

Ocean Science Trust Study Overview

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Rigs to Reefs?
Options for Platform Decommissioning

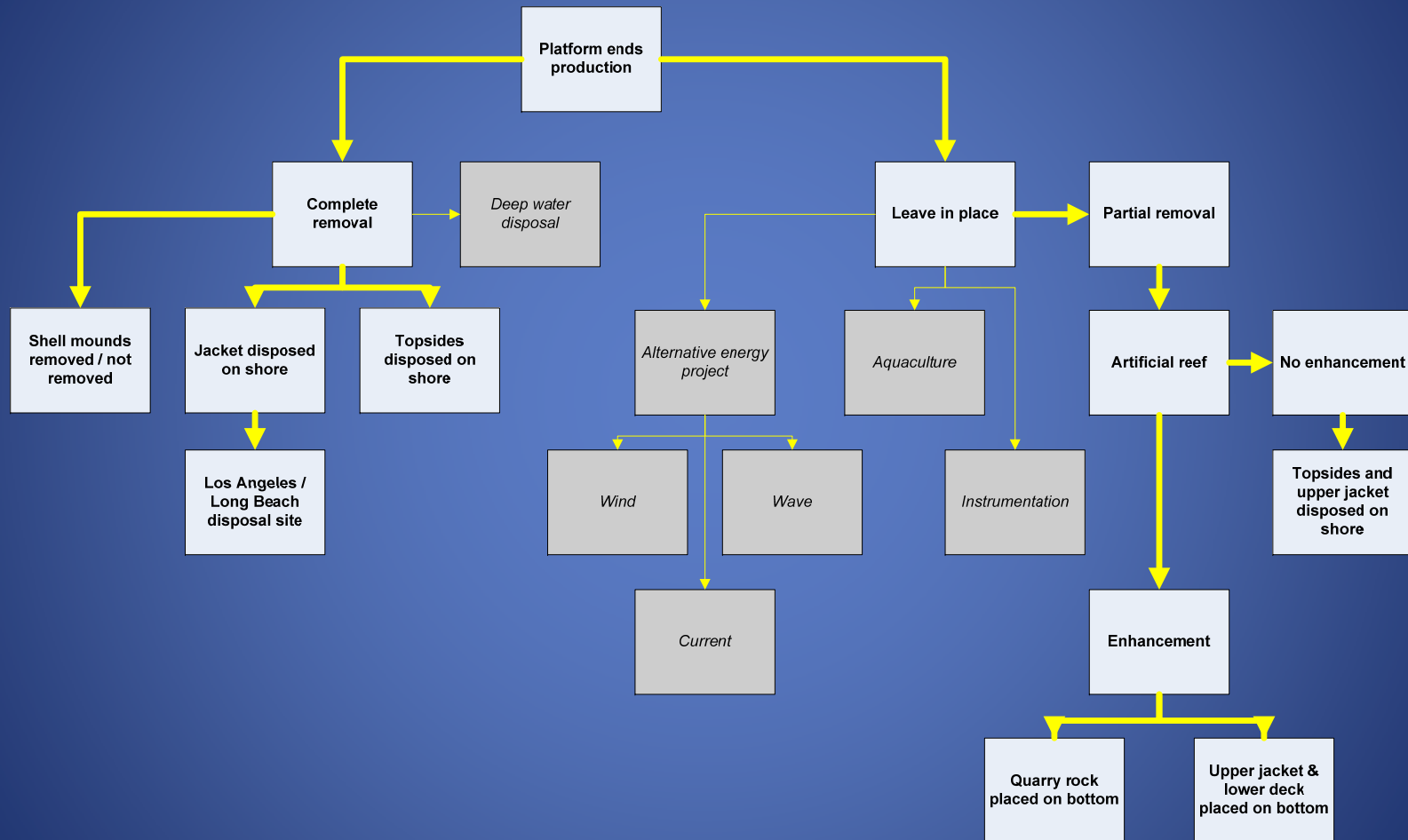


Project Approach

- Evaluate range of potential options
- Describe overall regulatory and legal context
- Select options for in-depth analysis
- Conduct in-depth analysis
 - Focus on choice between options
 - Describe and evaluate major sources of impact
 - Develop decision model for more detailed examination
- Investigate legal and liability issues
- Interact with EAC at key points in the process



Overview of Options Considered



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Criteria for Selecting Options

- Viability within ten-year timeframe
- Existing legal framework for implementation
- Technical feasibility
- Economic viability
- Degree of acceptance by managers
- Degree of interest from proponents
- Relevance to the majority of S CA platforms



Features of the Analysis

- Many aspects identical (well abandonment, topsides removal)
- Use available data / information
 - Published literature, reports, monitoring data
 - Mix of quantitative and qualitative information
 - Many data gaps
- New information for
 - Fish production on platforms
 - Worst-case air emissions
 - Minor costs (dredging, reef enhancement, cathodic protection)



Factors Excluded From Analysis

Reason excluded

Likely effect

Identical in both options

- | | |
|------------------------------------|--------|
| ■ Well abandonment | ■ None |
| ■ Platform preparation | ■ None |
| ■ Pipeline/power cable disposition | ■ None |
| ■ Platform deck removal | ■ None |
| ■ Closure shoreside facilities | ■ None |
| ■ Aesthetics | ■ None |



Factors Excluded From Analysis (cont.)

