

**Cruise Plan
Regional Monitoring Program
Summer 2001 Bivalve Maintenance Cruise
August 1-3, 2001**

Objectives

The objectives of this cruise are to check and maintain bivalve moorings at 12¹ sites in the San Francisco Estuary.

Transplanted bivalves were deployed at 12 sites in June, 2001. Deployment duration is approximately 100 days. During this cruise, evaluation of mooring integrity will be performed by checking for abrasion of lines and security of knots and cable ties. Mesh bags containing bivalves will be scrubbed with a nylon brush to remove fouling organisms and bivalve cages will be checked for condition.

Personnel

The personnel and work assignments for this cruise are as follows:

Name	Affiliation	Duties
Gordon Becker	AMS	Dive Tender
David Bell	AMS	Cruise Manager, Dive Master
David Morgan	Romberg Tiburon Institute	Vessel Skipper
Paul Salop	AMS	Diver

Mr. Becker will tend divers and record data to the cruise log. Mr. Bell will be responsible for scientific dive operations and safety. Mr. Morgan will be responsible for vessel operation and safety. Mr. Salop will be assisting in diving operations.

Cruise Schedule

The cruise schedule (Table 1) assumes that approximately 0.5 hr will be required for operations at each site.

¹ No bivalves were deployed at the Grizzly Bay, Sacramento River, and San Joaquin River stations.

Table 1. Activity schedule for 2001 Summer Bivalve Maintenance Cruise.

Date	Activity	Time
Day 1 Aug. 1, 2001	Mobilize gear on R/V Questuary, Emeryville Marina. Depart for Yerba Buena Island site.	1000-1100
	Examine and maintain moorings at Yerba Buena, Alameda, Redwood Creek, Dumbarton Bridge and Coyote Creek. Slack current at Dumbarton Bridge at 1307 (Figure 1).	1100-1600
	Demobilize gear at Emeryville and fill SCUBA tanks.	1600-1630
Day 2 Aug. 2, 2001	Mobilize gear on R/V Questuary, Emeryville Marina. Depart for Horseshoe Bay site.	1030-1100
	Examine and maintain moorings at Horseshoe Bay, Red Rock, Pinole Point, San Pablo Bay and Petaluma River. Slack current at Pinole Point at 1445 (Figure 2).	1100-1600
	Demobilize gear at Emeryville and fill SCUBA tanks.	1600-1630
Day 3 Aug. 3, 2001	Mobilize gear on R/V Questuary, Emeryville Marina. Depart for Davis Point site.	0800-0830
	Examine and maintain moorings at Davis Point and Napa River. Slack current at Davis Point at 1108 (figure 3).	0830-1300
	Demobilize gear at Emeryville marina.	1300-1400

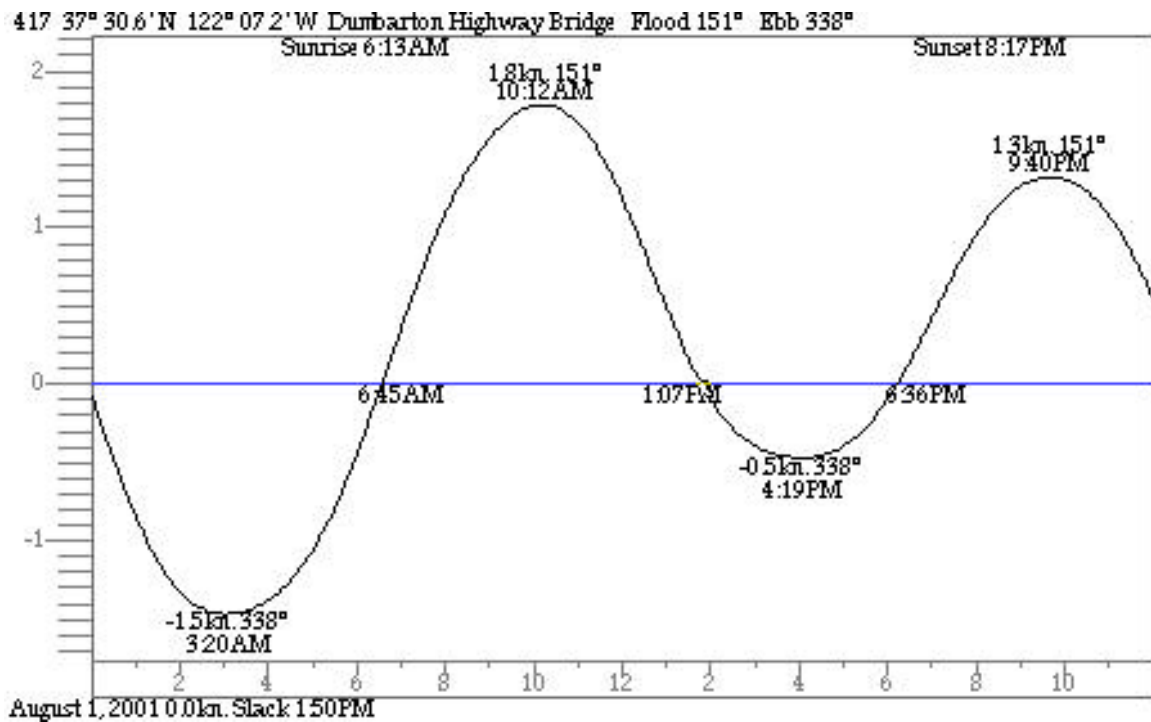


Figure 1. Currents near Dumbarton Bridge on August 1, 2001.

