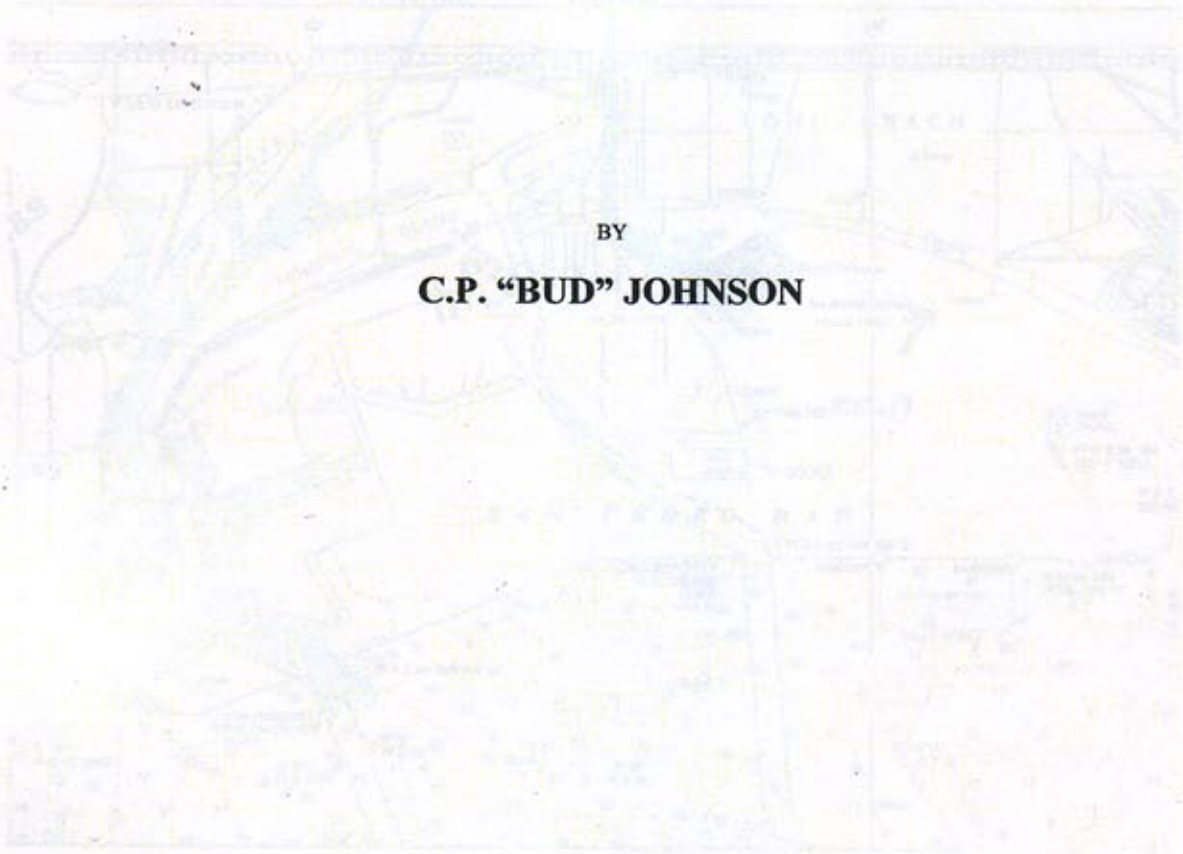
ENVIRONMENTAL IMPACT CONCERNS
LOS ANGELES HARBOR

CONCEPT PAPER
(WORK IN PROGRESS)



BY

C.P. "BUD" JOHNSON

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INTRODUCTION

The purpose of this "Concept Paper" is to review factors that contribute to debris and pollution deposited on Cabrillo Beach locations (inner harbor) in Los Angeles Harbor. Over the past 50 years water acreage in the Harbor has been reduced by City and Port of Los Angeles infrastructure. This, in part, has resulted in the modification of incoming and outgoing tidal action; specifically, water circulation and flow patterns within the Harbor.

