

San Dieguito Lagoon Inlet Dynamics and Maintenance

Coastal Environments

La Jolla, CA

www.coastalenvironments.com

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Lagoon Inlet

- Lagoon Inlet Dynamics
 - Lagoon monitoring program
 - 1993 Flood
 - Inlet sedimentation
 - Inlet behavior

- Inlet Maintenance Plan
 - Initial and Periodic Maintenance
 - Excavation, public access and safety
 - Effect of artificial inlet opening on adjacent beaches

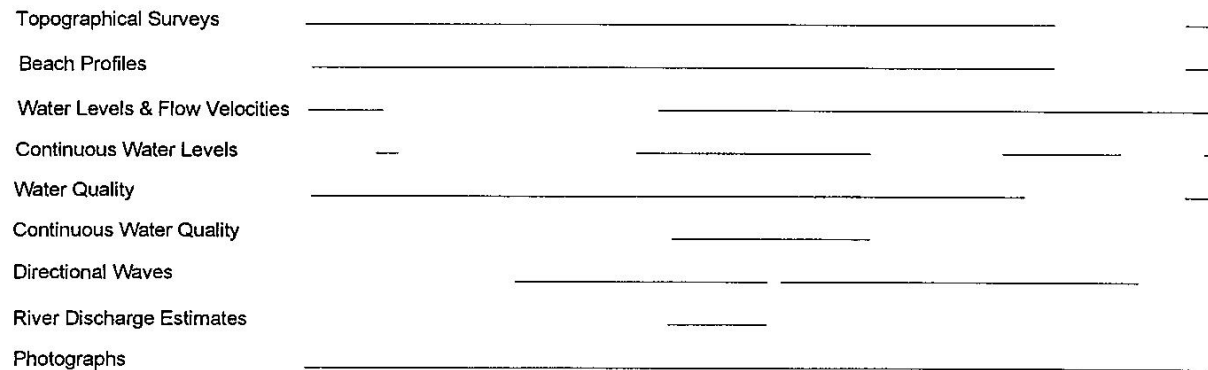
- Video – Excavation Operation (Sep 2000)