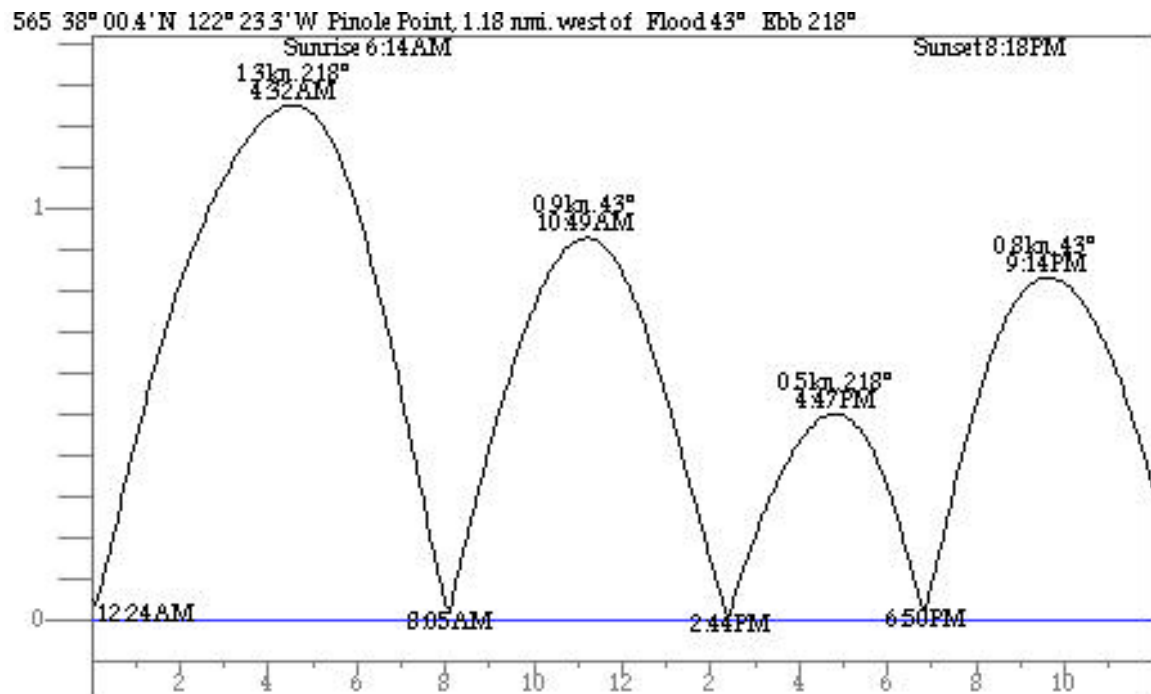


Figure 2. Currents near Pinole Point on August 2, 2001.

