T&E AGENDA: 05/03/21
ITEM: (d) 3

CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

Memorandum

TO: TRANSPORTATION AND ENVIRONMENT COMMITTEE

FROM: Kerrie Romanow

SUBJECT: **SEE BELOW**

DATE: April 15, 2021

Approved

Date 04/21/21

SUBJECT: DISCHARGE REGULATIONS AND FUTURE IMPACTS ON THE SAN JOSÉ – SANTA CLARA REGIONAL WASTEWATER FACILITY REPORT

RECOMMENDATION

Accept a report on future wastewater discharge requirements and their potential impacts on Regional Wastewater Facility Capital Projects.

EXECUTIVE SUMMARY

The San José-Santa Clara Regional Wastewater Facility[1] (RWF) is the largest advanced wastewater treatment plant in the western United States. It works nonstop to clean Silicon Valley's wastewater to very high national standards, protecting public health. In addition to protecting public health, the RWF has the vital responsibility of protecting our environment, not just through regulatory compliance but through stewardship efforts that further enhance and benefit the ecosystems and wildlife present. The RWF is the largest discharger into the San Francisco Bay, a large industrial air emissions source, and is continually faced with meeting increasingly stringent regulatory requirements. The RWF is regulated under two principal operating permits: a National Pollutant Discharge Elimination System (NPDES) permit under the Clean Water Act, administered by San Francisco Bay Regional Water Quality Control Board (Water Board), and an Air Operating Permit under Title V of the Clean Air Act, administered by Bay Area Air Quality Management District (BAAQMD).

NPDES permit requirements have become increasingly restrictive over the years, but the RWF has been able to successfully meet them through capital improvements and a robust pretreatment/source control program. Since 1997, the RWF has also had a South Bay

[1] *The legal facility name remains San Jose-Santa Clara Water Pollution Control Plant, but a new common name, San José-Santa Clara Regional Wastewater Facility, was approved in early 2013.*

Monitoring Program (SBMP), which tracks a variety of water quality and habitat data points to demonstrate that the RWF's discharge, or effluent, is not harmful to the South San Francisco Bay (Bay). Data from the SBMP has helped inform new regulations and facilitated a reduction in the requirements in recently issued NPDES permits. The SBMP also provides critical data that informs proposed water quality criteria that would be most protective for the Bay by the Water Board.

For air emissions, staff is focused on the California Air Resources Board (CARB) programs regulating Toxic Air Contaminants and Greenhouse Gas (GHG) emissions, which could impact the RWF. Staff is also engaged with BAAQMD in implementation of rules to limit human health risk and GHG emissions from wastewater treatment facilities. The BAAQMD is also studying the RWF and several facilities as potential sources of odor in the region. Staff has been coordinating air sampling activities with BAAQMD for the odor attribution study.

In accordance with the adoption of Senate Bill (SB) 1383 in 2016, the California Department of Resources Recycling and Recovery (CalRecycle) developed new regulations to reduce climate change pollutants such as methane that result from the landfill disposal of organic material. The new regulations were finalized in November 2020 and will go into effect on January 1, 2022. The final regulations maintain biosolids in the definition of organic material. Once the RWF's new Dewatering Facility is complete, the RWF will be better aligned with the SB 1383 regulations. Staff will procure a few short-term contracts prior to the startup and commissioning of the Dewatering Facility for the transport and beneficial use of the dewatered biosolids.

New and pending wastewater regulations represent advancements in the identification of and detection of limits for water quality contaminants. Additional investments in treatment technologies to the extent available do not always result in a commensurate improvement in overall water quality (i.e. there are diminishing returns on investment). Staff continues to monitor and participate in the formal rulemaking process on behalf of the rate payers to advocate for reasonable requirements. Air emission regulations are typically focused on human health impacts in the vicinity of the source, but recent trends show that more focus is being given to climate-related concerns where impacts are non-localized. Emissions reductions are typically achieved through end-of-pipe and fuel-cleaning control technologies. Like their wastewater counterparts, emissions reduction regulations can come with high costs. Staff continually evaluates new rules and proposed permit conditions and look for the most cost-effective engineering and policy solutions. This report provides a summary of the more significant regulations that impact the RWF and discusses how the Environmental Services Department is advocating and often influencing these regulations and responding through capital improvements.

