

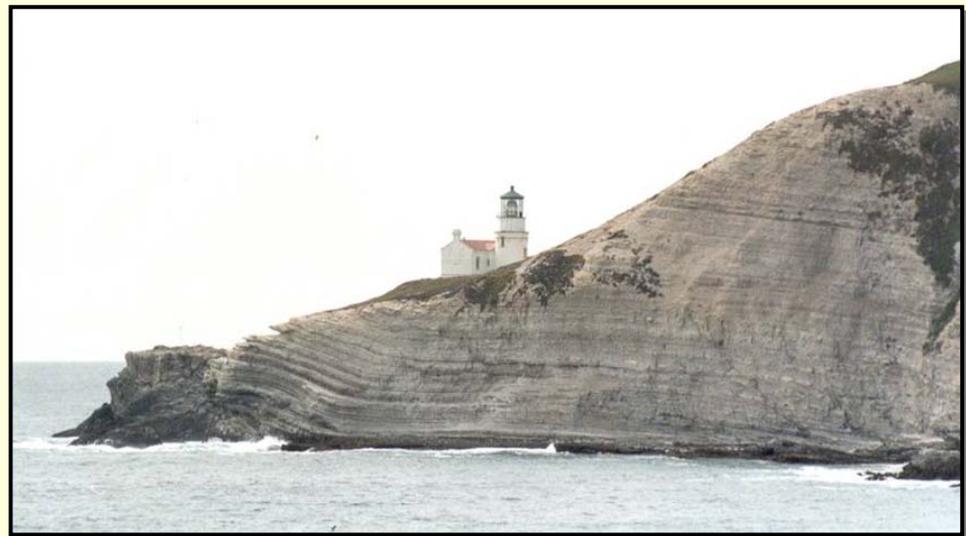
Best Management Practices Used For Recent Decommissioning Projects

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Presentation Outline

- Explosives Use
- Onshore Pipeline Decommissioning
- Offshore Pipeline Decommissioning
- Heavy Equipment in Sensitive Areas
- Conclusions and Acknowledgements



Recent Explosives Use

- Chevron 4H Platform Decommissioning Project
 - Conventional Offshore Production Platform
 - Pile Severing
- Seacliff Pier Complex Decommissioning Project
 - Pier Based Oil and Gas Production
 - Concrete Caisson Removal
- Arco Bird Island
 - Pier Based Oil and Gas Production
 - Concrete Caisson Removal

Chevron 4H Platform Explosives Use



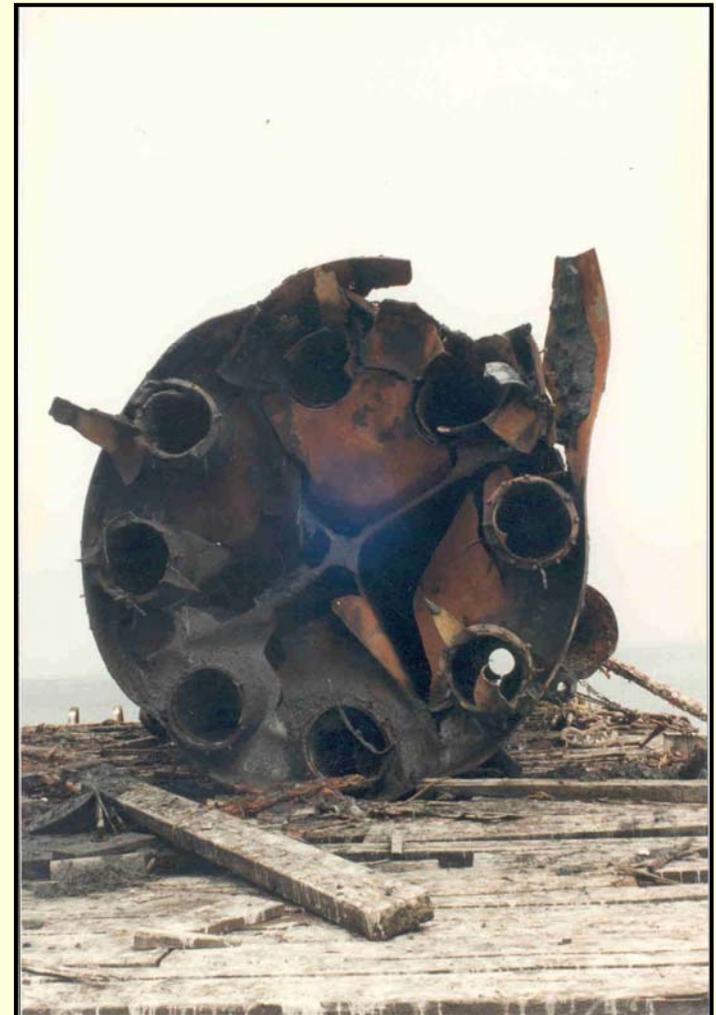
Chevron 4H Platform Explosives Use



Chevron 4H Platform Explosives Use



Chevron 4H Platform Explosives Use



Seacliff Pier Explosives Use



Seacliff Pier Explosives Use



Seacliff Pier Explosives Use



Bird Island Explosives Use



Bird Island Explosives Use



Bird Island Explosives Use



Explosive Use BMP's

- Focused Demolition Planning Based Upon Structure
 - Explosives use is as much art as it is science
 - Bigger is not necessarily better
- Effort Implementation of Marine Wildlife Contingency Plan
 - Marine Mammals
 - Marine Birds
 - Marine Fish