Water Flow Conditions

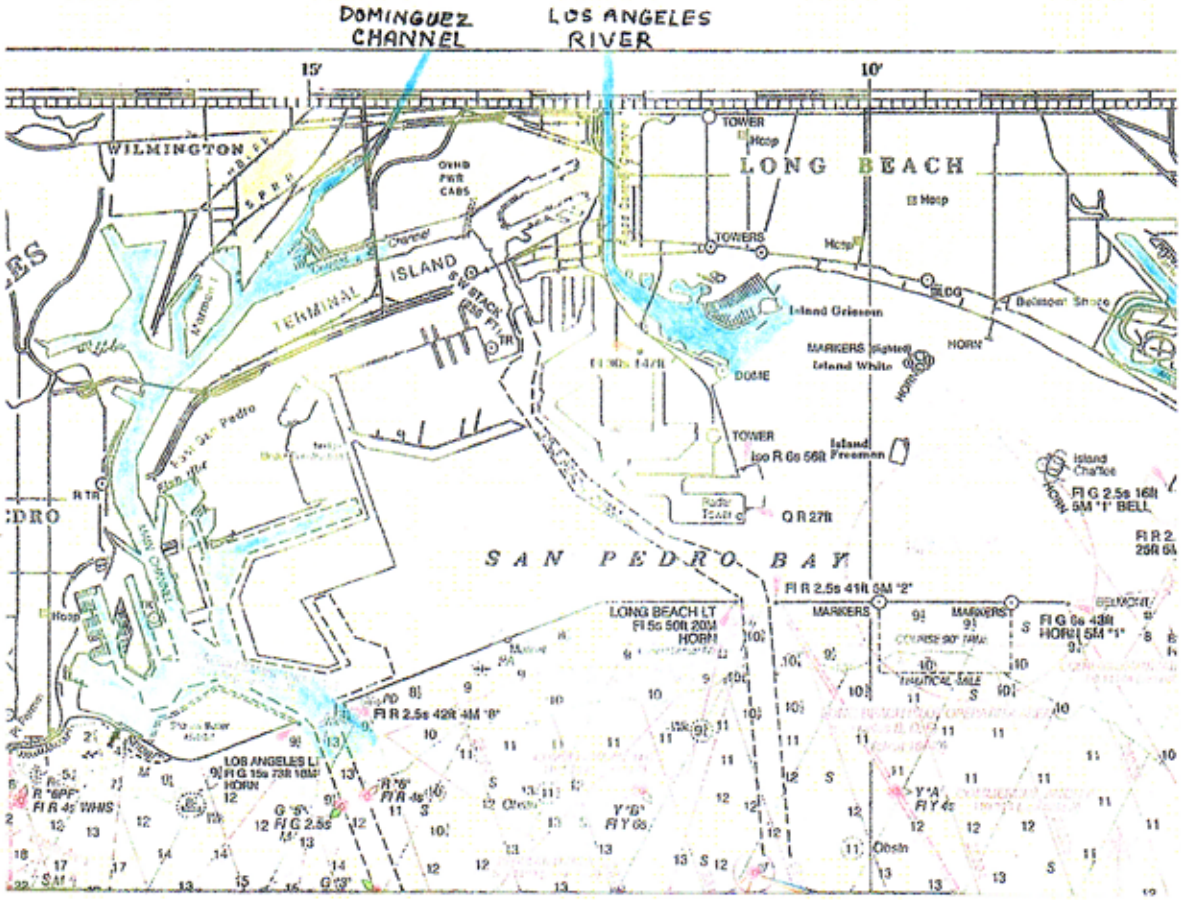

Figure 1

Figure 1 shows the water flow area and two sources of water pollution in the harbors of Long Beach and Los Angeles. The Dominguez Channel is an outlet feeder into the Los Angeles Harbor. The Los Angeles River Flood Control Channel is an outlet feeder to the Long Beach Harbor.