BACKGROUND

The RWF is the largest wastewater discharger in San Francisco Bay and the largest advanced wastewater treatment plant in the western United States, serving a population of 1.5 million

people (roughly one-fifth of the entire Bay Area population) and over 17,000 businesses across eight cities and the County. From industrial dischargers to residents and restaurants, the RWF is responsible for cleaning wastewater to the highest standards before it is discharged to the shallow waters of the Lower South Bay. The RWF incorporates primary, secondary biological nutrient removal (BNR), filtration, and disinfection into its treatment processes.

Since 1956, the RWF has continually treated the majority of Silicon Valley's wastewater and protected public health and the Bay environment. The RWF is sized to treat an average of 167 million gallons per day (MGD) during dry weather. The year-round average influent flows for 2019 and 2020 were 109 MGD and 101 MGD respectively. Average effluent flow into the Bay through the Artesian Slough was 93 MGD and 83 MGD over the same two years, with an average of approximately 11 MGD diverted to the South Bay Water Recycling system to be used as recycled water in three cities with peak recycled water production of approximately 23 MGD occurring in the summer when demand for recycled water is highest and flows to the RWF are lowest.

Wastewater treatment at the RWF is accomplished by using a series of physical, biological, and chemical processes to treat the liquids stream and the solids stream. Separated solids (or sludge) from wastewater are thickened and processed through anaerobic digesters to reduce pathogen content, sludge volume, and create biogas for beneficial reuse. The digested sludge (biosolids) is then pumped to open air lagoons capped with water, and then to drying beds for further volume reduction. The treatment and stabilization of biosolids is completed over a four-year cycle. At the RWF, this process generates approximately 85 dry metric tons of biosolids per day. The dried biosolids are sent annually to the adjacent Newby Island Landfill to be used as alternative daily cover (ADC).

The RWF is a critical regional asset while being a good steward of the environment and enabling recreational uses by and in the Bay. The Don Edwards National Wildlife Refuge is located right near the effluent discharge. Public trails winding along Artesian Slough accommodate day hikers and wildlife photographers. Fishing enthusiasts and seasonal duck hunters launch from the nearby Alviso Boat Launch to fish and hunt in waters flowing from the RWF.

The RWF is regulated under two principal operating permits:

- A NPDES permit under the Clean Water Act, administered by the Water Board. After nearly a year of negotiation with the Water Board, a new NPDES Permit was issued in November 2019 and after some additional revisions, was approved by the Water Board on February 12, 2020. The new permit, Order Number R2-2020-0001 became effective April 1, 2020.
- A "Permit to Operate" under Title V of the Clean Air Act, administered by BAAQMD. The Air Permit was issued in March 2017 and will be up for renewal in March 2022.

NPDES Permit

The NPDES Permit mandates water quality monitoring requirements for the RWF's effluent discharge to the Bay and sets specific concentration limits for several conventional wastewater pollutants, metals, and organic compounds. The NPDES Permit further requires that RWF effluent discharge may not cause or contribute to impairment of any beneficial uses designated for the Lower South Bay. The designated beneficial uses of the Lower South Bay where the RWF discharges are:

- Estuarine Habitat
- Preservation of Rare and Endangered Species
- Wildlife Habitat
- Contact Recreation
- Non-contact Recreation.

The RWF continues to be recognized in its NPDES Permit as supporting all these beneficial uses and providing additional environmental enhancement to the Lower South Bay. This recognition stems from consistent documentation of beneficial use attainment by the SBMP.

Over the last two decades, the United States Environmental Protection Agency (EPA) and the Water Board have developed water quality regulations related to a variety of pollutants. Regulatory focus through the late-1980s and early-1990s was on copper, nickel, and freshwater flows. In the late-1990s this focus shifted to cyanide, legacy mercury, and Polychlorinated Biphenyls (PCBs).