Surveys and Measurements

San Dieguito Lagoon Summary of Surveys, 1992-94

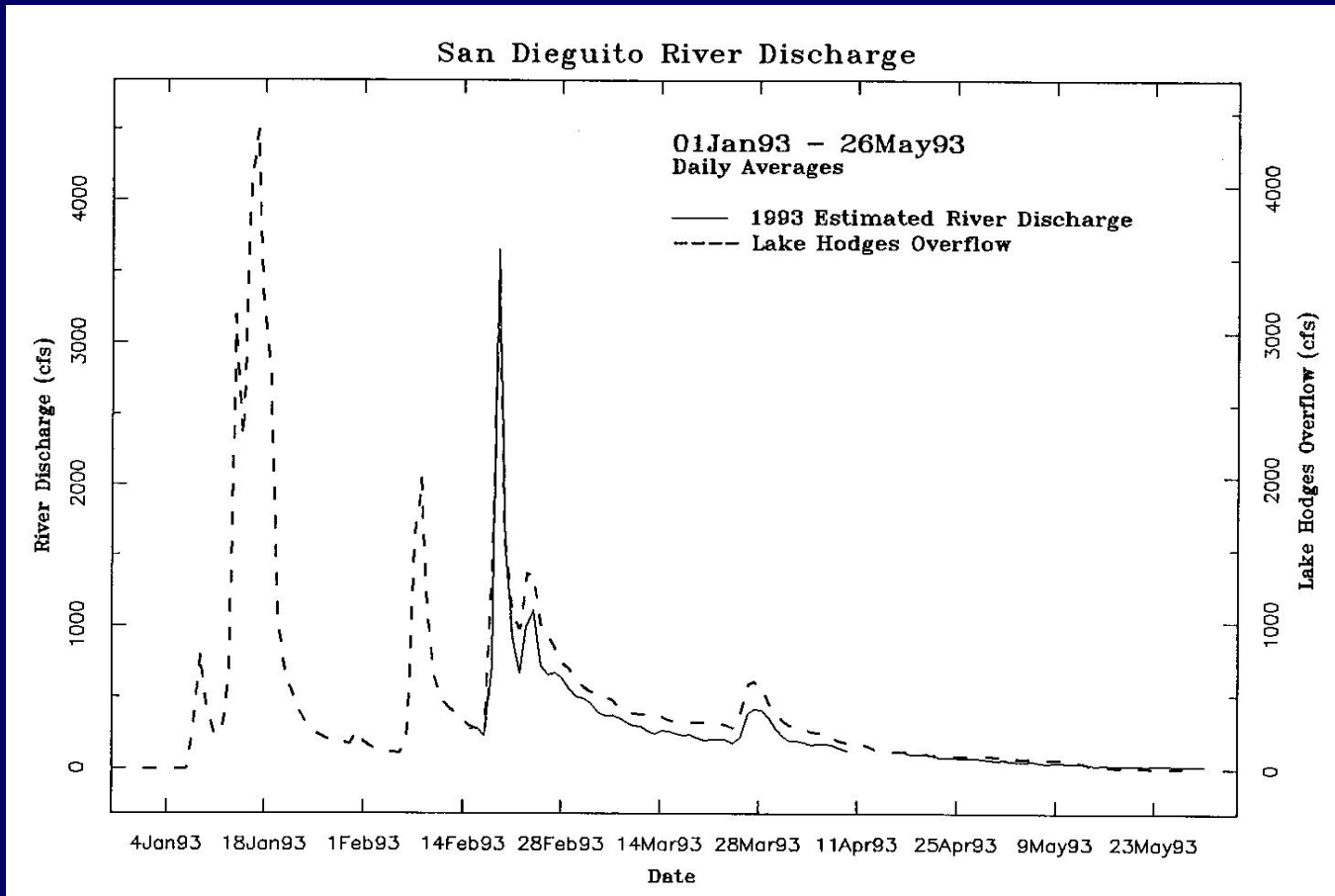
Surveys/Measurements



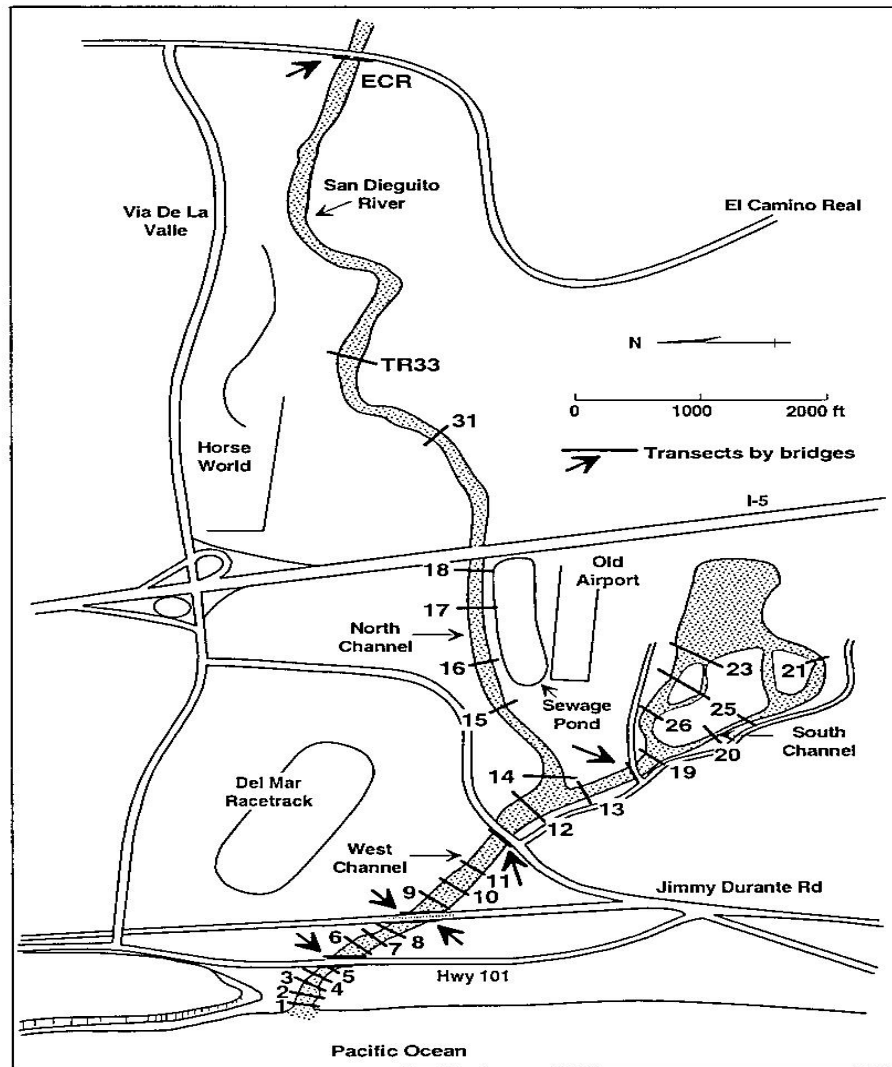
Jan Mar May Jul Sep Nov Jan Mar May Jul Sep Nov Jan Mar May Jul Sep Nov
 1992 1993 1994