Onshore Pipeline Decommissioning

- Abandonment Considerations
 - Depth of Burial
 - Future Land Use
 - Erosion Potential
 - Stream Crossings
 - Extent of Onsite Contamination
 - Accessibility
 - Sensitive Habitat



Effective Pipeline Preparation



- Pipeline Pigging and Flushing
- Stability Grouting



Access and Removal Procedures



Slope Restoration



Pipeline Abandonment Considerations



Pipeline Removal In Surf Zone



Offshore Pipeline Handling Considerations

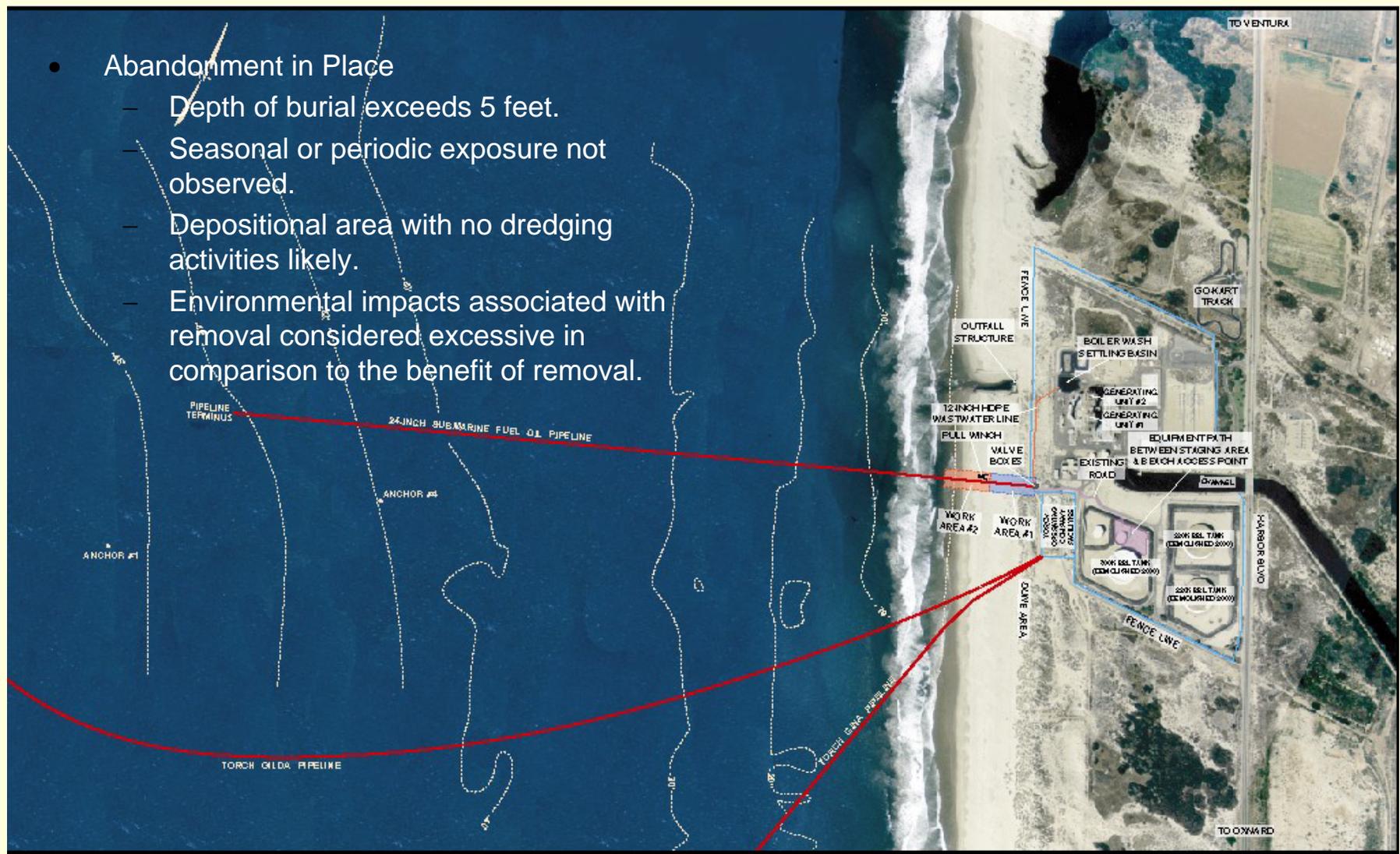


Best Management Practices Used For Recent Decommissioning Projects



Best Management Practices Used For Recent Decommissioning Projects

- Abandonment in Place
 - Depth of burial exceeds 5 feet.
 - Seasonal or periodic exposure not observed.
 - Depositional area with no dredging activities likely.
 - Environmental impacts associated with removal considered excessive in comparison to the benefit of removal.