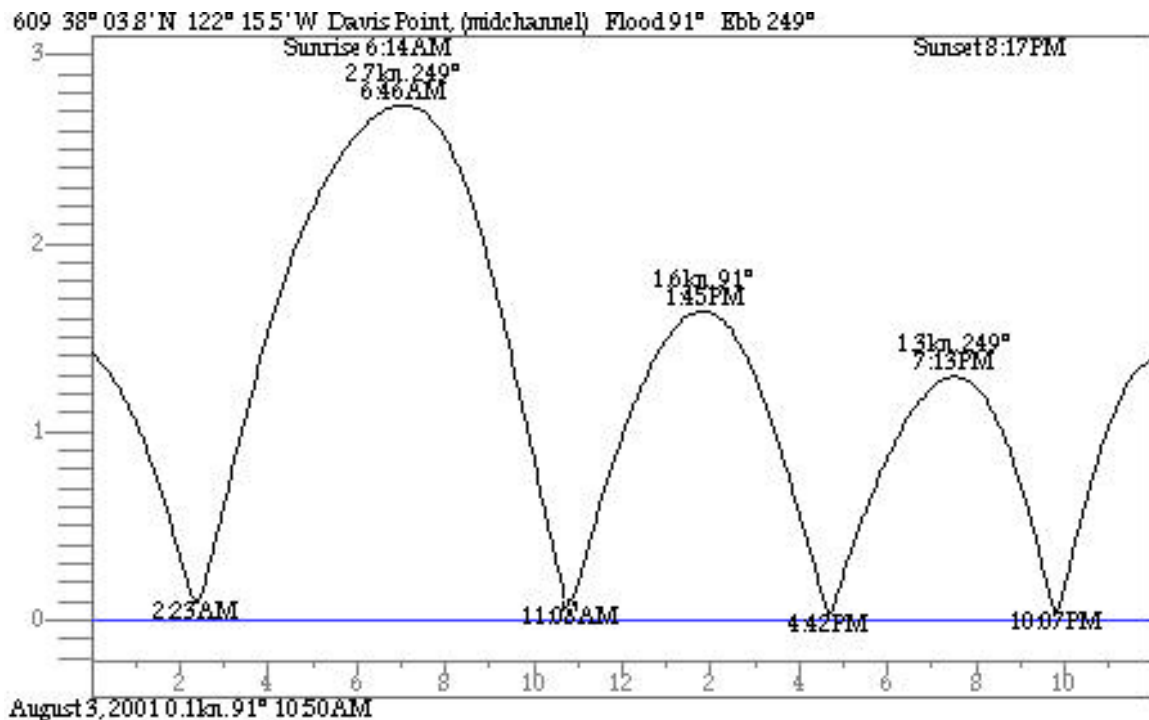


Figure 3. Currents near Davis Point on August 3, 2001.

Mooring Examination and Maintenance Procedures

All diving operations will be conducted by divers working in pairs and tethered together. The vessel will be tied to the surface marker for each mooring. The divers will descend to the bottom and locate the ground line to the mooring. When the ground line has been located, its attachment to the piling will be examined by feeling for abrasion and looseness in the knots and cable ties. After this examination, the divers will proceed along the ground line checking its integrity. At the mooring, the earth anchors will be checked to confirm that they have not worked out of the bottom and that serious erosion of bottom sediments has not occurred around them. All knots will be checked for secureness and the presence of intact cable ties. When the integrity of all lines and knots has been verified and any problems have been corrected, the divers will ascend the mooring line to the bivalve bags and use nylon brushes to gently scrub all debris and fouling organisms from the bags. After the bags have been scrubbed, the divers will return to the surface by retracing their route along the ground line and piling. Spare line, earth anchors and buoys will be onboard the vessel if replacements are required.

Site Locations

The geographic coordinates for the sites are listed in Table 2.

Table 2. Coordinates of Regional Monitoring Program Bivalve Deployment

Site Name/Code	Latitude (N)	Longitude (W)	Comments
Coyote Creek BA10	37° 28.19'	122° 03.83'	Channel marker "18"
Dumbarton Bridge BA30	37° 30.80'	122° 08.08'	Channel marker "14"
Redwood Creek BA40	37° 32.82'	122° 11.70'	Channel marker "4"
Alameda BB71	37° 41.73'	122° 20.38'	Channel marker "1" 1.65 nmi. SE of Hunters Point
Yerba Buena Island BC10	37° 49.12'	122° 20.81'	Dolphin 0.1 nmi. N of Bay Bridge
Horseshoe Bay BC21	37° 49.87'	122° 28.65'	Dolphin 100 ft W of fishing pier
Red Rock BC60	37° 55.70'	122° 28.13'	Channel marker "2" for Larkspur ferry terminal
Pinole Point BD30	38° 01.00'	122° 22.05'	Channel marker "P"
San Pablo Bay BD20	38° 02.72'	122° 25.71'	Channel marker "1"
Petaluma River BD15	38° 06.77'	122° 30.05'	NE end of railroad bridge
Davis Point BD40	38° 03.26'	122° 15'.63	E side of UNOCAL loading dock
Napa River BD50	38° 04.84'	122° 14.82'	Mare Island Strait adjacent to General Foods facility, 0.7 nmi. from channel marker "2"
Grizzly Bay BF20	38° 06.49'	122° 03.37'	Channel marker "9" 1.0 nmi. NW of Garnet Point
Sacramento River BG20	38° 03'.58	121° 47.50'	Channel marker "8" N of Sherman Island
San Joaquin River BG30	38° 01.27'	121° 48.32'	Channel marker "8" 0.75 nmi. E of Antioch Marina

Bivalve Deployments

Bivalves deployed during the previous cruise are indicated in Table 3.

Table 3. Bivalve deployments from June, 2001.

Site Name	Site Code	Deployed MCAL (Number)	Deployed MEDU (Number)	Deployed CGIG (Number)
Coyote Creek	BA10		160	144
Dumbarton Bridge	BA30	160	160	
Redwood Creek	BA40	160	160	
Alameda	BB71	160	160	
Yerba Buena Island	BC10	160	160	
Horseshoe Bay	BC21	160	160	
Red Rock	BC61	160	160	
Petaluma River	BD15		160	144
San Pablo Bay	BD20		160	144
Pinole Point	BD30	160	160	
Davis Point	BD40		160	144
Napa River	BD50		160	144
	TOTAL	1120	1920	720