Shoreline Preservation Strategy

- Adopted in 1993
- Proposes beach building & maintenance to protect/restore regional beaches
- Emphasizes beach sand replenishment
- Guided by Shoreline Preservation Working Group (formed in 1980s, reports to RPC)
- Regional Comprehensive Plan supports implementation
Regional Beach Sand Project

- In 2001, six miles of regional beaches restored
- $17.5 million from U.S. Navy and DBW
- Contributions from coastal cities
- Pilot project to implement Strategy goals
- First step in implementing long-term approach
Other Shoreline Preservation Efforts

- Sand Compatibility & Opportunistic Use Program (SCOUP)
- Shoreline Monitoring
- Nearshore Habitat Inventory
- CRSMP – public workshops
  - January 23 San Diego (SANDAG)
  - June 5 North County, Encinitas
  - June 12 South County, Imperial Beach
Figure 2: Existing Sediment Management

- Sediment trapped behind dams and debris basins
- Sand and gravel mining
- Urbanization of watershed
- Sand placed on nearby beaches
- Sediment excavated and placed nearby
- Sand held in place by urbanization
- Sand and gravel sold for construction
- Beach erosion due to less sand
- Less sand to coast ocean
- Ocean
- Beach replenished with sand dredged from offshore

Sand trapped by harbor structures
Harbor
Channelized river
Reservoir
Figure 2: Existing Sediment Management
Figure 3B: SANDAG Shoreline Erosion Problem Areas
Existing Sand Data for:
- Coronado
- Imperial Beach
- Oceanside
- Carlsbad
- Encinitas
- Solana Beach
San Diego Sensitive Resources

**Beach**
- California grunion
- Tidepools
- Snowy Plover

**Nearshore**
- Surfgrass, Kelp Bed Reefs
- Commercial/Recreational Fishing

**Lagoons, Bays, Estuaries**
- Nesting Sites
- Marine Fish Nursery & Foraging
Environmental Objectives

- Maintain Healthy Habitats
- Protect Sensitive Resources
- Avoid/Minimize Impacts
CRSMP APPROACH

Constraints & Opportunities

- Update Mapping Tools
- Lessons Learned (2001 RBSP, Other Projects)

Maintain & Protect Resources

- Flexible Lagoon Maintenance
- Enhance Sandy Beach
- Buffer Sensitive Resources/ Piers

Adaptive Management

- Focused Monitoring- Feedback
Figure 13: Sensitive Biological Resource Areas in the Vicinity of Imperial Beach Sediment Management Areas
Figure 12: Sensitive Biological Resource Areas in the Vicinity of South Coronado Sediment Management Areas
Figure 11: Sensitive Biological Resource Areas in the Vicinity of North Coronado Sediment Management Areas
Figure 10: Sensitive Biological Resource Areas in the Vicinity of Mission Beach Sediment Management Areas
Figure 9: North County Sediment Sources

Legend
- Inland Sources
- Lagoons
- Major Roads
- Offshore Sites
- Dams
- Freeways
- Municipal

0 2 4 Miles
Figure 10: Sediment Source Locations in Central County Region
Figure 11: Sediment Source Locations in South County Region
Rough Regional Sand Budget Projections

- Region Needs at Least 30 Million Cubic Yards to be Completely Restored (SPC ’93)

- 400,000 Cubic Yards Per Year Either Completely Dispersed or Lost Based on 2.1 Million Cubic Yards of the RBSP ’01 Lasting for 5 Years (CF ’07)

- Adding 1 Million Cubic Yards Per Year Would Offset the 400,000 Cubic Yards Per Year Dispersion/Loss Rate and Supply the 30 Million Cubic Yards Need Over 50 Years or Less
### APPROXIMATE PLANNED AND ACTUAL SAND PLACEMENT QUANTITIES
#### SOUTH COUNTY SAN DIEGO FROM 1993 TO 2015

| PROJECT | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---------|----|----|----|----|----|----|----|---|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|
| CUMULATIVE AMOUNT | | | | | | | | | | | | | | | | | | | | | | | | | |
| OVERALL TARGET RATE WITHOUT SAND RETENTION | | | | | | | | | | | | | | | | | | | | | | | | | |
| RESULT | LO | LO | OK | LO | LO | LO | LO | OK | LO | LO | LO | OK | LO | LO | LO | LO | LO | LO | LO | LO | LO | LO | LO |
| ADDITIONAL NEED TO NOURISH (YES -Y OR NO-NO?) | Y | Y | N | Y | Y | Y | Y | Y | Y | N | Y | Y | Y | N | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| MINIMUM QUANTITY FOR NOURISHMENT NEEDED | | | | | | | | | | | | | | | | | | | | | | | | | |
| OVERALL TARGET RATE WITH SAND RETENTION | | | | | | | | | | | | | | | | | | | | | | | | | |
| RESULT | LO | LO | HI | OK | OK | LO | LO | OK | LO | HI | LO | LO | HI | LO | OK | LO | LO | LO | LO | LO | LO | LO | LO |
| ADDITIONAL NEED TO NOURISH (YES -Y OR NO-NO?) | Y | Y | N | N | N | Y | Y | Y | N | Y | Y | N | Y | Y | N | Y | N | Y | Y | Y | Y | Y | Y | Y |
| MINIMUM QUANTITY FOR NOURISHMENT NEEDED | | | | | | | | | | | | | | | | | | | | | | | | | |