Title V Permit

The Title V program is designed to standardize air quality permits for major sources of emissions across the country and is required for facilities that emit more than the Major Source Thresholds (MSTs) of criteria pollutants. The criteria pollutants include carbon monoxide, ozone, lead, nitrogen oxides, particulate matter, and sulfur dioxide. The Title V permit incorporates the RWF's Permit to Operate, also issued by the BAAQMD, and all other applicable local, state, and federal air quality regulations.

The RWF tracks emissions from its engine generators through a combination of fuel consumption, source testing, and monitoring of pollutant levels in the digester gas fuel supply. These parameters are reported to the BAAQMD on an annual basis. In addition, the RWF submits a report of Title V compliance status semi-annually.

ANALYSIS

Wastewater regulations typically evolve over multiple five-year NPDES and Air permit cycles but can have significant impacts to operational and capital costs that affect rate payers, so RWF staff proactively engage with their regulators to advocate for the most cost-effective approaches.

Staff is proactive in identifying issues on the horizon, collecting data, and building case studies to inform common sense, science-based solutions for the Bay and the RWF.

Wastewater Regulations under Consideration or Development

San Francisco Bay Nutrient Watershed Permit - In addition to discharging a variety of chemical constituents within the range allowed under each Publicly Owned Treatment Works (POTWs) NPDES permit, POTWs are also large dischargers of nutrient compounds to the Bay, specifically nitrogen and phosphorus. Nitrogen levels in San Francisco Bay are elevated compared to other urban water bodies. However, the elevated nitrogen is not currently causing impairment of the Bay, which would manifest through effects like harmful algal blooms and low dissolved oxygen levels. Despite no currently observed impairment, regulators have considered a hard limit, or cap, on nutrient loads discharged to the Bay and not allowing any future increases, disregarding inherent long-term increases due to expected population growth.

Through continued participation in the research and investigations into the impact of nutrients in the Bay and collective negotiation with Water Board staff, the RWF and partner wastewater agencies successfully worked with regulators on the adoption of a new Nutrient Watershed Permit, which took effect in July 2019. The new Permit delays load caps in any form until 2024, at the earliest; and factors in projected population growth and inherent load variability into any future load caps. While the 2019 Nutrient Watershed Permit does not require load caps, it instead includes:

- Increased funding from dischargers, based proportionally on nutrient discharge loads from each facility, to support regional studies to further evaluate nutrient impacts on the Bay,
- Continued monitoring of nutrient discharges from wastewater treatment plants
- Regional evaluations of potential nutrient reduction strategies utilizing natural treatment systems (wetlands and horizontal levees) and increased recycled water.

Staff is actively engaged in all requirements to ensure the RWF is well represented in terms of its current nutrient removal performance, contribution of nutrients to the Bay, and opportunities to achieve additional nutrient reductions should they be necessary.

It is anticipated that the Water Board will impose nitrogen limits that account for growth and variability in the 2024 Nutrient Watershed Permit in the form of effluent load caps. Similar load caps for phosphorus are not expected because it does not appear to pose a potential threat to Bay water quality. The load caps envisioned for the 2024 nutrient permit will likely need to be achieved by 2029, which is the end of the permit term. Additional treatment modifications to meet the anticipated load cap by 2029 will be necessary due to increased nitrogen loads from projected population growth and due to changes in solids dewatering that will generate a return stream of high strength nitrogen that the RWF will need to develop the capacity to fully treat. If no further action is taken by 2029 to reduce nitrogen loads discharged from the RWF, the RWF will exceed the anticipated future nitrogen load caps at some point between 2024 and 2029. The RWF staff initiated a comprehensive process optimization study in early 2020 to evaluate how the Capital Improvement Program (CIP) and the RWF could respond to future nutrient load caps

and other regulatory requirements in a cost-effective and environmentally protective manner within the existing CIP project timelines. The evaluation was not included in the Plant Master Plan because at that time, nutrient regulations were not a high priority for the regulators and there were not indications that the Bay could be impaired by nutrients. Furthermore, nutrient load caps for wastewater treatment plants did not exist until the 2019 nutrient watershed permit, so there was not a limit or treatment threshold upon which to base an evaluation. The study has identified the best treatment technology to keep the RWF in compliance with the future nitrogen load cap until the study's planning horizon of 2051. The study is also evaluating options and projected costs to reduce nitrogen loads even further than the future nitrogen load cap should the scientific evaluation of the Bay indicate additional reductions are necessary. Since the study identified the treatment technology to meet the future load cap, the next five-year CIP plan will need to modify existing projects or include new project(s) in order to meet the nutrient loads cap.

