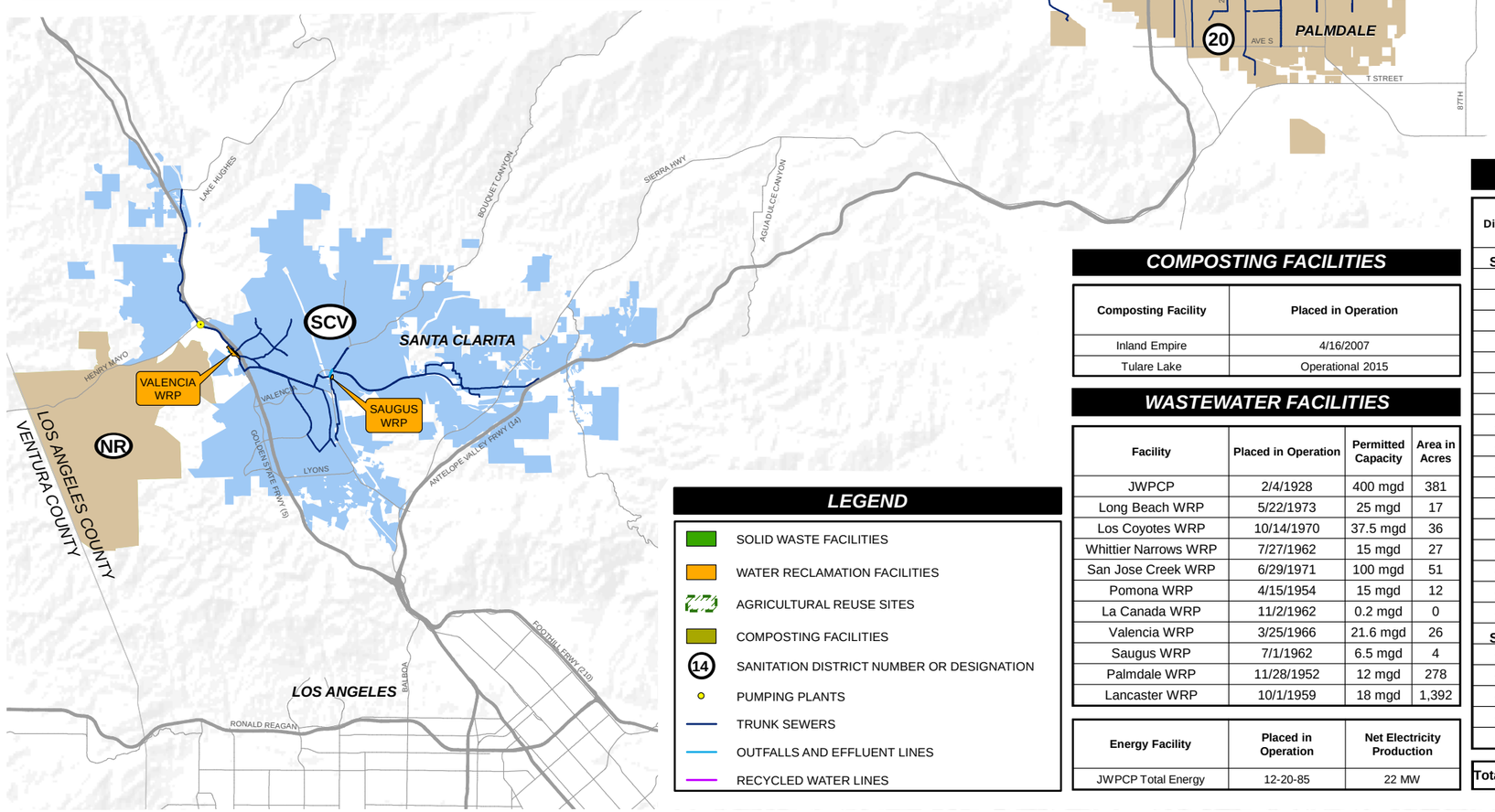
LOS ANGELES COUNTY VICINITY MAP

Kern County
Ventura County
San Bernardino County
Orange County
Los Angeles County
Antelope Valley
Santa Clarita Valley
Newhall Ranch
Joint Outfall System
South Bay Cities

