• The Steering Committee makes strategic decisions and controls project “purse strings”
• US Environmental Protection Agency
• National Marine Fisheries Service
• US Army Corps of Engineers
• US Fish and Wildlife Service
• California Department of Fish and Game
• State Lands Commission
• State Resources Agency
• State Coastal Conservancy
- California State Lands Commission is the land owner
- Fish and Wildlife Service is lead on construction of the restoration plan
- Caltrans owns and operates Pacific Coast Highway
- Aera Energy LLC operates several oil leases in the project area
- State Parks owns and operates Bolsa Chica State Beach
- Orange County Flood Control has a flood channel easement for the EGGW Flood Channel
- DFG operates the Bolsa Chica Ecological Reserve
- Hearthside Homes owns several adjacent properties
- Gas Company operates a dry gas line owned by Long Beach
- Orange County Water District operates groundwater test wells
- RWQCB oversees contaminant cleanup and WQ permits
- Corps, CCC, AQMD, USCG regulate certain activities
• ~ 2,400 acres under full tidal influence with a direct ocean connection
MAP OF
THE PROPERTY OF
THE BOLSA LAND CO.
LEASED TO
• after 100 years of dike, roads, and houses
• ~1,300 acres of degraded wetlands and an oil field in a very urban setting
• The Bolsa Chica restoration project
• A full tidal basin (367 acres), managed tidal areas (178 ac), new nesting areas (20 ac), dune plant rehab (19 ac)
• down coast inlet location and two bridges
• no change to Inner or Outer Bolsa Chica Ecological Reserve, seasonal ponds and future restoration area (387 ac), whipstock oil area (25 ac), or flood channel
• total of ~ 2.7 million cubic yards (cy) of dredging
  – ~ 1.3 million cy of clean sand goes to the ebb shoal
  – ~ 1.4 million cy to build the tidal basin containment berms and nesting areas
• groundwater interception feature between managed tidal wetland and houses
• hopes to acquire Fieldstone, remove PCB’s, and restore
Oil Well Abandonment Steps

- Equipment and pipes in the well casing are removed, casing left in place.
- Well casing is extensively plugged with concrete far below the surface.
- Surface pump and related equipment are removed.
- Well casing is cut off below ground and below any proposed excavation depths.
- Well cellar is broken up and removed, surface returned to grade.
To be removed from the full tidal basin, oil wells and pipelines, gas line, and roads
- Contamination in the full tidal basin will be cleaned up during the restoration grading.

- Areas of contamination have been mapped and cleanup goals established.

- All the contamination will be hauled off site or sequestered in the core of nest sites or levees.
Parking Lot Improvements
The following scenarios include deployment or staging of specific booming configurations. Each of these configurations includes pre-established anchor points along the Full Tidal Basin (FTB) levee structure. Priority of these three tactics will vary on the source of the spill and the tidal conditions at the time.

Note: In addition to the protection strategies, conditions in the inner basin may be favorable for open water containment and recovery by deployment of vessel based skimming and storage resources.
Bolsa Chica Booming
Strategy detail

**North Thumb Deployment**

Deployment of approximately 800 feet of containment boom from the “thumb” levee across to the nearest point on the west side of the FTB.

This boom will used to contain and recover floating oil. Collection points at either shoreline allow access to shore based recovery and storage equipment. Boom angle relative to currents may need to be adjusted for extreme tidal conditions to prevent entrainment. Boom should be angled to move collected oil toward shallower, lower current areas.

This deployment will be facilitated by placement of permanent boom anchors on the levee structure (pictured below)

Photo of anchor point detail
Bolsa Chica Booming
Strategy detail

Central Thumb Deployment

Deployment of approximately 1200 feet of containment boom from the “thumb” levee across to the point on the west side of the FTB levee.

This boom will be used to contain and recover floating oil. Collection points at either shoreline allow access to shore based recovery and storage equipment. Boom angle relative to currents may need to be adjusted for extreme tidal conditions to prevent entrainment. Boom should be angled to move collected oil toward shallower, lower current areas.

This deployment will be facilitated by placement of permanent boom anchors on the levee structure (pictured below).

Photo of anchor point detail
Bolsa Chica Booming
Strategy detail

**Tidal Mouth Deployment**

Deployment of approximately 1200 feet of containment boom from the southern corner of the FTB to an anchor point approximately 600 feet on a direct line from the north shore of the opening. The boom then angles back to shore at the eastern most point near the boat ramp.

This boom will be used to contain and recover floating oil. Collection points at either shoreline allow access to shore based recovery and storage equipment. Boom angle relative to currents may need to be adjusted for extreme tidal conditions to prevent entrainment. Boom should be angled to move collected oil toward shallower, lower current areas.

This deployment will be facilitated by placement of permanent boom anchors on the levee structure (pictured below).