Constituents of Emerging Concern - Constituents of Emerging Concern (CECs) is a term used that includes a broad range of unregulated chemical components found at trace levels in many of our water supplies, and there is a concern that these compounds may have an impact on aquatic life. Examples of these components include chemicals commonly found in pharmaceuticals and personal care products, which are increasingly being detected at low levels in surface water. The RWF is taking a proactive approach to CECs by engaging in regional science-driven efforts to understand the sources and environmental impacts of various CECs and integrating pollution prevention messaging into public outreach campaigns to educate the public on proper disposal.

Poly- and per-fluoroalkyl Compounds
A recent regulatory focus has been on poly- and per-fluoroalkyl compounds (PFAS), a large class of chemicals with a diverse number of applications in textiles, carpet treatment, metal plating, cookware coatings, food packaging, and firefighting foams. Because of their broad applications, PFAS are entering the wastewater stream through residential, commercial, and industrial pathways. PFAS are persistent in the environment and some forms accumulate in wildlife, potentially causing reproductive impairment or other toxic effects. With the recent scrutiny, the State Water Resources Control Board (SWRCB) began issuing focused orders to evaluate the pathways through which PFAS is entering the environment. The action began in mid-2019 and two of three phases are completed with sampling at landfills and in water supplies already conducted. Sampling by wastewater treatment plants is part of lower priority pathways in phase 3 because most POTWs are unlikely to be significant pathways of PFAS into the environment. Phase 3 monitoring requirements were issued to POTWs in the second half of 2020. The SWRCB issued a blanket Order to collect PFAS concentration data from all POTWs except for those in the San Francisco Bay Region. The POTWs in the San Francisco Bay Region are participating in a more focused, more informative study of PFAS in wastewater and biosolids in collaboration with the San Francisco Estuary Institute (SFEI) and the San Francisco Bay Regional Water Quality Control Board (RWQCB). This collaboration is the result of RWF staff actively participating in and assuming leadership roles in regional science programs, building trust between the wastewater community and our regulators over the course of many years. The San Francisco Bay study is evaluating potential true sources of PFAS in addition to the fate and

transport of PFAS at POTWs. The study should provide valuable insight into the most effective control measures, which are unlikely to be treatment technology upgrades at POTWs.

The RWF, also through active participation and leadership in proactive regional science programs, has measured concentrations of PFAS compounds in RWF effluent as part of three separate studies conducted prior to the current SWRCB phased study. Concentrations of PFAS in RWF effluent are consistent with concentrations at other wastewater treatment plants in the region, meaning concentrations in RWF effluent will most likely not be a priority for regulators. Following the State's investigations and depending on the magnitude of PFAS in wastewater effluent relative to other PFAS pathways, it is possible that future regulations of PFAS in treated wastewater effluent could be imposed. Because of their chemical nature and behavior in water, treating PFAS at a wastewater treatment plant is unlikely to be an effective control or reduction strategy. In addition to participating in the regional study with SFEI, staff are exploring pollution prevention strategies for PFAS reductions should they become necessary in the future.

Flea and tick pet treatment

A second category of emerging contaminants is flea and tick treatment for household pets. Many of the most popular and lower cost products on the market today are applied topically to a dog's or cat's skin between their shoulders. Studies conducted in the San Francisco Bay Area have demonstrated that the topical application causes the product and chemicals to spread rapidly throughout a household, onto furniture, clothes, bedding, hands, and faces. As these items are washed, the chemicals are sent into the collection system and to the RWF. Many of the popular topical flea and tick treatments in wide use today contain one of the two most problematic pesticides, fipronil and imidacloprid. Studies conducted at the RWF and other POTWs have shown that these two compounds are not removed or reduced by treatment at even advanced wastewater treatment facilities like the RWF, so they are discharged to the environment. These compounds are highly toxic to aquatic life, especially insect-like aquatic invertebrates. In addition, imidacloprid is a class of pesticide known as a neonicotinoid, which are pesticides that have been implicated in honeybee colony collapses.