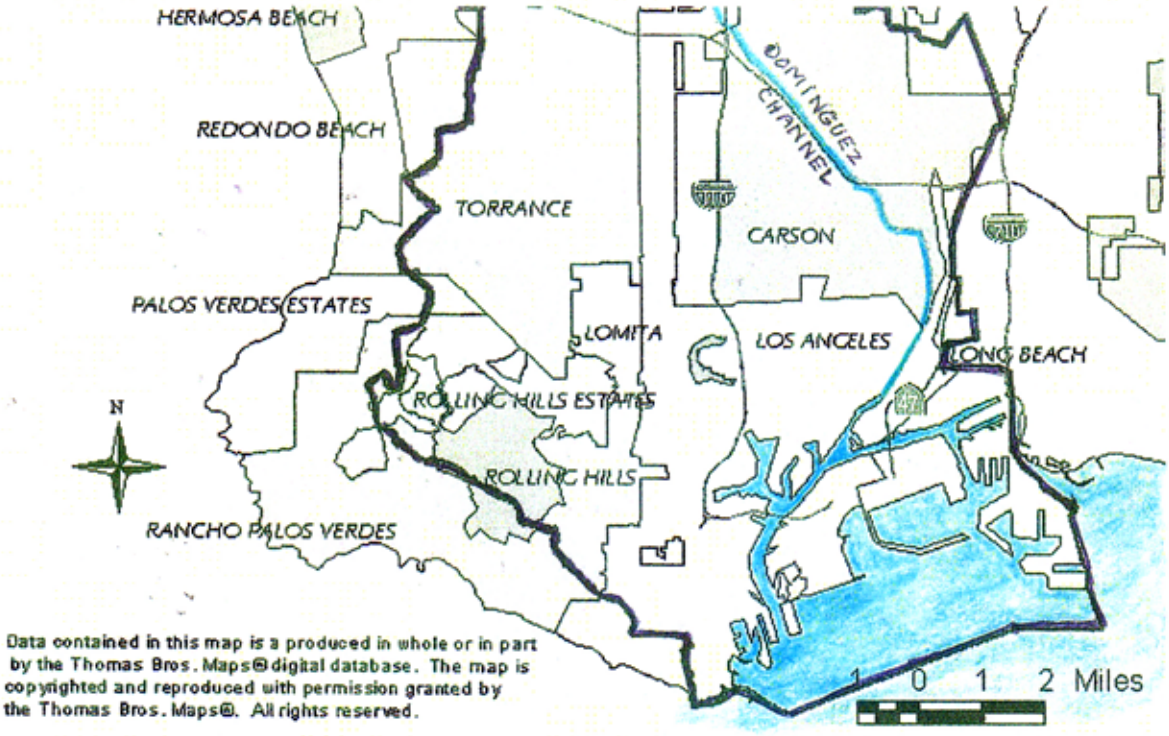

Figure 2

With regard to San Pedro Harbor, the land area adjacent to the northern Harbor boundary, entitled Dominguez Watershed, comprises approximately 100 square miles of land in the southern portion of Los Angeles County. Over 96% of this area has been developed for residential and/or commercial use (**see Figure 2**). Dominguez Channel extends from near the Los Angeles International Airport to Los Angeles Harbor. The Channel serves portions of 9 cities located in the watershed area. Other land areas within the watershed can drain into several debris basins and lakes or directly into the Los Angeles Harbor. Any pollution in the water that drains into the Harbor will eventually end up in the Main Channel. Because of tidal action, water out-flow from the Dominguez Channel will be directed through the Main Channel towards Angel's Gate.

