**STATE OF CALIFORNIA**
**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD**
**LOS ANGELES REGION**
**320 West 4th Street, Suite 200, Los Angeles, California 90013**

# FACT SHEET
# WASTE DISCHARGE REQUIREMENTS
# FOR
# GROUNDWATER PLUME AREA 1 AND AREA 2
# PIER A WEST/AREA 2
# 101-501 NORTH HENRY FORD AVENUE, WILMINGTON, CALIFORNIA
**(SLIC NO. 1198; SITE ID NO. 2040246)**

**ORDER NO. R4-2007-0019, CI-9416, SERIES 061**

**FACILITY ADDRESS**
Groundwater Plume Area 1 and Area 2
Pier A West/Area 2
101-501 North Henry Ford Avenue
Wilmington, California 90744

**FACILITY MAILING ADDRESS**
Mr. Al Moro, Chief Harbor Engineer
Port of Long Beach
925 Harbor Plaza
Long Beach, California 90744

## PROJECT DESCRIPTION

Pier A West/Area 2 (Site) is located at Latitude N33° 46.317', Longitude W118° 14.67' in Wilmington, Los Angeles County. The Assessor's Parcel Number is 7440003.

The Site is a 123-acre site that has been used for oil field operations since the 1930s. In 1994, the Site was purchased by the Port of Long Beach (the Port) from Union Pacific Resources Company, a predecessor to Anadarko Petroleum. The Site is currently leased by Tidelands Oil Production Company for crude oil production. Between 1948 and 1970, liquid wastes, drilling muds, tank bottoms, solid debris, solvents, spent catalysts, paint sludges, and other liquids that did not conform to the Site's disposal permits were deposited into 19 shallow, clay-lined impoundments or sumps. In 1970, disposal of liquid wastes ceased, residual liquids were removed, and the sumps were covered with 2 to 3 feet of clean soil.

Site soil and groundwater are impacted with metals, petroleum hydrocarbons, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), and polycyclic aromatic hydrocarbons (PAHs). This Regional Board issued a California Water Code section 13304 order on July 11, 2007, for an interim source removal action of the impacted soil and groundwater from these 19 sumps (collectively, the "hot spots") under the oversight of the Regional Board at Pier A West/Area 2. Site-wide cleanup of soil, soil vapor, and groundwater will continue under the Voluntary Cleanup Agreement (VCA) with regulatory oversight by the Department of Toxic Substance Control (DTSC).

*The Chemical Oxidation Pilot Test Work Plan* (Work Plan), dated April 16, 2008, includes a proposal for the ISCO pilot test in Groundwater Plume Area 1 and Area 2 using sodium permanganate in the "A" Zone Aquifer and upper aquitard, and ozone and hydrogen peroxide in the "B" Zone Aquifer. The injection areas will be within the VOC concentration ranging from 10,000 micrograms per liter (µg/L) to 100,000 µg/L. On May 14, 2008, the Regional Board approved the Work Plan. This pilot test study is to evaluate the effectiveness of the remedial technology, develop a site-specific understanding of permanganate and ozone treatments and develop design parameters for full-scale applications.

**VOLUME AND DESCRIPTION OF DISCHARGE (INJECTION)**

The groundwater monitoring program shall include a complete network to cover the injection areas, up-, down-, and cross-gradient monitoring points.

Sodium Permanganate Solution

A total of 6,300 gallons and 1,800 gallons of 40 percent sodium permanganate solution diluted to a 20 percent solution will be injected in the Groundwater Plume Area 1 and Groundwater Plume Area 2 pilot test locations, respectively (Figures 1 and 2). A total of 130 and 35 injection points will be used in Groundwater Plume Area 1 (approximately 10,000 square feet ($ft^2$.)) and Area 2 (approximately 2,600 $ft^2$.), respectively. Injections will be performed at a rate of 7 gallons per minute (gpm) per borehole from approximately 3 to 10 ft below ground surface (bgs) in Groundwater Plume Area 1 and at a rate of 5 gpm per borehole from 5 to 13 ft bgs in Groundwater Plume Area 2. The actual rate of injection will be verified and recorded in the field and reported. Each injection location will be backfilled with a cement/bentonite grout, to the existing grade, immediately after the direct push tool is extracted.

Ozone and Hydrogen Peroxide

Up to 15 pounds per day of ozone gas at up to a 12 percent concentration by weight and up to 35 percent hydrogen peroxide solution at 75 gallons per day will be applied at each testing area in the "B" Zone Aquifer using two PulseOx-1000 units. Injection points will be installed at two depths, one for the ozone gas and the second for the hydrogen peroxide solution in each injection well for 11 injection wells in Groundwater Plume Area 1 and 8 injection wells in Groundwater Plume Area 2 (Figures 3 and 4).