ing guidelines which have already been mentioned are discussed and evaluated for each route.

- Then applications are made for construction, ROW, and environmental permits. Interstate natural gas companies have the power of eminent domain to ensure that an environmentally compatible route can be secured should such action be required.
- Bids go out to various preselected construction companies with proven wetlands construction expertise. An up-to-date referral system is employed to assure that the bidder has the equipment, expertise, and the financial strength to complete the job and his track record for previous projects is good. The bids incorporate the mitigative planning measures as construction specifications including the type of equipment desired for use and the various permit requirements. Construction bids are opened at a predetermined date and evaluated for cost, construction plan, task comparison, and resources the company plans to use in terms of equipment and manpower.
- Part of the mitigative planning sequence is implementation. Our onsite construction inspectors monitor for specification compliance. These United field personnel have the hand's-on responsibility to complete the job in full accordance with the plans, specifications, laws and regulations and most importantly in a safe, workmanlike manner. The real success of a wetlands project rests upon the experience and expertise of these project supervisors, field engineers, construction representatives and inspectors.

Construction sequence

Current pipeline construction practices in wetlands is a repeatable operation which requires digging ditches into which the pipe is floated and subsequently lowered to the bottom of the ditch. This construction method is known as the push method because all welding operations and pipe storage is done at a central staging area to reduce ROW impacts. The push-pull method is another variation where the pipe is pulled as it is floated. The material

(Continued on page 9)

How to save a marsh by creating one

A unique project in San Diego gives Caltrans the chance to build back a coastal natural resource.

by Gene Berthelsen

Gene Berthelsen is Chief of Communications for Caltrans. This article first appeared in the official Caltrans' publication 'Going Places,' Sept.-Oct. 1984 issue.

A staff of talented Caltrans scientists in San Diego is hard at work turning a heretofore unloved piece of real estate on the southeastern shore of San Diego Bay into a thriving habitat where lightfooted clapper rails, California least terns, and other birds, wildlife, and plants can once again begin to weave their complex set of environmental relationships.

At the same time, work can proceed on a much needed interchange on Interstate 5 and State Route 54, and related projects.

The conservation work involves Sweetwater Marsh, a tidal area unprepossessing in looks, but one of the last remaining saline marshes in San Diego Bay. Like so much California marshland, this area in the 1920s and 30s was thought to have no particular purpose, and so was adorned with a landfill dump.

Sweetwater Marsh is part of a complex land swap involving the old dump, old dredge spoils, and 200 acres of marshy land to be preserved by the U.S. Corps of Engineers. Most of the land is currently owned by the Santa Fe Railroad.

Caltrans is restoring 25 acres of the wetlands and adding 10 acres of new marsh in exchange for the use of 10 acres for the freeway. By doing so, Caltrans can expand Interstate 5 and build its east-west Route 54, just south of San Diego. Groundbreaking was held last May. Santa Fe will have an opportunity to develop its residential and coastal-oriented Gunpowder Point project, and Caltrans will complete its Sweetwater Flood Control Project for the Corps of Engineers.

As with so many Caltrans projects, the Route 5/54 Interchange was planned during a period of dynamic change in state and federal environmental law. Agreements for the route's location were signed in 1964. By 1969, the project was already awaiting funding. The project was to involve a lane addition to the existing Route 5 between E Street in Chula Vista and 24th Street in National City, and an 8-lane freeway between Routes 5 and 805. One of the main features of the project was a freeway-to-freeway interchange of routes 5 and 54.

Integrated with the project was a Corps of Engineers flood control project on the Sweetwater Channel to control periodic flooding (even though a serious flood had not occurred since 1916, when a wildly effective rainmaker named Hatfield had succeeded in flushing much of San Diego into the Bay — and had to flee to Mexico).

Caltrans' first action was to go ahead by filing a notice of negative declaration, even though almost 30 acres of marshland were slated to be used for structures and fill. Next came an environmental report and a thorough review by local, state, and federal agencies.

It was the Endangered Species Act and the Fish and Wildlife Service which prompted the decision to regenerate the marshland. Two species of endangered birds, the light-footed clapper rail and the California least tern, had nesting areas within project limits.

To mitigate the impact on these areas, the conservation agencies and Caltrans recommended eliminating some off-ramps and relocating others, eliminating dredging associated with the project, removing hiking and recreational trails, assuring fresh water flushing of the area,