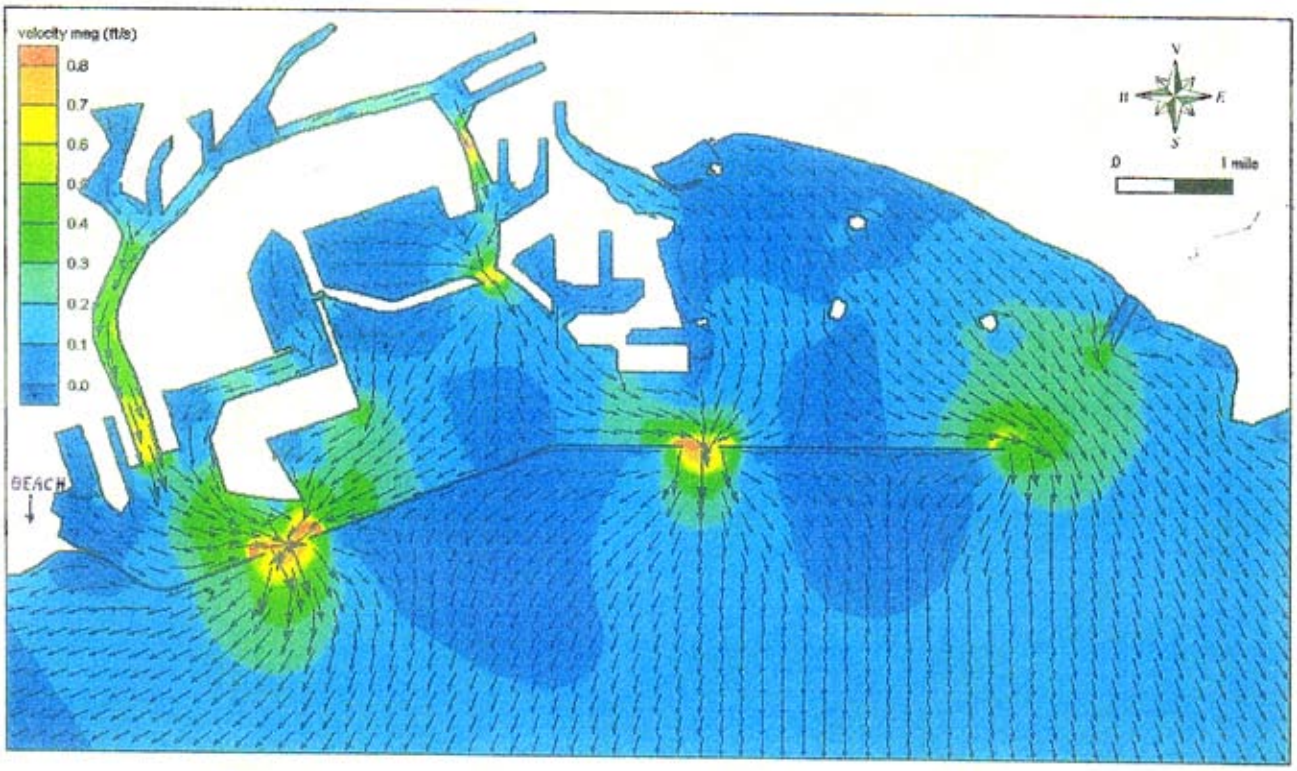

Figure 4-3 Maximum Ebb Current during Typical Tide Condition

Figure 4.3

Tidal Flow Conditions

Computer modeling information of San Pedro Bay, depicted in Figure 4.3 was taken from a large study conducted by the "Los Angeles Containment Task Force (LACSTF) final draft dated October 19, 2004. The figure shows the flow direction and circulation pattern for a typical outgoing tidal current. On the left side of Figure 4.3 as shown by the vertical color bar, the outgoing tidal current in the Main Channel can typically reach velocities up to 0.7 feet per second (one –half mile per hour). Looking closer at the water area adjacent to Cabrillo Beach, the dark blue color area is 0.0-0.1 feet per second (360 per hour) or less. Once polluted water reaches the beach area, there is not enough flow velocity to provide an exit pattern toward Angels Gate. This weak water circulation pattern and slow water flow adjacent to Cabrillo Beach implies that pollutants will tend to end up on the beach.

The following observations may be concluded:

1. Freshwater flow from Dominguez Channel will ride on the surface of the heavier salt water flow in the Main Channel of the Harbor.

2. With an outgoing tide, polluted freshwater exiting from Dominguez Channel or other sources such as recreational or commercial vessels will be vectored toward Angels Gate via the Main Channel.