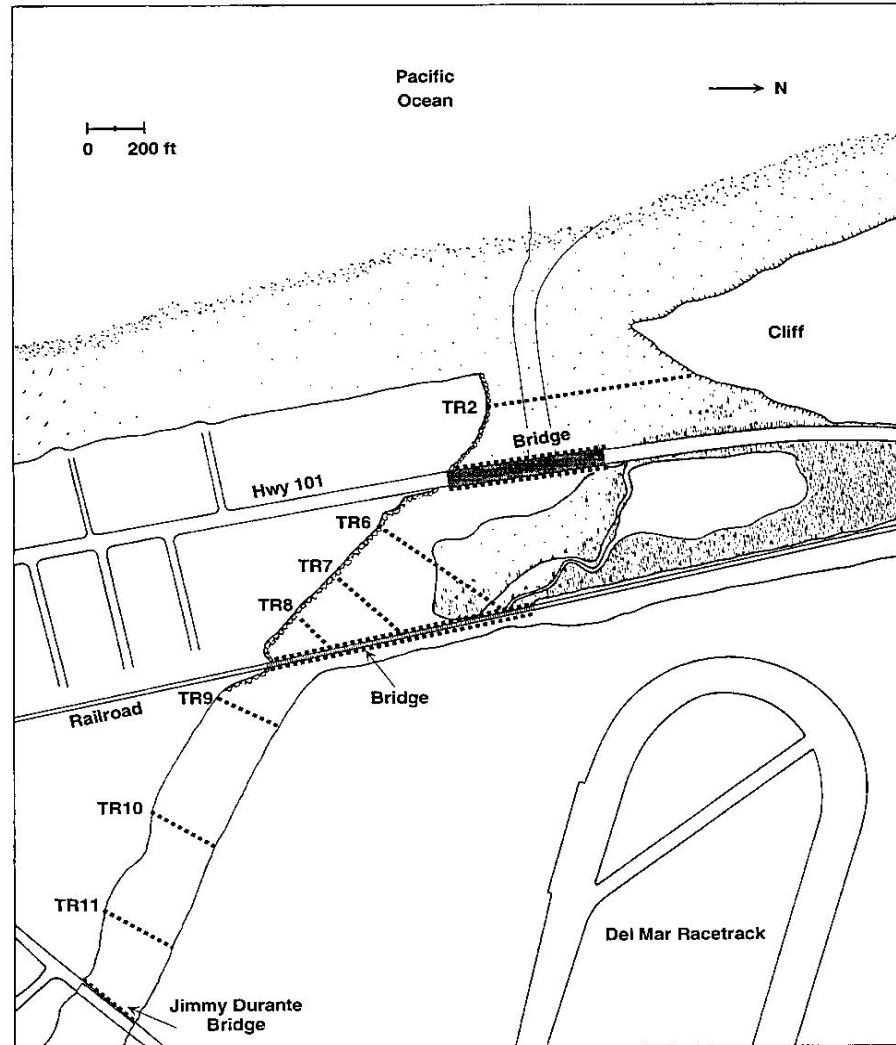
1993 San Dieguito River Discharge



Established Transects

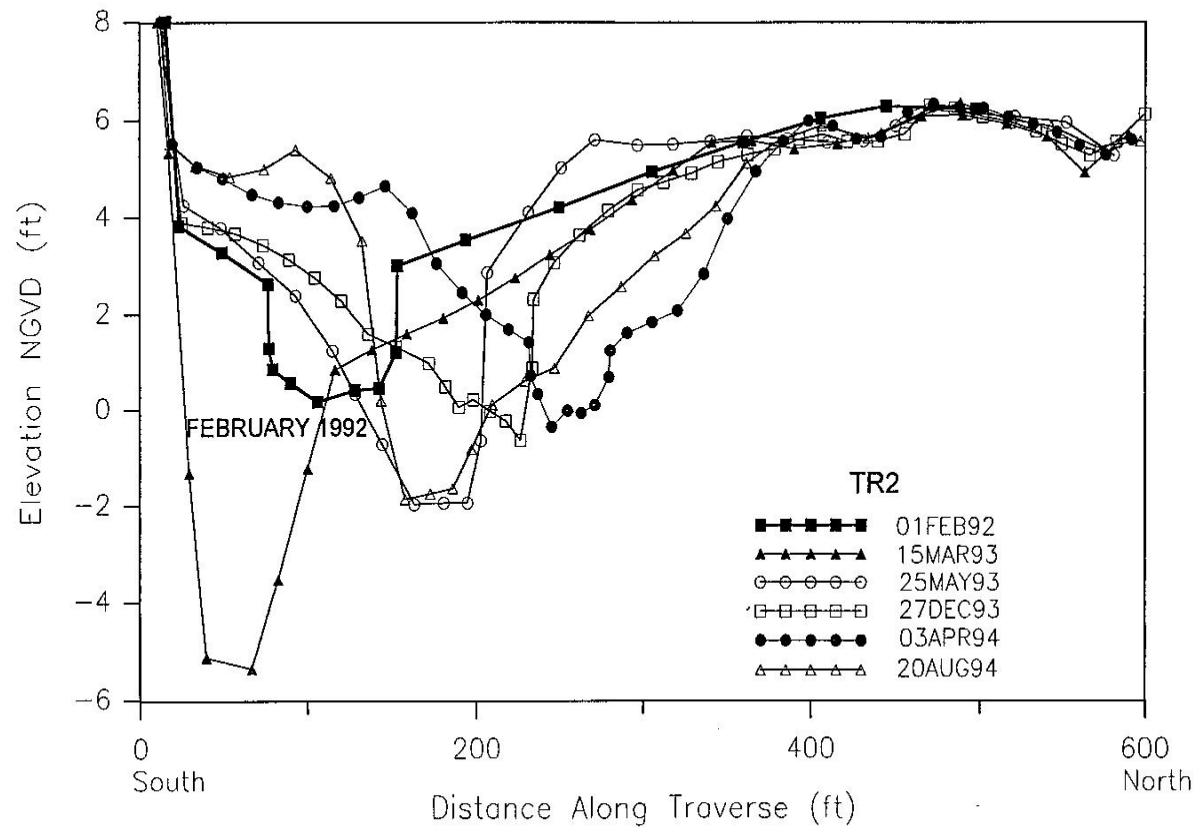


Transects of Interest

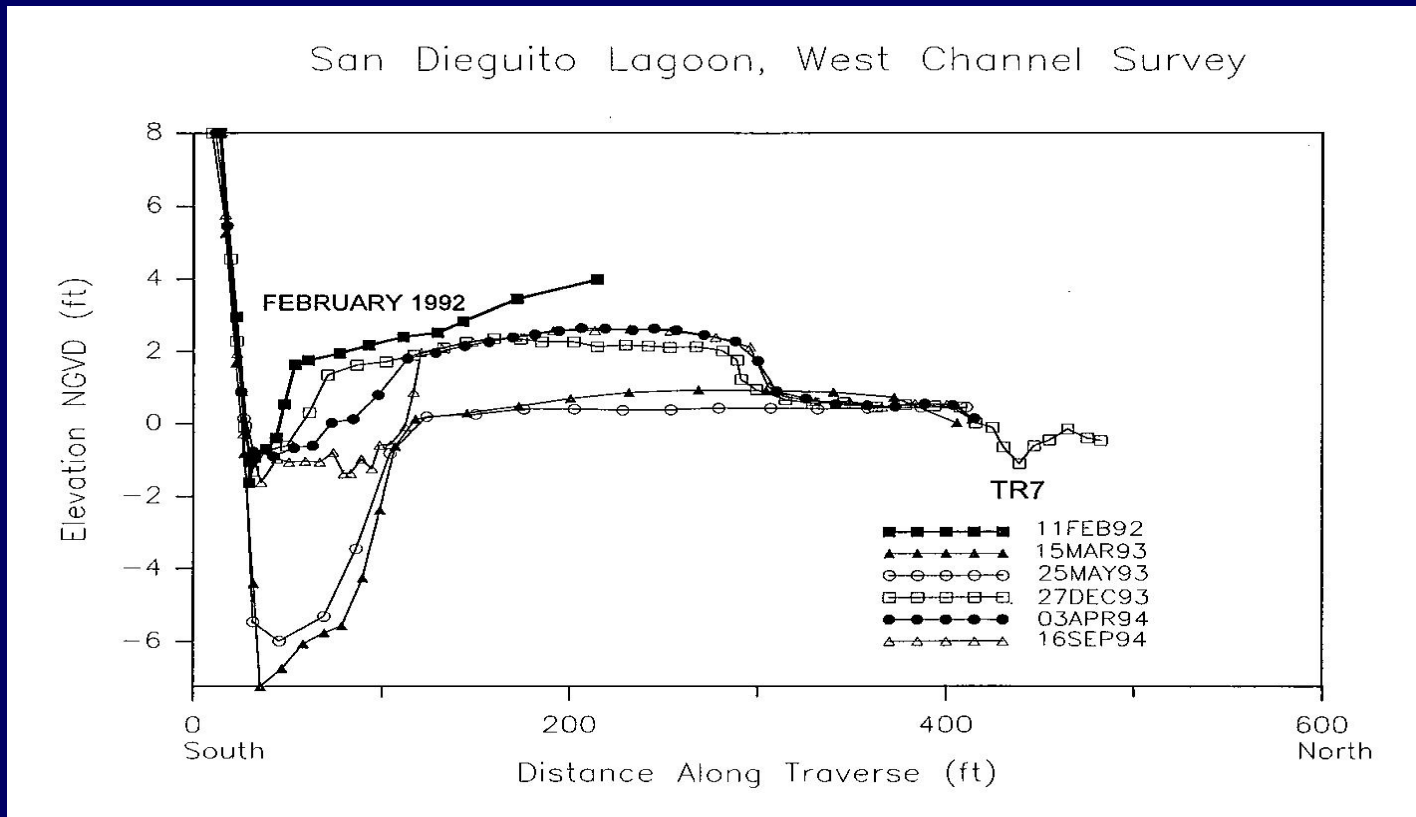
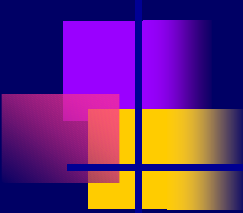