Reason excluded

Data poor, hard to quantify, small

- Employment
- Broader regional, state economy
- Tax consequences
- Mitigation costs or credits
- Non-MMS permitting costs

Likely effect on analysis

- Very small
- Very small
- Small to moderate depending on magnitude and policy implications
- Small based on lack of legal basis and precedent for artificial habitats
- Small because permitting requirements likely to be similar for both options



Key Findings

- Impacts not equally likely or significant
- Localized and short-term
 - Benthic communities
 - Birds
 - Marine mammals
 - Water quality
 - But larger chance of impact under complete removal
- Mix of potentially positive and negative
 - Socioeconomic due to changes in ocean access
 - Fishing, nonconsumptive, shipping



Key Findings (cont.)

- Potentially larger impacts
 - Air emissions (Harmony alone)
 - NO_x: 600 tons vs. 89 tons
 - CO₂: 29,400 tons vs. 4,400 tons
 - PM₁₀: 21 tons vs. 3 tons
 - Biological communities
 - Standing stock
 - Recruitment and production
 - Costs
 - \$1.09 billion for complete removal
 - \$478 million for partial removal



Desired Option

- No way to make an objective choice
- Depends heavily on preferences

Complete

Ecosystem integrity

Strict compliance

Clear ocean access

Potential liability

Partial

Air emissions

Biological production

Cost / funding

Recreational fishing

Water quality

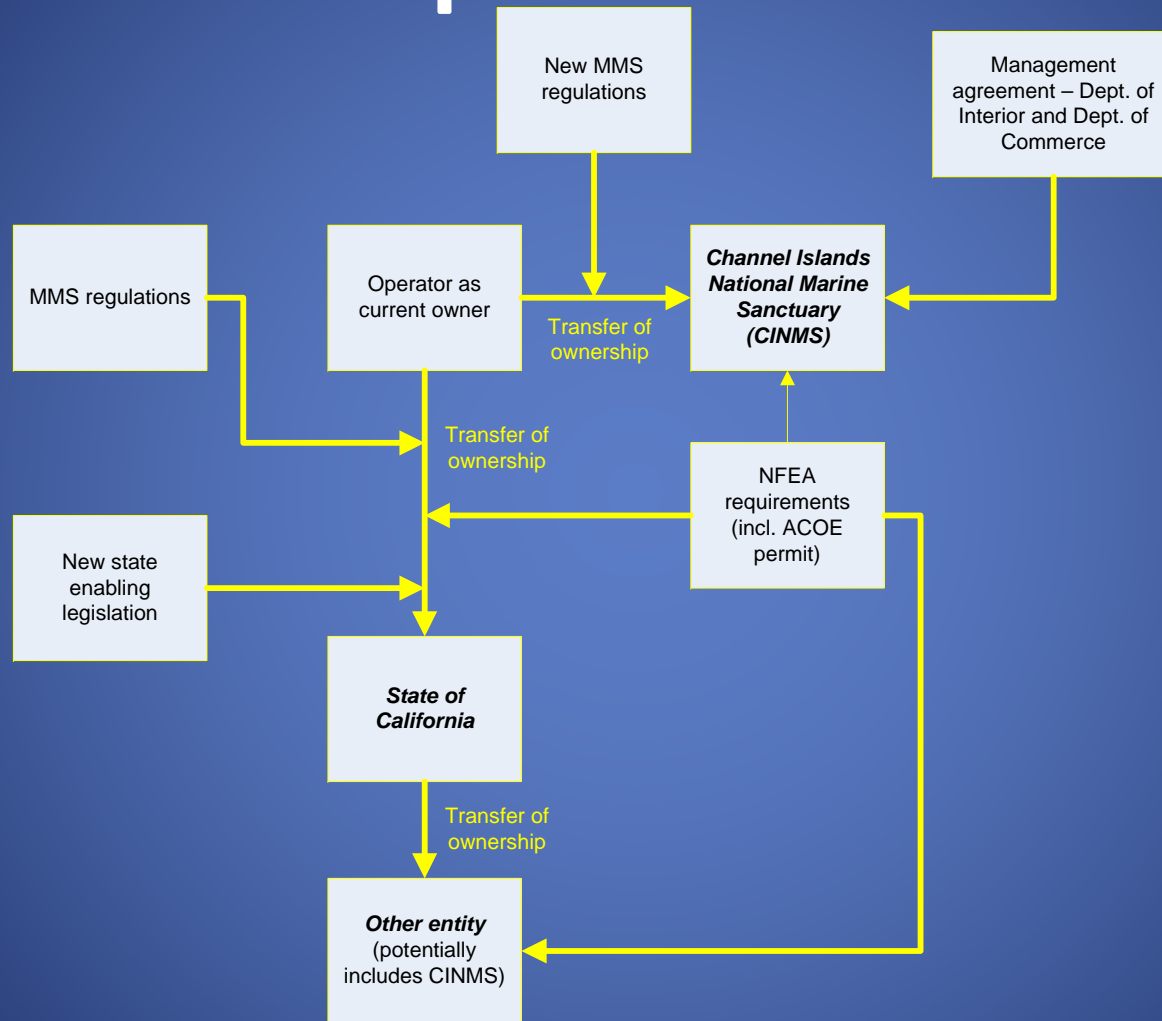


Partial Removal: Legal and Liability

- Well-defined pathways for ownership transfer
- Well-developed mechanisms for managing liability
- Funds available from avoided costs
- CA would require new legislation
 - Acceptance of ownership of reefs in OCS
 - Expanded artificial reef program
 - Acceptance / management of avoided costs
 - Liability containment



Ownership Transfer Pathways



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