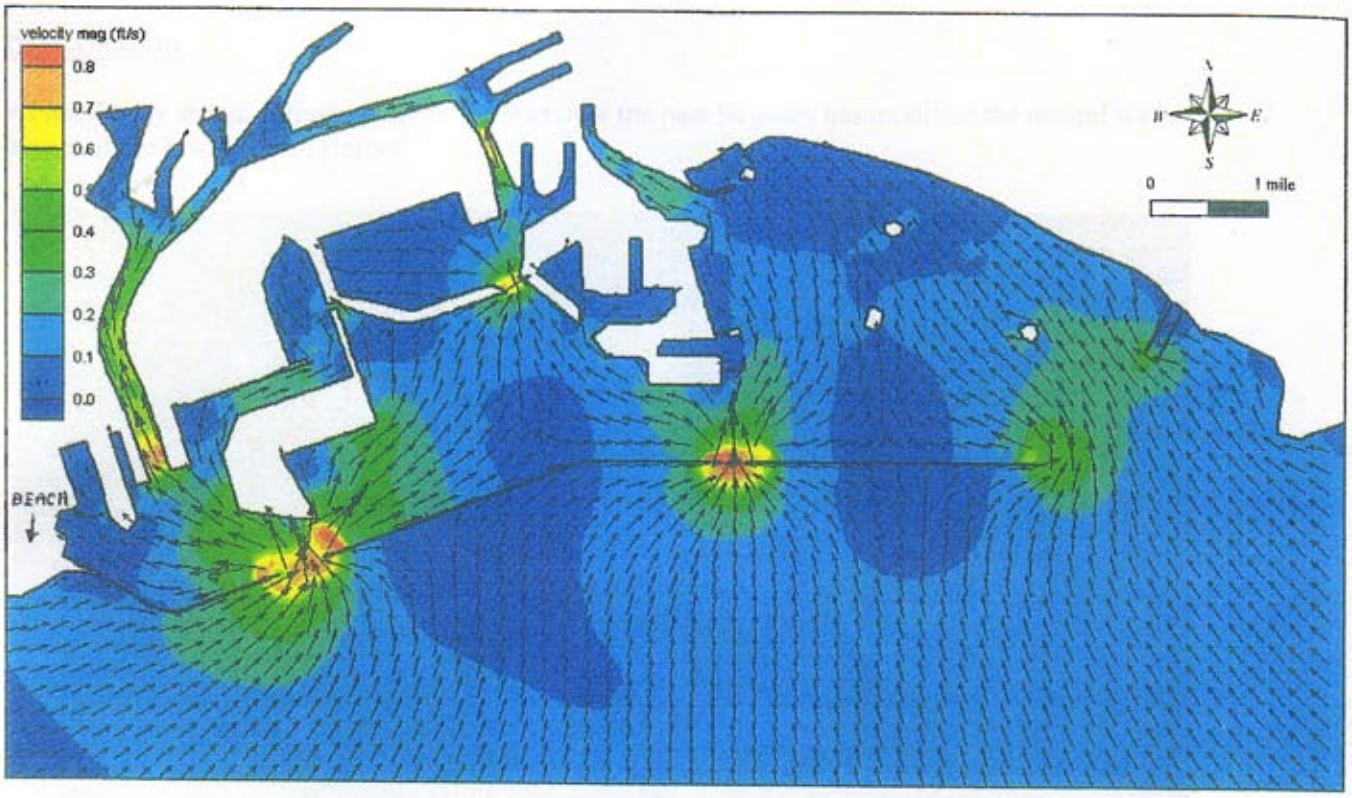

Figure 4-2 Maximum Flood Current during Typical Tide Condition

Figure 4.2

3. If the tide changes direction prior to the polluted water reaching Angels Gate, this tide reversal could cause the pollution to end up on the inner harbor beaches to the West, as shown in Figure 4.2.

DISCUSSION

As previously stated, infrastructure in the Port over the past 50 years has modified the natural water events of the Los Angeles Harbor.