Since there is not an identified treatment technology to remove these compounds from wastewater, RWF staff initiated a proactive pollution prevention (P2) effort to educate the public and San José staff on the environmental risks posed by fipronil and imidacloprid. Outreach messaging encourages residents to consider using chewable flea and tick treatments for their pets after speaking to their veterinarian, to practice integrated pest management (less toxic alternatives) for flea and tick control and treatment, and to research alternative products that do not contain fipronil and imidacloprid. The RWF staff continues to research and refine P2 messaging for flea and tick pet treatment through collaborations with partner agencies in the collaborative Bay Area Pollution Prevention Group as well as the State Department of Pesticide Regulations. Staff is also evaluating the prevalence of fipronil and imidacloprid containing treatments at San José facilities to understand the feasibility of reducing the use of these chemicals through internal policy changes.

Microplastics
A third category of CECs is microplastics. Microplastics are tiny particles of plastic that are smaller than five millimeters and are found in the form of microbeads, fragments, fibers, tiny plastic pellets called nurdles, foamed plastic particles from packaging, cigarette filters and other items. These particles all originate from human use and are entering the environment because of human activities. Wastewater treatment plants are not designed to remove such tiny particles from the waste stream, and technology to remove them at wastewater treatment plants is incredibly expensive due to the sheer volume of water that is treated at a centralized facility. Detections of these microplastics in Bay water and in some fish is cause for concern since these particles are not food and could potentially contain chemicals that are toxic to aquatic organisms. The toxicity and environmental impact of microplastic particles are still poorly understood and are a priority focus of future research at the state level and a priority for the California Ocean Protection Council (OPC).

Bay Area wastewater treatment plant effluent, including the RWF effluent, was analyzed for microplastics in 2015 and again in 2017 as part of a comprehensive study. The results indicate that at least a portion of the microplastics in the sanitary waste stream pass through wastewater treatment plants, including those with advanced treatment technology and filtration like the RWF. The majority of microplastics in treated wastewater at the RWF were in the form of microfibers, which are present from laundering garments made with synthetic plastic fibers.

Through the San Francisco Estuary Institute (SFEI) and the 5-Gyres Institute, wastewater agencies, stormwater agencies, scientists, and regulators partnered with representatives from the garment industry and environmental groups and from 2016 through 2018, conducted comprehensive investigations into the environmental occurrence, sources, and environmental fate of microplastics. The investigations were summarized in a final report that was released in October 2019. The report concluded that wastewater treatment plants with filtration treatment steps like the RWF discharge much lower concentrations of microplastics than those without. Furthermore, the monitoring summarized in the report shows that wastewater treatment plants contribute much lower amounts of microplastics than other pathways such as stormwater discharges or air deposition. Contributions of microplastics from non-wastewater pathways can be as much as 300 times greater than wastewater discharges. Federal law, the Microbead-Free Waters Act of 2015, banned the sale of certain products containing microbeads starting in January 2018. While microbeads in rinse-off cosmetics have been banned, the other types of microplastic particles such as fibers and fragments remain. A broad group of stakeholders agree that plastics use reduction, product stewardship, and true source control are the best strategies to reduce the amount of microplastics entering the environment. Staff will continue to monitor this issue for any further developments.

State Toxicity Plan - Monthly chronic toxicity testing is required under the RWF NPDES Permit, but testing is for diagnostic purposes and results aren't evaluated against numeric effluent limits, but instead against measured effects on a test species. A State Toxicity Plan that includes adoption of numeric toxicity limits for all POTWs, was adopted by the State Water

Resources Control Board on December 1, 2020. Numeric toxicity limits will now be included in all NPDES Permits as they are reissued.

