MEMORANDUM

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Prepared For: Fong Tse, City of Newport Beach

Submitted To: Paul Cochran, Caltrans District 12

Date: June 4, 2014

Subject: **Park Avenue Bridge Project Water Quality Technical Memorandum**

Introduction

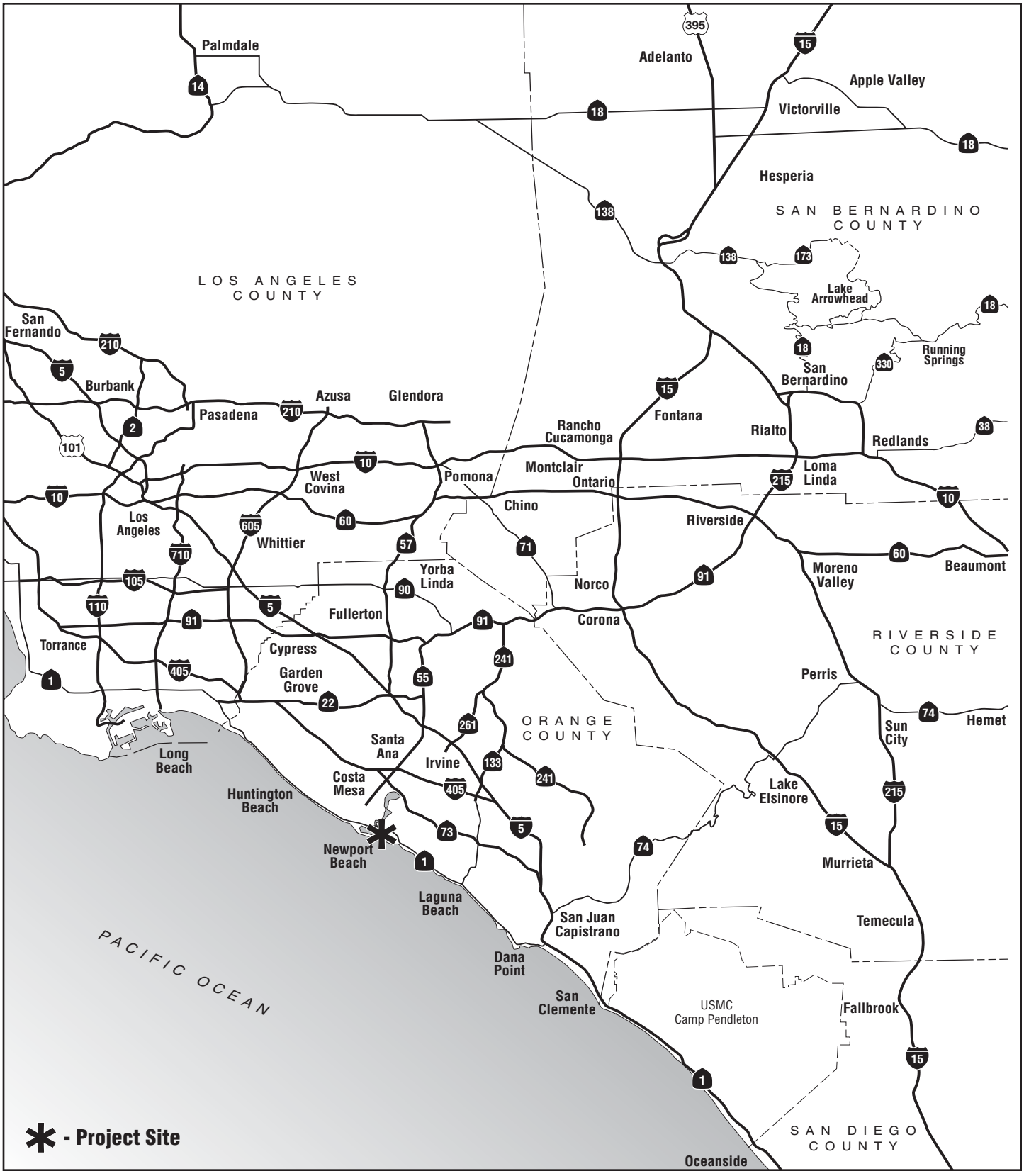
The proposed project (project) is the replacement of the Park Avenue Bridge over Grand Canal with an improved bridge structure. It is located within the southern portion of the City of Newport Beach, in southern Orange County, and is the only connection between Balboa Island and Little Balboa Island (Exhibit 1). The two options for constructing the Park Avenue Bridge include:

1. **Stage Construction Option:** Construction would be phased so that approximately half of the bridge would remain open for vehicle, bicycle, and pedestrian use at all times, while the other half is removed and replaced. Boat access in the Grand Canal beneath the bridge would also be continuously available. Existing utilities within the bridge would be relocated to allow for demolition of half the bridge while maintaining utility service throughout the construction phase.