Photo of anchor point detail
Scenario: Spill to FTB from State Lease
Objective: Minimize environmental impact
Strategy: Contain the release

Tidal conditions: falling or slack before fall

Tactics:
1. Isolate FTB by closing water control structures
   a) Use mechanical means to isolate MTB by closing control valves on Freeman Creek or FTB structures
   b) Close all four structures unless positive containment is verified
2. Deploy protection/containment strategies in FTB to contain release
   a) Deploy on-site and contracted containment boom
      i. Deploy boom ahead of leading edge. If at night or low visibility (fog) farthest boom first to ensure containment
3. Recover floating oil
   a) Deploy shoreside recovery equipment at collection points
   b) Deploy sorbents or passive recovery if oil is not heavy enough for skimming operations
   c) Deploy oil snare as appropriate in high current areas
4. Cleanup shorelines with approved countermeasures
   a) Use approved cleanup tactics to remove oil from shorelines
**Scenario: Spill to FTB from State Lease**

**Objective:** Minimize environmental impact

**Strategy:** Contain the release

**Tidal conditions: rising or slack before rise**

**Tactics:**

1. Isolate FTB by closing water control structures
   - a) Use mechanical means to isolate MTB by closing control valves on Freeman Creek or MTB structures
   - b) Close all four structures unless positive containment is verified

2. Deploy protection/containment strategies in FTB to contain release
   - a) Deploy on-site and contracted containment boom
     - i. Deploy boom ahead of leading edge. If at night or low visibility (fog) farthest boom first to ensure containment

3. Recover floating oil
   - a) Deploy shoreside recovery equipment at collection points
   - b) Deploy sorbents or passive recovery if oil is not heavy enough for skimming operations
   - c) Deploy oil snare as appropriate in high current areas

4. Cleanup shorelines with approved countermeasures
   - a) Use approved cleanup tactics to remove oil from shorelines
Scenario: Oil Service Bridge Spill

Objective: Minimize environmental impact

Strategy: Contain the release

**Tidal conditions falling or slack before fall**

**Tactics:**

1. Deploy oil snare lines from bridge to contain and recover oil in high current areas
2. Isolate Tidal areas by closing water control structure
   a) Use mechanical means to isolate MTB and Freeman Creek Culverts
3. Stage protection/containment strategies in FTB to contain release
4. Recover floating oil offshore if possible
   a) Stage shoreside recovery equipment at collection points
   b) Stage sorbents or passive recovery if oil is not heavy enough for skimming operations
5. Cleanup shorelines with approved countermeasures
   a) Mobilize for possible beach cleanup
   b) Use approved cleanup tactics to remove oil from shorelines
Scenario: Oil Service Bridge Spill

Objective: Minimize environmental impact

Strategy: Contain the release

Tidal conditions: rising or slack before rise

Tactics:
1. Deploy oil snare lines from bridge to contain and recover oil in high current areas
2. Isolate Tidal areas by closing water control structure
   a) Use mechanical means to isolate MTB and Freeman Creek Culverts
3. Deploy protection/containment strategies in FTB to contain release
4. Recover floating oil at collection points if possible
   a) Stage shoreside recovery equipment at collection points
   b) Stage sorbents or passive recovery if oil is not heavy enough for skimming operations
5. Cleanup shorelines with approved countermeasures
   a) Mobilize for possible shoreline cleanup
   b) Use approved cleanup tactics to remove oil from shorelines
**Scenario: Spill from Retention Pond on State Lease to Inner Bolsa Bay**

**Objective:** Minimize environmental impact

**Strategy:** Contain the release

**Tidal conditions rising or slack before rise**

**Tactics:**

1. Deploy protection/containment strategies in Inner Bolsa Chica Bay to contain release
   - 1. Deploy containment boom near source if possible
   - 2. Implement planning strategies

2. Recover floating oil at collection points if possible
   - a) Stage shoreside recovery equipment at collection points
   - b) Stage sorbents or passive recovery if oil is not heavy enough for skimming operations

3. Cleanup shorelines with approved countermeasures
   - a) Mobilize for possible shoreline cleanup
   - b) Use approved cleanup tactics to remove oil from shorelines
Bolsa Chica Booming Strategy detail

The following scenarios include deployment or staging of specific booming configurations. Each of these configuration includes pre-established anchor points along the Full Tidal Basin (FTB) levee structure. Priority of these three tactics will vary on the source of the spill and the tidal conditions at the time.

Note: In addition to the protection strategies, conditions in the inner basin may be favorable for open water containment and recovery by deployment of vessel based skimming and storage resources.

- Oil spill containment boom (solid filled floatation 10-24” overall)
- Anchor point (40-60 lb. Danforth or similar anchor)
North Thumb Deployment

Deployment of approximately 800 feet of containment boom from the “thumb” levee across to the nearest point on the west side of the FTB.

This boom will used to contain and recover floating oil. Collection points at either shoreline allow access to shore based recovery and storage equipment. Boom angle relative to currents may need to be adjusted for extreme tidal conditions to prevent entrainment. Boom should be angled to move collected oil toward shallower, lower current areas.