The most significant change in the RWF's newest NPDES Permit, approved by the Water Board in February 2020, is a change to the test species used to evaluate chronic toxicity in RWF effluent. The previous species was the water flea, *Ceriodaphnia dubia*, which produced unreliable data, and false positive toxicity test results. In advance of the Permit negotiations, staff at the RWF studied five candidate test species (including the water flea) to determine which species was the most sensitive to the RWF effluent. The research concluded that the fathead minnow, *Pimephales promelas*, provided the most reliable data. Negotiations with the Water Board were successful, and the Water Board changed the test species to the fathead in the 2020 NPDES Permit to evaluate both chronic and acute toxicity. This beneficial change was the direct result of RWF staff's research and will decrease the number of false positive data and provide greater confidence in all toxicity testing results. This change is estimated to save the RWF approximately $375,000 over the five-year permit term by improving testing efficiencies. In addition, more accurate data will result in increased operational efficiency by reducing the number of investigations and additional testing associated with false positive results. The 2020 Permit also does not include numeric toxicity limits because it was approved before adoption and implementation of the State Toxicity Plan and the history of chronic toxicity detections at the RWF did not show levels high enough to warrant a pre-emptive limit.

Adoption of numeric toxicity limits under the State Toxicity Plan will be in place when the RWF's NPDES permit is reissued in 2025. While any new effluent limit increases the challenges for compliance, the change in test species to the fathead minnow should mitigate the risk of non-compliance instances in the future because of the low rate of false positives in the fathead minnow toxicity test.

The RWF has a nationally accredited environmental laboratory and has recognized expertise in chronic toxicity testing. Even with this expertise and experience, it's important to note that the causes of chronic toxicity intermittently detected at the RWF have never been successfully identified. This problem is not unique to the RWF, with other wastewater facilities also unable to successfully identify the precise causes of toxicity in their discharges. Consequently, any response to future non-compliance events for chronic toxicity, because of the new limits, would be exceptionally difficult to design without knowing the cause of any observed toxicity.

Air Quality Regulations under Consideration or Development

Toxic Air Contaminants / Rule 11-18 – BAAQMD is implementing a new rule: Regulation 11, Rule 18 (Rule 11-18) to assess and reduce human health risks associated with toxic air contaminant emissions from facilities throughout the Bay Area. It is expected that the RWF will be subject to Rule 11-18 in 2021 and will be required to fund a human Health Risk Assessment (HRA) for the entire RWF under the guidance of BAAQMD.

This HRA under Rule 11-18 is expected to commence in 2021 with a request for information from BAAQMD. Staff will coordinate with BAAQMD to ensure that the most up to date emissions information is used in the HRA so that the health risks associated with the RWF are accurate. The HRA will be conducted after BAAQMD has all the emissions and process information required for the analysis. Results of the HRA are expected in 2022. Facilities that are found to have elevated potential adverse health effects on the surrounding community will be required to submit and implement a plan to reduce impacts.
However, the RWF recently completed HRAs conducted as part of the permitting process for the new equipment including the Cogeneration Facility and Headworks 3. Those HRAs showed compliance with health risk standards under the strict HRA methodology. The new engines include Best Available Control Technology (BACT) which reduces emissions and associated health risks from the new equipment compared to the equipment that will be replaced. Headworks 3 and the sludge thickening facility that are both under construction include improved emissions control for toxic air contaminants compared to the existing processes.

Greenhouse Gas Emissions / Cap and Trade - In the absence of federal action to reduce greenhouse gas (GHG) emissions, California has created statewide programs, including a Cap and Trade program to track and promote reduction of GHG emissions. The current program authorized by Assembly Bill (AB) 32 in 2006 was set to expire in 2020 but was extended through 2030 with the adoption of Senate Bill (SB) 32 in 2017.

The RWF uses its digester gas as a fuel to power the facility but must blend it with large volumes of pipeline natural gas (a fossil fuel) to have sufficient fuel supplies. After five years of being subject to the Cap and Trade program, the RWF was able to exit the program by purchasing electrical power from the utility grid rather than generating it onsite by using additional natural gas. This decreased GHG emissions generated onsite to less than the Cap and Trade threshold, but requires consistent management of emissions to remain under the cap. The RWF power generation systems are changing as the on-site power generation system transitions to the new Cogeneration Facility. Staff is working on plans for the operation of the Cogeneration Facility with the goal of balancing overall GHG emissions below the Cap and Trade threshold, while powering the RWF in the most reliable and economical way for rate payers.