Traverse TR2 Located at the Inlet Area

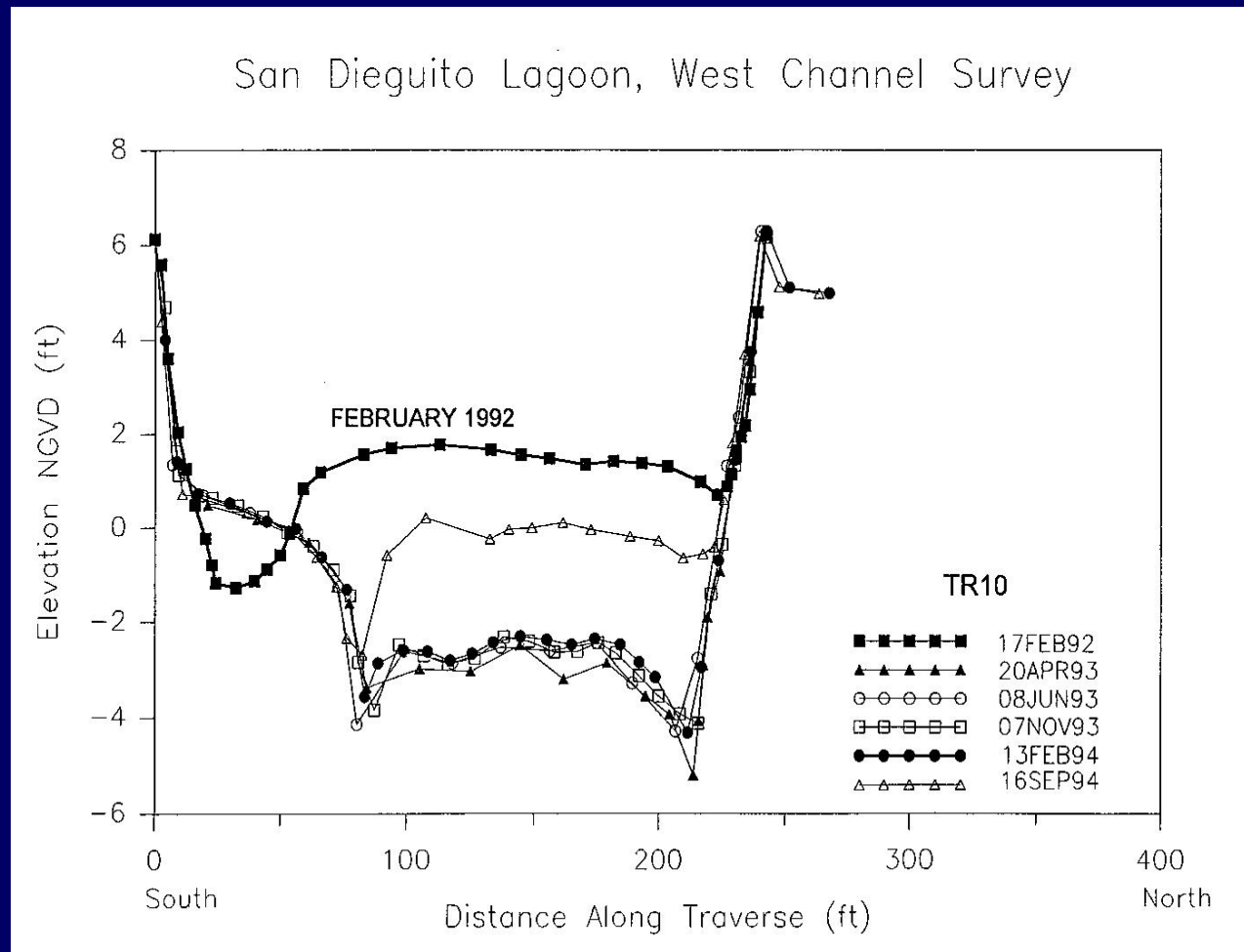
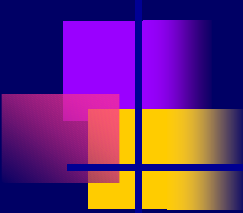
San Dieguito Lagoon, West Channel Survey



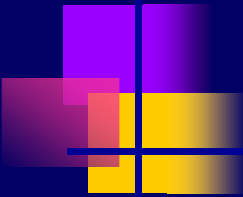
Traverse TR7 Located at West Channel



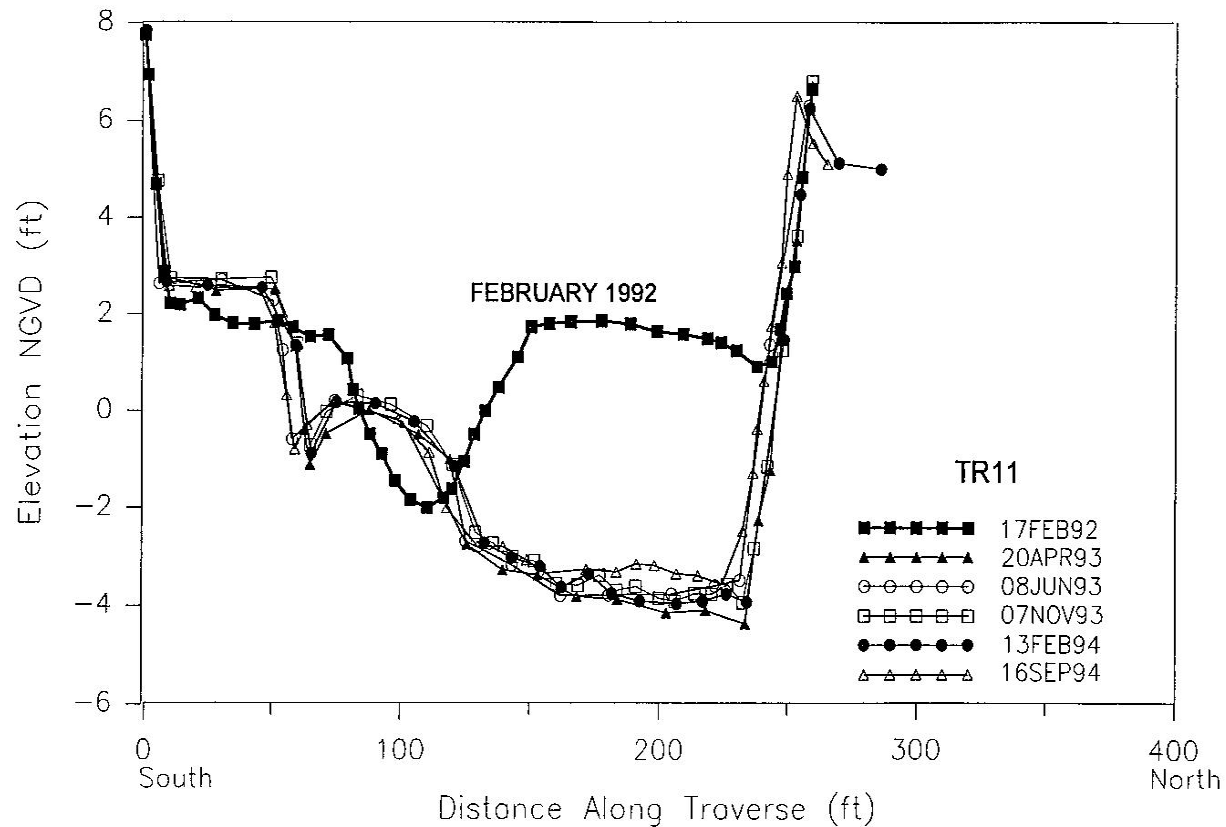
Traverse TR10 Located East Railway Bridge