REGIONAL FACILITIES







LEGEND

- SOLID WASTE FACILITIES
- WATER RECLAMATION FACILITIES
- AGRICULTURAL REUSE SITES
- COMPOSTING FACILITIES
- (14) SANITATION DISTRICT NUMBER OR DESIGNATION
- PUMPING PLANTS
- TRUNK SEWERS
- OUTFALLS AND EFFLUENT LINES
- RECYCLED WATER LINES

COMPOSTING FACILITIES

Composting Facility	Placed in Operation
Inland Empire	4/16/2007
Tulare Lake	Operational 2015

WASTEWATER FACILITIES

Facility	Placed in Operation	Permitted Capacity	Area in Acres
JWPCP	2/4/1928	400 mgd	381
Long Beach WRP	5/22/1973	25 mgd	17
Los Coyotes WRP	10/14/1970	37.5 mgd	36
Whittier Narrows WRP	7/27/1962	15 mgd	27
San Jose Creek WRP	6/29/1971	100 mgd	51
Pomona WRP	4/15/1954	15 mgd	12
La Canada WRP	11/2/1962	0.2 mgd	0
Valencia WRP	3/25/1966	21.6 mgd	26
Saugus WRP	7/1/1962	6.5 mgd	4
Palmdale WRP	11/28/1952	12 mgd	278
Lancaster WRP	10/1/1959	18 mgd	1,392

Energy Facility	Placed in Operation	Net Electricity Production
JWPCP Total Energy	12-20-85	22 MW

SANITATION DISTRICTS OF LOS ANGELES COUNTY

SOLID WASTE FACILITIES

Sanitary Landfills	Placed in Operation	Area in Acres	Status
Palos Verdes	5/15/1957	288	Closed 12/31/1980
Spadra	7/15/1957	338	Closed 4/8/2000
Puente Hills	5/19/1958	1,368	Closed 10/31/2013
Mission Canyon	6/1/1960	373	Closed 1/9/82
Scholl Canyon	3/22/1961	431	Operating
Calabasas	2/14/1961	500	Operating
Mesquite	Operational 2009	2,290	Operational

Energy Facility	Operational	Net Electricity Production
Commerce Refuse-to-Energy	1/1/1987	10 MW
Puente Hills Gas-to-Energy	1/1/1987	46 MW
SERRF Refuse-to-Energy	12/1/1988	30 MW
Spadra Gas-to-Energy	4/5/1991	6 MW
Puente Hills Engines	5/1/2005	5.4 MW
Calabasas Gas-to-Energy	7/12/2010	5.6 MW

Other Solid Waste Facilities	Operational
South Gate TF	1/2/1958
Puente Hills Recycle Center	10/25/1982
DART MR/TF	3/2/1998
Puente Hills MR/TF	7/11/2005
Puente Hills IMF	Under Construction