CARB has adopted a regulation to implement the directives of SB 32. The regulation to continue the Cap and Trade program is similar in structure to the existing Cap and Trade regulation and will include the same 25,000 Metric Tons (MT) of Carbon Dioxide equivalents (CO_2e) applicability threshold. However, the overall allowable statewide emissions cap will decrease from approximately 350 Million MT of CO2e to 250 Million MT CO_2e in 2030. This is designed to increase the cost of GHG emission allowances. The increased allowance cost would result in higher compliance costs for the RWF if allowance purchases are required in the future. Emissions from the RWF are expected be remain below the Cap and Trade threshold through 2030.

Greenhouse Gas Emissions / BAAQMD Methane Rules - Methane is a potent GHG (21 times as potent as carbon dioxide) that is generated through the anaerobic decomposition of organic matter in processes such as in the anaerobic digesters at the RWF. The high potency of methane has made reduction of methane emissions a high priority for BAAQMD. Nearly all biogas currently produced at the RWF is captured on-site and used to generate energy for the facility. The remaining methane escapes as fugitive emissions. As part of the Capital Improvement Program (CIP) at the RWF, all biogas piping in the facility is being replaced and updated, reducing potential leak sources, and improving overall safety.

BAAQMD has begun rule development on measures intended to reduce methane emissions at Bay Area facilities. The first of these rules, Rule 13-1, was intended to require facilities to find and eliminate any large (defined as more than 10 pounds per day) methane leaks. The rule adoption has been deferred in favor of rules targeted at organic waste processing, composting, wastewater treatment, and landfills. Planned Rule 13-4, targeting wastewater treatment facilities and anaerobic digesters for methane and nitrous oxide emission reductions has the greatest potential effect on the RWF. The intent of the rule will be to limit fugitive methane emissions and minimize the formation of nitrous oxide in the treatment process. Formal rulemaking for this was expected by the end of 2019 but was been delayed indefinitely due to lack of BAAQMD staff resources and effects of COVID-19. City staff and Bay Area Clean Water Agencies (BACWA) are working to educate BAAQMD personnel on wastewater treatment and anaerobic digester operations to help inform their rulemaking process. City staff and BACWA will monitor developments, provide comments, and participate in discussions with BAAQMD during the rule development process.

Air Permit Changes

Digester Permit to Operate – The BAAQMD revised the Permit to Operate (PTO) for the anaerobic digesters before construction began on the digester upgrade project. The PTO included new monitoring requirements for compliance demonstration. A requirement to monitor and record all instances of digester gas releases through pressure relief valves is the most significant additional requirement in the PTO. This monitoring will require the installation of new equipment to continuously monitor the pressure inside the digesters. The CIP project team is working with RWF staff to add the required monitoring equipment to the four upgraded digesters. RWF staff is retrofitting the remaining digesters with the appropriate equipment.

New Equipment Monitoring – New equipment including digester gas flares and the cogeneration plant consisting of four engine/generators and two boilers all began operation in 2020. The new enclosed flare has a continuous temperature monitoring requirement and both flares have continuous flow monitoring requirements. Many parameters including catalyst bed temperature and fuel flow must be monitored for the new cogeneration engines. These additional monitoring requirements have been included in the routine air permit compliance program. The new combustion equipment is subject to strict emission limits. Emissions testing

has been conducted on each piece of equipment to demonstrate compliance with these strict emission limits.

South Bay Odor Study

Regional Odor Attribution Study – BAAQMD has hired consulting firms to conduct an odor attribution study for the RWF, Newby Island Landfill, and Zero Waste Energy Development Company (ZWEDC). Milpitas residents complain that all three facilities contribute to odor. The odor attribution study is intended to characterize odors from each of the three facilities so that odors observed in the community can be traced to their source. The results of the study will be used by BAAQMD to develop a plan for reducing odors from any of those facilities that are found to contribute to odors observed in the community.