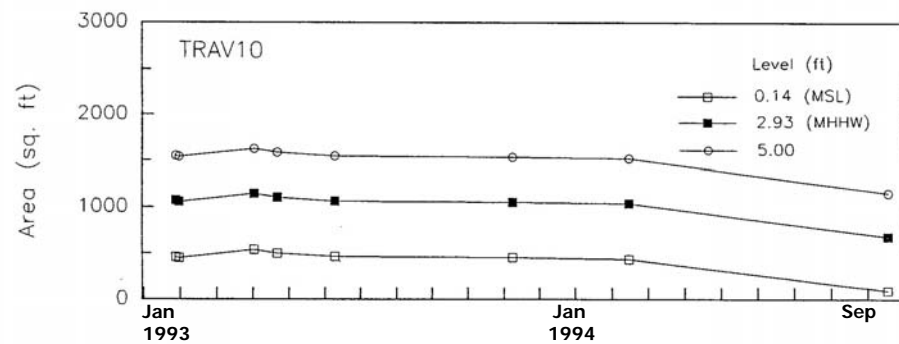
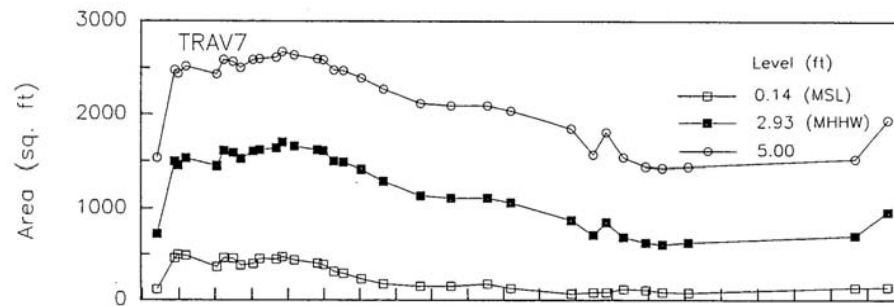
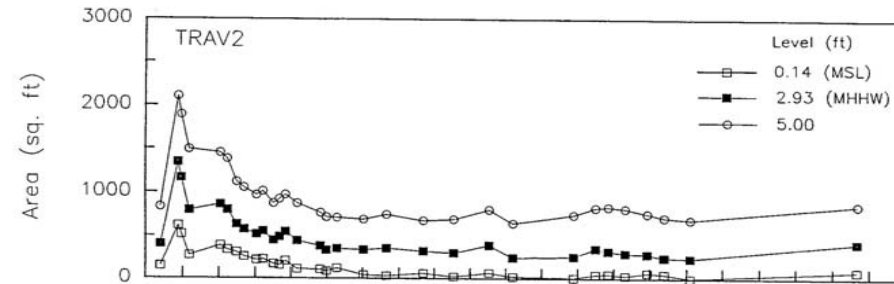
Traverse TR11 Located East Railway Bridge



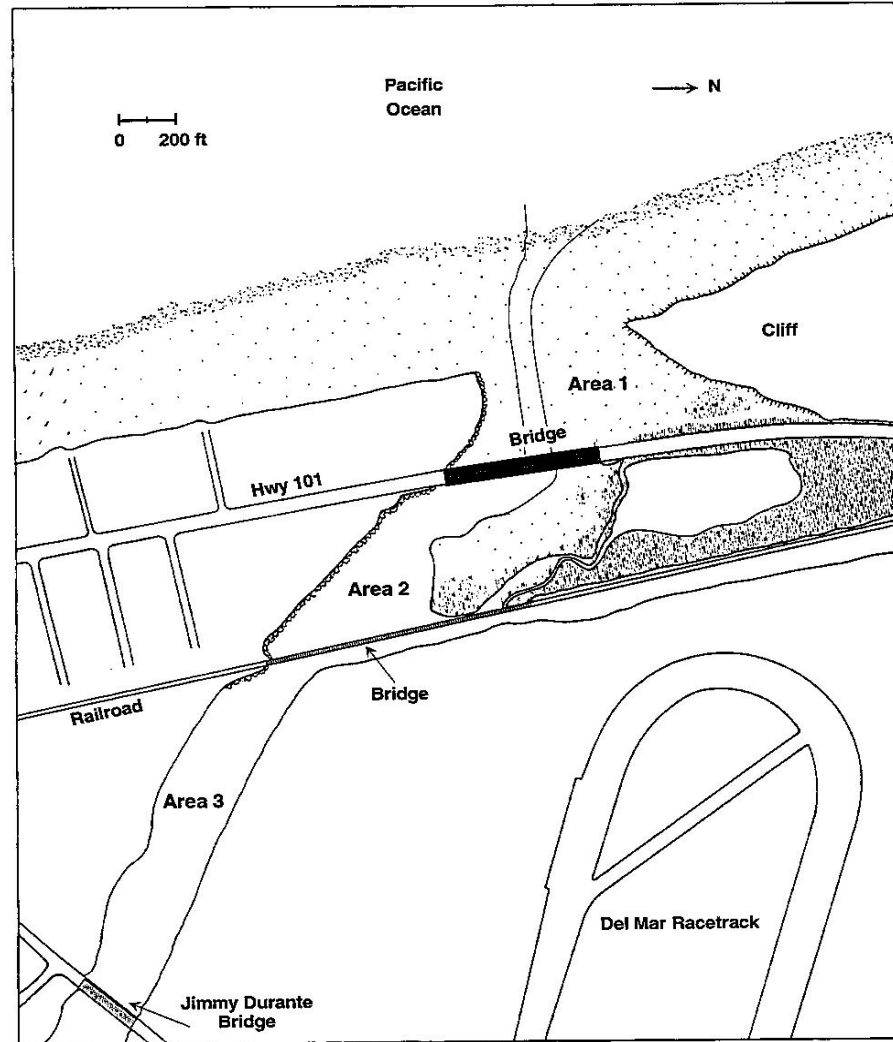
San Dieguito Lagoon, West Channel Survey



