

July 1, 1997

To: Rob Ricker
cc: Chuck McKinley

From: Dan Welsh

Subject: Review of Progress in Restoration Planning and Scaling for Natural Resources Injured by San Francisco Drydock/Cape Mohican Oil Spill

As you requested, I have reviewed our restoration planning process and have the following observations:

- At least 20 potential projects were screened. Nearly half of these were eliminated because they did not have a strong nexus to the injured resources and location of the spill, were relatively less feasible, or did not appear to be as cost effective as other projects.
- As injury assessment progressed and the scale of injuries to specific resources became better documented, the trustees modified the scale of the restoration projects to match the scale of the injuries. Costs of almost all projects were cut significantly during this process.

Chronology of Progress in Scaling Restoration to Injury

The trustees' restoration planning process resulted in identification of 19 restoration projects that were evaluated at the May 12 meeting. These projects were organized in 5 categories: acquisitions, wetland restorations, bird habitat enhancement, protection and enhancement of rocky intertidal habitat, and lost use compensation (see attached table). The total estimate of the cost of these projects was \$18,721,338.

On May 12, the projects were evaluated as acceptable, unacceptable, or in need of further development based on nexus to the injured resources, feasibility, and cost. As a result of the May 12 meeting and further discussions among the trustees, the list of restoration projects was reduced to 11 projects costing \$7,626,000 on May 16 (see attached table).

Trustee progress in injury assessment, particularly habitat equivalency analysis, enabled further evaluation of restoration projects by May 20. Project categories were modified to include: sandy beach habitat enhancement/restoration, wetland habitat enhancement/restoration, rocky intertidal habitat enhancement/protection, projects to compensate for bird injuries, and projects to compensate for lost human use. The number of projects was reduced to 10 and the cost of these projects was reduced to \$5,725,000.

Preliminary results of assessment of injuries to herring resulted in addition of a \$1,300,000 herring restoration project prior to development of the governments settlement offer. This addition was partially offset by refinements of cost estimates and scaling of projects in the other categories that substantially reduced costs of several projects. Thus, the estimate of the costs of projects discussed at the June 18 meeting was \$5,950,000 (see attached project summaries).

500028

Potential Restoration Projects for Natural Resources
 Injured by Cape Mohican Oil Spill
 Draft: 5/12/97

Project Name	Species to Benefit	Cost	Info. Source	Complete Summary Received	Detailed Proposal Developed
A) Acquisitions					
Martin Dunes Acquisition	snowy plovers, shorebirds	\$615,000	USFWS	Yes	Yes
Red Rock Acquisition	herons, egrets, gulls, cormorants	\$1,500,000	CDFG	Yes	No
B) Wetland Restorations					
Restoration of Tomales Bay Diked Wetlands	shorebirds, grebes, loons, ducks, fish	\$507,300	NOAA	Yes	Yes
Tubbs Island Levee Setback	grebes, ducks, shorebirds, fish, seals	\$275,000	USFWS	Yes	Yes
Giacomini Ranch Wetland Restoration	shorebirds, fish, seals, seabirds, waterbirds herring	\$1,000,000	NPS	Yes	Yes

500029

Project Name	Species to Benefit	Cost	Info. Source	Complete Summary Received	Detailed Proposal Developed
C) Bird Habitat Enhancement					
Least tern nesting habitat enhancement at Alameda NAS	least terns	\$15,000	USFWS	Yes	No
Tern nesting habitat enhancement at Bair Island	Caspian tern, least tern	\$38,000	USFWS	Yes	No
Exotic cord-grass removal from shorebird habitat on SF Bay mudflats	shorebirds	\$12,000	USFWS	Yes	No
Exotic vegetation removal at E. Marin Island	herons, egrets	\$28,000	USFWS	Yes	No
Restore dunes at Pt Reyes by removing exotic vegetation	snowy plovers, shorebirds	\$25,000 to \$643,438	NPS	Yes	No
Bird and habitat protection on Alcatraz	cormorants, gulls, herons, guillemots	\$40,000	NPS	Yes	Yes
Snowy Plover Habitat Restoration & Outreach on Ocean Beach	snowy plovers, shorebirds	\$138,000	NPS	Yes	No
D) Protection & Enhancement of Rocky Intertidal Habitat					
Intertidal program at Duxbury Reef	intertidal fauna and flora	\$711,225	NOAA	Yes	No
SEALS Program at Fitzgerald Marine Reserve	seals, intertidal fauna and flora	\$497,375	NOAA	Yes	No

500030

Project Name-	Species to Benefit	Cost	Info. Source	Complete Summary Received	Detailed Proposal Developed
E) Lost Use Compensation Projects					
Crissy Field Restoration & Public Access Fund		\$2,500,000	NPS	Yes	Yes
Fort Baker Waterfront Improvements		\$700,000	NPS	Yes	Yes
Big Lagoon Wetland Restoration - Public Access		\$329,000	NPS	Yes	Yes
Muir Beach Water Supply Project		\$3,460,000	NPS	Yes	Yes
Pier One Seismic Upgrade		\$5,712,000	NPS	Yes	Yes