2. **Temporary Bridge Option:** This approach would include constructing a temporary bridge over Grand Canal at Balboa Avenue (Exhibit 2). Balboa Avenue is a local two-lane roadway (one vehicle lane and sidewalk in each direction) that is situated in an east-west direction across Balboa Island and Little Balboa Island. Currently, there is no bridge crossing over the Grand Canal at Balboa Avenue, and the roadway terminates at each end of the canal. The temporary bridge would maintain access to Little Balboa Island with two 10-foot lanes. Bicycle and pedestrian access would also be provided via a 5-foot wide walkway located adjacent to the vehicle travel lanes.

A qualitative assessment of the proposed project and its construction options was performed to assess potential water quality impacts during construction and post-construction conditions based on the region's applicable stormwater regulations per the National Pollutant Discharge Elimination System (NPDES) permit requirements. It was also performed to characterize the baseline water quality conditions, and to identify potential water quality issues and applicable mitigation measures (Best Management Practices, or BMPs). The assessment covers the following:

a.) An evaluation of the potential impacts related to implementing the project.
b.) A description of the site, Regional and Local Hydrology, Floodplains, Groundwater Resources, Topography, Climate, and Soils/Erosion Potential.
c.) Identification of the applicable requirements of the Federal Clean Water Act (CWA), State Water Quality Regulations, State Requirements under the Federal CWA, Beneficial Uses, Groundwater and Surface Water Quality Objectives, and a review of the Section 303(d) Impaired Waters List.
d.) Identification of the potential stormwater quality mitigation measures (BMPs) that may be needed based on the water quality requirements applicable to the project.



NOT TO SCALE

PRELIMINARY ENVIRONMENTAL STUDY FORM
PARK AVENUE BRIDGE REPLACEMENT PROJECT

Regional Location

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Exhibit 1

Source: Google Earth, October 2013.

- Project Boundary
- Temporary Bridge Option

PRELIMINARY ENVIRONMENTAL STUDY FORM
PARK AVENUE BRIDGE REPLACEMENT PROJECT

Site Vicinity

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Exhibit 2

Site Description

The approximately 0.4 acre project is situated in a highly urbanized area of Newport Beach surrounded by residential and commercial uses. Grand Canal divides Balboa Island and Little Balboa Island, and is located directly beneath the Park Avenue Bridge. The existing bridge consists of five 20-foot spans supported by precast concrete pile extensions at the piers and abutments. Each end of the bridge includes Americans with Disabilities (ADA)-accessible ramps extending from the adjacent at-grade sidewalks to the bridge-mounted sidewalks. The bridge is illuminated by pole-mounted luminaires on both sides of the bridge approaches. A desktop survey of the region was performed using topographic maps and aerial images to identify the receiving water body for runoff from the project, which is Grand Canal in Lower Newport Bay.

Regional and Local Hydrology

The project is located in the Newport Bay watershed, which is located in the central Orange County portion of the Santa Ana Regional Water Quality Control Board's (RWQCB) jurisdiction. Runoff in the region flows from the foothills of the Santa Ana Mountains west towards the Pacific Ocean. Rainfall in the City of Newport Beach averages 11 inches per year (Orange County Public Works).

Floodplains

This site is located in areas designated as Zone AE, which corresponds to "Areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods. [Base Flood Elevation] BFEs are shown within these zones." (U.S. Federal Emergency Management Agency, 2009). The BFE noted on the floodplain map is 9 feet. For more information, refer to the Location Hydraulics Study prepared for this project.

Groundwater Resources

The project is located within the Coastal Plain of Orange County Groundwater Basin, which covers an area of approximately 350 square miles. The Coastal Plain of Orange County Groundwater Basin underlies a coastal alluvial plain in the northwestern portion of Orange County. In general, the groundwater levels in the southern coastal area has declined steadily, but average groundwater levels have risen about 15 feet since 1990 (California Department of Water Resources, 2004). A geotechnical investigation should be conducted prior to final design and construction to confirm groundwater levels.

Soils/Erosion Potential

The Soil Erodibility Factor (K factor) for the site 0.32, according to the State Water Resources Control Board's (SWRCB) Geographic Information System (GIS) K-factor data file. Generally, this equates to a low potential for erosion within the project area characterized by particles resistant to detachment. However, this is a planning-level tool, so a detailed site-specific survey is still required for design-level analysis.