Cross-Sections Changes



Areas 1, 2 and 3

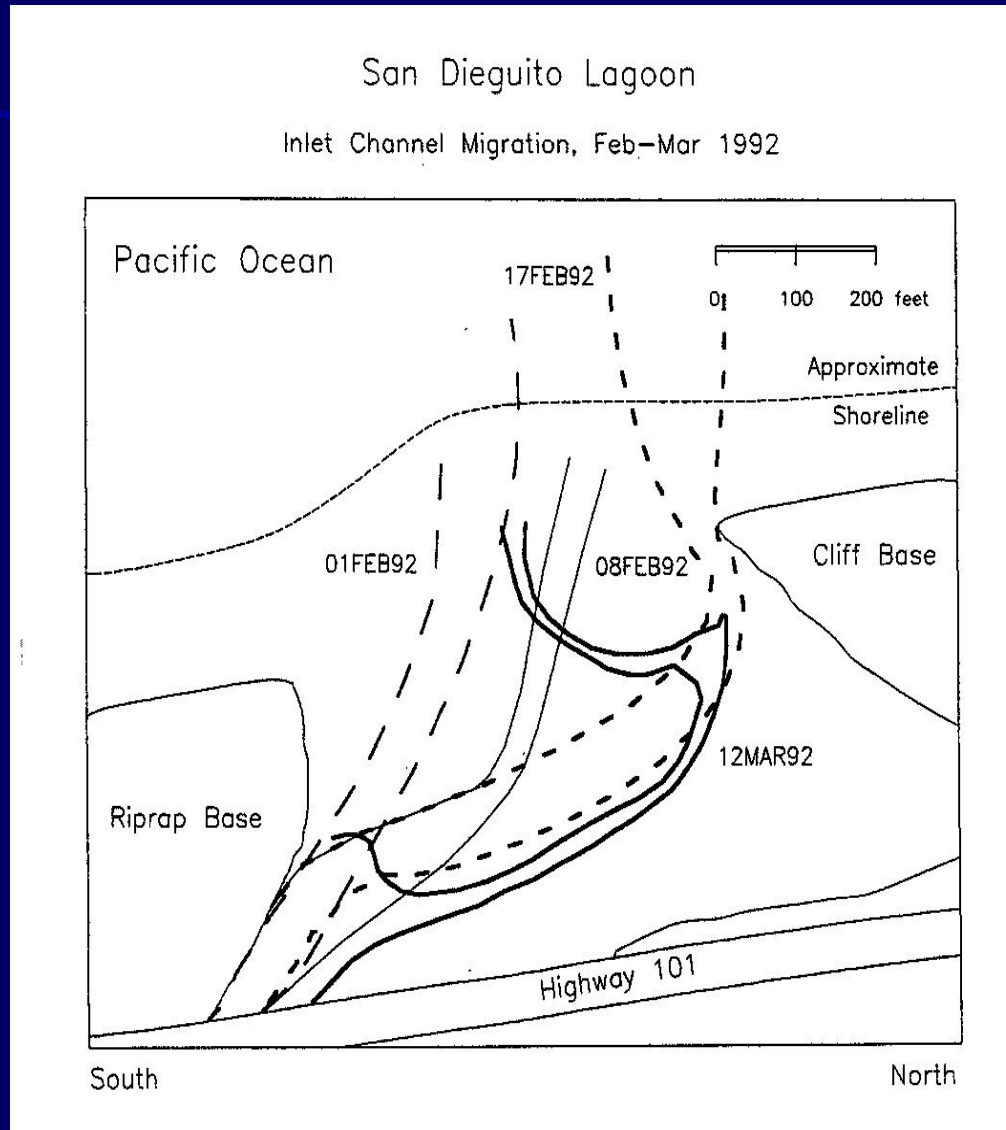
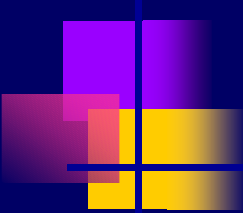


Sedimentation Rates Areas 1, 2 and 3

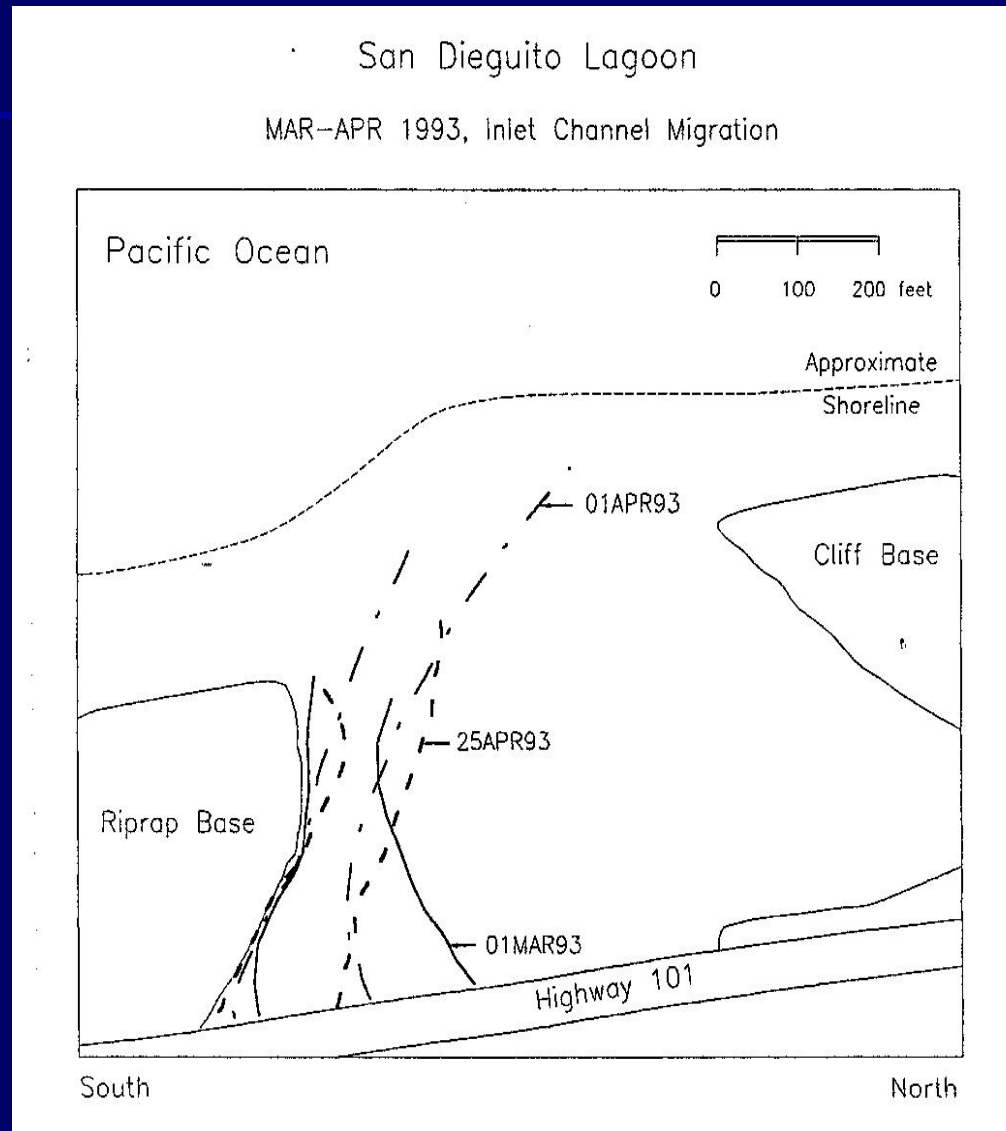
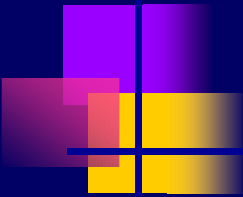
| Area | Sedimentation Rate (yd ³ /month) | | |
|--------|---|--------------|--------------|
| | Mar-Apr 1993 | May-Dec 1993 | Jan-Sep 1994 |
| AREA 1 | 6000 | 500 | Small |
| AREA 2 | 2000 | 6000 | Small |
| AREA 3 | Small | Small | Up to 1000 |