500031

Potential Restoration Projects for Natural Resources
 Injured by Cape Mohican Oil Spill
 Draft Summary: 5/16/97

Project Name	Species to Benefit	Cost Estimate	Info. Source	Complete Summary Received	Detailed Proposal Developed
A) Acquisitions					
Red Rock Acquisition	cormorants, gulls, herons, egrets, seals	\$1,500,000	CDFG	Yes	No
B) Wetland Restorations					
Tubbs Island Levee Setback	grebes, cormorants, gulls, ducks, fish, shorebirds, seals	\$270,000	USFWS	Yes	Yes
Giacomini Ranch Wetland Restoration	shorebirds, fish, seals, seabirds, waterbirds, herring	\$1,000,000	NPS	Yes	Yes
C) Protection & Enhancement of Rocky Intertidal Habitat					
Intertidal Program at Duxbury Reef	intertidal fauna and flora	\$711,000	NOAA	Yes	No

500032

Project Name	Species to Benefit	Cost Estimate	Info. Source	Complete Summary Received	Detailed Proposal Developed
D) Bird Habitat Enhancement					
Bird and Habitat Protection on Alcatraz	cormorants gulls, herons, guillemots	\$75,000	NPS	Yes	Yes
Protect and Enhance Sandy Beach and Dune Community at Pt. Reyes and Ocean Beach	shorebirds	\$281,000	NPS	Yes	No
Enhancement of Water Bird Nesting and Foraging Habitat in San Francisco Bay	terns, herons, egrets, gulls, shorebirds	\$750,000	USFWS	Yes	No
E) Lost Use Compensation Projects					
Crissy Field Restoration & Public Access Fund		\$2,500,000	NPS	Yes	Yes
Big Lagoon Wetland Restoration - Public Access		\$329,000	NPS	Yes	Yes
Angel Island Foot Trail Enhancement		\$150,000	CDPR	Yes	No
Wetlands Walkway at Candlestick Point		\$60,000	CDPR	Yes	No

500033

Summary of Potential Restoration Projects for Natural
Resources Injured by Cape Mohican Oil Spill
Draft: 5/20/97

Project Name and Injury Compensation Category	Species to Benefit	Cost Estimate	Notes
A) Sandy Beach Habitat Enhancement/ Restoration			
Protect and Enhance Sandy Beach and Dune Community at Pt. Reyes and Ocean Beach	shorebirds	\$355,000	
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B) Wetland Habitat Enhancement/ Restoration			
Tubbs Island Levee Setback	grebes, cormorants, gulls, ducks, fish, shorebirds, seals	\$270,000	
Giacomini Ranch Wetland Restoration	shorebirds, fish, seals, seabirds, waterbirds, herring	\$600,000	
C) Rocky Intertidal Habitat Enhancement/ Protection			
Intertidal Program at Duxbury Reef	intertidal fauna and flora	\$711,000	

500034

Project Name and Injury Compensation Category	Species to Benefit	Cost Estimate	Notes
D) Projects to Compensate for Bird Injuries			
Red Rock Acquisition	cormorants, gulls, herons, egrets, pelicans, seals	\$1,500,000	
Enhancement of Water Bird Nesting and Foraging Habitat in San Francisco Bay	cormorants, gulls, terns, herons, egrets, shorebirds	\$750,000	
E) Projects to Compensate for Lost Human Use			
Crissy Field Restoration & Public Access Fund		\$1,000,000	
Big Lagoon Wetland Restoration - Public Access		\$329,000	
Angel Island Foot Trail Enhancement		\$150,000	
Wetlands Walkway at Candlestick Point		\$60,000	

500035

POTENTIAL RESTORATION MEASURES
FOR SAN FRANCISCO DRYDOCK/CAPE MOHICAN SPILL

<u>Restoration Categories</u>	<u>Estimated Costs(\$)</u>
● Sandy Beach Habitat	370,240
● Rocky Intertidal Habitat	350,000
● Wetland Habitat	570,000
● Water Birds	1,800,000
● Pacific Herring	1,300,000
● Human Uses	1,560,000
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TOTAL	\$ 5,950,240

500036

POTENTIAL RESTORATION MEASURES
FOR SAN FRANCISCO DRYDOCK/CAPE MOHICAN SPILL

Restoration Category: SANDY BEACH HABITAT

Objective: Enhance sandy beach habitat in Golden Gate National Recreation Area (GGNRA) and Point Reyes National Seashore (PRNS) to compensate for impacts of the spill to sandy beach habitat.

Restoration Measures:

- A) Eradicate European beach grass and replant native dune vegetation on 20 acres of dunes at PRNS and at Ocean Beach in GGNRA. Monitor recovery of native plants and use by shorebirds for five years.
- B) Remove tarballs from Drake's Beach and Limantour Beach at PRNS.
- C) Develop and implement a public education program to increase protection of shorebirds on Ocean Beach in GGNRA.