Water Quality/Clean Water Act Requirements

Overview

The CWA, as amended by the Water Quality Act of 1987, is the major federal legislation governing water quality, which was enacted "to restore and maintain the chemical, physical, and biological integrity of the nation's waters." Important sections of the CWA include:

- Sections 303 and 304 – provide for water quality standards, criteria, and guidelines;
- Section 401 – requires that an applicant for a federal permit such as a CWA Section 404 permit, must obtain a certification that the discharge will comply with the applicable CWA sections and their provisions;

- Section 402 – establishes the NPDES system, a permitting system for the discharge of any pollutant (except for dredge or fill material) into waters of the United States. This permitting program is administered by the California RWQCBs; and
- Section 404 – regulates the discharge of dredged or fill material into waters of the United States.

The permits associated with these sections of the CWA typically include additional site-specific requirements. The desktop survey indicated that a U.S. Army Corps of Engineers' Section 404 and Santa Ana RWQCB Section 401 permits are anticipated under the CWA to construct this project.

Beneficial Uses and Water Quality Objectives

The RWQCB is responsible for the protection of beneficial uses of water resources within its jurisdiction and uses planning, permitting, and enforcement authorities to meet this responsibility. Every water body within the jurisdiction of the RWQCB is designated a set of beneficial uses that are protected by appropriate water quality objectives and identified in the Santa Ana RWQCB's *Water Quality Control Plan Santa Ana River Basin* (Basin Plan). The beneficial uses for the Irvine Groundwater Management Zone and surface water in Lower Newport Bay are summarized in the following table.

Beneficial Use Type	Beneficial Use Applicable to Groundwater	Beneficial Use Applicable to Surface Water
Municipal and Domestic Supply (MUN) – Includes uses for community, military, municipal or individual water supply systems. These uses may include, but are not limited to, drinking water supply.	✔	-
Agricultural Supply (AGR) – Includes uses for farming, horticulture, or ranching. These uses may include, but are not limited to, irrigation, stock watering, and vegetation for range grazing.	✔	-
Industrial Service Supply (IND) – Includes uses for industrial activities that do not depend primarily on water quality. These uses may include, but are not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection and oil well repressurization.	✔	-
Industrial Process Supply (PROC) – Includes uses for industrial activities that depend primarily on water quality. These uses may include, but are not limited to, process water supply and all uses of water related to product manufacture or food preparation.	✔	-
Navigation (NAV) – Includes uses for shipping, travel or other transportation by private, commercial, or military vessels.	-	✔
Contact Water Recreation (REC-1) – Includes uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, or use of natural hot springs.	-	✔

Beneficial Use Type	Beneficial Use Applicable to Groundwater	Beneficial Use Applicable to Surface Water
Non-contact Water Recreation (REC-2) – Includes the uses of water for recreational activities involving proximity to water, but not normally involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.	-	✔
Commercial and Sportfishing (COMM) – Includes uses of water for commercial or recreational collection of fish or other organisms, including those collected for bait. These uses may include, but are not limited to, uses involving organisms intended for human consumption.	-	✔
Wildlife Habitat (WILD) – Includes uses of water that support wildlife habitats that may include, but are not limited to, the preservation and enhancement of vegetation and prey species used by waterfowl and other wildlife.	-	✔
Rare, Threatened or Endangered Species (RARE) – Includes waters that support the habitats necessary for the survival and successful maintenance of plant or animal species designated under state or federal law as rare, threatened, or endangered.	-	✔
Spawning, Reproduction and Development (SPWN) – Includes waters that support high quality aquatic habitats necessary for reproduction and early development of fish and wildlife.	-	✔
Marine Habitat (MAR) – Includes waters that support marine ecosystems that include, but are not limited to, preservation and enhancement of marine habitats, vegetation, fish, shellfish, and wildlife.	-	✔
Shellfish Harvesting (SHEL) – Includes waters that support habitats necessary for shellfish collected for human consumption, commercial, or sport purposes.	-	✔

Impaired Waterbodies

Section 303 of the CWA requires that the state adopt water quality objectives for surface waters. The Basin Plan contains water quality objectives that are considered necessary to protect the specific beneficial uses it identifies for surface waters. Section 303(d) of the CWA specifically requires the state to develop a list of impaired water bodies and Total Maximum Daily Loads (TMDLs) plans to determine the maximum allowable pollutant load that a water body can receive and continue to meet the designated beneficial uses. The project drains to Grand Canal in Lower Newport Bay, which is impaired per the 2010 303(d) List for Chlordane, Copper, Dichlorodiphenyltrichloroethane (DDT), Indicator Bacteria, Nutrients, Polychlorinated biphenyls (PCBs), Pesticides, and Sediment Toxicity. TMDLs have been developed for Selenium, Nutrients, Fecal Coliform Bacteria, Organochlorine Compounds (pesticides), and Sediment.