Actual sand placement data from SANDAG 2006 Regional Beach Monitoring Program Annual Report by Coastal Frontiers, April 2007

**COLOR**

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**TARGET - NO RETENTION = 1 MCY/YR**

**TARGET - WITH RETENTION = 0.5 MCY/YR**
### APPROXIMATE PLANNED AND ACTUAL SAND PLACEMENT QUANTITIES
#### CENTRAL COUNTY SAN DIEGO FROM 1993 TO 2015

| TIME | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|------|----|----|----|----|----|----|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PROJECT |     |     |     |     |     |     |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| SANDAG RBSP | | | | | | | | | | | | | | | | | | | | | | | | |
| U.S. Navy Homporting | | | | | | | | | | | | | | | | | | | | | | | | |
| CUMULATIVE AMOUNT | | | | | | | | | | | | | | | | | | | | | | | | |
| OVERALL TARGET RATE WITHOUT SAND RETENTION | | | | | | | | | | | | | | | | | | | | | | | | |
| RESULT | LO | LO | OK | LO | LO | LO | LO | LO | LO | OK | LO | LO | OK | LO | LO | LO | LO | LO | LO | LO | LO | LO | LO |
| ADDITIONAL NEED TO NOURISH (YES -Y OR NO-N?) | Y | Y | N | Y | Y | Y | Y | Y | Y | Y | Y | Y | N | Y | Y | Y | N | Y | Y | Y | Y | Y | Y |
| MINIMUM QUANTITY FOR NOURISHMENT NEEDED | | | | | | | | | | | | | | | | | | | | | | | | |

**NOTE:** SAND RETENTION ALREADY EXISTS AT MISSION BAY ENTRANCE CHANNEL JETTY NORTH

Actual sand placement data from SANDAG 2006 Regional Beach Monitoring Program Annual Report by Coastal Frontiers, April 2007

#### LEGEND

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### Approximate Planned and Actual Sand Placement Quantities

**North County San Diego from 1993 to 2015**

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<tr>
<td>OVERALL TARGET RATE WITHOUT SAND RETENTION</td>
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<td>MINIMUM QUANTITY FOR NOURISHMENT NEEDED</td>
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<td>OVERALL TARGET RATE WITH SAND RETENTION</td>
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<td>MINIMUM QUANTITY FOR NOURISHMENT NEEDED WITH SAND RETENTION INCLUDED</td>
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**Color Key**

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</tr>
</tbody>
</table>

*Actual sand placement data from SANDAG 2006 Regional Beach Monitoring Program Annual Report by Coastal Frontiers, April 2007*
Rough Regional Possible Sand Budget Projections

• Adding 1 MCY/YR Would Offset the 400,000 CY/YR Dispersion/Loss Rate and Supply the 30 MCY Need Over 50 Years or Less

• Opportunistic Sand Could Supply 90% of the 1 MCY/YR Target

• The Balance Could Be Realized by Large Projects by SANDAG, the USACE, or By-Passing Oceanside Harbor

• Retention Measures Could Reduce The Needed Volume
Figure 19b: Central County Regional Sediment Sources and Receiver Sites

Legend:
- **RSM Near-Shore Sites**
- **RSM On-Shore Sites**
- **Lejune Maintenance Sites**
- **SOS-HIP Sites**
- **SANDAG Sites**
- **Offshore Borrow Sites**
- **USACE Sites**
- **Utilities**
- **Freeways**
- **Major Roads**
- **Municipal Boundaries**

Scale: 0 1 2 Miles
Figure 19c: South County Regional Sediment Sources and Receiver Sites
Figure 18: Oceanside Nearshore Sand Bypass

Legend:
- Bathymetry
- Pendleton Nearshore Source
- Onshore Receiver Sites
- Near Shore Receiver Site
- Municipal Boundaries
- Freeways
Figure 20: Proposed Sand Retention Sites

Legend
- Proposed Sand Retention Sites
- Freeways
- Major Roads

0 1.5 3 Miles
Recommendations

• Implement Opportunistic Beach Fill Programs to Input As Much Sand As Possible to the Region Each Year;
• Continue Maintenance Dredging Operations and Consider Proportional Placement to Maximize Benefits Over Space and Time;
• Implement Larger Projects (SANDAG, USACE, Harbor By-Passing) Periodically to Offset Any Remaining Dispersion/Losses, and Coordinate in Time; and
• Strongly Consider Sand Retention Throughout the Region to Minimize Dispersion/Losses and Future Fill Amounts.