SANITATION DISTRICTS DATA

District	Date of Formation	Placed in Operation	Area (Sq. Miles)	Population 2014	Cities/ Partial Cities	Miles of District Sewers 2014	Pump Stations	Wastewater Management
SBC	12/24/1923	9/12/1926	14.6	117,671	8	25.4	11	Joint Outfall System
1	11/17/1924	2/13/1928	41.3	571,853	11	105.5	1	Joint Outfall System
2	2/25/1924	2/13/1928	76.1	691,957	19	219.9	2	Joint Outfall System
3	5/19/1924	5/20/1948	52.3	509,518	4	78.3	6	Joint Outfall System
4	3/17/1924	12/9/1926	1.9	35,723	2	6.3	0	LA City Sewerage System
5	3/31/1924	2/13/1928	87.8	743,064	15	181.6	10	Joint Outfall System
8	9/21/1925	2/13/1928	31.3	140,803	4	87.6	3	Joint Outfall System
9	8/16/1926	5/10/1927	0.2	2,324	1	0.0	0	LA City Sewerage System
14	8/31/1938	12/2/1941	59.0	197,512	2	75.5	0	Lancaster Sewerage System
15	1/2/1945	2/27/1948	77.6	584,145	20	145.9	2	Joint Outfall System
16	1/2/1946	2/27/1948	37.4	268,140	5	43.6	0	Joint Outfall System
17	1/2/1946	11/23/1949	7.7	55,678	1	5.2	0	Joint Outfall System
18	11/23/1948	7/1/1950	60.1	338,844	11	83.9	3	Joint Outfall System
19	3/28/1950	5/19/1951	14.2	92,550	5	35.1	2	Joint Outfall System
20	8/7/1951	9/8/1952	41.3	127,655	1	45.6	0	Palmdale Sewerage System
21	11/13/1951	8/21/1954	84.7	410,055	9	85.6	4	Joint Outfall System
22	9/22/1953	12/6/1954	64.1	333,742	12	102.0	0	Joint Outfall System
23	7/10/1956	7/14/1959	2.5	122	1	2.1	0	Joint Outfall System
SCV	1/2/1961	5/10/1962	63.3	278,097	1	43.2	1	Santa Clarita Valley Sewerage System
27	4/20/1961	4/2/1962	0.2	2,241	0	0.4	0	LA City Sewerage System
28	9/14/1961	11/2/1962	4.1	11,447	1	4.1	0	Joint Outfall System
29	9/20/1962	11/12/1964	2.2	11,411	1	35.4	3	Joint Outfall System
34	10/31/1967	Inactive	4.0	7,696	1	0.0	0	Inactive
NR	6/14/2006	Inactive	18.7	3	0	0.0	0	Inactive
Total			**846.9**	**5,532,252**	**78**	**1,411.9**	**48**	

SANITATION DISTRICTS OF LOS ANGELES COUNTY

Regional Recycled Water Program

The Metropolitan Water District of Southern California is exploring the potential of a water purification project to beneficially reuse water currently discharged to the Pacific Ocean to recharge regional groundwater basins. Under a partnership with the Sanitation Districts of Los Angeles County, Metropolitan would build a new purification plant and distribution lines to groundwater basins in Los Angeles and Orange counties. The program would represent the first in-region production of water by Metropolitan. Diversifying the region's water supply sources, advancing conservation and maintaining imported supplies are all part of Metropolitan's long-term Integrated Water Resources Plan.

Program at a Glance

Under the current program configuration, Metropolitan would purify water at the Sanitation District's Joint Water Pollution Control Plant in Carson, and replenish groundwater basins in Los Angeles and Orange counties. The initial program activities call for construction of a 500,000 gallon-per-day demonstration project at the plant site and feasibility studies. The operational phase(s) of the program call for deliveries of up to 150 MGD (168,000 ac-ft per year) of purified water and the construction of up to 60 miles of distribution lines to convey the water to spreading basins and/or injection well sites in both counties. The program is being configured to ensure delivery flexibility to groundwater basins to meet the needs of Metropolitan's Member Agencies, groundwater basin managers and pumpers. The potential for shared use of public and private rights-of-way and operational facilities is also under consideration.

Proven Safe Techniques

The project involves use of established technologies to purify non-nitrified secondary effluent and turn it into a supply that is suitable for indirect potable reuse through groundwater replenishment. These technologies include reverse osmosis membrane treatment followed by ultraviolet light and other processes. The water would be purified, injected or spread onto groundwater basins as another "barrier" of safety, pumped out and re-treated as necessary before entering the drinking water system.

Sanitation Districts' Joint Water Pollution Control Plant in Carson

Groundwater Basins: Dependent on Metropolitan

Groundwater basins produce about a third of Southern California's overall water needs thanks in part to replenishment supplies from Metropolitan. Along with Metropolitan's imported supplies, this purified water would represent a new, drought-proof supply for groundwater replenishment.