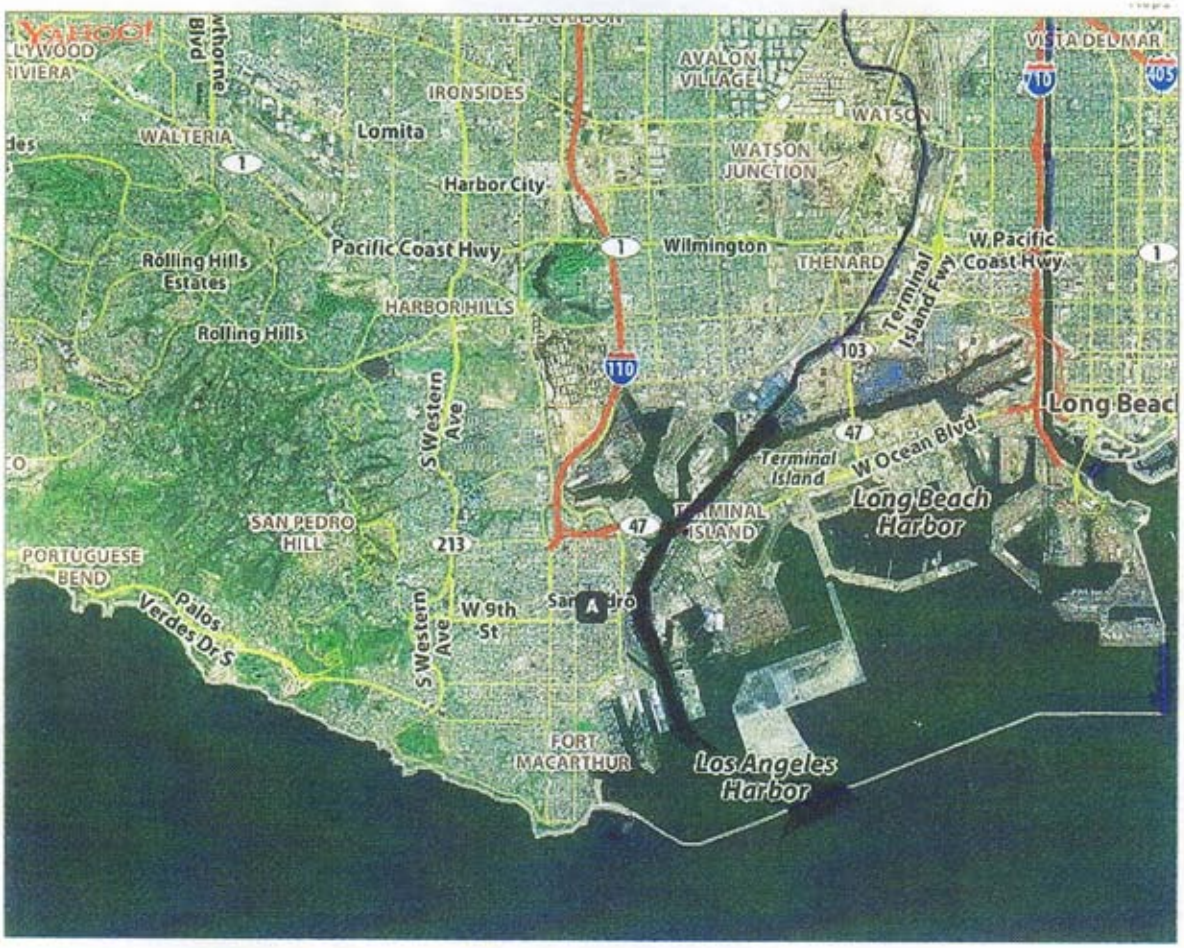

Figure 3

Figure 3 shows the infrastructure development within the Harbor. The change of water circulation patterns with slow water flow and currents along the beaches, results in surface water pollution (oils, chemicals, etc.) that will eventually end up on adjacent beaches. Improvement, therefore, is required.

Bolsa Chica Wetlands

Before we discuss potential improvements in the circulation and water flow patterns for Cabrillo Beach, a study and project involving the Bolsa Chica Wetlands in Orange County, which has similar pollution problems will be reviewed.

Figure 4

Figure 4 shows the Bolsa Chica Wetlands in Orange County, California in 2002 and prior to project development. One of the goals of this project was to create water flow and circulation in the wetlands area. The project site had several tributaries (similar to Dominguez Channel) emptying into the wetlands. However, there was not an exit pattern to create water circulation conditions. Thus, sections of the wetlands became polluted various times during the year.