Weak Outflow – Inlet 1992



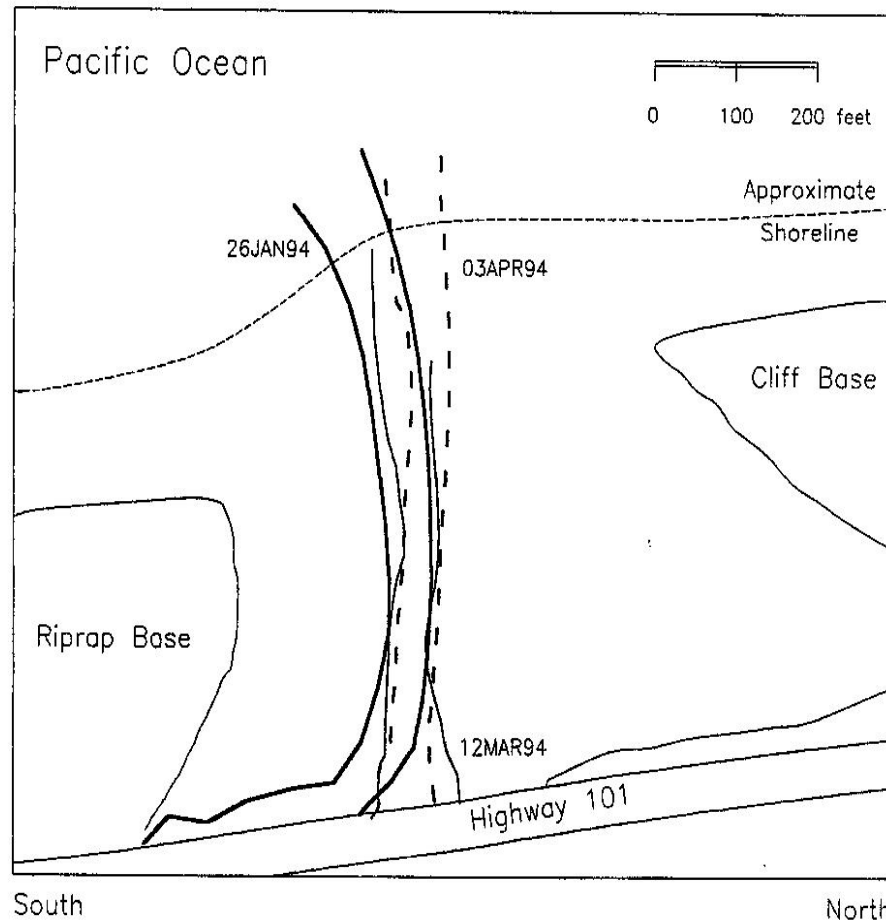
Flood of 1993 causing Strong Flow – Inlet 1993