Estimates of Costs:

A)	GGNRA:	\$ 82,250
	PRNS:	\$143,440
B)	PRNS:	\$ 88,800
C)	GGNRA:	<u>\$ 55,750</u>
	Total:	\$370,240

500037

POTENTIAL RESTORATION MEASURES
FOR SAN FRANCISCO DRYDOCK/CAPE MOHICAN SPILL

Restoration Category: ROCKY INTERTIDAL HABITAT

Objective: Protect rocky intertidal habitat at Duxbury Reef to compensate for impacts of the spill to rocky intertidal habitat.

Restoration Measures:

This project utilizes public education and information as a means to protect rocky intertidal habitat from trampling by visitors. Educational materials and activities will be designed for use by teachers and for docent-led trail walks. Informational materials will also be developed for self-guided trail walks. An intertidal interpretive display will be designed and constructed. All materials will inform the public about sensitivity of rocky intertidal habitats and will teach the public to avoid the most sensitive areas. Visitor use and resource recovery will be monitored for seven years.

Estimates of Costs:

Because this project helps compensate for impacts to rocky intertidal habitat and for lost human use of the environment, project costs are split evenly between these two categories at \$350,000 per category.

TOTAL: \$350,000

500038

POTENTIAL RESTORATION MEASURES
FOR SAN FRANCISCO DRYDOCK/CAPE MOHICAN SPILL

Restoration Category: WETLAND HABITAT

Objective: Restore former baylands to tidal action to compensate for impacts of the spill to wetland and mudflat habitat.

Restoration Measures:

- A) Construct a new interior levee and breach existing levee at Lower Tubbs Island to open a 72-acre fallow farm field on San Pablo Bay NWR to tidal action.
- B) Remove levees to restore approximately 500 acres of tidal wetlands at Giacomini Ranch along the shore of Tomales Bay.

Estimates of Costs:

A)	Total Restoration Project Cost:	\$635,000
	Amount Available From Other Sources:	<u>\$365,000</u>
	Amount Needed to Complete Project:	\$270,000
B)	Total Restoration Project Cost:	\$1,000,000
	Amount Sought From Other Sources:	<u>\$700,000</u>
	Amount Needed to Complete Project:	\$300,000
	TOTAL	\$570,000

500039

POTENTIAL RESTORATION MEASURES
FOR SAN FRANCISCO DRYDOCK/CAPE MOHICAN SPILL

Restoration Category: WATER BIRDS

Objective: Acquire and enhance nesting and roosting habitat for water birds in San Francisco Bay to compensate for injuries sustained by water birds as a result of the oil spill.

Restoration Measures:

- A) Acquire Red Rock, a 3-acre island that is the last remaining privately owned island in central San Francisco Bay. Manage and enhance Red Rock for cormorant, gull, heron, and egret nesting and pelican roosting.
- B) Establish a colonial water bird habitat enhancement fund for use in restoring or enhancing habitat on Alcatraz and other nesting sites in San Francisco Bay.

Estimates of Costs:

A) \$1,300,000
B) 500,000

Total: \$1,800,000

500040

POTENTIAL RESTORATION MEASURES
FOR SAN FRANCISCO DRYDOCK/CAPE MOHICAN SPILL

Restoration Category: PACIFIC HERRING

Objective: Create eelgrass habitat to compensate for the loss of herring eggs and other ecological services provided by oiled habitat along the San Francisco waterfront.

Restoration Measures:

- A) Create 21.5 acres of eelgrass habitat at suitable sites in San Francisco Bay.

Estimates of Costs:

TOTAL: \$1,300,000

500041

POTENTIAL RESTORATION MEASURES
FOR SAN FRANCISCO DRYDOCK/CAPE MOHICAN SPILL

Restoration Category: COMPENSATION FOR LOST HUMAN USES

Objective: Implement projects that enhance human uses of natural resources in the areas affected by the spill. The projects will compensate the public for recreational opportunities that were lost or impaired due to closures and other impacts to public facilities.

Restoration Measures:

- A) Establish a public use enhancement fund for Crissy Field to provide for public access, education, and maintenance of uses of shoreline and tidal marsh habitat.
- B) Enhance access to Angel Island beaches through construction of new or improved trails, stairs, and walkways.
- C) Implement a public education program at Duxbury Reef to inform people about rocky intertidal habitat.
- D) Construct an elevated walkway into wetlands at Candlestick Point to facilitate access for educational programs dealing with wetland habitats.

Estimates of Costs:

A)	Crissy Field:	\$1,000,000
B)	Angel Island:	\$150,000
C)	Duxbury Reef:	\$350,000
D)	Candlestick Point:	<u>\$60,000</u>
	TOTAL	\$1,560,000

500042