WASTEWATER SERVICES SECTOR

Point Isabel Wet Weather Facility

Key Issue Statement

The Point Isabel Wet Weather Facility (PIWWF) is not in the floodplain, however, the EBMUD assets that direct flows to this facility and outside of the County, the North Interceptor and Force Main, may be at risk of damage. Although the PIWWF facility is planned for retirement by 2035, more frequent storm events may cause inflow and infiltration (I/I) beyond current levels. A high groundwater table may also increase liquefaction potential adding to the risk of damage during a seismic event. Before PIWWF is retired, EBMUD would need to monitor and plan for short-term maintenance in the event of damage to the assets.

Since outfall capacity is further reduced during high storm tides, sea level rise and storm events will exacerbate existing issues, resulting in more frequent and potentially longer lasting occurrences when discharge capacity is limited. In the event of flooding around the facility, it may not be accessible to workers due to flooded roadways. Additional problems may arise if the plant’s power is compromised, and workers cannot access the facility with additional fuel for back up power supplies needed to maintain plant operations.

Asset Description

Wastewater, or sewage, is the refuse liquid and waste materials from washing, flushing or manufacturing. Wastewater is collected, conveyed, treated, and discharged through an interconnected network of structures and facilities. Wastewater collection assets are those facilities that protect public health by conveying wastewater from its source to treatment and discharge facilities.

EBMUD was established in 1923 and provides wastewater, recycled water, and drinking water service throughout the East Bay, including Contra Costa County. EBMUD provides wastewater disposal services in the unincorporated community of Kensington, the cities of El Cerrito and Richmond through Stege Sanitary District - serving a population of approximately 28,107. Stege Sanitary District collects wastewater from these cities and delivers it to EBMUD’s North Interceptor, which is then directed to EBMUD’s Main Wastewater Treatment Plant outside of Contra Costa County. During peak wet weather flow conditions, wastewaters from the North Interceptor are diverted to the Point Isabel Wet Weather Facility (PIWWF) for discharge via the Point Isabel Wet Weather Facility Outfall and diffuser to the Richmond Inner Harbor.

Wastewater treatment plants are permitted to discharge a specific amount of wastewater based on its capacity allowance. The PIWFF and the Outfall have a design capacity of 100 million gallons per day (MGD). The outfall extends approximately 300 feet into the Bay, with the last portion being a diffuser section designed to ensure maximum dilution and mixing with deep Bay waters. Wet weather overflows have declined in frequency since the PIWWF began operating, however according to the RWQCB, EBMUD’s
“annual discharge volumes for all [wet weather facilities] exceed the long-term design goal of 100 million gallons per year.” EBMUD is planning for long-term changes to the system since negotiating a consent decree with the USEPA effective September 2014. In this agreement, EBMUD and its satellite collection agencies will implement projects to reduce inflow and infiltration in the collection system and gradually eliminate need for the wet weather facilities. PIWWF is scheduled for retirement by 2035.

Exposure to Flooding

Assets on the Bay shoreline and along major creeks and channels in the project area were analyzed to determine if they were exposed to either current or future flooding. Current flood risk was determined using the most current FEMA Flood Insurance Rate Maps (FIRMS) available when the analysis was conducted. Some assets that are within the FEMA-designated 100-year floodplain are also at risk of more frequent or extensive flooding in the future due to sea level rise. The potential for increased flood risks as sea level rises within the current 100-year floodplain may be underestimated as the increase in riverine flooding due to elevated Bay water levels has not been fully resolved. Lastly, there are assets that are not currently within the FEMA-designated 100-year floodplain but will potentially be exposed to flooding in the future due to sea level rises. Some of these assets may currently be protected from the 100-year flood by the existing shoreline while others may be at a distance from either the Bay shoreline or creek and channel banks and therefore beyond the extent of current flooding. The PIWFF is not located in the flood plain but the North Interceptor and Force Main that direct flows to this facility and outside of the County may be at risk of damage.

Vulnerabilities

GOV1: EBMUD owns the wastewater conveyance and disposal assets that Stege Sanitary District depends on to discharge their waste. The various agencies involved need to collaborate with funding, planning, and decision-making to avoid system-wide failures.

GOV2: Wastewater infrastructure is interconnected to, and affected by, other systems and assets (e.g., stormwater contributes to wet weather flows to wastewater treatment plants) that are owned and managed by different public and private entities. The process and relationships may not be in place to support the coordination and collaboration that will be needed to address these shared vulnerabilities.

PHYS: The EBMUD North Interceptor runs through predominantly low soil strength bay muds and artificial fill and it is subject to a high groundwater table because of its proximity to San Francisco Bay. Flooding increases I/I, particularly inflow of stormwater to the interceptor through manholes and other structures, limits the capacity of the interceptor for sewage. Flooding also increases liquefaction potential, adding to the risk of damage due to seismic event.
FUNC1: Storm events have the potential to reduce outfall and diffuser capacity and exacerbate wet weather flow capacity issues. The discharge capacity of the outfall and diffuser may be reduced during existing high storm tides, which could occur more often with climate change. The reduced capacity will have consequences on how EBMUD handles wet weather flows and may threaten the overall performance of the EBMUD system.

FUNC2: The wastewater facility relies on roads and highways to bring employees, fuel, and other materials to the site and if the roads used to access the facility experiences extensive flooding, the plant may not be able to continue operations. For example, PIWFF may be inaccessible if Central Avenue or I-580 flood.

Consequences

Society and Equity: EBMUD provides a critical public health and safety function. If storm events or sea level rise overwhelm and compromise the system, it could affect EBMUD’s ability to treat and discharge wastewater. Without EBMUD’s service, Stege Sanitary District, which serves the communities of El Cerrito, Kensington, and a portion of the Richmond Annex would have to direct its wastewater to another treatment plant.

Environment: If storm events or sea level rise overwhelm and compromise EBMUD assets, untreated sewage could overflow into the environment. Toxic substances and excessive nutrients degrade water quality and harm fish and other aquatic organisms.

Economy: A system disruption could potentially have wide-ranging consequences in the communities along the NorthInterceptor. Cumulative impacts on commercial and industrial businesses and the associated employment, goods, and services they provide could also be significant. Operations and maintenance cost, as well as capital improvement costs could increase with storm event and sea level rise flooding.