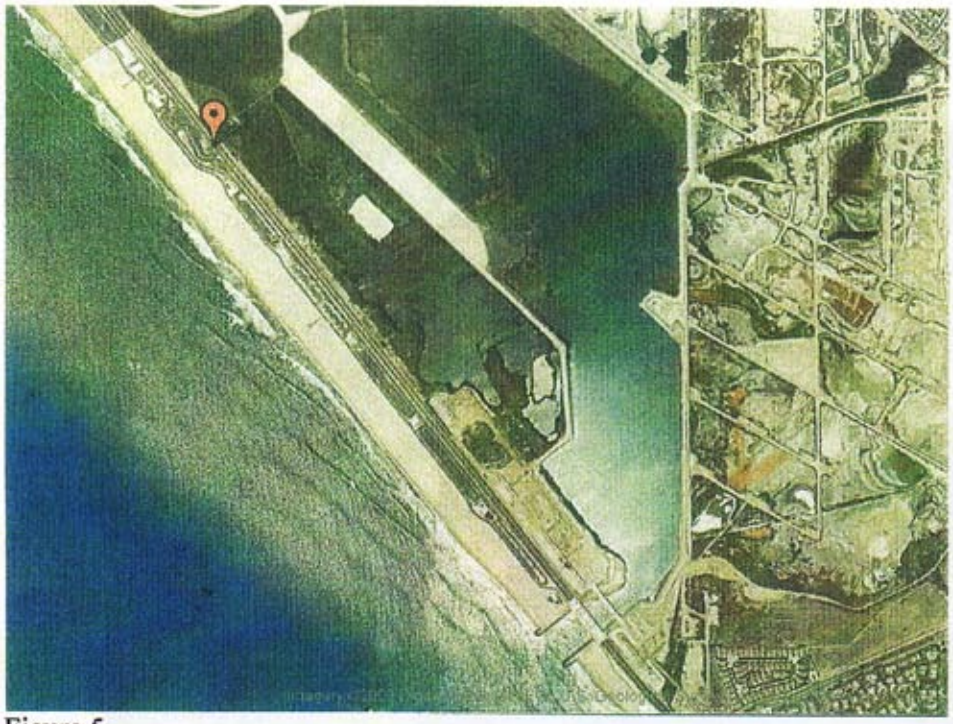

Figure 5

Figure 5 shows the completed project as it is today. Note that the wetlands now have an opening to the ocean which allows water flow and circulation 24/7 by way of the natural incoming and outgoing tide cycles.

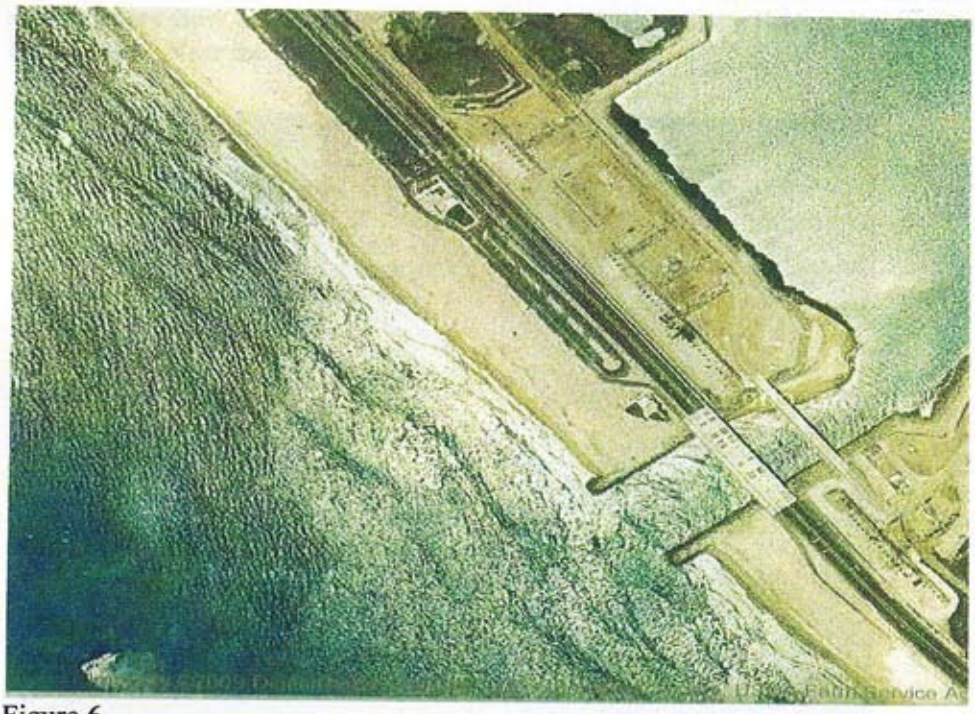

Figure 6

Figure 6 shows a close-up of the new opening between the ocean and wetlands. In order to not re-invent the wheel, the discussion to follow regarding Cabrillo beach will be based on the success of this wetlands project. A similar concept will be discussed with a goal of establishing an incoming and outgoing circulation and water flow pattern for the Cabrillo Beach inner harbor area.

Cabrillo Beach

Figure 7

Figure 7 shows an aerial view of San Pedro Harbor, including the Breakwater and Cabrillo Beach. This area is where slow water patterns exist today. Also shown is a fishing pier parallel to the inner-side of the Breakwater. Near the base of the Pier, is a rock jetty.