The odor attribution study includes seasonal sampling events. The first sampling event occurred in October 2020 with samples taken at RWF from the primary outflow channel, secondary aeration basin, lagoon, and drying bed. The sampling team also conducted ambient and downwind odor observations. A second monitoring event was conducted in March 2021 with samples again taken from the primary outflow channel and a secondary aeration basin. An additional monitoring event will be conducted in the summer of 2021. A report of the results is expected before the end of the year.

Recent and planned changes at the RWF are expected to reduce potential emissions of odors. The new Headworks Process (Headworks 3), currently under construction, will replace the current open headworks with an enclosed process equipped to collect and treat air with a biofilter to reduce potential odors. In addition, the RWF is in the start-up phase of new odor control measures for undigested sludge handling systems. The planned dewatering facility for digested sludge will lead to the eventual decommissioning of the lagoons and drying beds which have been alleged as odor sources by the BAAQMD. These enhanced odor control measures are intended to prevent objectional odors beyond the RWF fence line.

Other Wastewater-related Regulations

Implementation of SB 1383 – With the adoption of SB 1383 in 2016, CalRecycle developed new regulations for reducing organic waste in landfills and short-lived climate pollutants, such as methane. The targets set by SB 1383 are a 50% reduction in the statewide disposal of organic waste from the 2014 level by 2020, and a 75% in the statewide disposal of organic waste from the 2014 level by 2025. CalRecycle's regulations were finalized in November 2020 and become effective on January 1, 2022. The final regulations maintained biosolids in the definition of organic waste and, from a reporting perspective, deem the use of organic material ADC as landfill disposal.

Implementation of the SB 1383 regulation is expected to impact the already limited capacity for beneficial use options for biosolids around the Bay Area. Many wastewater agencies have begun diverting biosolids from landfills to promote the reuse of the carbon- and nutrient- rich

wastewater treatment residual. More wastewater agencies are anticipated to follow suit to minimize the disposal of organic material in landfills.

The RWF adopted its Biosolids Transition Strategy in 2015, which included proceeding with a new dewatering facility and retiring the active lagoons and drying beds. Once the Dewatering Facility is complete (currently anticipated to be in 2024), the RWF will be better aligned with SB 1383 regulations. To manage the dewatered biosolids, staff plans to procure at least two short-term contracts for the transport and beneficial use. These contracts should be in place no later than the startup and commissioning of the Dewatering Facility. These short-term contracts will provide the City with the flexibility and additional time necessary to implement other aspects of the RWF's biosolids management strategy. A memo focused on the RWF's biosolids management strategy will be presented to the Treatment Plant Advisory Committee (TPAC) and City Council later this spring.

The RWF may not be able to fully empty and haul the biosolids from all the lagoons and drying beds until at least four years after the operational start of the new dewatering facility. Therefore, the RWF may continue to send some biosolids to the landfill as the current process results in low moisture biosolids with limited management options.

Staff will continue to monitor implementation of CalRecycle's SB 1383 regulations and may adjust the RWF's biosolids management strategy accordingly.

EVALUATION AND FOLLOW UP

Staff will continue to track regulatory discussions and advocate for the City's interest directly with regulators and indirectly through several regional groups including BACWA, CASA, San Francisco Bay Regional Monitoring Program (RMP), SFEI, and the San Francisco Bay Nutrient Management Strategy Steering Committee. Staff will plan to return to the T&E Committee on an annual basis with an update, and will bring forward recommendations on specific items, as appropriate.

CLIMATE SMART SAN JOSE

The content of this memorandum does not affect Climate Smart San José.

PUBLIC OUTREACH/INTEREST

This memorandum will be posted on the City's website for the May 3, 2021 Transportation & Environment Committee agenda.

COORDINATION

This report has been coordinated with the City Attorney's Office and the City Manager's Budget Office.

COMMISSION RECOMMENDATION/INPUT

This item is scheduled to be heard at the May 20, 2021 Treatment Plant Advisory Committee meeting.

CEQA

Not a Project, File No. PP10-0669 (a), Staff Reports.

/s/
KERRIE ROMANOW
Director, Environmental Services

For questions, please contact Jennifer Voccola-Brown, Sustainability & Compliance Manager, at (408) 975-2594 or Jennifer.Brown@sanjoseca.gov.