NPDES Permit

NPDES Municipal Permit Requirements

The project is located within the urban NPDES permitted area (NPDES Order R8-2010-0062) of the Santa Ana RWQCB's jurisdiction in Orange County. It drains to Grand Canal in Lower Newport Bay and the City of Newport Beach, which is covered by the NPDES permit. A Drainage Area Management Plan (DAMP) was developed for the County of Orange, Orange County Flood Control District and 26 incorporated cities (collectively called "permittees") including the City of Newport Beach, and describes the responsibilities, procedures, and practices the permittees use to protect water quality by reducing or eliminating pollutants discharged from storm drainage systems they own or operate, including the selection and implementation of source control and treatment control BMPs. The project will meet the current requirements of the 2003 DAMP and its associated documents (e.g., Model Water Quality Management Plan, etc.).

The Orange County DAMP's New Development/Redevelopment Program requires priority projects to implement treatment control BMPs if the project will result in the addition or replacement of 5,000 or more square feet in impervious surface, which is anticipated to increase flows and pollutant loading to downstream facilities. This project is subject to the Model Water Quality Management Plan because it will replace over 5,000 square feet of impervious surface. Structural treatment control and non-structural source control BMPs will be incorporated into the project where feasible to collect and treat either the stormwater runoff volume or flow, as stated in the requirements of NPDES Order Number R8-2009-0030. In addition, Low Impact Development (LID) BMPs will be included in the project's design where technically feasible. During the project design phase, the increase in flows and pollutant loading will be addressed through the hydrology and Water Quality Management Plan analyses.

Construction General Permit

The Construction General Permit (CGP), Order 2009-0009-DWQ, is a "General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities" and requires coverage for any construction project disturbing more than one acre of land, for any size parcel that is part of a larger common plan of development, or for any site that the RWQCB requires coverage. The CGP generally requires:

1. Assessment of the Site Risk (Risks 1, 2, 3, from low risk to high risk)
2. Enrollment under the Permit through the SWRCB
3. Development and implementation of a Storm Water Pollution Prevention Plan (SWPPP)
4. Sampling of stormwater and potentially sampling of receiving water (depending on project risk)
5. Reporting requirements

Based on the information currently available for the project, it will disturb less than an acre and it is not subject to the CGP requirements.

Best Management Practices

Post-Construction BMPs and Runoff Reduction Measures

Non-structural post-construction BMPs and runoff reduction measures applicable to the project site may include, but are not limited to the following:

- Implement minimum BMPs as applicable to the project
- Site design BMPs
- Preservation of existing flow patterns

- Preservation of drainage density
- LID BMPs (where technically feasible)

Regulatory Requirement Summary

The table below summarizes the regulatory requirements that must be met to construct this project.

Regulatory Requirement	Mitigation to Address Requirement
Municipal NPDES Permit	Design and install site design, structural treatment control BMPs, and LID BMPs (if technically feasible) to address anticipated pollutants. Conduct geotechnical investigations to determine current groundwater conditions, and consider the results when evaluating structural treatment control BMPs. Evaluate during the project design phase through the hydrology and Water Quality Management Plan analyses.
Section 401/404 permits	Comply with all applicable requirements as stated in the Section 401/404 permits.

References

California Department of Water Resources, *California's Groundwater, Bulletin 118, Coastal Plain of Orange County Groundwater Basin,* updated February 2004 (http://www.water.ca.gov/pubs/groundwater/bulletin_118/basindescriptions/8-1.pdf), accessed on April 20, 2014.

California Regional Water Quality Control Board, Santa Ana Region, *Waste Discharge Requirements for The County of Orange, Orange County Flood Control District, and The Incorporated Cities of Orange County within the Santa Ana Region Areawide Urban Storm Water Runoff Orange County*, Order Number R8-2009-0030, NPDES Number CAS618030, December 16, 2009 (amended by Order R8-2010-0062 on October 29, 2010).

California Regional Water Quality Control Board, Santa Ana Region, *Water Quality Control Plan for the Santa Ana River Basin (Region 8)*, January 24, 1995 (updated February 2008).

City of Newport Beach, *Preliminary Environmental Study Form: Park Avenue Bridge Rehabilitation and Reconstruction*, Federal Project No. BRLO-5151(026), February 2014.

Orange County Public Works Department, *Historic Rainfall Data at Newport Beach Harbor Station, 1922-2013*.

Orange County Stormwater Program, *Drainage Area Management Plan (DAMP)*, July 1, 2003.

State Water Resources Control Board, *National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities* (Order Number 2009-0009-DWQ, NPDES Number CAS000002), September 5, 2009.

State Water Resources Control Board, File Transfer Protocol Website, Geographic Information System K-Factor shapefile.

United States Federal Emergency Management Agency (FEMA) Map Service Center, Flood Maps, Panel 06059C0382J, dated December 3, 2009, and accessed at http://msc.fema.gov on April 23, 2014.