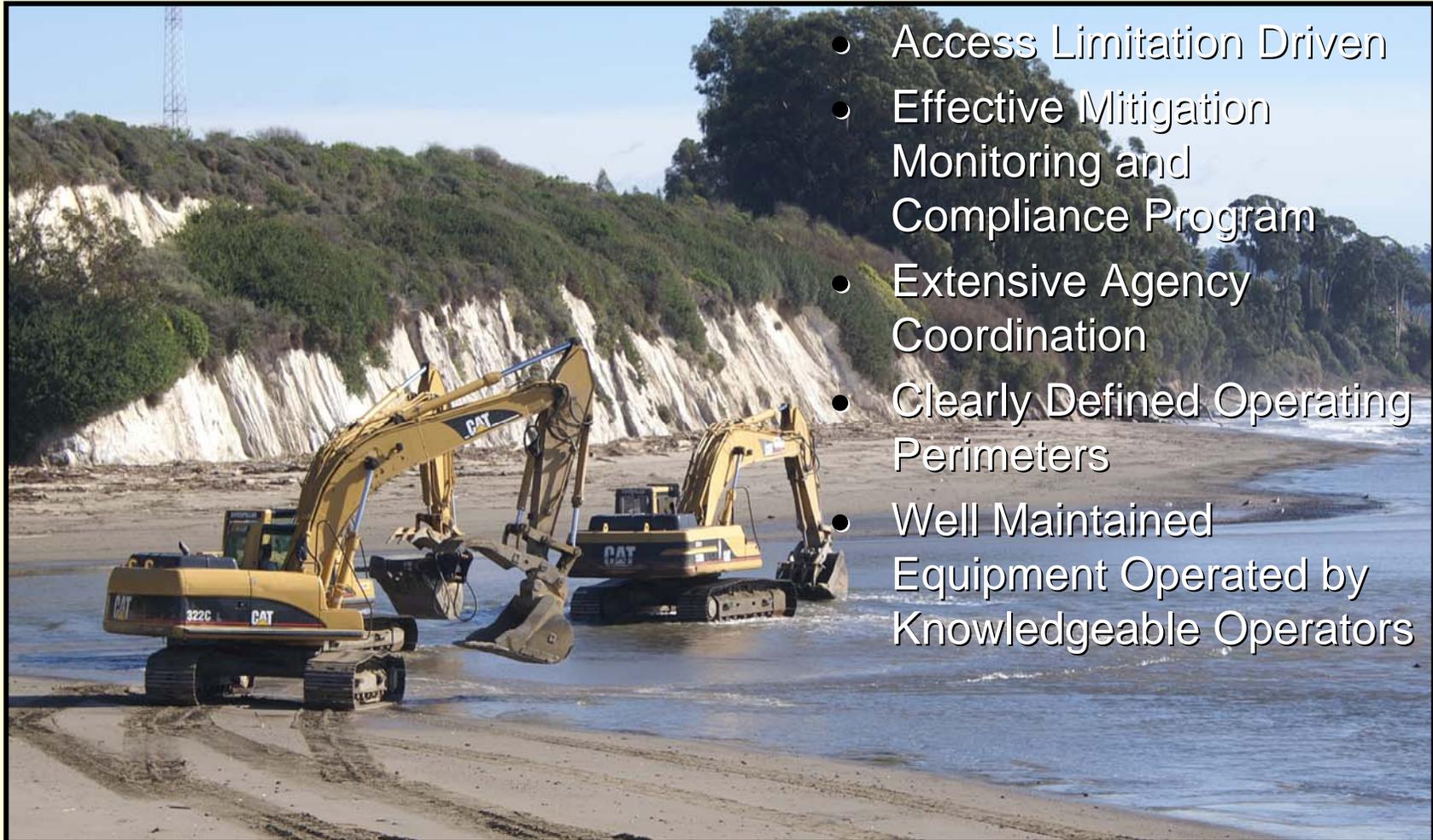
Environmental Considerations



Environmental Considerations



Heavy Equipment in Sensitive Areas



- Access Limitation Driven
- Effective Mitigation Monitoring and Compliance Program
- Extensive Agency Coordination
- Clearly Defined Operating Perimeters
- Well Maintained Equipment Operated by Knowledgeable Operators

Effective Site Exposure



Goleta Beach Hazards Removal



Goleta Beach Hazards Removal



Effective Dewatering Procedures



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