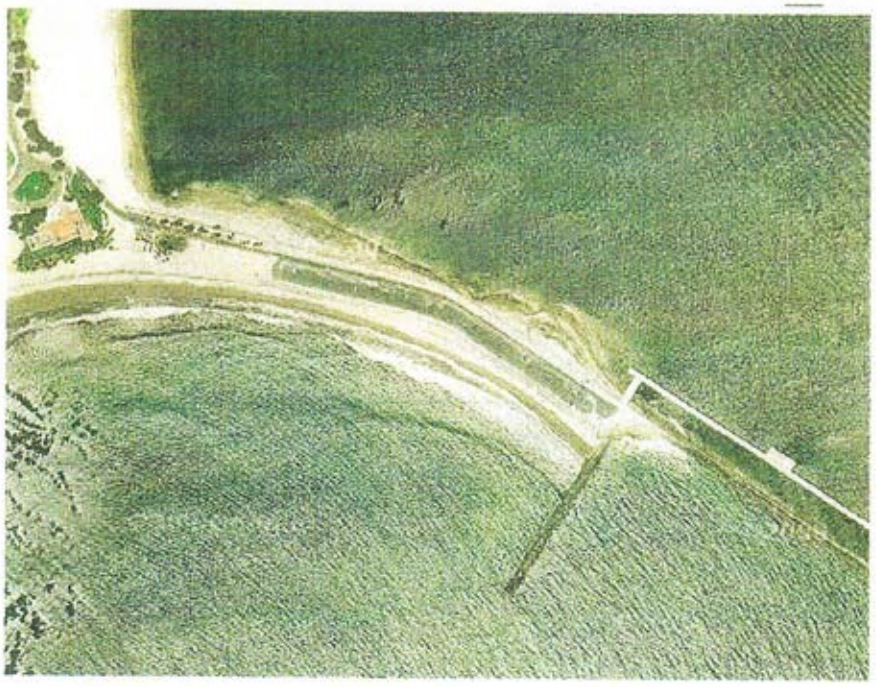

Figure 8

Figure 8 is a close-up of the Breakwater base of the fishing pier and the rock jetty extending to sea, at right angles to the Breakwater. This is the area where the author proposes to locate a new opening in the San Pedro Breakwater.

Figure 9

Figure 9 is a design concept, similar to the opening at Bolsa Chica, showing an additional jetty and the removal of Breakwater rocks to beach level between each jetty. The new opening will connect the ocean to the bay and inner harbor beach areas. This will permit rise (incoming) and fall (outgoing) tidal flows, occurring twice per day to create new water flow and circulation patterns in Cabrillo Beach and inner harbor areas west of the Main Channel. The new circulation pattern with increased velocities will force polluted water to exit toward the new opening; rather than stagnate on the beach front. The polluted water will be drawn through the new opening and out to sea, as Mother Nature has intended over hundreds of years priors to construction of the Breakwater. A ballpark estimate for the Cabrillo Beach project would be under $5,000,000.

Looking Ahead

Los Angeles County continues toward an eventual land build out. Normally, when build-out occurs, there becomes an increase in multi-story development and flood control and sewer projects. This occurs at the expense of San Pedro and Long Beach beachfronts. It clearly places additional strain on existing flood control systems, which, by itself, is a reason to work on this circulation problem in San Pedro Bay.

1. It is recommended that this Cabrillo Beach project plan be joined with the Breakwater studies presently under way in Long Beach. For the past four years, there has been a cooperative dialog between the Ports of Long Beach and Los Angeles. This is evidenced by the joint cooperation that has and is presently occurring related to air-quality management programs and many other issues. This would result in a reduction of duplicate efforts and costs to this project as it moves forward.

2. It is clear that both Ports have issues relating to water quality and circulation problems on their respective beachfronts. It would be appropriate and economical for a joint-project effort with

regard to developing an Environmental Impact Report (EIR) in the future. This is now a San Pedro Bay concern, not just a Port of Long Beach or Port of Los Angeles issue.

3. Of course, nothing can be achieved if the Army Corp of Engineers, who has a management role related to the Breakwater, does not support the necessity of this project. But the "Corp" might have a positive view on this type joint venture project and a team approach; with the power of both Ports, Cities of San Pedro and Long Beach, concerned citizens of San Pedro and Long Beach and the public at large, all supporting an ever increasing water quality improvement for Beach fronts.

Note: Should there be a need for additional discussion regarding any issues in this "Concept Paper", I can be reached at (562) 590-5555, (310) 650-6451 or by e-mail at harborlightinc@yahoo.com.

Dr. C. P. Bud Johnson, P.E. (retired)