DATE: 7/5/84

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

TIDE NOTE FOR HYDROGRAPHIC SHEET

Marine Center: Pacific

OPR: L123

Hydrographic Sheet: H-10102

Locality: South San Francisco Bay, Califronia

Time Period: August 17,1983-April 19,1984

Tide Station Used: 941-4458 San Mateo Bridge, CA
941-4510 Dumbarton Bridge, CA
941-4523 Redwood Creek, CA

Plane of Reference (Mean Lower Low Water): 941-4458=14.67 feet
941-4510= 2.98 feet
941-4523= 0.72 feet

Height of Mean High Water Above Plane of Reference: 941-4458=7.0 feet
941-4510=7.8 feet
941-4523=7.4 feet

Remarks: Recommended Zoning:

See Page 2

James R. Hubbard
Chief, Tidal Datums Section

July 13, 1984

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OPR L123 H-10102

I. In San Francisco Bay
  A. South of latitude 37°34.0' to 37°32.0'
    1. West of longitude 122°13.0' zone on 941-4458 and apply x1.03 range ratio
    2. East of longitude 122°13.0' zone on 941-4458 and apply +10 minute time correction and x1.07 range ratio

  B. South of latitude 37°32.0' to 37°31.0'
    1. West of longitude 122°10.0' zone on 941-4458 and apply +15 minute time correction and x1.07 range ratio
    2. East of longitude 122°10.0' zone on 941-4458 and apply +15 minute time correction and x1.10 range ratio

  C. South of latitude 37°31.0' to 37°30.0'
    1. West of longitude 122°09.0' zone on 941-4510 and apply -10 minute time correction and x0.97 range ratio
    2. East of longitude 122°09.0' zone direct on 941-4510

II. In Belmont Slough zone on 941-4458 and apply +10 minute time correction and x1.03 range ratio

III. In Steinberger Slough zone on 941-4458 and apply +15 minute time correction

IV. In Corkscrew Slough zone on 941-4458 and apply +20 minute time correction and x1.08 range ratio.

V. In Redwood Creek, West Point Slough and Smith Slough zone direct on 941-4523

FIELD TIDE NOTE

OPR-L123-PHP-81, (H-10102)

Steinberger Slough to Ravenswood Point

Soundings on the field sheet were reduced on the basis of predicted tides for San Francisco (Golden Gate), California. Tide correctors were generated at 0.2 foot intervals using a PDP-8e computer system and program AM500, "Predicted Tide Generator".

Tide Zone Correctors:
Predicted tides were adjusted with correctors supplied by the Tides and Water Levels Branch, Rockville, Maryland, 14 October, 1983. One set of zone correctors were applied to the entire smooth field sheet. The correctors applied were recommended by Tides and Water Levels for a large portion of the survey area and were used for the entire survey.

Time of high water	+1 hr 00 minutes
Time of low water	+1 hr 25 minutes
Height ratio	1.51

Stations

Two tide stations (ADR gages) were operated by PHP personnel in conjunction with three permanent gages maintained by NOAA, Pacific Tide Party at San Francisco, Alameda and San Mateo, California. PHP installed and operated stations are:

Site: Dumbarton Railroad Bridge 941-4510
Position: 37/29/56N, 122/06/23W
Duration: 11 May, 1983 to Present
Digital Record: 40.3 feet above the staff

Site: Port of Redwood City Wharf #5 941-4523
Position: 39/30/24.5N, 122/12/39W
Duration: 15 August, 1983 to end of survey
Digital Record: 10.0 feet above the staff

Stations operated continuously by PTP:

Site: Fort Point, (San Francisco) Ca. 941-4290 (Primary)
Position: 37/48.4N, 122/27.9W

Site: Alameda, Ca. 941-4750 (Secondary)
Position: 37/46.5N, 122/17.9W

Site: San Mateo, Ca. 941-4458 (Secondary)
Position: 37/34.8N, 122/15.2W

Frequent checks with PTP confirm that there were no breaks in data on their stations during survey H-10102.

Levels and Installation:

Dumbarton Railroad Bridge, California (941-4510) was installed by PHP personnel per project instructions (OPR-L123-PHP-81), 11 August, 1981, Change #5, 18 July, 1983. Fischer Porter ADR gage, S/N 7404A0407M17, a floatwell, and a staff were installed and levelled on 11 May, 1983 and were in place for the entire survey. The structures were bolted, steel banded, and epoxy glued to a concrete bridge support pile. 9 bench marks have been used. 6 marks were recovered and 3 were newly established. The 3 new marks were: 1) set in a concrete foundation of a pipeline (4510E 1983), 2) set in a concrete foundation of a California Department of Water Resources test well (4510F 1983), and 3) a Horizontal Control Disk set in a concrete foundation of a pipeline (Hetchy 1983). Bench Mark 4510F was re-inforced with concrete because it was discovered to be wobbly in February, 1984. Good records were obtained with no interruptions in data during survey operations. Floatwell clogging affected tide data for 8/11-16/83. The well was plunged. A half day was lost 9/30/83 and a whole day was lost 10/2-3/83 with a timer and signal wire failure. Both components were replaced 10/3/83. Levels were run for a second time on 10/28/83 and a third time on 2/27-28/84. No movement was detected. No noticeable divergence has been observed in the gage to tide staff difference since the installation of the station.

Port of Redwood City, Wharf #5, California (941-4523) was installed by PHP personnel on 15 August, 1983. The 1974 historic site and floatwell were used. A new staff was installed and bolted to the historic staff and two pieces of steel angle iron clamped to a concrete pile. Fischer Porter ADR S/N 7304A1380M5 ran well from 15 August, 1983 to the end of the survey. Good records were obtained with no interruptions in data during survey operations. An hour's data was lost 1/19/84 when a timer failed. (It was replaced.) A day and a half's data was lost 2/21-23/84 when the tape jammed. No new marks were installed. Levels run to 5 recovered bench marks compare well with history. Six month levels were not run in February because the removal was expected close to it. Closeout levels will occur within 2 months of the completion of the survey.

All levels were to third order accuracy using Leitz B1 automatic level S/N 214303 and K&E 1cm Metagrad rod S/N 81-0167.

No survey data was acquired without the required tide support. Pacific Standard Time (120 W) was used for all gages.

It is recommended that when the final zoning is performed for this survey, the oceanographer should attempt to seperate zones more realistically.