Stable Inlet – 1994

San Dieguito Lagoon, Inlet Survey

JAN-APR 1994

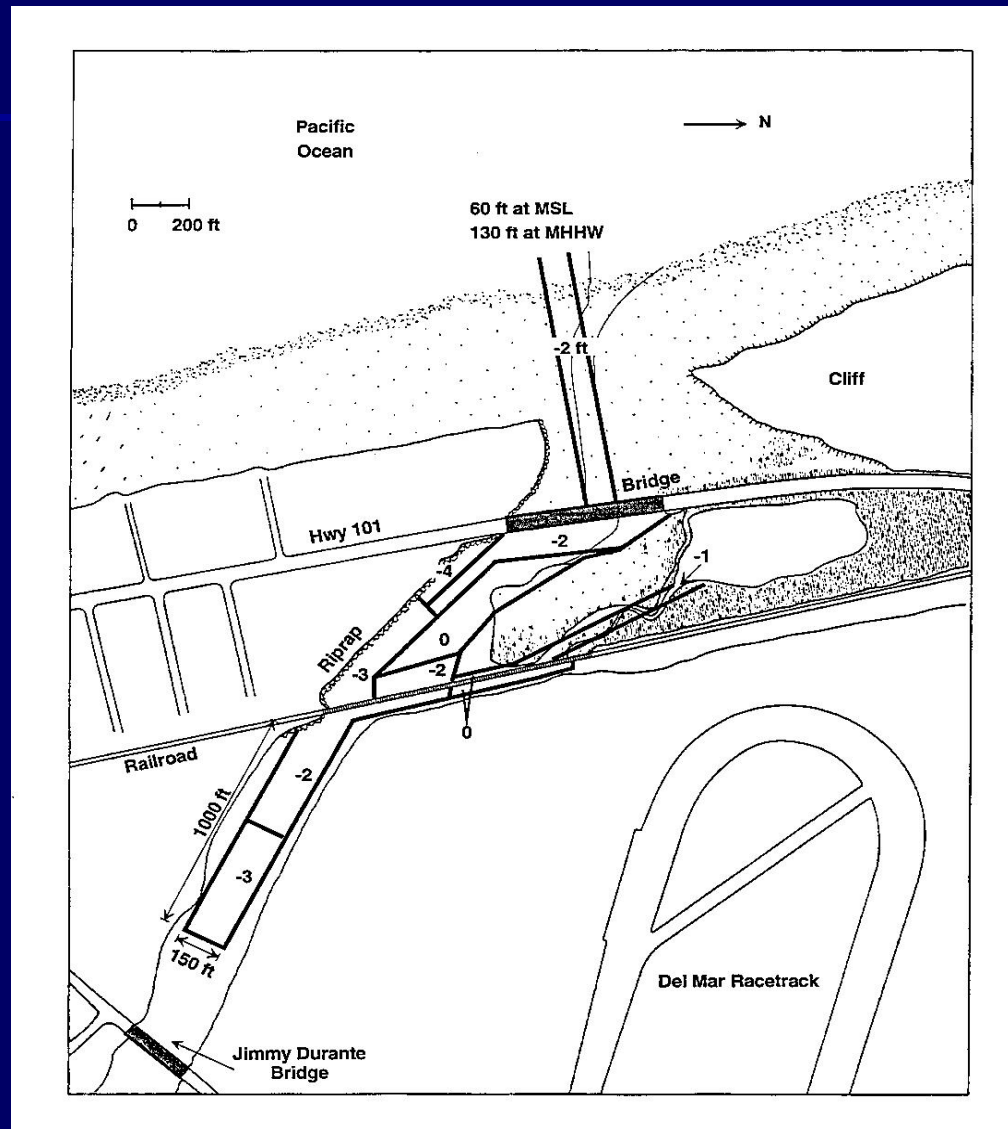


Excavation Plan

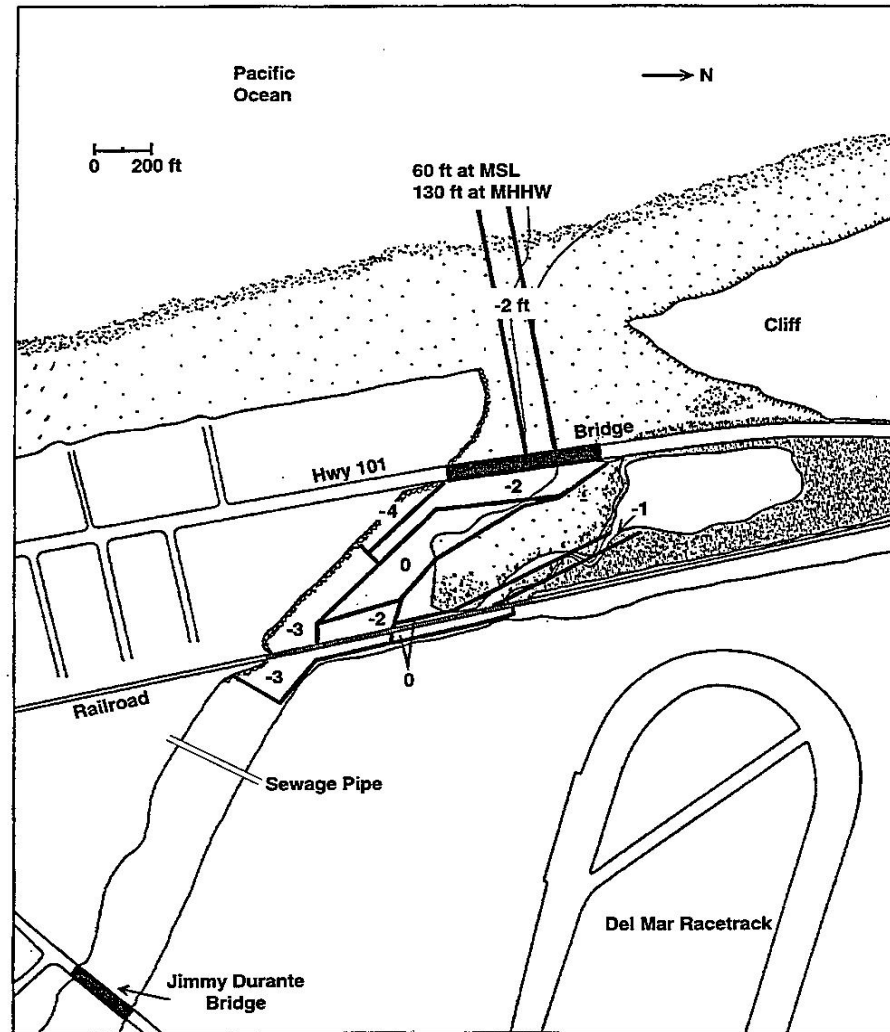
- Initial excavation
 - At start of project
 - Estimated by 45,000 yd³
- Periodic excavation
 - Every 8 months
 - 16,000 yd³



Initial Excavation



Periodic Excavation



Estimated Excavated Volumes

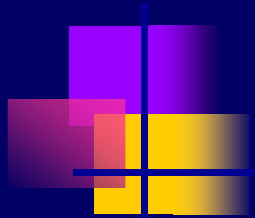
| Area | Initial Dredging ^a (Start Time T_o) | Periodic Maintenance Dredging Time and Volume Per Cycle (3 Times Dredging every 2 years) | | |
|------------------------------------|--|--|-----------------------------------|-----------------------------------|
| | | $T_o + 8$ months ^b | $T_o + 16$ months ^b | $T_o + 24$ months ^b |
| 1 | 5,000 | 4,000 | 4,000 | 4,000 |
| 2 | 15,000 | 12,000 | 12,000 | 12,000 |
| 3 | 25,000 | - | - | 5,000 |
| Total Volume (yd ³) | 45,000 | 16,000 | 16,000 | 21,000 |

^a Estimates are based on the assumption that initial dredging will be carried out in early fall 1994.

^b Time interval in months from the date periodic dredging cycle starts (T_o).



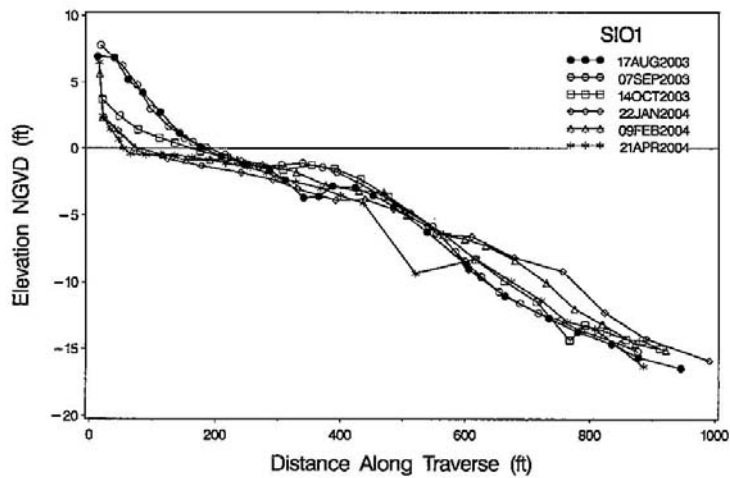
Opening San Dieguito Lagoon



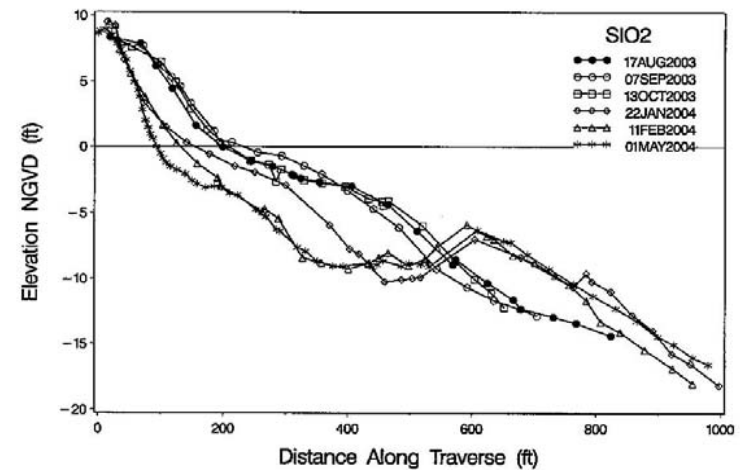
| Number | Open Date | Close Date |
|--------|-------------|-------------|
| 1 | 23 Sep 2000 | 21 Nov 2001 |
| 2 | 4 Oct 2002 | 4 Nov 2002 |
| 3 | 5 Sep 2003 | Still open |



Beach Response to SEP 2003 Artificial Inlet Opening



Profile Located Just South of Inlet



Control Profile Located 2,000 ft
South of Inlet



Excavation Operation – Sep 2000