Key Milestones

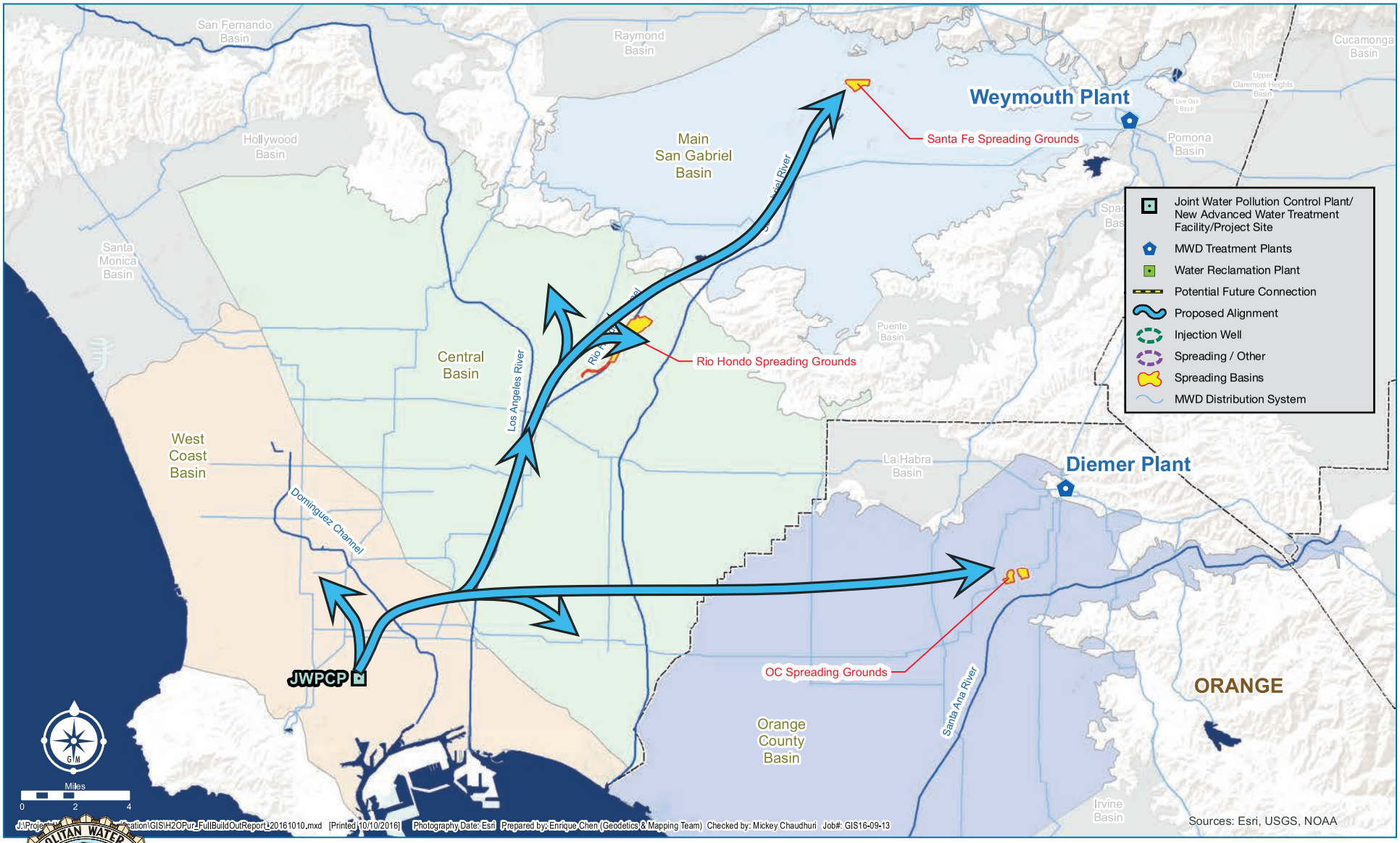
November 2015

- Metropolitan and Sanitation Districts boards approved agreement for demonstration project and feasibility studies.
- Metropolitan board authorized $15 million for demonstration-scale recycled water treatment plant and studies.

2016-2017

- Design and construct demonstration-scale plant.
- Both boards review feasibility studies and consider recommended next steps.

Regional Recycled Water Program



The mission of the Metropolitan Water District of Southern California is to provide its service area with adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way.

The Metropolitan Water District of Southern California: 700 N. Alameda St., Los Angeles, CA 90012 P.O. Box 54153, Los Angeles, CA 90054-0153 (213) 217-6000/(800) call-mwd (255-5693)