This deployment will be facilitated by placement of permanent boom anchors on the levee structure (pictured below)

Photo of anchor point detail
Bolsa Chica Booming
Strategy detail

**Central Thumb Deployment**

Deployment of approximately 1200 feet of containment boom from the “thumb” levee across to the point on the west side of the FTB levee.

This boom will be used to contain and recover floating oil. Collection points at either shoreline allow access to shore based recovery and storage equipment. Boom angle relative to currents may need to be adjusted for extreme tidal conditions to prevent entrainment. Boom should be angled to move collected oil toward shallower, lower current areas.

This deployment will be facilitated by placement of permanent boom anchors on the levee structure (pictured below)

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*Photo of anchor point detail*
Bolsa Chica Booming
Strategy detail

Tidal Mouth Deployment

Deployment of approximately 1200 feet of containment boom from the southern corner of the FTB to an anchor point approximately 600 feet on a direct line from the north shore of the opening. The boom then angles back to shore at the eastern most point near the boat ramp.

This boom will be used to contain and recover floating oil. Collection points at either shoreline allow access to shore based recovery and storage equipment. Boom angle relative to currents may need to be adjusted for extreme tidal conditions to prevent entrainment. Boom should be angled to move collected oil toward shallower, lower current areas.

This deployment will be facilitated by placement of permanent boom anchors on the levee structure (pictured below).

Photo of anchor point detail
**Scenario: Spill to FTB from State Lease**

**Objective:** Minimize environmental impact

**Strategy:** Contain the release

**Tidal conditions:** Falling or slack before tide

**Tactics:**

1. **Isolate FTB by closing water control structures**
   a) Use mechanical means to isolate MTB by closing control valves on Freeman Creek or FTB structures
   b) Close all four structures unless positive containment is verified

2. **Deploy protection/containment strategies in FTB to contain release**
   a) Deploy on-site and contracted containment boom
      i. Deploy boom ahead of leading edge. If at night or low visibility (fog) farthest boom first to ensure containment

3. **Recover floating oil**
   a) Deploy shoreside recovery equipment at collection points
   b) Deploy sorbents or passive recovery if oil is not heavy enough for skimming operations
   c) Deploy oil snare as appropriate in high current areas

4. **Cleanup shorelines with approved countermeasures**
   a) Use approved cleanup tactics to remove oil from shorelines
**Scenario: Spill to FTB from State Lease**

**Objective:** Minimize environmental impact

**Strategy:** Contain the release

**Tidal conditions:** Rising or slack before rise

**Tactics:**

1. Isolate FTB by closing water control structures
   a) Use mechanical means to isolate MTB by closing control valves on Freeman Creek or MTB structures
   b) Close all four structures unless positive containment is verified

2. Deploy protection/containment strategies in FTB to contain release
   a) Deploy on-site and contracted containment boom
      i. Deploy boom ahead of leading edge. If at night or low visibility (fog) farthest boom first to ensure containment

3. Recover floating oil
   a) Deploy shoreside recovery equipment at collection points
   b) Deploy sorbents or passive recovery if oil is not heavy enough for skimming operations
   c) Deploy oil snare as appropriate in high current areas

4. Cleanup shorelines with approved countermeasures
   a) Use approved cleanup tactics to remove oil from shorelines
Scenario: Oil Service Bridge Spill

Objective: Minimize environmental impact

Strategy: Contain the release

Tidal conditions: falling or slack before fall

Tactics:
1. Deploy oil snare lines from bridge to contain and recover oil in high current areas
2. Isolate Tidal areas by closing water control structure
   a) Use mechanical means to isolate MTB and Freeman Creek Culverts
3. Stage protection/containment strategies in FTB to contain release
4. Recover floating oil offshore if possible
   a) Stage shoreside recovery equipment at collection points
   b) Stage sorbents or passive recovery if oil is not heavy enough for skimming operations
5. Cleanup shorelines with approved countermeasures
   a) Mobilize for possible beach cleanup
   b) Use approved cleanup tactics to remove oil from shorelines
Scenario: Oil Service Bridge Spill

Objective: Minimize environmental impact

Strategy: Contain the release

Tidal conditions: rising or slack before rise

Tactics:

1. Deploy oil snare lines from bridge to contain and recover oil in high current areas
2. Isolate Tidal areas by closing water control structure
   a) Use mechanical means to isolate MTB and Freeman Creek Culverts
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**Scenario: Spill from Retention Pond on State Lease to Inner Bolsa Bay**

**Objective:** Minimize environmental impact

**Strategy:** Contain the release

**Tidal conditions:** rising or slack before rise

**Tactics:**

1. Deploy protection/containment strategies in Inner Bolsa Chica Bay to contain release
   - 1. Deploy containment boom near source if possible
   - 2. Implement planning strategies

2. Recover floating oil at collection points if possible
   - a) Stage shoreside recovery equipment at collection points
   - b) Stage sorbents or passive recovery if oil is not heavy enough for skimming operations

3. Cleanup shorelines with approved countermeasures
   - a) Mobilize for possible shoreline cleanup
   - b) Use approved cleanup tactics to remove oil from shorelines